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

Harwich 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	Harwich Water Department
PWS Address	196 Chatham Road
City/Town	Harwich, Massachusetts
PWS ID Number	4126000
Local Contact	Deborah Fuller
Phone Number	508-432-0304

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.

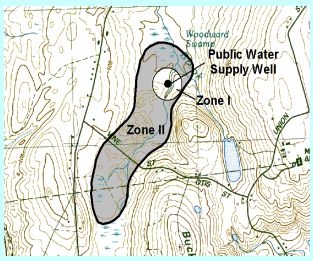
Refer to Section 2 and Table 3 for Recommendations to address potential sources of contamination. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

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

Zone II #: 97 ***Susceptibility:*** High

Well Name	***Source ID***
GP Well #1	4126000-01G
GP Well #2	4126000-02G
GP Well #3	4126000-03G
Main Station	4126000-04G
GP Well #4	4126000-05G

Zone II #: 98 ***Susceptibility:*** High

Well Name	***Source ID***
GP Well #5	4126000-06G
GP Well #6	4126000-07G
GP Well #7	4126000-08G

Zone II #: 99 ***Susceptibility:*** High

Well Name	***Source ID***
GP Well #8	4126000-09G
GP Well #9	4126000-10G

Zone II #: 29 ***Susceptibility:*** High

Well Name	***Source ID***
GP Well #10	4126000-11G

Zone II #: 362 ***Susceptibility:*** Moderate

Well Name	***Source ID***
GP Well #11	4126000-12G

Harwich Water Department is operated a maintained by the Town of Harwich, and is governed by a three-member board of water commissioners. The Town of Harwich Municipal water system is supplied by twelve (12) wells that draw water from the Monomoy Lens aquifer on Cape Cod. Each well has a Zone I of 400 feet. The twelve (12) wells are encompassed by five separate Zone IIs (refer to attached map of Zone I and Zone II for individual well locations). The wells are located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers (i.e. clay) that can prevent contaminant migration.

Water from each of Harwich's 12 wells is treated for corrosion control by the addition of potassium hydroxide at five (5) treatment stations. For additional

information on monitoring results and treatment and for a copy of the most recent Consumer Confidence Report please contact the Public Water System contact person listed above in Table 1.

Section 2: Discussion of Land Uses in the Protection Areas

There are five (5) Zone IIs for the town of Harwich's twelve (12) groundwater wells. Each Zone II in this report is identified by a unique Zone II identification number. A list of the individual drinking water sources with its respective Zone II is provided in Section 1.

The Zone IIs for Harwich are mainly a mixture of forest and residential land uses (refer to attached maps for details). There also exist a number of land uses and activities that are potential sources of contamination. Key issues (1-6) are discussed in this section with a complete listing in Table 2, and further details provided in the Table of Regulated Facilities and Table of Underground Storage Tanks in the Appendix.

Key issues include:

1. Inappropriate Activities in Zone Is
2. Residential Land Uses and Activities within Zone IIs
3. Comprehensive Wellhead Protection Planning for Zone IIs
4. Stormwater Pollution within Zone IIs
5. Transmission Line Right-of-Way within Zone IIs
6. Transportation Corridor within Zone IIs

The individual ranking of susceptibility to contamination for Harwich Zone IIs is listed in Table 1, based on the threat ranking of land uses within the Zone IIs, as seen in Table 2.

1. Zone Is - The Zone I for each of the Harwich wells is a 400 foot radius around the wellhead. Massachusetts drinking water regulations (310 CMR 22.00 Drinking Water) requires public water suppliers to own the Zone I, or control the Zone I through a conservation restriction. The twelve (12) Zone Is for the town of Harwich's wells are owned or controlled by the public water system. Only water supply activities are allowed in the Zone I. However, many public water supplies were developed prior to the Department's regulations and contain non water supply activities such as homes and public roads. The following non water supply activities occur in the Zone I of Harwich's wells:

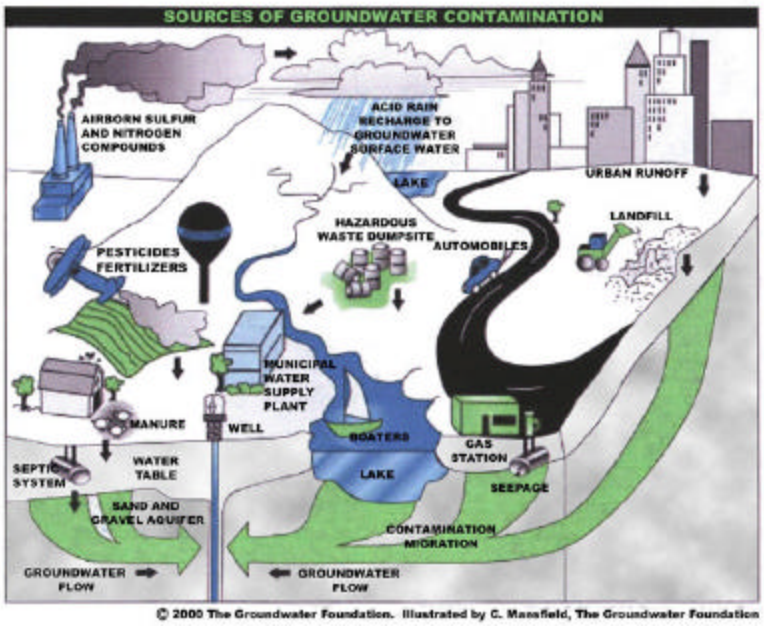
Zone I: Main Station 4126000-04G - The main station wellfield and pumping station has been in operation since the 1930s. This area acts as a system headquarters and district office activities associated with water supply operations (e.g. maintenance of equipment). The main station source consists of a wellfield comprised of four shallow wells (26 feet deep) with a vacuum pump system. The wellfield is located around the grounds of the Harwich Water

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.



Department buildings. Lubricating and chemical storage, truck parking and bulk chemical storage (in containment) and bulk lubricants are located within the Zone I of the main station well. Over the years the town has made significant improvements to the Zone I. In the late 1980s and early 1990s the Water Department undertook the following improvements to the Zone I;

1. Four (4) catch basins that there were located in the Zone I were removed and parking lot runoff was redirected away from the main well.
2. A 5000 gal. underground storage tank was removed from the main station area.
3. An aboveground storage tank for the backup diesel generator was removed in the early 1990s.
4. A septic system was relocated outside of the Zone I.

Zone Is: 4126000-01G, 02G, 03G, 06G, 08G, 09G, 10G - Utility transmission lines right-of-ways exist through Zone Is of the aforementioned wells. Additionally, the Cape Cod bike path is located in the Zone I of wells 01G, 02G, 03G, 06G and 08G.

Recommendations—Zone I

- To the extent possible, remove all non water supply activities from the Zone Is to comply with DEP's Zone I requirements.
- Keep non water supply activities outs of the Zone I.
- Do not use or store pesticides, fertilizers or road salt within the Zone I.

2. Residential Land Use - If managed improperly, household hazardous waste, septic systems, lawn care, and pet waste can all contribute to groundwater contamination. Hazardous materials may 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. Fertilizers and pesticides contain hazardous chemicals that can travel through the soil and contaminate ground water if over-applied. Pet waste may contain bacteria, parasites, or viruses that are a health risk. Water supplies may also be threatened from improper use and disposal of chemical products used in homes or businesses. Steps to educate residents and businesses on proper disposal of these materials is the best defense from pollution.

Residential Recommendations - Household Hazardous Waste:

- **Proper Disposal -** Educate residents on the problem of disposing of hazardous materials in landfills, septic systems, wastewater treatment plants, storm drains, and on the ground. Encourage residents to use the Town of Harwich's Household Hazardous Waste Collection center. The Town of Harwich operates a permanent household hazardous waste collection center at the Harwich transfer station. The Town of Harwich accepts all paints and paint related products as well as all automotive products (batteries, antifreeze, motor oil etc.) for recycling. Very small quantity generators (VSQG) of hazardous waste and waste oil can use the facility for a fee.
- **Alternative Products -** Provide residents with information on options that are available to substitute less hazardous substances for many products used in the home.

Residential Recommendations - Septic systems:

- **System Care -** Educate residents on private septic systems about using cleaning compounds that are safe for the septic system, and on proper disposal practices, i.e. only sanitary waste in the septic system. Information on septic systems can be found at Massachusetts Department of Environmental Protections website http://www.state.ma.us/dep/brp/files/yours yst.htm.
- **Proper Disposal -** Residents should dispose of used oil, antifreeze, paints, and other household chemicals properly - not in septic systems.

Residential Recommendations - Lawn Care and Landscaping:

- **Environmentally Sound Lawn Care -** Provide educational materials to residents about the proper application of pesticides or fertilizers. Landscape with native grasses, native flowering plants and trees and shrubs. Once established, native plants require less water and may not require fertilizer, herbicides or pesticides use. Encourage the use of native plants and

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.

landscaping by establishing a demonstration area at a town facility. Information on environmentally sound lawn care practices can be obtained from the Massachusetts Department of Food and Agriculture Pesticide Bureau's website at http://www.massdfa.org.

Residential Recommendations - Heating Oil Tanks:

- **Underground Storage Tanks -** Since 1989, the Town of Harwich has a fuel storage system regulation. The Town of Harwich has reduced the number of underground storage tanks in the town significantly over the last decade through its program of education, testing and regulation. The regulations specify that fifteen years after installation, each tank and its piping is required to undergo tightness testing annually. Additionally, tanks older than 30 years must be removed. The Town of Harwich identified underground storage tanks at residential properties in and adjacent to Zone II as part of pilot project with the Department of Environmental Protection. Barnstable County Department of Health and the Environment (http://www.CapeCod.net/bcdhe/oil/oil.htm) maintains a database of underground storage tanks in the town of Harwich. A common source of heating oil leaks is the delivery or supply line that carries home heating oil from the storage tank to the furnace (refer to fact sheet "Heating Oil Delivery Lines, Homeowner's Guide to Preventing Leaks" included in the appendix). Target remaining homeowners with underground storage tanks in Zone II for education and outreach.
- **Aboveground Storage Tanks** - Provide educational materials to residents regarding the proper storage of liquid petroleum products in aboveground storage tanks. The Department requires all wellhead protection zoning and non zoning controls to prohibit the siting of liquid petroleum products storage in Zone II unless such storage is aboveground, on an impervious surface and either in a container or in an aboveground tank within a building, or in an area that has a containment system designed and operated to hold either 10 percent of the total possible storage capacity of all containers, or 110% of the largest container storage capacity whichever is greater. Consult with the local fire department for any additional local code requirements regarding aboveground storage tanks. A fact sheet on basement and outside oil tanks can be obtained from the Barnstable County Department of Health And Environment at http://www.CapeCod.net/bcdhe/oil/oil.htm.

3. Comprehensive Wellhead Protection Planning - Protection planning prevents drinking water contamination by managing the land area that supplies water to a well. A Wellhead Protection Plan coordinates community efforts, identifies protection strategies, establishes a timeframe for implementation, and provides a forum for public participation. There are numerous resources available to help communities in developing a plan for protecting drinking water supply wells.

Protection Planning Recommendations:

- **Prevent new development in the Zone II -** The town should continue to purchase potentially developable land located within the existing wellhead protection areas and areas for use as future well sites.
- **Develop a land acquisition plan -** Land acquisition projects protect water supplies by limiting the land development potential. Acquisitions can be accomplished by municipal water systems through conservation restrictions, land banking, land purchases and land donations. Sample conservation restrictions are available at: http://www.state.ma.us/dep/brp/dws/. The Town of Harwich is fortunate that its Zone IIs still have significant forest (refer to attached maps for percentage of forest). However, future development of Zone II is a major concern. The Department recommends that the town acquire Zone II land closest to the Zone I or land that is subject to high-risk development refer to http://www.state.ma.us/dep/brp/dws/ for a copy of DEP's guidance, "Developing a Local Wellhead Protection Plan").
- **Priority Land Acquisition Assessment Project -** The Cape Cod Commission has recently completed a priority land acquisition assessment project for several Cape Cod communities, including Harwich, through a Massachusetts Department of Environmental Protection 604 (b) water quality management planning grant program. The Cape Cod Commission completed the project in two phases through grant # (97-02) and grant # (99-01). In the first phase the Cape Cod Commission reviewed and assessed specific land parcels that potentially could support a water supply or could be used for current wellhead protection. In the second phase a detailed assessment was completed for specific sites identified with the highest potential for water supply development. The objective of the first phase project was to aide towns in assessing properties that may be suitable for future water supply development or protection of existing water supply sources. Copies of the two reports were issued to each public water supplier included in the assessment project.
- **Inspection Program** - Develop and implement an Inspection Program for facilities that generate, use, store, or dispose of hazardous/toxic materials. Local Board of Health and Building Inspectors working on inspections often include floor drain and underground storage tanks. Local inspection programs can provide valuable technical assistance on Best Management Practices.
- **Develop a Wellhead Protection Plan** – Establish a local team, and refer them to http://www.state.ma.us/dep/brp/dws/ for a copy of DEP's guidance, "Developing a Local Wellhead Protection Plan".

- **Local Controls** - Coordinate efforts with local officials in Brewster and Chatham to compare existing controls with current MA Wellhead Protection Regulations 310 CMR 22.21(2). For more information on DEP land use controls see http://www.state.ma.us/dep/brp/dws/.

4. 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, 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 Recommendations:

- **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 refer to: 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
- **Stormwater Planning -** Encourage local officials to become familiar with and begin to implement a stormwater management program to meet DEP's Phase II Storm Water Regulations. For additional information, refer to the Stormwater Management Information at http://www.state.ma.us/dep/brp/ww/wwpubs.htm#storm.

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

5. Transmission Line Right-Of-Way –An utility right-of-way runs through the Zone I of wells 4126000-01G, 02G 03G, 06G, 07G 08G, 09G 10G. The utility currently does not use herbicide for vegetative control on its right-of-way's. Over-application or improper handling of herbicides during right-of-way maintenance is a potential source of contamination. The rights-of-way management regulations (333 CMR 11) were designed to minimize any potential harmful effects of herbicides use for vegetation control along rights-of-way in Massachusetts. The regulations promote the use of an integrated pest management (IPM) approach to vegetation control and aims to protect drinking water wells and environmentally sensitive areas. Any company or agency proposing to use an herbicide must use applicators that are certified or licensed by the Department. Industries proposing to clear or maintain right-of-ways with herbicides submit a five-year vegetative management plan (VMP). These plans are subject to review by the Department, and advisory panel, the public and municipalities. Yearly operational plans are also submitted to the Department of Food and Agriculture and municipalities in which proposed herbicides spraying is expected to take place. Final acceptance of these plans is considered only when all concerns and recommendations are addressed.

Transmission lines Right-of-Way - Recommendations:

- **Best Management Practices** - Work with utility company, and local officials during their review of the transmission line right-of-way Yearly Operating Plan to ensure Best Management Practices are implemented with regard to vegetation control in the Zone II, and that herbicides are not used in the Zone Is.
- Identify any other right-of-way in your Zone II that may require vegetative control. Common rights-of-ways are railroad, electric, gas, water, telephone, and telecommunication services.

6. Transportation Corridor - Route 6 runs through the Zone II for well 4126000-12G. 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. De-icing salt washes off into storm drains or onto adjacent ground. In addition, roadways are frequent sites for illegal dumping of hazardous or other potentially harmful wastes.

Transportation Corridor - Recommendations:

- **Emergency Response Planning** - Contact local fire department to ensure the Zone II is in emergency response planning.
- **Low Salt Areas** - Encourage water districts and towns to educate employees and private contractors of the restrictions in designated Low Salt Areas.
- **Planning and Developing** - Notify town officials 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, 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.

Other land uses and activities that may be potential sources of contamination include; agriculture, landfills, dry cleaners, photo processors, very small quantity generators of hazardous waste or waste oil, small quantity generators of hazardous waste or waste oil, auto repair shops, underground storage tanks, horse tables, and shooting range. Refer to Table 2 and Appendix 2 for more information about these land uses and potential sources of contamination.

Agricultural - Approximately 3 percent of the Zone II #29 is comprised of cranberry bogs. As is the case for most other crops the commercial production of cranberries usually requires input of fertilizer and pesticides. Utilization of best management practices (BMPs) as planned and described in an established conservation farm plan can ensure that agricultural system will uphold the integrity of the surrounding natural resources.

Cranberry Bog - Recommendations:

- Encourage Cranberry bog owner/operator to:

1. Obtain and follow an approved USDA, Natural Resource Conservation Service Conservation Farm Plan.
2. Maintain a pesticide license or certification with the Massachusetts Department of Food and Agriculture including all applicable training and recertification courses.

Wood waste Landfill - T.W. Nickerson wood waste landfill is located on Chatham and Harwich Town Line (Zone II #98). For additional information refer to Appendices or contact DEP, Division of Solid Waste Management.

Photo Processor - The photo processor is located in Zone II #99 and is registered with the Department as a very small quantity generator of hazardous waste. Information on the requirements for photo processors are available at the Departments web site http://www.state.ma.us/dep/erpubs.htm.

Dry cleaners - The dry cleaners located in Zone II # 97 is registered through the Environmental Results Program (ERP) and as a Very Small Qty Generator of Hazardous Waste. The ERP program streamlined existing pollution control requirements for dry cleaners.

Recommendations: The dry cleaners should review its ERP certification and the dry cleaners certification workbook. Refer to Appendix for recommendations and additional information.

Underground Storage Tank - Cranberry Valley golf course has a 2000 gallon gasoline underground storage tank that is double walled with interstitial monitoring. An UST is a concern in Zone II #97 due to the potential threat posed by the release of its contents. If managed improperly, Underground Storage Tanks can be a potential source of contamination due to leaks or spills of the chemicals they store. Work with the local fire Department and UST owner to

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 Protection Areas (Zones I and II)

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

Activities	Quantity	Threat*	Zone II ID #	Potential Source of Contamination
Agricultural				
Fertilizer Storage or Use	2	M	#29	Fertilizers: leaks, spills, improper handling, or over-application
Pesticide Storage or Use	2	H	#29	Pesticides: leaks, spills, improper handling, or over-application (cranberry bogs)
Commercial				
Service Stations/ Auto Repair Shops	1	H	#99	Automotive fluids and solvents: spills, leaks, or improper handling, 1-1000 gal. AST in a vault,
Dry Cleaners	1	H	#97	Solvents and wastes: spills, leaks, or improper handling, ERP-dry cleaners, VSQG
Golf Courses	1	M	#97	Fertilizers or pesticides: over-application or improper handling
Nursing Homes	1	L	#29	Groundwater discharge permit for wastewater treatment facility, Microbial contaminants
Photo Processors	1	H	#99	Photographic chemicals: spills, leaks, or improper handling or storage ,VSQG- hazardous waste
Sand And Gravel Mining/Washing	1	M	#98	Heavy equipment, fuel storage, clandestine dumping: spills or leaks, also the site of a former shooting range
Residential				
Fuel Oil Storage (at residences)	Numerous	M	All	Fuel oil: spills, leaks, or improper handling
Lawn Care / Gardening	Numerous	M	All	Pesticides: over-application or improper storage and disposal
Septic Systems / Cesspools	Numerous	M	All	Hazardous chemicals: microbial contaminants, and improper disposal
Stables	Several	L	#29,#97	Horse Barn: manure

Activities	Quantity	Threat*	Zone II ID #	Potential Source of Contamination
Miscellaneous				
Aquatic Wildlife and pet waste	Numerous	L	All	Microbial contaminants
Landfills and Dumps	1	H	#98	Seepage of leachate (T.W. Nickerson-woodwaste landfill-SD 0055. 003)
Schools, Colleges, and Universities	1	M	#97	Fuel oil, laboratory, art, photographic, machine shop, and other chemicals: spills, leaks, or improper handling or storage, (Harwich Jr. senior high school) playing fields and parking areas in the Zone II only
Small quantity hazardous waste	1	M	#99	Hazardous materials and waste: spills, leaks, or improper handling or storage
Stormwater Drains/ Retention Basins	Numerous	L	All	Debris, pet waste, and chemicals in stormwater from roads, parking lots, and lawns
Transmission Line Rights-of-Way - Type:	1	L	#97, #98, #99	Corridor maintenance pesticides: over-application or improper handling; construction (Zone I 01G-03G)
Transportation Corridors	2	M	#362	Fuels and other hazardous materials: accidental leaks or spills; pesticides: over-application or improper
Underground Storage Tanks	1	H	#97	Stored materials: spills, leaks, or improper handling (2000 gallon gasoline tank, double walled, cathodic)
Very Small Quantity Hazardous Waste	4	L	#99	Hazardous materials and waste: spills, leaks, or improper handling or storage

Water Supply Protection Area % that is Sewered = 0%

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 source of contamination, may contain other potential source of contamination, or may use Best Management Practices to prevent contaminants from reaching drinking water supplies.
2. For more information on regulated facilities, refer to Appendix : Regulated Facilities within the Water Supply Protection Area information about these potential sources of contamination.
3. There were no Oil or Hazardous Materials Sites in Harwich's protection areas.

*** 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.

ensure compliance with local code requirements regarding USTs. During refilling of UST, the UST owner should ensure that the operator of the oil transport tanker does not leave the vehicle while the UST is being filled. For additional recommendations and information refer to Appendix.

Auto repair shop – Stagg Chevrolet is located within Zone II #99. The facility is a small quantity hazardous waste generator (SQM) and has a 1000 gal. aboveground storage tank located in a vault. Due to the daily operations this facility generates small quantities of hazardous waste. This facility is registered as a small quantity waste generator with the Department and has a contract with a licensed hauler to remove the hazardous waste off-site. Hazardous waste is a potential source of contamination if it is improperly handled or stored. Stagg Chevrolet received a notice of noncompliance on January 25, 1999 for an unpermitted discharge to ground (floor drain). For recommendations and additional information refer to appendix.

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 the Harwich wells.

Section 3: Source Water Protection

Implementing source protection measures and Best Management Practices (BMPs) will reduce the Harwich Water Supply System's susceptibility to contamination. Additional source protection recommendations are listed in Table 3 and the Key Issues above.

Harwich is commended for promoting source protection measures:

- In 1999 and 1998 Harwich Water Department received first-place in the Department Drinking Water Awards large community system-ground water category program. In addition in 1999 Harwich Water Department won first-place for the best overall "public water system".
- A chain-link fence was erected for water supply protection purposes between the water supply area associated with sources-06G, 07G and 08G and the Cape Cod Bike Trail.
- The Town of Harwich and the Department completed a pilot site discovery project that evaluated facilities that may pose a risk to the drinking water supplies in 1999. The Harwich Water Department, board of health, and fire department identified sites for further assessment investigation. Several facilities received a site visit and one (1) notice of noncompliance was issued for a floor drain discharging to ground at an auto retail facility in the Zone II.

In addition to the current efforts and the specific recommendations listed with the key issues, water suppliers are encouraged to pursue the following protection measures. Appendix 1 includes further recommendations.

➢ 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.

- v Work with golf courses to ensure that BMPs are in place for the handling and application of fertilizers and pesticides.
- v Work with sand and gravel operations to ensure that BMPs are in place for fuel storage and the prevention of clandestine dumping. The town should investigate the parcel of land (former sand and gravel pit) located off Depot road to determine if this area was once used as a shooting range. Additional information on shooting ranges is available on the Department web page at http://www.state.ma.us/drp/files/pbshot/leadshot.htm.

➢ 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.

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?	**NO**	Continue to improve Zone I by removing non water supply activities within the Zone I to the extent feasible .
Municipal Controls (Zoning Bylaws, Health Regulations, and General Bylaws)		
Does the municipality have Wellhead Protection Controls that meet 310 CMR 22.21(2)?	**YES**	The Town of Harwich's "Aquifer Protection District" bylaw meets DEP's requirements. Refer to www.state.ma.us/dep/brp/dws/ for model bylaws and health regulations, and current regulations.
Do neighboring communities protect the Zone II areas extending into their communities?	**?**	Work with Brewster, Chatham, and Dennis municipalities to include Zone IIs 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.
Does the municipality have a wellhead protection committee?	**NO**	The Town of Harwich has a Board of three water commissioners. Establish committee; include representatives from citizens' groups, neighboring communities, and the business community.
Does the Board of Health conduct inspections of commercial and industrial activities?	**YES**	The town is encouraged to continue this program, and to include municipal facilities. 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 residential, commercial and municipal uses within the Zone II.

➢ Plan for the Future:

One of the most effective means of protecting water supplies is planning, such as the adoption of local controls to protect watersheds and ground water. These controls may include health regulations, 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.

Additional Resources Available for Source Protection:
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 assessment and protection recommendations in this SWAP report are provided as a tool to spur community discussion, support ongoing source protection efforts, and help set local drinking water protection priorities.

The Harwich Water Department should supplement this SWAP report with local information on potential sources of contamination and land uses. To aid in the protection of the wells, 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.

Funding Resources:
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. For additional information, please refer to the program fact sheet from this year. Please note: each year 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://www.state.ma.us/dep/brp/mf/mfpubs.htm.

Section 4: Appendices

1. Protection Recommendations
   - Outreach to Residents and the Community
   - Planning
   - Partnering with Local Businesses

2. Regulated Facilities within the Water Supply Protection Area

For More Information

Contact Mark Dakers in DEP's Lakeville office at (508) 946-2847 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.

3. Data Sources and Additional Documents on Source Protection in Harwich
   - *A Reference Guide for Homeowners, Your Septic System, DEP pamphlet-1990*
   - *A Homeowner's Guide to Avoiding Costly Heating Oil System Weeks, DEP pamphlet 1994*
   - *Industrial Floor Drains, Common Questions about the UIC Program , DEP pamphlet-June 1998*
   - *Summary of Recommended Source Water Protection Measures*
   - *Important Health Environmental Information for Oil Users, Cape Cod Commission pamphlet*

- *Source Protection Resources (web pages)*
- *Protecting Water Sources from Fertilizer, Department of Food and Agriculture*
- *Protecting Groundwater from Pesticides, Massachusetts Department of Food and Agriculture*
- *Heating Oil Delivery Lines, A Homeowner's Guide to Preventing Leaks, DEP pamphlet-2001*
- *Source Water Protection Grant Program/Wellhead Protection Grant Program Fact Sheet*
- *Homeowner Guide to Environmentally Sound Lawn care, Massachusetts Department of Food and Agriculture*
- *Hazardous Waste for Golf Courses, DEP fact sheet 12/97*
- *Manure Management for Healthy Horses, DEP pamphlet October 2000*

4. Maps of the Public Water Supply (PWS) Protection Areas

APPENDIX 2:
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
245510	Cranberry Point Nursing Home	111 Headwaters Drive	Harwich	Wastewater discharge	Groundwater discharge permit	Nursing home
131476	Cape Cod Auto Mall	182 Route 137	Harwich	Generator of Hazardous Waste	Small Quantity Generator	Auto repair/sales
293837	Jiffy Cleaners Inc.	1421 Route 39	Harwich	Generator of Hazardous Waste	Very Small Quantity Generator, Environmental Results Program	Dry Cleaners
	Stop & Shop Supermarket Company	Routes 39 and 137	Harwich	Generator of Hazardous Waste	Very Small Quantity Generator of Waste Oil	Supermarket
	Vollers Design	173 Bay Road	Harwich	Generator of Hazardous Waste	Very Small Qty Generator of Hazardous Waste	Photochemicals
	Harwich Jr., Senior High School	Oak Street	Harwich	Air quality permit	Minor Stationery Source	Heating plant

Underground Storage Tanks [1]

Facility Name	Address	Town	Description	Tank Type	Tank Leak Detection	Capacity (gal)	Contents
Cranberry Valley Golf Course	183 Oak Street	Harwich	Golf course	2 Wall	Interstitial	2000	Gasoline

Solid Waste Facilities

Facility Identification Number	Facility Name	Address	Town	Permitted activity	Activity class	Facility description
SL0055.001	T.W. Nickerson Stump landfill	160 Mill Hill Road	Chatham	Landfill	Wood Waste Landfill	Solid Waste Facility

1. 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.