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

Hadley Highway and 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	Hadley Highway and Water Department
PWS Address	P.O. Box 406
City/Town	Hadley
PWS ID Number	1117002
Local Contact	Mr. Michael J. Klimoski
Phone Number	413-586-2390

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.

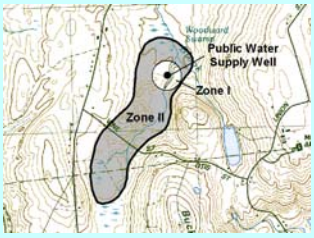
Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination, the assessment helps focus protection efforts on appropriate best 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
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

Table 2 Water Supply Protection Area

Zone II # 200	*Susceptibility: High*
Mount Warner Well #1	1117002-01G
Mount Warner Well #2	1117002-02G
Zone II #462	***Susceptibility: High***
Callahan Well #1	1117002-03G
Callahan Well #2	1117002-04G

Hadley is an agricultural and growing, rural residential community in western Massachusetts. Hadley Highway and Water Department maintains four wells for the town's drinking water supply: Mount Warner Wells #1 and #2 (1117002-01G, and 1117002-02G, Zone II #200) and the Callahan Wells #1 and #2 (1117002-03G and 1117002-04G, Zone II #462). The Mount Warner wells are 12-inch diameter gravel developed wells that pump water from a confined aquifer located in the central part of town. The wells have a combined pumping capacity of approximately 1,400 gallons per minute (gpm) and serve as the main supply. Well #1 was installed in 1954 and Well #2 was installed in 1963 at depths of greater than 200 feet. The Callahan wells pump water from an unconfined aquifer south of the Mt. Warner Wells. The Callahan Wells are 16-inch gravel developed wells installed in 1978. Due to the presence of manganese in the water from the Callahan wells, the Callahan wells are used only to supplement the Mt. Warner wells. Each of the Callahan wells has an approved withdrawal rate of 1,050 gpm. Approved withdrawal rates are based on results from extended duration pumping tests. The Zone II for the Callahan wells was delineated through the SWAP program; the Zone II for the Mt. Warner wells was delineated previously by the Town's consultant.

Both wells are located within glacially deepened, bedrock valleys that were buried with sand, gravel and in some areas clay during the recession (melting) of the glaciers some 10,000 before present. Glacial Lake Hitchcock was formed through much of the Connecticut River valley from southern Vermont to central Connecticut. Sediment laden meltwater formed deltas into the lake leaving course grained materials at the deltas and along the shoreline. Fine grained deposits were carried to deeper quiescent waters and settled to the lake bottom. Although there is evidence that some portions of the Callahan well aquifer Zone II has a confining clay layer, there is no confining unit in the vicinity if the Callahan wells. The Mt. Warner wells are located within the confined portion of an adjacent aquifer although there is evidence of a delta within the Mt. Warner well Zone II. Both protective areas are considered to be highly vulnerable to contamination because the confined portions of the aquifer are discontinuous and not defined in detail.

Each well has a 400 feet protective Zone I radius. Aquifer parameters were determined from multiple, extended duration pumping tests and the Zone II for the wells was delineated based on conceptual and analytical modeling in

conjunction with geological mapping. Please refer to the attached map to view the boundaries of each Zone II. Water from the Callahan wells and the Mt. Warner Wells is not treated prior to distribution. For current information on water quality monitoring results, please refer questions to the Public Water System contact person listed above in Table 1 for a copy of the most recent Consumer Confidence Report.

Section 2: Land Uses in the Protection Areas

The land uses within the Zone IIs for Hadley Highway and Water Department's wells are a mixture of light industrial, commercial, residential and agricultural areas (refer to attached map for details). Some locations within the protection are served by the Town municipal sewer system while other areas are served by on-site septic disposal. Land uses and activities that are potential sources of contamination are listed in Table 2, with further detail provided in the Tables of Regulated Facilities attached in Appendix B.

Key Land Uses and Protection Issues include:

1. Non-conforming Zone I
2. Residential land uses
3. Transportation corridors
4. Hazardous materials storage and use
5. Confirmed release sites of hazardous materials or oil
6. Protection Planning
7. Agricultural activities
8. Sewer Pipeline and Wastewater Treatment Facility

Although there are many safeguards on place, the overall susceptibility ranking to contamination of the groundwater supplies is high, based on the presence of numerous high ranking threat land uses within the Zone II 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:

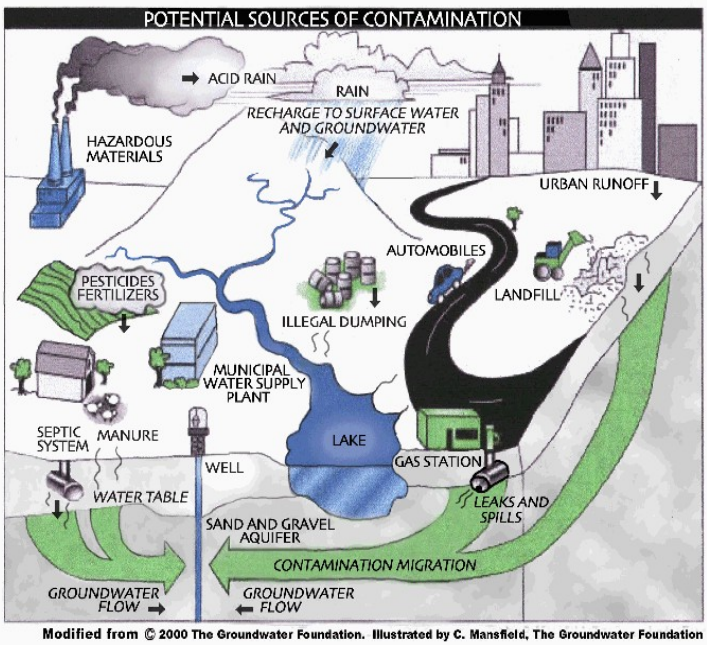
- Protects drinking water quality at the source
- Reduces monitoring costs through the DEP Waiver Program
- Treatment can be reduced or avoided entirely, saving treatment costs
- Prevents costly contamination clean-up
- Preventing contamination saves costs on water purchases, and expensive new source development

Contact your regional DEP office for more information on Source Protection and the Waiver Program.

1. Non-conforming Zone I – Massachusetts drinking water regulations (310 CMR 22.00 Drinking Water) requires public water suppliers to control the Zone I through ownership or some other mechanism such as 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. Hadley Highway and Water Department does not own the entire Zone I for any source. The Mt. Warner Zone I has floor drain sump at the pump house and above-ground diesel storage tanks (within secondary containment) for emergency power at the pump house; the Callahan well Zone I has a portion of a state highway within Zone I.

Zone I Recommendations:

✓ Obtain a Right-of-First Refusal for acquiring the land within the Zone I



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currently not owned by the Department.

- ✓ Consider purchasing the land or acquiring a conservation restriction on the land to minimize potential threats.
- ✓ 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.
- ✓ Contact the property owner to be sure they are aware they are within the Zone I and Zone II of the well. Provide information about BMPs.

2. Residential Land Uses – Approximately 25% of the Zone II #200 consists of residential areas. The Zone II #462 has about 12% of the land use as residential. Although some of the community is served by municipal sewer, there are several areas, including agricultural and residential areas within the Zone IIs that utilize on-site septic disposal. If managed improperly, activities associated with residential use can contribute to drinking water contamination. Common potential sources of contamination include:

- **Septic Systems** – Improper maintenance and disposal of household hazardous chemicals to septic systems is a potentially a significant source of contamination to the groundwater because septic systems discharge directly to the ground. If septic systems fail or are not properly maintained they could be a potential source of microbial contamination.
- **Household Hazardous Materials** - Hazardous materials may include petroleum products for automotive and lawn care, 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.
- ✓ Work with planners to manage and control new residential developments in the water supply protection areas.
- ✓ Promote BMPs for stormwater management and pollution controls. Continue catch basin cleaning routines.

3. Transportation Corridors – Both Zone IIs have numerous local roads throughout. State Routes 9 and 47 run through Zone II #462 and Route 116 runs through #200 along the eastern edge. 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 and de-icing salt, automotive chemicals and other debris on roads are picked up by stormwater and wash into catch basins.

Transportation Corridor Recommendations:

What are "BMPs?"

Best Management Practices are structural (i.e. oil & grease trap catch basins), nonstructural (i.e. hazardous waste collection days) or managerial measures that are used to protect and improve surface water and groundwater quality.

- ✓ **Emergency Response** Work with local emergency response teams to ensure that any spills within the Zone II can be effectively contained.
- ✓ **Low Salt Areas** - Submit a formal request to MA Highway Department to establish Low Salt Areas along Route 9. Hadley maintains Route 47 and should continue to use a moderate sand/salt mixture for ice control on local Hadley roads and monitor water quality. Educate employees and private contractors of the restrictions in designated Low Salt Areas if they are designated.
- ✓ **Planning and Developing** - Be aware of EPA's Intermodal Surface Transportation Efficiency Act. The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 contains provision for the planning and developing of highway systems and transportation enhancement activities,

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 Uses and Activities in the Protection Area

For more information, refer to Appendix 2: Regulated Facilities within the Water Supply Protection Area

Activities	Quantity	Threat*	Zone II	Potential Source of Contamination
Agricultural				
Dairy Farms	4	M	462	Manure (microbial contaminants): improper handling
Fertilizer Storage or Use	Numerous	M	Both	Fertilizers: leaks, spills, improper handling, or over-application
Livestock Operations	1	M	462	Manure (microbial contaminants): improper handling
Landscaping	1	M	462	Fertilizers and pesticides: leaks, spills, improper handling, or over-application
Manure Storage or Spreading	Numerous	H	Both	Manure (microbial contaminants): improper handling
Nurseries	2	M	462	Fertilizers, pesticides, and other chemicals: leaks, spills, improper handling, or over-application
Pesticide Storage or Use	Numerous	H	200	Pesticides: leaks, spills, improper handling, or over-application
Commercial				
Cemeteries	3	M	200	Over-application of pesticides: leaks, spills, improper handling; historic embalming fluids
Dry Cleaners	1	H	462	Solvents and wastes: spills, leaks, or improper handling
Medical Facilities	4	M	462	Biological, chemical, and radioactive wastes: spills, leaks, or improper handling or storage
Paint Shops	1	H	462	Paints, solvents, other chemicals: spills, leaks, or improper handling or storage
Printer Shops	1	M	462	Printing inks and chemicals: spills, leaks, or improper handling or storage
Office Research Laboratories	1	M	200	Laboratory chemicals and wastes: spills, leaks, or improper handling or storage

Activities	Quantity	Threat*	Zone II	Potential Source of Contamination
Sand And Gravel Mining/Washing	1	M	200	Heavy equipment, fuel storage, clandestine dumping: spills or leaks
Residential				
Fuel Oil Storage (at residences)	Numerous	M	Both	Fuel oil: spills, leaks, or improper handling
Lawn Care / Gardening	Numerous	M	Both	Pesticides: over-application or improper storage and disposal
Septic Systems / Cesspools	Numerous	M	Both	Hazardous chemicals: microbial contaminants, and improper disposal
Miscellaneous				
Aboveground Storage Tanks	Numerous	M	Both	Materials stored in tanks: spills, leaks, or improper handling
Clandestine Dumping	1	H	462	Debris containing hazardous materials or wastes
NPDES Locations	1	L	462	Hazardous material and wastes: improper disposal
Oil or Hazardous Material Sites	2	--	462	Tier Classified Oil or Hazardous Materials Sites are not ranked due to their site-specific character.
Pipeline (Sewer)	1	M	462	Oil or sewage: spills or leaks
Road Maintenance Depots	2	M	462	Deicing materials, automotive fluids, fuel storage, and other chemicals: spills, leaks, or improper
Schools	1	M	462	Fuel oil, laboratory, art, photographic, machine shop, and other chemicals: spills, leaks, or improper handling or storage
Small quantity hazardous waste	Numerous	M	Both	Hazardous materials and waste: spills, leaks, or improper handling or storage
Stormwater Drains/ Retention Basins	Numerous	L	Both	Debris, pet waste, and chemicals in stormwater from roads, parking lots, and lawns
Transportation Corridors	Numerous	M	Both	Fuels and other hazardous materials: accidental leaks or spills; pesticides: over-application or improper
Underground Storage Tanks	6	H	462	Stored materials: spills, leaks, or improper handling
Wastewater Treatment Plant/Collection	1	M	462	Treatment chemicals or equipment maintenance materials: improper handling or storage; wastewater:

Table 2 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.

including the mitigation of water pollution due to highway runoff. Through ISTEA, states are able to use a portion of their federal funding allotment for runoff pollution control devices and other BMPs to prevent polluted runoff from reaching their lakes, rivers, and bays. Catch basins transport stormwater from roadways and adjacent properties to the ground. As flowing stormwater travels, it picks up debris and contaminants from streets, parking areas and lawns. Common potential contaminants include lawn chemicals, pet waste, leakage from dumpsters, household hazardous waste, and contaminants from vehicle leaks, maintenance, washing or accidents.

Stormwater Catch Basins – Recommendations:

- ✓ **Mapping** - If storm drainage maps are available, review the maps with emergency response teams. If maps aren't yet available, work with town officials to prioritize and investigate mapping options such as the upcoming Phase II Stormwater Rule requiring some communities to complete stormwater mapping. Wherever possible, ensure that drains discharge stormwater outside of the Zone II.
- ✓ **Inspect, Maintain, and Clean -** Work with the Town and State to have catch basins inspected, maintained, and cleaned on a regular schedule. Additionally, street and parking lot sweeping reduces the amount of potential contaminants in runoff. Note: Catch basin cleanings are classified as solid waste by DEP and must be handled and disposed in accordance with all regulations, policies, and guidance. In the absence of written approval from DEP, catch basin cleanings must be taken to a facility permitted by DEP to accept solid waste. For information on DEP's Nonpoint Competitive Grants Program Upcoming Funding Opportunity see: http://www.state.ma.us/dep/brp/mf/mfpubs.htm#wpa.
- ✓ **Best Management Practices** - Work with the Town to develop Best Management Practices that are the most effective, practical means of preventing or reducing pollution from nonpoint sources. Information is available at http://www.epa.gov/OWOW/NPS/roads.html.
- ✓ **Local Controls** - Encourage local officials to develop a local stormwater ordinance. For more information see http://www.epa.gov/owow/nps/ordinance/stormwater.htm.
- ✓ **Storm Drain Stenciling Program** - Work with local watershed groups to institute a Storm Drain Stenciling Program. For more information on how to develop a storm drain stenciling program go to http://www.earthwater-stencils.com.
- ✓ **Wellhead Protection Grants** – Continue working towards applying for a Wellhead Protection Grant from DEP for the purpose of addressing stormwater drainage in the Zone II, and for working with the Town to address the "Phase II Stormwater Regulations".

4. Hazardous Materials Storage and Use – Commercial or industrial land uses make up about 4% of the entire #462 Zone II, and less than 1% of the #200 Zone II. Many small businesses and industries use hazardous materials, produce hazardous waste products, and/or store quantities of hazardous materials. 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 A 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.
- ✓ Work with the local Board of Health to 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 II #462 contains two open-ended DEP Tier Classified Oil and/or Hazardous Material Release Sites indicated on the map as Release Tracking Numbers 1-0010026, and 1-0014233. Refer to the attached map and Appendix 3 for more information.

Oil or Hazardous Material Contamination Sites Recommendation: .

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

6. Protection Planning – The town is currently working on a protection plan. Hadley has many of the components for completion of the plan. Hadley does have an Aquifer Protection By-law Review Committee that has proposed and presented revisions to the protective by-law for approval at Town Meeting. Protection plans coordinate community efforts, identify protection strategies, establish a timeframe for implementation, and provide a forum for public education and outreach. The development of a successful Wellhead Protection Plan is outlined in five steps in DEP's "Developing a Local Wellhead Protection Plan" (see Appendix A for the full report) as:

- Maintain a protection committee or team
- Define the Wellhead Protection Area
- Identify potential sources of contamination
- Protect and manage the wellhead protection area
- Conduct ongoing public education and outreach

Top 5 Reasons to Develop a Local Wellhead Protection Plan

❶ Reduces Risk to Human Health

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.

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

The Town does have an Aquifer Protection District Bylaw, adopted in 1985 and revised in 2001. The by-law substantially complies with water supply protection control regulations 310 CMR 22.21(2) with a few exceptions to the older sections of the by-law.

Protection Planning Recommendations:

- ✓ Develop a Wellhead Protection Plan. Maintain 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 periodically review and 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 /dep/brp/dws/protect.htm. Submit current by-laws to the MA DEP for review for compliance.
- ✓ If local Board of Health regulations do not regulate floordrains, be sure to include floordrain controls that meet 310 CMR 22.21(2).

7. Agricultural Activites – Crop and pasture lands make up the largest land use percentage of each Zone II: 48% of #200 and 54% of #462. 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. Improper

management of hazardous materials also pose a potential threat to the groundwater. In some instances, farmers have on-site irrigation wells or use town water for animals or crops.

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.
- ✓ Where appropriate, ensure farmers use back-flow prevention devices for connections to pubic water supplies but also for on-site wells. Inform farmers of BMPs for sanitary seals and back flow prevention for any on-site wells.
- ✓ Work with hobby farmers to ensure that they also are aware of the necessity of back flow prevention for any on-site wells and water use. Offer information about BMPs from NRCS, MA Department of Food and Agriculture and the MA DEP web site.

8. Sewer pipelines and Wastewater Treatment Plant – The Zone II contains the Hadley Wastewater Treatment Plant that discharges into the Connecticut River as well as gravity and force mains. Activities associated with wastewater transmission and treatment involve sewage leaks and the storage and use of hazardous materials such as treatment chemicals, chlorine and fuel. Municipal wastewater contains contaminants including bacteria, viruses, metals and volatile chemicals. Spills, leaks or mismanagement of wastewater, hazardous materials and stormwater at the plant is a potential source of contamination.

Wastewater Treatment Plant Recommendations:

- ✓ Ensure wastewater treatment facility is operated, upgraded and maintained according to DEP requirements.
- ✓ Work to have stormwater drains and the drainage system around the wastewater treatment plant mapped.
- ✓ Work with plant to be sure that best management practices are used for proper handling of materials and in containing spills and leaks.
- ✓ Work with plant to be sure emergency planning includes notification for Hadley Highway and Water Department.
- ✓ Ensure that the plant's underground storage tank has monitoring and is maintained properly.

Other land uses and activities within the Zone II that have potential for contamination include auto repair shops, gas stations, plant nurseries, and medical facilities. Refer to Table 2 and Appendix 2 for more information about these land uses.

Section 3: Source Water Protection Conclusions and Recommendations

Current Land Uses and Source Protection:

Although the Zone II contains numerous existing and potential sources of contamination, awareness and source protection measures reduces the risk of actual contamination, as illustrated in Figure 2. Identifying additional 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 listed above and below should be used to better protect your water supply.

For More Information

Contact Catherine V. Skiba in DEP's Springfield Office at (413) 755-2119 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.

Source Protection Recommendations:

To better protect the sources for the future:

- ✓ Inspect the Zone I regularly, and when feasible, remove any non-water supply activities.
- ✓ 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 your Zone II and watersheds when 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.
- ✓ Communicate with owners/operators of the rights-of-way to ensure Best Management Practices are being used
- ✓ Develop and implement a Wellhead Protection Plan.

Partner with Local Businesses:
Since many small businesses and industries use hazardous materials and produce hazardous waste products, it is essential to educate the business community about drinking water protection. Encouraging partnerships between businesses, water suppliers, and communities will enhance successful public drinking water protection practices.

Educate Residents:
If managed improperly, household hazardous waste, septic systems, lawn care, and pet waste can all contribute to groundwater contamination. Hazardous materials include automotive wastes, paints, solvents, pesticides, fertilizers, and other substances. If a septic system fails or is not properly maintained, it could be a potential source of microbial contamination. Animal waste is also a source of microbial contamination.

Provide Outreach to the Community:
Public education and community outreach ensure the long-term protection of drinking water supplies. Awareness often generates community cooperation and support. Residents and business owners are more likely to change their behavior if they know where the wellhead protection recharge area is located; what types of land uses and activities pose threats; and how their efforts can enhance protection.

Plan for the Future:
One State and of the most effective means of protecting water supplies is planning, local include such as the adoption of local controls to protect land use regulations related to watersheds and ground water., These controls may include health ordinances/regulations, no discharge prohibitions general ordinances, and zoning bylaws that prohibit potential sources of contamination from wellhead protection areas.

Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures. These recommendations are only part of your ongoing local drinking water source protection.

Resources for Drinking Water Source Protection:
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.

Conclusions:
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. 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

Table 3: Current Protection and Recommendations

Protection Measures	Status	Recommendations
Zone I		
Does the Public Water Supplier (PWS) own or control the entire Zone I?	**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)?	**Partially**	The Town's "Aquifer Protection District" bylaw has recently been updated and substantially meets DEP's best efforts for wellhead protection. Refer to www.state.ma.us/dep/brp/dws/ for model bylaws and health regulations, and current regulations for any future updates. Submit by-laws for review
Do neighboring communities protect the Zone II areas extending into their communities?	**NO**	Work with neighboring municipality Amherst to include portions of the Zone III along the Fort River in their wellhead protection controls.
Planning		
Does the PWS have a Wellhead Protection Plan?	**NO**	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. And inform ER teams of the location of the Zone IIs.
Does the municipality have a wellhead protection committee?	**YES**	Encourage the continuation of the committee and include modification and improvement of existing by-laws as appropriate.
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.

APPENDIX B:
REGULATED FACILITIES WITHIN THE WATER SUPPLY PROTECTION AREA

DEP Permitted Facilities

DEP Facility Number	Facility Name	Street Address	Town	Permitted Activity	Activity Class	Facility Description
30533	Allards Farms, Inc.	41 S. Maple Street	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	Farm
				Generator of Hazardous Oil Waste	Small Quantity Generator	Farm
				Handler	Recycling – A	Farm
36688	Valley Starter and Alternator	3 Isabel Court	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	Automotive Repair
37540	Jiffy Lube	347 Russell Street	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	Automotive Maintenance
				Toxic Waste User	BLW-TU (Below Threshold)	Automotive Maintenance
50407	Montgomery Rose Company, Inc.	350 Russell Street	Hadley	Generator of Hazardous Waste and Waste Oil	Very Small Quantity Generator	Industrial
				Plant	RES Application Approved	Industrial
				DISCH	IWWSC	
				Plant	ASB-AQ	Industrial
50158	Montgomery Rose Company, Inc.	319 River Drive	Hadley	Air Handler	Synthetic Source (SM450)	Industrial

251565	Performance Motoring, Inc.	315 Russell Street	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	
				Generator of Hazardous Waste Oil	Small Quantity Generator	
				Non Permitted Action (Non-Notifier)	Requires change of use or permit	
				Toxic User	BLW-TU	
				EPIC	BLW-SW	
				Plant	BLW-AQ	
284980	Hadley Wastewater Treatment Plant	134 South Middle Street	Hadley	SUROWI	WMSRMN (NPDES Discharge)	Treatment Facility
				Generator of Hazardous Waste	Very Small Quantity Generator	
972	Hadley Municipal Treatment Plant	Town Hall	Hadley	SURFAC	SURMIN	Treatment Facility
*MV4135850889	Charlie's Auto Body	Mill Valley	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	Auto Body Repair
*MV4135848976	Dr. Edward M. Nowak	293 Russell Street	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	Medical Facility
*MAV000009171	Dr. Edward Smola	59 East Street	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	Medical Facility
*MV4135863306	Dr. Mark Klepacki	190 Russell Street	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	Medical Facility
*MAV000009355	Drs. Gold, Moini, and Witzenberger	190 Russell Street	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	Medical Facility
*MAV000018044	Gleason Brothers	50 S Maple Street	Hadley	Generator of Hazardous Waste Oil	Very Small Quantity Generator	

*MAV000002810	Hadley Family Chiropractor	187 Russell Street	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	Medical Facility
*MV4135595431	Hampshire College Physical Plant	289 Bay Road	Hadley	Generator of Hazardous Waste and Oil Waste	Very Small Quantity Generator	College
*MAV000009496	Hampshire Mall Dental Center	Hampshire Mall, Route 9	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	Medical Facility
*MV4135493251	MA/UMASS Hadley Farm	111 N. Maple Street	Hadley	Generator of Hazardous Waste and Waste Oil	Very Small Quantity Generator	Research Farm
*MAV000015084	Midas Muffler	397 Russell Street	Hadley	Generator of Hazardous Waste and Waste Oil	Very Small Quantity Generator	Auto Repair
*MV4135860892	Monro Muffler/Brake, Inc.	360 Russell Street	Hadley	Generator of Hazardous Waste Oil	Small Quantity Generator	Auto Repair
*MAV000011653	New England Auto Sales	251 Russell Street	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	Auto Sales
*MV4135867133	Paint Shack	322 Russell Street	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	Paint Shop
*MAV000015111	Ray's Auto Repair	71 Lawrence Plain Road	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	Auto Repair
*MAV000003668	Redi Rent	301 Russell Street	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	Rental Company
*MAV000005372	Valley Dentists	138 Russell Street	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	Medical Facility
**MAR981886625	Wal-Mart #2683	337 Russell Road	Hadley	Generator of Hazardous Waste	Very Small Quantity Generator	Discount Retailer

* Massachusetts Identification Number
**EPA Identification Number

Underground Storage Tanks

Facility Name	Address	Town	Description	Tank Type	Tank Leak Detection	Capacity (gal)	Contents
Allards Farms, Inc.	41 S Maple Street	Hadley	Farm	2 Wall	Interstitial Space Monitor	10000	Diesel
Kicza Lumber Company, Inc.	303 Russell Street	Hadley	Lumber Yard	1 Wall	Removed?	1000	Diesel
				1 Wall	Removed?	1000	Waste Oil
Montgomery Rose Company	350 Russell Street	Hadley		2 Wall	Interstitial Space Monitor	4000	Diesel
Town of Hadley Highway Department	South Middle Street	Hadley	DPW	2 Wall	Interstitial Space Monitor	10000	Diesel
				2 Wall	Interstitial Space Monitor	10000	Gasoline

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 may be located within the water supply protection area(s) that should be considered in local drinking water source protection planning.

APPENDIX C – 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/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	Contaminant Type
1-0010026	169 Bay Road	Hadley	Oil
1-0014233	25 East Hadley Road	Hadley	Oil

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