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

Andover Water Department

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.

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	Andover Water Department
PWS Address	397 Lowell Street
City/Town	Andover, Massachusetts 01810-4416
PWS ID Number	3009000
Local Contact	John Pollano
Phone Number	(978) 623-8350

Introduction

We are all concerned about the quality of the water we drink. Drinking water sources 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. Emergency Planning Recommendations for Class B River Intakes
4. Source Water Protection
5. Appendices

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.

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.

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.

Zone A: is the most critical for protection efforts. It is the area 400 feet from the edge of the reservoir and 200 feet from the edge of the tributaries (rivers and/or streams) draining into it.

Zone B: is the area one-half mile from the edge of the reservoir but does not go beyond the outer edge of the watershed.

Zone C: is the remaining area in the watershed not designated as Zones A or B.

The attached map shows Zone A and your watershed boundary.

Section 1: Description of the Water System

Groundwater Sources

IWPA ***Susceptibility:*** High

Well Name	***Source ID#***
Abbott Well	3009000-03G

Surface Water Sources

Source Name	***Source ID #***	***Susceptibility***
Haggetts Pond Reservoir	3009000-01S	High
Fish Brook Station	3009000-02S	High
Merrimack River	3009000-03S	High

The Andover Water Department (Andover) maintains and operates four public water supply sources. Andover's surface water supplies are located within the Merrimack River basin, with the Abbott Well being in the Shawsheen River basin. The Abbott Well interim wellhead protection area (IWPA), and Haggetts Pond Reservoir (01S) and Fishbrook Station (02S) water supply protection areas are located entirely within Andover. The intake for the Merrimack River (03S) is in Andover.

For current information on 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 at http://www.epa.gov/safewater/ccr1.html

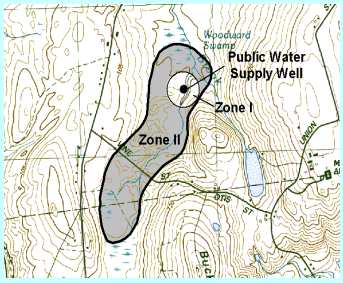
Class B Drinking Water Sources

There are twelve Class B drinking water sources on rivers in Massachusetts, eleven in the urbanized northeast and one in the western part of the State. Five of these sources are located on the Merrimack River. The large watersheds and historically urbanized land uses associated with major rivers makes source protection a challenge at the Class B sources.

A Class B water body source such as the Merrimack River does not have Zone A, B and C protection areas, as do Class A water body sources. For the purposes of the SWAP assessments, a 400 foot setback area along the river and all feeder streams has been delineated for Class B water body sources that is referred to as an "Emergency Planning Zone". Land uses and activities within this zone are of particular concern for source protection and emergency planning because of their proximity to the water supply.

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.



River drinking water sources are particularly susceptible to spills and accidental releases from public and private discharges; accidents related to vehicles, railroads, airports, boats; utility easements; fixed site releases at industrial and public facilities; inappropriate use of pesticides and fertilizers; improper disposal of hazardous household waste; and illegal dumping of a variety of substances.

This assessment has been conducted on the watershed area upstream of the Andover intake. In addition, DEP has delineated a 400-foot emergency planning zone (shown on the GIS map that accompanies this report) adjacent to the river and its tributaries for the purpose of this assessment.

Section 2: Land Uses in the Protection Areas

The IWPA and watersheds for Andover's reservoir and the Fish Brook/ Merrimack River intake are primarily a mixture of forest and residential, with a small portion consisting of agricultural, commercial, and 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. Activities in Zone I
2. Activities in Zone A/Emergency Planning Zone
3. Chemical and Hazardous Materials Manufacture, Storage and Use
4. Agricultural Activities
5. Residential Land Uses
6. Transportation Corridors
7. Road and Maintenance Depots
8. Oil or Hazardous Material Contamination Sites
9. Comprehensive Surface Water Protection Planning

The ranking of susceptibility to contamination for the Abbott Well IWPA, Fish Brook Station, Haggetts Pond Reservoir, and Merrimack River watershed 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.

1. Activities in Zone I – The Zone I for Abbott Well is a 275 foot radius around the wellhead. Massachusetts drinking water regulations (310 CMR 22.00) require public water suppliers to own the Zone I, or control the Zone I through a conservation restriction. 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 Zone I for the Abbott Well (03G) contains a local road, a house, and approximately 30 parking spaces.

Zone I Recommendations:

- ✓ To the extent possible, remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements.
- ✓ 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.

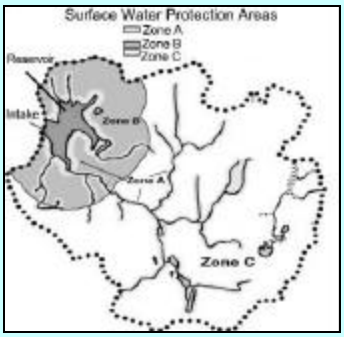
2. Activities in Zone A/Emergency Planning Zone - A Zone A for a reservoir includes all areas within 400 feet of the reservoir shore line and within 200 feet of either side of all streams and feeder ponds that flow into the reservoir.

Class B River Intakes

Class B water sources do not have Zone A , B and C protection areas as the Class A sources do. For the purposes of this report, an "Emergency Planning Zone" has been delineated. The **Emergency Planning Zone** is the land area within 400 feet of both sides of the river including all tributary streams and surface water bodies.

What is a Watershed?

A watershed is the land area that catches and drains rainwater down-slope into a river, lake or reservoir. As water travels down from the watershed area it may carry contaminants from the watershed to the drinking water supply source. For protection purposes, watersheds are divided into protection Zones A, B and C.



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.

The Emergency Planning Zone is a 400 foot setback on either side of the river and all tributaries to a Class B river intake. Land use activities within a Zone A or Emergency Planning Zone may have an impact on surface water sources. Existing and future land use activities which may have an impact on surface water sources include: on-site septic systems; public and private recreational activities; untreated stormwater runoff; domestic animals; new construction; spills along roads; above ground and underground storage tanks; erosion; and, un-permitted and unauthorized activities. Also, wild animals and domestic pets can be carriers of waterborne diseases such as Giardia, Cryptosporidium, Salmonella, etc.

Zone A/Emergency Planning Zone Recommendations:

Work with communities within the combined watersheds to:

- ✓ To the extent possible, remove all activities from the Zone As to comply with DEP's Zone A requirements.
- ✓ Use BMPs for the storage, use, and disposal of hazardous materials.
- ✓ Storage of pesticides, fertilizers or road salt within the Zone A and Emergency Planning Zone should be covered and contained.
- ✓ Keep any new prohibited activities out of the Zone A.
- ✓ Identify stormwater drains and the drainage system along transportation corridors. Work to better manage stormwater by pre-treating contaminated stormwater and/or redirecting stormwater outside of the Zone A and Emergency Planning Zone.
- ✓ Continue your efforts to protect these areas and to monitor and review activities within the Zone A and Emergency Planning Zone.

3. Chemical and Hazardous Materials Manufacture, Storage and Use – Many large and small businesses use hazardous materials, produce hazardous waste products, and/or store large quantities of hazardous materials in Underground Storage Tanks (USTs)/Aboveground Storage Taks (ASTs). Although many facilities within the watershed use best management practices (BMPs), hazardous materials and waste can be unexpectedly released through spills, leaks or improper handling or storage, and 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:

Work with communities within the combined watersheds to:

- ✓ Educate local businesses on BMPs for protecting water supplies, and encourage them to use BMPs for handling, storing and disposing of hazardous waste. Distribute the fact sheet "Businesses Protect Drinking Water" available in Appendix A and on www.mass.gov/dep/brp/dws/protect.htm, which provides BMPs 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 floor drain requirements. See brochure "Industrial Floor Drains" for more information.

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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 facilities are using best management practices (BMPs). 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 Watershed

For more information, refer to Appendix B: Regulated Facilities within the Water Supply Protection Area

Land Uses	Quantity	Threat	Source ID #	Potential Contaminant Sources*
Agricultural				
Fertilizer Storage or Use	Few	M	03S	Leaks, spills, improper handling, or over-application of fertilizers
Livestock Operations	1	M	02S	Improper handling of manure (microbial contaminants)
Manure Storage or Spreading	1	H	02S	Improper handling of manure (microbial contaminants)
Pesticide Storage or Use	Few	H	03S	Leaks, spills, improper handling, or over-application of pesticides
Commercial				
Body Shops	2	H	03S	Improper management of vehicle paints, solvents, and primer products
Gas Stations	12	H	02S, 03S	Spills, leaks, or improper handling or storage of automotive fluids and fuels
Service Stations/Auto Repair Shops	5	H	03S	Spills, leaks, or improper handling of automotive fluids, and solvents
Cemeteries	Few	M	03S	Leaks, spills, improper handling, or over-application of pesticides; historic embalming fluids
Dry Cleaners	1	H	03S	Spills, leaks, or improper handling of solvents and wastes
Funeral Homes	Several	L	03S	Spills, leaks, or improper handling of hazardous chemicals
Golf Courses	7	M	02S, 03S	Over-application or improper handling of fertilizers or pesticides
Printer and Blueprint Shops	2	M	02S, 03S	Spills, leaks, or improper handling or storage of printing inks and chemicals
Railroad Tracks and Yard	4	H	03G, 03S	Over-application or improper handling of herbicides, leaks or spills of transported chemicals and maintenance chemicals; fuel storage
Sand and Gravel Mining/ Washing	Few	M	03S	Spills or leaks from heavy equipment, fuel storage, clandestine dumping

Land Uses	Quantity	Threat	Source ID #	Potential Contaminant Sources*
Industrial				
Asphalt, Coal Tar, and Concrete Plants	1	M	03S	Spills, leaks, or improper handling or storage of hazardous chemicals and wastes
Chemical Storage or Manufacture	Numerous	H	03S	Spills, leaks, or improper handling or storage of chemicals or process waste
Electronics/Electrical Manufacturers	1	H	02S	Spills, leaks, or improper handling or storage of chemicals and process wastes
Hazardous Materials Storage	Numerous	H	02S, 03S	Spills, leaks, or improper handling or storage of hazardous materials
Industrial Parks	Few	H	03S	Leaks, spills of chemicals from improper handling or storage
Nuclear Power Plants	1	H	03S	Spills, leaks, or improper handling of radioactive materials
Plastic Manufacturers	1	H	03S	Spills, leaks, or improper handling or storage of solvents, resins and process wastes
Residential				
Fuel Oil Storage (at residences)	100+	M	All	Spills, leaks, or improper handling of fuel oil
Lawn Care/Gardening	100+	M	All	Over-application or improper storage and disposal of pesticides
Miscellaneous				
Aboveground Storage Tanks	Few	M	01S, 02S, 03S	Spills, leaks, or improper handling of materials stored in tanks
Aquatic Wildlife	100+	L	01S, 02S, 03S	Microbial contaminants
Combined Sewer Overflows	Several	L	03S	Microbial and non-microbial contaminants including industrial wastewater; improper disposal of hazardous wastes
Composting Facilities	1	L	02S	Storage and improper handling of organic material, animal waste, and runoff
Fishing/Boating	100+	L	03S	Fuel and other chemical spills, microbial contaminants
Landfills and Dumps	4	H	02S, 03S	Seepage of leachate
Large Quantity Hazardous Waste Generators	15	H	03S	Spills, leaks, or improper handling or storage of hazardous materials and waste
NPDES Locations	2	L	03S	Improper disposal of hazardous material and wastes
Oil or Hazardous Material Sites	50+	--	02S, 03S	Tier Classified Oil or Hazardous Materials Sites are not ranked due to their site-specific character. Individual sites are identified in Appendix B.

Land Uses	Quantity	Threat	Source ID #	Potential Contaminant Sources*
Miscellaneous				
Road and Maintenance Depots	2	M	01S, 03S	Spills, leaks, or improper handling or storage of de-icing materials, automotive fluids, fuel storage, and other chemicals
Schools, Colleges, and Universities	Several	M	03S	Spills, leaks, or improper handling or storage of fuel oil, laboratory, art, photographic, machine shop, and other chemicals
Small Quantity Hazardous Waste Generators	29	M	02S, 03S	Spills, leaks, or improper handling or storage of hazardous materials and waste
Stormwater Drains	100+	L	01S, 02S, 03S	Debris, pet waste, and chemicals in stormwater from roads, parking lots, and lawns
Superfund Sites	1	H	03S	Spills, leaks, or improper handling or storage of oil or hazardous materials and waste
Transmission Line Rights-of-Way	9	L	All	Construction and corridor maintenance, over-application or improper handling of herbicides
Transportation Corridors	5	M	01S, 02S, 03S	Accidental leaks or spills of fuels and other hazardous materials, over-application or improper handling of pesticides
Underground Storage Tanks	100+	H	02S, 03S	Spills, leaks, or improper handling of stored materials
Utility Substation Transformers	1	L	03S	Spills, leaks, or improper handling of chemicals and other materials including PCBs
Very Small Quantity Hazardous Waste Generators	100+	L	02S, 03S	Spills, leaks, or improper handling or storage of hazardous materials and waste
Waste Transfer/ Recycling Stations	3	M	03S	Improper management, seepage, and runoff of water contacting waste materials

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 information on regulated facilities, refer to Appendix B: Regulated Facilities within the Water Supply Protection Area information about these potential sources of contamination.
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)

- ✓ Continue monitoring water quality in the Merrimack River.
- ✓ Continue to plan and prepare for spills by communicating with municipalities and facilities in the Ipswich River watershed, and by conducting drills.

4. Agricultural Activities – Agricultural land uses, cropland and pastures, comprise about 2% of the combined watersheds. Pesticides and fertilizers have the potential to contaminate a drinking water source if improperly stored, applied, or disposed. If managed improperly, underground and aboveground storage tanks (USTs and ASTs) can be potential sources of contamination due to leaks or spills. Agricultural activities can also be a potential source of microbial contamination from improper manure management.

Agricultural Recommendations:

- ✓ Work with farmers to make them aware of the water supply and to encourage the use of a U.S. Natural Resources Conservation Service (NRCS) farm plan to protect water supplies.
- ✓ The Massachusetts Department of Food & Agriculture's booklet titled "On-Farm Strategies to Protect Water Quality - An Assessment & Planning Tool for Best Management Practices" (December 1996) describes technical and financial assistance programs related to the control of erosion and to the management of nutrients, pests, manure, grazing and irrigation.
- ✓ Work with farmers to ensure that pesticides, fertilizers and manure are being stored within a structure designed to prevent runoff.

5. Residential Land Uses – Approximately 30% of the combined watersheds and IWPA consist of residential areas, of which a large portion is served by private septic systems, with the remainder being served by municipal sewering. 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** – 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:
Work with communities within the combined watersheds to:

- ✓ 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.
- ✓ Work with planners to control new residential developments in the water supply protection areas.
- ✓ Promote BMPs for stormwater management and pollution controls.

6. Transportation Corridors - Several major transportation corridors and other paved and unpaved local roads cross through the watersheds and IWPA. Spills from vehicular accidents are a major concern. In addition, 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 into catch basins. The steep topography of the watershed results in application of de-icing materials to protect public health and safety by keeping the roads passable.

Transportation Corridor Recommendations:
Work with communities within the combined watersheds to:

- ✓ Identify stormwater drains and the drainage system along transportation corridors.
- ✓ Work with the Towns and State to have catch basins inspected, maintained, and cleaned on a regular schedule.
- ✓ Work with local emergency response teams to ensure that any spills 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.
- ✓ Establish vegetated buffers along roads and parking areas to provide some filtration of contaminants.
- ✓ Encourage regular street sweeping. Appendix A contains a fact sheet titled *DPWs Protect Drinking Water.*
- ✓ Conduct emergency drills to be ready for spills.
- ✓ Regularly inspect the watersheds for illegal dumping and spills.
- ✓ Work with local emergency response teams to ensure that any spills can be effectively contained.

7. Road and Maintenance Depots - Potential sources of contamination in state and municipal facilities can result from accidental dumping, spills, leaks, vehicle washing operations, or from wastewater treatment. Waste management and product storage pose the greatest threats with a wide variety of potentially harmful contaminants.

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 the 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 to the Zone II.

2. The groundwater in this area probably discharges to 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.

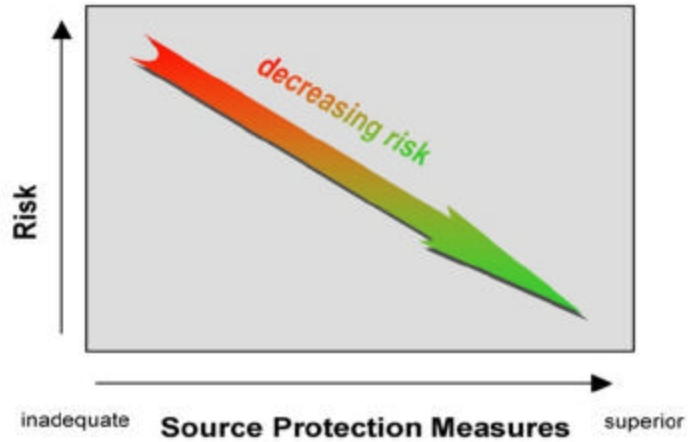

Figure 2: Risk of contamination decreases as source protection increases. This is true for public water systems of any susceptibility ranking, whether High, Moderate, or Low.

Table 3: Current Protection and Recommendations

Protection Measures	Status	Recommendations
Zone A		
Does the Public Water Supplier (PWS) own or control the entire Zone I and Zone A?	**YES** (Abbott Well)	Follow Best Management Practices (BMPs) that focus on good housekeeping, spill prevention, and operational practices to reduce the use and release of hazardous materials. To the extent possible, remove prohibited activities in Zone A and Zone I to comply with DEP's Zone A and Zone I requirements.
	NO (Haggetts Pond, Fish Brook)	
Are the Zone Is and Zone As posted with "Public Drinking Water Supply" Signs?	**NO**	Economical signs are available from the Northeast Rural Water Association (802) 660-4988.
Are the Zone Is and Zone As regularly inspected?	**YES**	Continue daily inspections of drinking water protection areas.
Are water supply-related activities the only activities within the Zone I and Zone A?	**NO**	Monitor prohibited activities in Zone A and Zone I, and investigate options for removing these activities.
Municipal Controls (Zoning Bylaws, Health Regulations, and General Bylaws)		
Does the municipality have Surface Water Protection Controls that meet 310 CMR 22.20C and Wellhead Protection Controls that meet 310 CMR 22.21(2)?	**YES**	Work with the Planning Board to compare land use controls to see that they meet current requirements of 310 CMR 22.20 (B) and 310 CMR 22.20 (C). Refer to mass.gov/dep/brp/dws/ for model bylaws and health regulations, and current regulations.
Do neighboring communities protect the water supply protection areas extending into their communities?	**UNKNOWN**	Work with communities within the Merrimack River Watershed to develop land use controls that meet current requirements of 310 CMR 22.20 (B) and 310 CMR 22.20 (C).
Planning		
Does the PWS have a local surface water and wellhead protection plan?	**IN PROGRESS**	Continue to develop and implement a surface water supply and wellhead protection plan. Follow "Developing a Local Wellhead Protection Plan" and "Developing a Local Surface Water Supply 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**	Supplement 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 watershed protection committee?	**NO**	Establish a committee with representatives from citizens' groups, neighboring communities, and the business community.
Does the Board of Health conduct inspections of commercial and industrial activities?	**UNKNOWN**	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 watershed protection education?	**YES**	Currently, outreach is through the annual Consumer Confidence Report, school programs, direct mailings, treatment plant tours, League of Women Voters. Increase residential outreach through additional bill stuffers, Drinking Water Week activities, and coordination with local groups. Aim additional efforts at commercial and municipal uses within the Zone C.

Road and Maintenance Depots Recommendations:
Work with communities within the combined watersheds to:

- ✓ Institute **Best Management Practices** - The New England Environmental Assistance Team provides municipalities in New England with information on how to comply with environmental requirements, and how to prevent pollution. For more information about this EPA sponsored program visit their website at http://www.epa.gov/region1/steward/neeat/muni/index.html. Encourage road and maintenance depots to develop best management practices to insure proper salt storage, proper maintenance of facilities and good housekeeping practices.
- ✓ Adequately size salt pile structure to allow for the loading and unloading of salt within the structure. Review the Department of Environmental Protection's Drinking Water Program Guidelines On Deicing Chemical (Road Salt) Storage at http://www.state.ma.us/dep/brp/dws/files/saltgui.doc.
- ✓ Encourage proper storage of materials at these facilities. Appendix A contains a fact sheet titled *DPWs Protect Drinking Water.*

8. Presence of Oil or Hazardous Material Contamination Sites – The Zone C for Fish Brook Station contains DEP Tier Classified Oil and/or Hazardous Material Release Sites indicated on the maps as Release Tracking Numbers 3-0003072 and 3-0003339. Refer to the attached maps and Appendix C for more information on these sites, and for information on DEP Tier Classified Oil and/or Hazardous Material Release Sites within the watershed for the Merrimack River.

Oil or Hazardous Material Contamination Sites Recommendation:

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

9. Protection Planning – Protection planning protects drinking water by managing the land area that supplies water to a reservoir. Currently, the Town of Andover has a watershed protection overlay district bylaw that was passed in 1986. It is unlikely that this bylaw meets current DEP Groundwater Protection regulations 310 CMR 22.21 and Surface Water Protection regulations 310 CMR 22.20 (b) and (c). A Groundwater and Surface Water Supply 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 reservoirs.

Top 5 Reasons to Develop a Local Surface Water Protection Plan

❶ Reduces Risk to Human Health

❷ Cost Effective! Reduces or Eliminates Costs Associated With:

- Increased 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.

Protection Planning Recommendations:
Work with communities within the combined watersheds to:

- ✓ Develop a Wellhead Protection Plan. 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".
- ✓ Encourage watershed towns to adopt controls that meet 310 CMR 22.20 (b) and (c). For more information on DEP land use controls see http://mass.gov/dep/brp/dws/protect.htm.
- ✓ Continue to work with town boards to review and provide recommendations on proposed development within your water supply protection areas. To obtain information on build-out analyses for the towns, see the Executive Office of Environmental Affairs' community preservation web site, http://commpres.env.state.ma.us/.

Other land uses and activities within the Protection areas that are potential sources of contamination are included in Table 2. Refer to Appendix B 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: Emergency Planning Recommendations for Class B River Intakes

Prevention

Public water suppliers with a river source may take preventive measures to protect the source from unexpected releases. Here are some suggestions.

1. Title III (Emergency Planning and Community Right-to-Know) of the Superfund Amendments & Reauthorization Act (SARA) of 1986 required that each community **develop a comprehensive emergency response plan**. Suppliers should review the existing plan to ensure that water supply issues are satisfactorily addressed in the plan, that current response personnel and their correct telephone numbers are listed, and that the entire plan is regularly reviewed and updated by community officials.

   The community plan, or a separate water supplier plan, should include copies of policies in the event of spills or releases; regulatory notification requirements such as what size spills are required to be reported, who to call, telephone numbers, and what information is required to be reported; map of intakes, tributaries, watershed boundaries, adjacent public wells, and locations of sites where spills or accidental releases could occur.

2. **Identify, map and distribute information** to local emergency responders regarding the locations of intakes on the river, tributaries, watershed boundaries, public wells adjacent to river; chemical use at municipal, state, and industrial facilities in watershed (contact Fire Dept., DEP); locations of stormwater drains and the locations of known dams in the event that they can be manipulated by authorized individuals for contaminant control.
   The Fire Dept., Board of Health, Planning Board, Local Emergency Planning Committee (LEPC), DEP and others may have existing information to help with your work. SARA requires companies to work with the community's LEPC if they handle extremely hazardous chemicals in quantities above established thresholds.

3. **Develop a communication list** of contacts at upstream and downstream facilities, dams, as well as other public water suppliers on, or adjacent to, rivers. Notify owners and operators of these facilities about the location of your intake and request, in writing, that you be notified immediately in the event of a chemical spill or unexpected discharge. Take this opportunity to educate others about water supply protection.

4. **Provide comments** to municipal boards in other cities/towns in the watershed about proposed development, land use controls, Best Management Practices (BMPs) for stormwater flow into tributaries, and other issues to avoid future problems.

5. **Post signs** along major roads in watershed which direct the public to call "911" or other appropriate local number in case of spills. Be aware of accident-prone areas and transport routes of chemicals if possible.

6. **Educate** the public, local officials, Civil Defense, local emergency response team, and others about water supply protection issues. Educate businesses about toxic use reduction.

7. **Conduct household hazardous waste collection days** and establish permanent collection sites, away from sensitive watershed areas, for used batteries, paints, motor oil, etc.

8. **Conduct drills**, in coordination with local/regional response teams, to test policies and procedures and to practice responding to various situations. Including businesses, local officials and staff, Fire Departments, Boards of Health, Civil Defense, school administration, and others in planning and implementing the drills will allow for several town or region-wide concerns to be addressed and tested at the same time, including: issuing health advisories, conducting neighborhood and/or school evacuations, and evaluating the town's communication system (both making responders aware of the emergency and issuing advisories to the public when necessary via television, radio, and other news media), equipment and emergency plan in general.

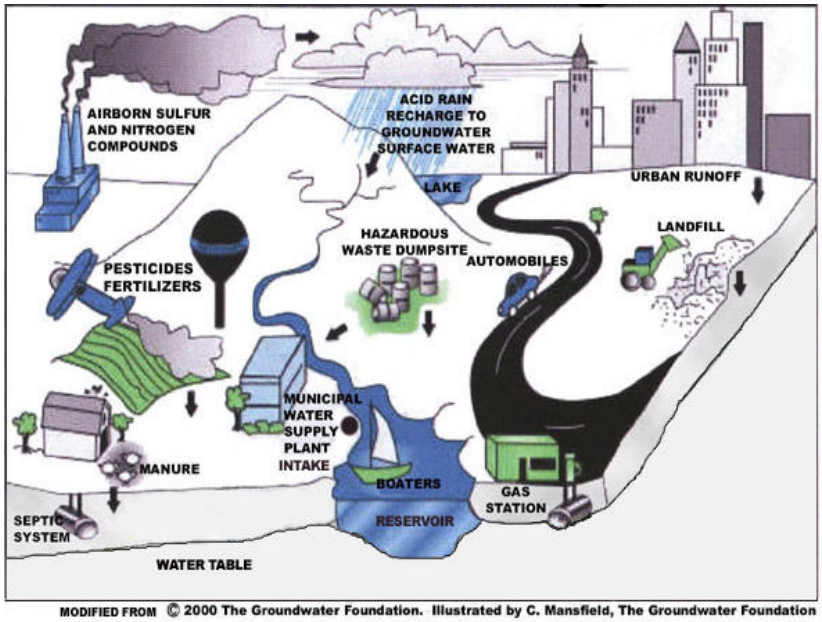

Figure 1: Sample watershed with examples of potential sources of contamination

9. Critique the drills and **modify components** of the emergency response system as needed.

Responding to Emergencies

Drinking water supply professionals responding to local emergencies need to be adequately prepared and trained, and know their roles and responsibilities. Here are some suggestions.

1. **Know regulatory reporting requirements** of state and federal agencies. Know who to call, telephone numbers and what information to report.

2. **Know your role & responsibilities**. Have access to, and be familiar with, the emergency communication list, policies and procedures for emergency response; know when, and how, to safely handle spills or other events until first responders arrive on scene; know what steps to take to avoid drawing contaminants into the water supply system; be familiar enough with local watershed characteristics to provide incident commander with information and advice.

3. **Provide training and materials to responding staff**. Water supply staff, including new employees, should be adequately trained, have access to appropriate materials (storm drain covers, absorbent pads, booms, etc.), up-to-date policies, procedures, and communication lists to perform tasks for which they are responsible.

Follow-up

Steps can be taken to ensure better preparedness in the event of future emergency situations. Here are some suggestions.

1. **Provide follow-up reports** to the public on the resolution of the situation.

2. **Share** the **information** learned from drills and real situations with others in order to better protect all public drinking water sources.

Section 4: Source Water Protection Conclusions and Recommendations

As with many water supply protection areas, the system watersheds and IWPA contain potential sources of contamination. However, source protection measures reduce the risk of actual contamination, as illustrated in Figure 2.

Current Land Uses and Source Protection:

As with many water supply protection areas, the system watersheds and IWPA contain potential sources of contamination. However, source protection measures reduce the risk of actual contamination, as illustrated in Figure 2. The water supplier is commended for taking an active role in promoting source protection measures in the Water Supply Protection Areas through:

- Coordinating with Merrimack Valley Planning Commission to map all septic systems and rank them according to environmental sensitivity
- Creating positions for water resource coordinator and environmental analyst
- Develop community link project to target source protection with school children
- Seventy-five percent of the Haggetts Pond Reservoir watershed is protected open space

Source Protection Recommendations:

To better protect the sources for the future:

- ✓ Develop and implement a Groundwater and Surface Water Supply Protection Plan.
- ✓ Educate residents on ways they can help you to protect drinking water sources.
- ✓ Work with emergency response teams to ensure that they are aware of the stormwater drainage in watersheds and to cooperate on responding to spills or accidents.
- ✓ Monitor progress on any ongoing remedial action conducted for the known oil or hazardous materials contamination site.

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.

- ✓ Work with businesses and others who have landscaped areas in the watersheds to encourage BMPs for the use of fertilizer and pesticide.
- ✓ Partner with local businesses to ensure the proper storage, handling, and disposal of hazardous materials.
- ✓ Continue to inspect the Zone A and Zone I areas regularly, and when feasible, remove prohibited non-water supply activities.

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.

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 watersheds and IWPA. Use this information to set priorities, target inspections, focus education efforts, and to develop a long-term drinking water source protection plan.

Section 5: Appendices

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

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 Anita Wolovick in DEP's Wilmington Office at (978) 661-7768 for more information and assistance on improving current protection measures.

Copies of this report have been provided to the public water supplier, town boards, and the local media.

APPENDIX A: DEP PERMITTED FACILITIES WITHIN ANDOVER'S WATER SUPPLY PROTECTION AREAS

DEP FACILITY NUMBER	FACILITY NAME	STREET ADDRESS	TOWN	PERMITTED ACTIVITY	ACTIVITY CLASS
133314	M K S INSTRUMENTS INC	6 SHATTUCK RD	ANDOVER	TURRPT	LARGE QUANTITY TOXICS USER
130130	US INTERNAL REVENUE SERVICE	310 LOWELL ST	ANDOVER	PLANT	AIR QUALITY PERMIT
215576	VICOR CORPORATION	400 FEDERAL ST	ANDOVER	TURRPT	LARGE QUANTITY TOXICS USER
215576	VICOR CORPORATION	400 FEDERAL ST	ANDOVER	HANDLR	SMALL QUANTITY GENERATOR OF HAZ WASTE
38043	NEW ENGLAND HYDRO TRANS ELECTRIC	RADISSON RD	AYER	HANDLR	SMALL QUANTITY GENERATOR RCRA HAZARDOUS WASTE
--	BROOK VILLAGE CONDO	C/O RELIABLE PROP. MGMT/P.O. BOX 210	BOXBOROUGH	GROUND	GROUNDWATER DISCHARGE
39155	CHELMSFORD LANDFILL	SWAIN RD	CHELMSFORD	SLF	CHARGEABLE CLOSED LANDFILL
366769	MERRIMACK VALLEY SCREEN PRINTING INC	6 ADAMS ST	CHELMSFORD	PLANT	NON-NOTIFIER AQ FAC THAT IS SUBJ TO REGS BUT NOT PERMITTED
366769	MERRIMACK VALLEY SCREEN PRINTING INC	6 ADAMS ST	CHELMSFORD	DISCH	NON-NOTIFIER IWW FAC THAT IS SUBJ TO REGS BUT NOT PERMITTED
130648	BROX INDUSTRIES INC	1471 METHUEN STREET	DRACUT	HWR	HAZARDOUS WASTE RECYCLER
131963	UNITED CIRCUITS INC	100 PLEASANT ST	DRACUT	TURRPT	LARGE QUANTITY TOXICS USER
131963	UNITED CIRCUITS INC	100 PLEASANT ST	DRACUT	HANDLR	LARGE QUANTITY GENERATOR OF HAZ WASTE
298511	DUMONT ENTERPRISES INC	41 LOWELL ST	DUNSTABLE	HANDLR	VERY SMALL QUANTITY GENERATOR RCRA HAZARDOUS WASTE

DEP FACILITY NUMBER	FACILITY NAME	STREET ADDRESS	TOWN	PERMITTED ACTIVITY	ACTIVITY CLASS
298511	DUMONT ENTERPRISES INC	41 LOWELL ST	DUNSTABLE	HANDLR	SMALL QUANTITY GENERATOR WASTE OIL/PCBS
298511	DUMONT ENTERPRISES INC	41 LOWELL ST	DUNSTABLE	HANDLR	VERY SMALL QUANTITY GENERATOR RCRA HAZARDOUS WASTE
298511	DUMONT ENTERPRISES INC	41 LOWELL ST	DUNSTABLE	HANDLR	SMALL QUANTITY GENERATOR WASTE OIL/PCBS
366857	DUNSTABLE GAS INC	238 PLEASANT ST	DUNSTABLE	FULDSP	FUEL DISPENSER STAGEII
32187	WEST AUTO REPAIR	30 PLEASANT ST	DUNSTABLE	HANDLR	VERY SMALL QUANTITY GENERATOR RCRA HAZARDOUS WASTE
136387	GROTON AL PRIME	619 BOSTON RD	GROTON	FULDSP	FUEL DISPENSER STAGEII
136387	GROTON AL PRIME	619 BOSTON RD	GROTON	HANDLR	VERY SMALL QUANTITY GENERATOR WASTE OIL/PCBS
136387	GROTON AL PRIME	619 BOSTON RD	GROTON	HANDLR	VERY SMALL QUANTITY GENERATOR RCRA HAZARDOUS WASTE
136387	GROTON AL PRIME	619 BOSTON RD	GROTON	HANDLR	VERY SMALL QUANTITY GENERATOR RCRA HAZARDOUS WASTE
136387	GROTON AL PRIME	619 BOSTON RD	GROTON	HANDLR	VERY SMALL QUANTITY GENERATOR WASTE OIL/PCBS
39315	GROTON LANDFILL	600 COW POND BRK RD	GROTON	SLF	CHARGEABLE LANDFILL
363409	GROTON TRANSFER STATION	600 COW POND BROOK RD	GROTON	TRSTN	SMALL HANDLING FACILITY
377537	AGGREGATE INDUSTRIES	80 AYER RD	LITTLETON	TURRPT	LARGE QUANTITY TOXICS USER

DEP FACILITY NUMBER	FACILITY NAME	STREET ADDRESS	TOWN	PERMITTED ACTIVITY	ACTIVITY CLASS
229723	MIDDLESEX CONCRETE	80 AYER RD	LITTLETON	HANDLR	VERY SMALL QUANTITY GENERATOR OF HAZ WASTE
363549	WAKEFIELD MATERIALS CORPORATION LITTLETO	80 AYER RD	LITTLETON	TURRPT	LARGE QUANTITY TOXICS USER
370173	CHEVROLET OF LOWELL INC	831 ROGERS ST	LOWELL	HANDLR	SMALL QUANTITY GENERATOR RCRA HAZARDOUS WASTE
370173	CHEVROLET OF LOWELL INC	831 ROGERS ST	LOWELL	HANDLR	LARGE QUANTITY GENERATOR WASTE OIL/PCBS
53879	FREUDENBERG NONWOVEN	221 JACKSON ST	LOWELL	HANDLR	LARGE QUANTITY GENERATOR WASTE OIL/PCBS
53879	FREUDENBERG NONWOVEN	221 JACKSON ST	LOWELL	HANDLR	SMALL QUANTITY GENERATOR RCRA HAZARDOUS WASTE
131011	IDEAL TAPE CO	1400 MIDDLESEX ST	LOWELL	HANDLR	LARGE QUANTITY GENERATOR RCRA HAZARDOUS WASTE
131011	IDEAL TAPE COMPANY	1400 MIDDLESEX ST	LOWELL	TURRPT	LARGE QUANTITY TOXIC USER
177799	JIFFY LUBE	645 ROGERS ST	LOWELL	HANDLR	VERY SMALL QUANTITY GENERATOR RCRA HAZARDOUS WASTE
177799	JIFFY LUBE	645 ROGERS ST	LOWELL	HANDLR	LARGE QUANTITY GENERATOR WASTE OIL/PCBS
53845	LOWELL COGENERATION COMPANY LP	282 WESTERN AVE	LOWELL	HANDLR	VERY SMALL QUANTITY GENERATOR RCRA HAZARDOUS WASTE
53845	LOWELL COGENERATION COMPANY LP	282 WESTERN AVE	LOWELL	HANDLR	LARGE QUANTITY GENERATOR WASTE OIL/PCBS
53845	LOWELL COGENERATION COMPANY LP	282 WESTERN AVE	LOWELL	TURRPT	LARGE QUANTITY TOXIC USER

DEP FACILITY NUMBER	FACILITY NAME	STREET ADDRESS	TOWN	PERMITTED ACTIVITY	ACTIVITY CLASS
131026	MA COM INC	100 CHELMSFORD ST	LOWELL	TURRPT	LARGE QUANTITY TOXIC USER
131026	MA COM INC	100 CHELMSFORD ST	LOWELL	HANDLR	LARGE QUANTITY GENERATOR RCRA HAZARDOUS WASTE
215603	NE NO6 INC SPEEDEE OIL CHANGE & TUNE UP	1485 MIDDLESEX ST	LOWELL	HANDLR	LARGE QUANTITY GENERATOR WASTE OIL/PCBS
35763	NTI LUBRICATIONS INC	1713 MIDDLESEX ST	LOWELL	HANDLR	SMALL QUANTITY GENERATO R RCRA HAZARDOUS WASTE
35763	NTI LUBRICATIONS INC	1713 MIDDLESEX ST	LOWELL	HANDLR	LARGE QUANTITY GENERATOR WASTE OIL/PCBS
131016	ROCHE BROTHERS BARREL & DRUM CO	161 PHOENIX AVE	LOWELL	HANDLR	LARGE QUANTITY GENERATOR RCRA HAZARDOUS WASTE
365455	SPECIALTY MATERIALS INC	1449 MIDDLESEX AVE	LOWELL	TURRPT	LARGE QUANTITY TOXIC USER
365455	SPECIALTY MATERIALS INC	1449 MIDDLESEX AVE	LOWELL	HANDLR	LARGE QUANTITY GENERATOR RCRA HAZARDOUS WASTE
34343	ASHLAND CHEMICAL CO	400 MAIN ST	TEWKSBURY	HANDLR	TRANSPORTER OF HAZARDOUS WASTE
34343	ASHLAND CHEMICAL COMPANY	400 MAIN ST	TEWKSBURY	TURRPT	LARGE QUANTITY TOXICS USER
53791	ECRM	554 CLARK RD	TEWKSBURY	HANDLR	LARGE QUANTITY GENERATOR OF HAZ WASTE
370388	3A GAS	257 MIDDLESEX RD	TYNGSBORO	FULDSP	FUEL DISPENSER
322941	ANDYS AUTO BODY	339 WESTFORD ST	TYNGSBORO	PLANT	AIR QUALITY PERMIT

DEP FACILITY NUMBER	FACILITY NAME	STREET ADDRESS	TOWN	PERMITTED ACTIVITY	ACTIVITY CLASS
322941	ANDYS AUTO BODY	339 WESTFORD ST	TYNGSBORO	HANDLR	VERY SMALL QUANTITY GENERATOR OF HAZ WASTE
348617	BARR ASSOC INC	300 POTASH HILL RD	TYNGSBORO	PLANT	AIR QUALITY PERMIT
320025	BELCASTRO FURNITURE RESTORATION	77 WESTECH DR	TYNGSBORO	PLANT	AIR QUALITY PERMIT
320025	BELCASTRO FURNITURE RESTORATION	77 WESTECH DR	TYNGSBORO	HANDLR	VERY SMALL QUANTITY GENERATOR OF HAZ WASTE
132303	BFI WASTE SYSTEMS OF NORTH AMERICA	385 DUNSTABLE RD	TYNGSBORO	PLANT	AIR QUALITY PERMIT
132303	BFI WASTE SYSTEMS OF NORTH AMERICA	385 DUNSTABLE RD	TYNGSBORO	HANDLR	SMALL QUANTITY GENERATOR OF HAZ WASTE
132303	BFI WASTE SYSTEMS OF NORTH AMERICA	385 DUNSTABLE RD	TYNGSBORO	DISCH	INDUSTRIAL WASTE WATER SURFACE WATE R DISCHARGE
298585	BRITE KLEEN CLEANERS	26 WESTFORD RD	TYNGSBORO	HANDLR	VERY SMALL QUANTITY GENERATOR OF HAZ WASTE
32160	COLONIAL AUTO BODY	121 LAKEVIEW AVE	TYNGSBORO	HANDLR	SMALL QUANTITY GENERATOR OF HAZ WASTE
110594	DANA WALLBOARD SUPPLY INC	6 CUMMINGS RD	TYNGSBORO	HANDLR	VERY SMALL QUANTITY GENERATOR OF WASTE OIL OR PCBS
302562	DUFFS GARAGE	92 KENDALL RD	TYNGSBORO	DISCH	BELOW INDUSTRIAL WASTE WATER REG LEVELS
302562	DUFFS GARAGE	92 KENDALL RD	TYNGSBORO	HANDLR	VERY SMALL QUANTITY GENERATOR OF HAZ WASTE
291199	DUNBAR BUS CO	33 MIDDLESEX RD	TYNGSBORO	HANDLR	VERY SMALL QUANTITY GENERATOR OF HAZ WASTE

DEP FACILITY NUMBER	FACILITY NAME	STREET ADDRESS	TOWN	PERMITTED ACTIVITY	ACTIVITY CLASS
132214	HUSSEY PLASTICS INC	65 MIDDLESEX RD	TYNGSBORO	HANDLR	VERY SMALL QUANTITY GENERATOR OF HAZ WASTE
307332	INDEPENDENT SPRAY	26R WOODLAWN ST	TYNGSBORO	PLANT	AIR QUALITY PERMIT
307332	INDEPENDENT SPRAY	26R WOODLAWN ST	TYNGSBORO	HANDLR	VERY SMALL QUANTITY GENERATOR OF HAZ WASTE
368183	MOBIL 12369	95-97 WESTFORD RD	TYNGSBORO	FULDSP	FUEL DISPENSER
324984	MUTUAL OIL	397 MIDDLESEX RD	TYNGSBORO	FULDSP	FUEL DISPENSER
321837	MUTUAL OIL CO INC	397 MIDDLESEX RD	TYNGSBORO	HANDLR	VERY SMALL QUANTITY GENERATOR OF WASTE OIL OR PCBS
368441	NEW ENGLAND TRANSIT SALES INC	30 PROGRESS AV	TYNGSBORO	HANDLR	SMALL QUANTITY GENERATOR OF WASTE OIL OR PCBS
132833	PICONICS INC	26 CUMMINGS RD	TYNGSBORO	PLANT	AIR QUALITY PERMIT
132833	PICONICS INC	26 CUMMINGS RD	TYNGSBORO	DISCH	INDUSTRIAL WASTE WATER HOLDING TANK
132833	PICONICS INC	26 CUMMINGS RD	TYNGSBORO	HANDLR	SMALL QUANTITY GENERATOR OF HAZ WASTE
853	THUNDERBIRD PLAZA	MIDDLESEX RD	TYNGSBORO	GROUND	GROUNDWATER DISCHARGE
209890	TJ MAXX PLAZA	440 MIDDLESEX RD	TYNGSBORO	GROUND	GROUNDWATER DISCHARGE
230673	TOWN AND COUNTRY GARAGE	54 PAWTUCKET BLVD	TYNGSBORO	FULDSP	FUEL DISPENSER

DEP FACILITY NUMBER	FACILITY NAME	STREET ADDRESS	TOWN	PERMITTED ACTIVITY	ACTIVITY CLASS
37104	TYNGSBORO AUTO WORKS	33 MIDDLESEX RD	TYNGSBORO	HANDLR	VERY SMALL QUANTITY GENERATOR OF HAZ WASTE
310633	TYNGSBORO HIGHWAY DEPT	89 KENDELL RD	TYNGSBORO	FULDSP	FUEL DISPENSER
130848	WESTFORD ANODIZING CORP	12 NORTH MAIN ST	WESTFORD	TURRPT	LARGE QUANTITY TOXICS USER

UNDERGROUND STORAGE TANKS WITHIN ANDOVER'S WATER SUPPLY PROTECTION AREAS

FACILITY NAME	ADDRESS	TOWN	DESCRIPTION	NUMBER OF TANKS
MOBIL #01-252	309 LOWELL ST	ANDOVER	GAS STATION	3
M W LEAHY CO INC	21 WESTFORD RD	AYER	TRUCK/TRANSPORT	3
MASS DPW MAINT DEPOT	SWANSON RD	BOXBOROUGH	STATE	2
VERC BOXBORO EXXON	1425 MASSACHUSETTS AVE	BOXBOROUGH	GAS STATION	4
CONOCOPHILLIPS EXXON	5 DRUM HILL RD	CHELMSFORD	GAS STATION	3
CUMBERLAND GULF #2428	71 DRUM HILL RD	CHELMSFORD	GAS STATION	5
MARCHAND OIL CO INC	89 STEADMAN ST	CHELMSFORD	PETROLEUM DISTRIBUTOR	7

FACILITY NAME	ADDRESS	TOWN	DESCRIPTION	NUMBER OF TANKS
SUNOCO #0011-8927	100 DRUM HILL RD	CHELMSFORD	GAS STATION	3
BROX INDUSTRIES INC	1471-1480 METHUEN ST	DRACUT	CONTRACTOR	
DRACUT AUTO CARE INC	500 NASHUA RD	DRACUT	GAS STATION	3
HIGHWAY DEPT	833 HILDRETH ST	DRACUT	MUNICIPAL	2
JAY'S SERVICE CENTER INC	1225 MAMMOTH RD	DRACUT	GAS STATION	6
JIM'S SERVICE STATION INC	1643 LAKEVIEW AVE	DRACUT	GAS STATION	4
P J KEATING COMPANY	240 BRIDGE ST	DRACUT	ASPHALT PLANT	1
SHELL SERVICE STATION	1100 LAKEVIEW ST	DRACUT	GAS STATION	3
DUNSTABLE GENERAL STORE INC	238 PLEASANT ST	DUNSTABLE	GAS STATION	3
A L PRIME ENERGY	619 BOSTON RD	GROTON	GAS STATION	3
TOWN OF GROTON HIGHWAY DEPT	500 COW POND BROOK RD	GROTON	MUNICIPAL	2
ARCHER'S MOBIL # 01-787	500 KING ST	LITTLETON	GAS STATION	5
DCM ENTERPRISES INC	25 KING ST	LITTLETON	GAS STATION	3

FACILITY NAME	ADDRESS	TOWN	DESCRIPTION	NUMBER OF TANKS
LITTLETON CITGO	256 AYER RD	LITTLETON	GAS STATION	3
MILLER AUTO SERVICES	2 HARVARD ST	LITTLETON	GAS STATION	1
SHELL SERVICE STATION #137781	460 KING ST	LITTLETON	GAS STATION	3
TMC LEASING LLC	80 AYER RD	LITTLETON	INDUSTRIAL	2
TOWN OF LITTLETON	39 AYER RD	LITTLETON	MUNICIPAL	3
VERYFINE PRODUCTS INC	20 HARVARD RD	LITTLETON	INDUSTRIAL	3
ADVANCED AUTO PERFORMANCE	479 BROADWAY ST	LOWELL	GAS STATION	2
AMES CORPORATION	121 CHURCH ST	LOWELL	OTHER	1
BRIDGE STREET SUNOCO	356 BRIDGE ST	LOWELL	GAS STATION	3
GASOLINE MERCHANTS INC	297 BROADWAY ST	LOWELL	GAS STATION	4
GEORGE MACHERAS	66 BROADWAY ST	LOWELL	OTHER	1
GETTY STATION #30618	801 LAKEVIEW AVE	LOWELL	GAS STATION	2
GORHAM STREET SUNOCO	380 GORHAM ST	LOWELL	GAS STATION	3

FACILITY NAME	ADDRESS	TOWN	DESCRIPTION	NUMBER OF TANKS
HAFFNER'S	1150 BRIDGE ST	LOWELL	GAS STATION	7
HAFFNER'S	215 DUTTON ST	LOWELL	GAS STATION	6
HAFFNER'S	189 APPLETON ST	LOWELL	GAS STATION	4
HESS 21322	558 PAWTUCKET ST	LOWELL	GAS STATION	3
HESS 21509	300 MERRIMACK ST	LOWELL	GAS STATION	3
IDEAL TAPE COMPANY	1400 MIDDLESEX ST	LOWELL	INDUSTRIAL	3
KAZANJIAN ENTERPRISE	1460 MIDDLESEX ST	LOWELL	GAS STATION	5
KINNEY'S TEXACO SERVICE INC	262 PAWTUCKET ST	LOWELL	GAS STATION	3
LOWELL GENERAL HOSPITAL	295 VARNUM AVE	LOWELL	HOSPITAL	2
LOWELL REGIONAL WATER UTILITY	815 PAWTUCKET BLVD	LOWELL	MUNICIPAL	2
MOUJAES INC C&J MOBIL	443 BRIDGE ST	LOWELL	GAS STATION	4
MULDOON BROTHERS INC	498 BROADWAY ST	LOWELL	GAS STATION	2
PETE AND RAY AUTO REPAIR INC	472 PRINCETON BLVD	LOWELL	GAS STATION	3

FACILITY NAME	ADDRESS	TOWN	DESCRIPTION	NUMBER OF TANKS
RAY MARCHAND OIL / AUTO	493 PRINCETON BLVD	LOWELL	GAS STATION	4
ROD'S AUTO CARE	626 ROGERS ST	LOWELL	GAS STATION	3
SUNOCO	711 ROGERS ST	LOWELL	GAS STATION	4
TONY'S FILLING STATION INC	51 MAMMOTH RD	LOWELL	GAS STATION	2
UNIVERSITY OF LOWELL	SOUTH CAMPUS	LOWELL	OTHER	1
UNIVERSITY OF LOWELL NORTH CAMPUS	NEW (1989) DORMITORY	LOWELL	OTHER	1
US POSTAL SERVICE LOWELL MAINT	44 POST OFFICE SQ	LOWELL	FEDERAL / NON-MILITARY	1
USA PETROLEUM CORP	780 ROGERS ST	LOWELL	GAS STATION	3
CRANE RENTAL CO INC	205 OLD MAIN ST	TEWKSBURY	OTHER	2
MOBIL #01-JFA	2 MAIN ST	TEWKSBURY	GAS STATION	6
MOBIL #01-PRJ	940 ANDOVER ST	TEWKSBURY	GAS STATION	5
TEXACO SERVICE	1 MAIN ST	TEWKSBURY	GAS STATION	4
BROWNING-FERRIS IND OF MASS INC	385 DUNSTABLE RD	TYNGSBORO	TRUCK/TRANSPORT	2

FACILITY NAME	ADDRESS	TOWN	DESCRIPTION	NUMBER OF TANKS
EXXONMOBIL OIL CORPORATION	95-97 WESTFORD RD	TYNGSBORO	GAS STATION	3
MIDDLESEX TEXACO	397 MIDDLESEX RD	TYNGSBORO	GAS STATION	2
RT-3 GAS INC	257 MIDDLESEX RD	TYNGSBORO	GAS STATION	4
STATELINE TOWN & COUNTRY	54 PAWTUCKET BLVD	TYNGSBORO	GAS STATION	2
TOWN & COUNTRY	54 PAWTUCKET BLVD	TYNGSBOROUGH	GAS STATION	2
TOWN OF TYNGSBORO HIGHWAY DEPT	89 KENDALL RD	TYNGSBORO	MUNICIPAL	2
COOK OIL CO INC	23 FORGE VILLAGE RD	WESTFORD	OTHER	1
CUMBERLAND FARMS #2408	158-180 LITTLETON RD	WESTFORD	GAS STATION	4
GETTY STATION #30562	1 OAK HILL RD	WESTFORD	GAS STATION	2
GETTY STATION #30633	262 GROTON RD	WESTFORD	GAS STATION	2
MOBIL #361	185 LITTLETON RD	WESTFORD	GAS STATION	4
ROBERT M HICKS INC	124 MAIN ST	WESTFORD	CONTRACTOR	1
WESTFORD CITGO	169 PLAIN RD	WESTFORD	GAS STATION	3

FACILITY NAME	ADDRESS	TOWN	DESCRIPTION	NUMBER OF TANKS
WESTFORD TIRE & AUTO	215 GROTON RD	WESTFORD	GAS STATION	4

For More Information On Underground Storage Tanks, Visit The Massachusetts Department Of Fire Services Web Site:
Http://Www.State.Ma.Us/Dfs/Ust/Usthome.Htm

Note: This Appendix Includes Only Those Facilities Within The Water Supply Protection Area(s) That Meet State Reporting Requirements And Report To The Appropriate Agencies. Additional Facilities Located Within The Water Supply Protection Area(s) Should Be Considered In Local Drinking Water Source Protection Planning.

APPENDIX B – Table of Tier Classified Oil and/or Hazardous Material Sites within Andover 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/sitellst.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	Status
3-0003072	309 LOWELL ST	ANDOVER	TIER 2
3-0003339	LOVEJOY RD	ANDOVER	TIER 2
2-0000026	1425 MASSACHUSETTS AVE	BOXBOROUGH	TIER 1B
3-0019820	5 DRUMHILL RD	CHELMSFORD	TIER 2
3-0000049	11 SCHOOL ST	CHELMSFORD	DEF TIER 1B
3-0001069	BROADWAY RD	DRACUT	DEF TIER 1B
3-0003492	1507 LAKEVIEW AVE	DRACUT	TIER 2
3-0002400	25 VICTORY LN	DRACUT	TIER 2
3-0004645	91 MILL ST	DRACUT	TIER 2
3-0016749	1507 LAKEVIEW AVE	DRACUT	TIER 2
3-0000496	1095 LAKEVIEW AVE	DRACUT	TIER 2

RTN	Release Site Address	Town	Status
3-0004651	2060 BRIDGE ST	DRACUT	DEF TIER 1B
2-0000223	37 GILSON RD	GROTON	TIER 1B
2-0012568	256 AYER RD	LITTLETON	TIER 1C
2-0014006	TAYLOR ST	LITTLETON	TIER 1C
3-0001052	150 PHOENIX AVE	LOWELL	TIER 2
3-0001056	VARNUM AVE	LOWELL	DEF TIER 1B
3-0004561	2461 MARKET ST	LOWELL	DEF TIER 1B
3-0019949	10 TECHNOLOGY DR	LOWELL	TIER 2
3-0000347	1 KYAN ST	LOWELL	TIER 2
3-0002629	774 DUTTON ST	LOWELL	DEF TIER 1B
3-0004664	205 CHURCH ST	LOWELL	DEF TIER 1B
3-0000041	200 MARKET ST	LOWELL	TIER 2
3-0017036	180 CHURCH ST	LOWELL	TIER 2
3-0002044	1465 MIDDLESEX ST	LOWELL	DEF TIER 1B
3-0001975	70 FRENCH AMORY ST	LOWELL	DEF TIER 1B
3-0017559	290 WESTFORD ST	LOWELL	TIER 2
3-0000355	BROADWAY DUMMER ST	LOWELL	DEF TIER 1B
3-0018128	219 EAST MERRIMAC ST	LOWELL	TIER 2
3-0011528	WESTFORD ST	LOWELL	DEF TIER 1B
3-0002609	262 PAWTUCKET ST	LOWELL	TIER 2
3-0001620	66 BROADWAY	LOWELL	TIER 2
3-0004509	253 MERRIMACK ST	LOWELL	TIER 1C
3-0013603	262 PAWTUCKET ST	LOWELL	TIER 2
3-0014250	PEVEY ST @ ARLENE ST	LOWELL	DEF TIER 1B
3-0014974	780 ROGERS ST	LOWELL	TIER 2
3-0018004	50 ARCAND DR	LOWELL	DEF TIER 1B
3-0017804	479 BROADWAY	LOWELL	TIER 2
3-0018153	498 BROADWAY	LOWELL	TIER 2
3-0002756	224 WALKER ST	LOWELL	DEF TIER 1B

RTN	Release Site Address	Town	Status
3-0000351	161 PHOENIX AVE	LOWELL	TIER 2
3-0001954	1682-1700 MIDDLESEX ST	LOWELL	TIER 2
3-0000852	43 LAKEVIEW AVE	LOWELL	DEF TIER 1B
3-0001328	356 BRIDGE ST	LOWELL	TIER 2
3-0000535	AIKEN AVE PERKINS ST	LOWELL	TIER 2
3-0002544	1 UNIVERSITY AVE	LOWELL	TIER 2
3-0000810	2 MAIN ST	TEWKSBURY	TIER 2
3-0000439	400 MAIN ST RTE 38	TEWKSBURY	TIER 1B
3-0001162	450 CLARK RD	TEWKSBURY	TIER 2
3-0003181	940 ANDOVER ST	TEWKSBURY	TIER 2
3-0012734	MAIN ST AND CLARK RD	TEWKSBURY	DEF TIER 1B
3-0001717	365 MAIN ST	TEWKSBURY	TIER 2
3-0002516	1 MAIN ST	TEWKSBURY	TIER 2
2-0000392	292 MIDDLESEX RD	TYNGSBOROUGH	DEF TIER 1B
2-0000136	475-530 DUNSTABLE RD	TYNGSBOROUGH	TIER 1A
2-0010348	11 12 WATERWAY PL	TYNGSBOROUGH	TIER 1C
2-0013702	95 97 WESTFORD RD	TYNGSBOROUGH	TIER 2
2-0011257	95 97 WESTFORD RD	TYNGSBOROUGH	TIER 2
2-0012727	54 PAWTUCKET BLVD	TYNGSBOROUGH	TIER 1C
2-0011980	160 MAIN ST	WESTFORD	TIER 2
2-0014121	12 BROOKSIDE RD	WESTFORD	TIER 1C
2-0013703	169 PLAIN RD	WESTFORD	TIER 1C
2-0000160	169 PLAIN RD	WESTFORD	TIER 1C
2-0012528	262 GROTON RD	WESTFORD	TIER 2
2-0012368	262 GROTON RD	WESTFORD	TIER 2
2-0010019	2 CARL THOMPSON RD	WESTFORD	TIER 2
2-0000232	10 NORTH MAIN ST	WESTFORD	TIER 2

For more location information, please see the attached map. The map lists the release sites by Release Tracking Number (RTN).