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(2008) Wellhead Protection Program - Lary Lane, Gilman, and Stadium Wells in the Town of Exeter, NH

Wellhead Protection Program

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Wellhead Protection Program Lary Lane, Gilman and Stadium Wells Town of Exeter, NH



March, 2008



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**Town of Exeter
Wellhead Protection Program
Lary Lane, Gilman, and Stadium Wells
March, 2008**

I. INTRODUCTION

A. Background and Purpose

A Wellhead Protection Program (WHPP) identifies existing and potential sources of contamination to public water supply wells. The purpose of a WHPP is to prevent contamination of groundwater used for drinking water, recognizing the best way to maintain high quality drinking water is to prevent contaminants from reach drinking water sources.

The Federal Safe Drinking Water Act requires states to develop Wellhead Protection Programs. New Hampshire's Groundwater Protection Act, NH RSA 485-C, provides the basis for protection in New Hampshire. The Town of Exeter, New Hampshire has developed this WHPP for three wells, the Lary Lane well, the Gilman well, and the Stadium well. Funding for the development of this WHPP was provided by the New Hampshire Estuaries Project. The Plan was written by the Rockingham Planning Commission (RPC) with assistance from the Town of Exeter's Department of Public Works and the Water and Sewer Advisory Committee. The RPC gratefully acknowledges the information provided by Brian Goetz of Weston & Sampson.

The water supply for the Town of Exeter is a combination of surface and groundwater. The Exeter River is the principal supply source for the Town's municipal water system. Water from the River is diverted to the Town's water treatment plant through the pumping station located on the east side of the Exeter River, near the Phillips Exeter Academy football stadium. During the winter months, water is taken from the Exeter Reservoir adjacent to Portsmouth Avenue because ice build-up prevents intake from the Exeter River. The water stored in the Reservoir comes from the Exeter River, Dearborn Brook and Skinner Springs. Groundwater from the Lary Lane well is also used to meet an average water system daily demand of 1.1 million gallons. The Gilman well and Stadium well are not active at this time.

The Town of Exeter purchased the water system from the Exeter Water Works Company in 1950. Until the renovation of the water treatment plant in 1974, the Town relied on groundwater to supply the municipal system. The Town is revisiting the option of using groundwater supplies in conjunction with the surface water supply to provide the town with a more diversified system. Included in this investigation is a review of current land use surrounding three existing wells located in Town, the Lary Lane well, Gilman well, and Stadium well.

B. Descriptions of the Wells

Lary Lane Well - The Lary Lane well is located at the end of Lary Lane and next to the Exeter River. The land is owned by the Town of Exeter. The well was brought on-line in 1959 and was the primary source of drinking water for the Town of Exeter's municipal system between 1959 and 1963. This well is currently used only in emergency situations as the Town explores options to reduce the level of arsenic in the well. The well can provide up to 107,000 gallons per day, or 10% of municipal water supply. Water from the Lary Lane well is delivered directly into the distribution system after chemical additions for disinfection and iron/manganese control.

Gilman Well - The Gilman well is located in Gilman Park, just off Bell Avenue. This well is also adjacent to the Exeter River. Until recently, Gilman Park was owned by the Gilman Park Trustees. At 2008 Town Meeting, voters in Exeter approved a gift of the Park to the Town by the Trustees.

Gilman well was drilled and constructed in 1951 but was taken off-line by the Town in 1959 due to increasing iron content and taste and odor complaints due to hydrogen sulfide. The well is an approved drinking water source listed as "inactive" by the NH Department of Environmental Services. The Town is currently considering reactivating this well in conjunction with the Stadium well. A Water System Evaluation conducted in 2002 by CDM states the Gilman well could be restored to active use.

Stadium Well - Stadium well is located near the Phillips Exeter Academy Football Stadium and next to the Academy's forest. The well is located on land owned by the Academy, and the Town has an agreement and a utility easement with the Academy to operate a public water supply well on the property.

Stadium well was installed in 1963 and was operated as the primary source of drinking water for the Town's municipal system until 1969 when the Town began using a combination of the Stadium well, Lary Lane well, the Exeter River, and Skinner Springs in Stratham. The well is currently off-line and considered to be an approved drinking water source listed as "inactive" by the NH Department of Environmental Services. The Town is currently considering reactivating this well in conjunction with the Gilman well. A Water System Evaluation conducted in 2002 by CDM states the Gilman well could also be restored to active use.

Table 1. Summary of Well Information

Well	Size	Depth	GPM Yield	Notes
Lary Lane	24 inch	94 feet	350	Arsenic
Gilman	24 inch	51 feet	305 - inactive	High Color
Stadium	24 inch	59 feet	597 - inactive	Iron-Manganese

C. Delineation of Wellhead Protection Areas and Sanitary Protective Radius

The area under which groundwater flows to a producing well is known as the Wellhead Protection Area (WHPA). For till and gravel wells, the WHPA is calculated based on existing hydrogeologic information. For bedrock wells, the WHPA is a circle whose radius depends on the maximum daily amount of water withdrawn from the well.

For this Wellhead Protection Program, the Rockingham Planning Commission delineated a Wellhead Protection Area around each of the wells of 4,000 feet (Map 1).

Another type of protected area is a groundwater source's Sanitary Protective Radius. The Sanitary Protective Radius is a 75 – 400 foot radius around a well, which under current law must be controlled by the water supplier through ownership or easement. The extent of the Radius depends on the permitted production volume of the well. The Sanitary Protective Radii for all three wells is 400 feet. To facilitate protection of the drinking water source, it is necessary to know the delineation of the Sanitary Protective Radius and its boundaries on the ground. Within the Radius only activities that are both directly related to the water system and non-threatening to water quality should occur. Regular inspections of the Sanitary Protective Radius help to identify any potentially threatening land use activities.

II. CHARACTERISTICS OF THE SOURCES AND SOURCE PROTECTION AREAS

A. Lary Lane Well

Water Quality - The primary water quality concern with water from the Lary Lane well is arsenic. Beginning January 2006, municipal water systems had to comply with a stricter standard for arsenic in drinking water, set at .010 parts per million. The well's arsenic levels are tested on a quarterly basis and tests taken in December 2006 and January 2007 reported 0.0114 mg/L and 0.0118 mg/L, above Federal maximum contaminant level of 0.010 mg/L. The recorded levels are not an immediate health concern, and the Town is assessing arsenic treatment options.

Land Use – Land use in the Lary Lane WHPA is a mix of forest, floodplain, and residential. Zoning in this WHPA is a mix of R-1, single family residential and R-2, single family residential. Most of the WHPA is also in the Town of Exeter's Aquifer Protection Overlay District, which prohibits certain land uses that may detrimentally affect the quality of groundwater.

The Town is fortunate to have the Phillips Exeter Academy forest and adjacent conservation land make up a significant portion of the WHPA for this well. The Academy forest does have recreation trails open to the public but motorized recreation is prohibited. There also two campgrounds in the WHPA alongside the Exeter River, which are vulnerable to flooding. The WHPA abuts a large wetland complex in Kensington, known as the Great Meadows. This complex is downstream of a horse farm and agricultural land. The Town's municipal water and sewer system services almost all the residences in the WHPA. A windshield survey did not identify any harmful activities.

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A summary of information from the 2002 Drinking Water Source Assessment Report by the NH Department of Environmental Services is compiled in Table 3. There were 12 criteria assessed in the report, which focused on vulnerability to potential and actual contamination within the source protection area. The Lary Lane well had seven (7) criteria rated as Low susceptibility, three (3) criteria rated Medium susceptibility, and two (2) criteria rated High susceptibility.

Table 2.
Lary Lane Wellhead Protection Area Characteristics
Assessed in 2002 by NH Department of Environmental Services
Reassessed in 2007 by Rockingham Planning Commission

Susceptibility Factor	Low	Medium	High	Comments
1. Confirmed contaminant detects of concern in source water	No current detects from anthropogenic sources.			Does not include naturally occurring substances
2. Well Integrity	No unresolved problems noted during sanitary survey.			Problems would include insufficient sanitary seal, drainage problems, or violations of the sanitary radius
3. Sanitary radius (75' to 400' from well)	Free from development except that associated with the well.			Development within the sanitary radius can contaminate sources.
4. Known sources of anthropogenic contamination within the WHPA.			One ore more within the WHPA and within 1000' of the well.	Proximity of contamination to supply source is critical.
5. Potential sources of anthropogenic contamination within the WHPA	None present within the portion of the WHPA that is within 1000' of the well.			Proximity of contamination to supply source is critical.
6. Numbered state highways or active railroads in WHPA.		One or more within the WHPA but not within 1000' of the well.		Roadways/railways increase the risk of accidental releases reaching the sources. Roadways are also a significant non-point source of pollution.
7. Routine pesticide application in WHPA		Application sites in WHPA but not within 500' of the well.		Application not allowed in sanitary radius.

Susceptibility Factor	Low	Medium	High	Comments
8. Septic systems or sewer lines located in the WHPA			10 or more septic systems or any sewer line located within 500' of well and/or high density of septic systems (more than 30) in remainder of WHPA.	Septic systems within the sanitary radius or 500' represent an increased risk to a well from pathogens and other contaminants.
9. Urban land cover	Less than 10% of WHPA has urban land cover and less than 10% of WHPA within 1000' of well has urban land cover.			Water quality impacts, as wells as loss of recharge are associated with imperviousness levels of 10% or more.
10. Agricultural land cover		Less than 10% agricultural land cover in WHPA.		Nitrates are a common problem in extensive agricultural areas.
11. Farms with 10 or more outdoor animal units	None present in WHPA			Nitrates and pathogens such as viruses travel well in groundwater and are associated with livestock concentrations.
12. Wastewater treatment, spray, irrigation, lagoons	None within the WHPA.			Unplanned upsets are possible; lagoons may leach nitrates and pathogens into groundwater.

B. Gilman Well

Water Quality – The Gilman well has not been active since 1959 due to an increasing iron content and odor problems coupled with maintenance issues. There are no recent water quality tests.

Land Use - Land use in the Gilman well WHPA is a mix of residential, institutional (Phillips Exeter Academy, Seacoast School of Technology), forest and recreation land, and Exeter's downtown retail and commercial cores along Water Street and Portsmouth Avenue. Zoning in this WHPA includes R-1 and R-2, single family residential; R-5, multi-family/elderly; C-1, central area commercial; C-2 highway commercial; WC, waterfront commercial; and H, health care (Exeter Hospital). Two overlay districts are included in the

WHPA, the Aquifer Protection Overlay and the Historic District. The municipal water and sewer system services the WHPA. A windshield survey of the WHPA did not identify any harmful activities, however, impervious surfaces from parking lots, roof tops, roads and driveways in the WHPA prevent rain and snowmelt from recharging groundwater supplies.

Data from the NH Department of Environmental Services identifies 10 point/nonpoint pollution sources and 14 RCRA Hazardous Waste facilities.

Because neither Gilman nor Stadium wells are active wells, assessments for WHPA characteristics have not been completed by the NH Department of Environmental Services. For the purpose of this Plan, the RPC performed a similar assessment for the Gilman well and Stadium well, relying on windshield surveys and the 2002 Water System Evaluation by CDM. The Gilman well had five (5) criteria rated as Low susceptibility, two (2) criteria rated Medium susceptibility, and five (5) criteria rated High susceptibility, as described in Table 4.

**Table 3.
Gilman Wellhead Protection Area Characteristics
Assessed in 2007 by Rockingham Planning Commission**

Susceptibility Factor	Low	Medium	High	Comments
1. Confirmed contaminant detects of concern in source water	No current detects from anthropogenic sources.			Does not include naturally occurring substances
2. Well Integrity	No unresolved problems noted during sanitary survey.			Problems would include insufficient sanitary seal, drainage problems, or violations of the sanitary radius
3. Sanitary radius (75' to 400' from wells)			Sewer line, septic system or regulated substance storage other than that associated with the well.	Development within the sanitary radius can contaminate sources.
4. Known sources of anthropogenic contamination within the WHPA.			One ore more within the WHPA and within 1000' of the well.	Proximity of contamination to supply source is critical.
5. Potential sources of anthropogenic contamination within the WHPA			More than 10 within the portion of the WHPA that is within 1000' of the well.	Proximity of contamination to supply source is critical.

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Susceptibility Factor	Low	Medium	High	Comments
6. Numbered state highways or active railroads in WHPA.		One or more within the WHPA but not within 1000' of the well.		Roadways/railways increase the risk of accidental releases reaching the sources. Roadways are also a significant non-point source of pollution.
7. Routine pesticide application in WHPA	No application sites in WHPA.			Application not allowed in sanitary radius.
8. Septic systems or sewer lines located in the WHPA			10 or more septic systems or any sewer line located within 500' of well and/or high density of septic systems (more than 30 in remainder of WHPA).	Septic systems within the sanitary radius or 500' represent an increased risk to a well from pathogens and other contaminants.
9. Urban land cover			10% or more of WHPA has urban land cover.	Water quality impacts, as wells as loss of recharge are associated with imperviousness levels of 10% or more.
10. Agricultural land cover		Less than 10% of land cover in WHPA.		Nitrates are a common problem in extensive agricultural areas.
11. Farms with 10 or more outdoor animal units	None present in WHPA.			Nitrates and pathogens such as viruses travel well in groundwater and are associated with livestock concentrations.
12. Wastewater treatment, spray, irrigation, lagoons	None present in WHPA.			Unplanned upsets are possible; lagoons may leach nitrates and pathogens into groundwater.

C. Stadium Well

Water Quality – The Stadium well has not been active since 1969. A 1968 report by Weston and Sampson notes elevated iron levels and traces of hydrogen sulfide. There are no recent water quality tests.

Land Use - Land use in the Stadium well WHPA is similar to land use in the Gilman well WHPA, a mix of residential, institutional (Phillips Exeter Academy, Seacoast School of Technology), forest and recreation land, and Exeter's downtown retail and commercial cores along Water Street and Portsmouth Avenue. Zoning in this WHPA includes R-1 and R-2, single family residential; R-5, multi-family/elderly; C-1, central area commercial; C-2 highway commercial; WC, waterfront commercial; and H, health care (Exeter Hospital). Two overlay districts are included in the WHPA, the Aquifer Protection Overlay and the Historic District. The municipal water and sewer system services the WHPA. A windshield survey of the WHPA did not identify any harmful activities. The Stadium well had four (4) criteria rated as Low susceptibility, three (3) criteria rated Medium susceptibility, and five (5) criteria rated High susceptibility, as described in Table 5.

Data from the NH Department of Environmental Services identifies 10 point/nonpoint pollution sources and 14 RCRA Hazardous Waste facilities

**Table 4.
Stadium Wellhead Protection Area Characteristics
Assessed in 2007 by Rockingham Planning Commission**

Susceptibility Factor	Low	Medium	High	Comments
1. Confirmed contaminant detects of concern in source water	No current detects from anthropogenic sources.			Does not include naturally occurring substances
2. Well Integrity			Well casing not sealed and is completely submerged by several feet of standing water.	Problems would include insufficient sanitary seal, drainage problems, or violations of the sanitary radius
3. Sanitary radius			Sewer line, septic system or regulated substance storage other than that associated with the well.	Development within the sanitary radius can contaminate sources.
4. Known sources of anthropogenic contamination within the WHPA.			One or more within the WHPA and within 1000' of the well.	Proximity of contamination to supply source is critical.
5. Potential sources of anthropogenic contamination within the WHPA		10 or fewer within the portion of the WHPA that is within 1000' of the well.		Proximity of contamination to supply source is critical.
6. Numbered state highways or active railroads in WHPA.		One ore more within the WHPA but not within 1000' of the well.		

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Susceptibility Factor	Low	Medium	High	Comments
7. Routine pesticide application in WHPA	No application sites in WHPA.			Application not allowed in sanitary radius.
8. Septic systems or sewer lines located in the WHPA			10 or more septic systems or any sewer line located with 500' of well and/or high density of septic systems (more than 30) in remainder of WHPA.	Septic systems within the sanitary radius or 500' represent an increased risk to a well from pathogens and other contaminants.
9. Urban land cover			10% or more of WHPA has urban land cover.	Water quality impacts, as well as loss of recharge are associated with imperviousness levels of 10% or more.
10. Agricultural land cover		Less than 10% agricultural land cover in WHPA.		Nitrates are a common problem in extensive agricultural areas.
11. Farms with 10 or more outdoor animal units	None present in WHPA.			Nitrates and pathogens such as viruses travel well in groundwater and are associated with livestock concentrations.
12. Wastewater treatment, spray, irrigation, lagoons	None present in WHPA.			Unplanned upsets are possible; lagoons may leach nitrates and pathogens into groundwater.

III. INVENTORY OF POTENTIAL CONTAMINATION SOURCES

The area under which groundwater flows to a producing well is known as the Wellhead Protection Area (WHPA). For the purposes of Wellhead Protection Program, a 4,000 foot WHPA radius was used when inventorying and assessing land use adjacent to the wells.

In order to assess current and future impacts from land uses in the WHPA, past land use was reviewed using historical Sanborn maps and data maintained by the NH Department of Environmental Services, existing zoning was determined, and a review of current land use activities was conducted. The Town of Exeter's Master Plan, Zoning Ordinance, and Site Plan and Subdivision Regulations were also reviewed, as were DPW files. Windshield surveys were conducted by Rockingham Planning Commission staff in November and December of 2007.

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This research was guided by a list developed by The NH Department of Environmental Services that identifies nineteen (19) Potential Contamination Sources (PCS). These are listed in Table 6.

**Table 5.
NH DES List of Potential Contamination Sources (PCS)**

Vehicle service And repair shops	General service and repair shops	Metalworking shops
Salt storage and use	Snow dumps	Stormwater infiltration ponds or leaching catch basins
Manufacturing facilities	Underground or above ground Storage tanks	Cleaning services
Waste and scrap Processing and storage	Food processing plants	Transportation corridors
Septic systems at commercial and industrial facilities	Laboratories and certain Professional offices (medical,dental, veterinary)	Use of agricultural chemicals
Fueling and maintenance of earth moving equipment	Concrete, asphalt and Tar manufacture	Cemeteries
Hazardous waste facilities		

Data from the NH Department of Environmental Services and information gathered during the windshield survey were used to create Tables 7, 8 and 9. Land use in the Lary Lane, Gilman, and Stadium well WHPAs is a mix of residential, commercial, industrial, municipal and undeveloped. The following tables identify PCS posed by the commercial, industrial and institutional land use, but threats are also posed by residential land use. These threats include improper disposal of household hazardous waste such as motor oil, prescription medications, and paint. Improper management of horse manure and dog waste also pose threats to groundwater supplies. Some of the residences, including the two campgrounds, are not served by Exeter’s sewer system and rely on septic systems for waste disposal. Old or failing septic systems can also be potential sources of contamination for water resources.

Table 6.
Underground Storage Tanks in the WHPA
NH Department of Environmental Services

Underground Storage Tanks		
Site Name	Site Address	Town
Phillips Exeter Academy	Gilman Street	Exeter
Former Exeter Jr. High	Linden Street	Exeter
Seacoast School of Technology	30 Linden Street	Exeter
Exeter Hospital	10 Buzell Avenue	Exeter
Mobil Oil Corporation	54 Portsmouth Avenue	Exeter
Globe Shopping Center	93 Portsmouth Avenue	Exeter
Getty Station	14 Court Street	Exeter
Town of Exeter Safety Complex	20 Court Street	Exeter
Town of Exeter Town Office	10 Front Street	Exeter
Bell Atlantic	15 Center Street	Exeter
St. Michael's Church	9 Lincoln Street	Exeter
Lincoln Street School	Lincoln Street	Exeter
Ocean Bank	1 Center Street	Exeter
Alrose Shoe Company	1 Rockingham Street	Exeter
Exeter Xtra Mart	72 Main Street	Exeter
Main Street Mobil	46 Main Street	Exeter
Osram Sylvania	131 Portsmouth Avenue	Exeter
Getty Station	108 Portsmouth Avenue	Exeter
Flynn's Car Wash	94 Portsmouth Avenue	Exeter
Exeter Sunoco	66 Portsmouth Avenue	Exeter
Exeter Irving	84 Portsmouth Avenue	Exeter
Roberts Automotive	1 Franklin Street	Exeter
Community Bank and Trust Co.	80 Main Street	Exeter
Front Street Realty Trust	134 Front Street	Exeter
Unitil Electric Company	114 Drinkwater Road	Kensington

**Table 7.
Hazardous Waste Generators in the WHPA
NH Department of Environmental Services**

Hazardous Waste Generators		
Site Name	Site Address	Town
Foss Motors	133 Portsmouth Avenue	Exeter
Flynn's Care Care Center	94 Portsmouth Avenue	Exeter
Blue Ribbon Cleaners	97 Portsmouth Avenue	Exeter
Meineke	92 Portsmouth Avenue	Exeter
Star Enterprise	84 Portsmouth Avenue	Exeter
Osram Sylvania	131 Portsmouth Avenue	Exeter
Robbins Auto Parts	76 Portsmouth Avenue	Exeter
Gary Blake Saab	58 Portsmouth Avenue	Exeter
Mobil Oil Corporation	54 Portsmouth Avenue	Exeter
Exeter Hospital	10 Buzell Avenue	Exeter
Robert Kilkelly	16 Green Street	Exeter
Clemson Fabrics Corp.	Chestnut Street	Exeter
Burnham Dry Cleaners	86 Lincoln Street	Exeter
Main Street Mobil	72 Main Street	Exeter
Rockingham County Newspaper	255 Water Street	Exeter
McCoy's Alignment	51 Winter Street	Exeter
Alrose Shoe	1 Rockingham Street	Exeter
Cote's Auto Body	58 Winter Street	Exeter
First NH Bank	97 Court Street	Exeter
Bell Atlantic	13 Center Street	Exeter
Karl Horst	60 Winter Street	Exeter
Roberts Automotive	1 Franklin Street	Exeter
Seacoast Pathology	100 High Street	Exeter
Al's Automotive Service	20 Franklin Street	Exeter
Getty Station	14 Court Street	Exeter
Derrick's Automotive	134 Front Street	Exeter
Seacoast School of Technology	30 Linden Street	Exeter
Phillips Exeter Academy	Gilman Street	Exeter
Unitil Electric Company	114 Drinkwater Road	Kensington

**Table 8.
Point/Nonpoint Pollution Sources
NH Department of Environmental Services**

Point/Nonpoint Source		
Site Name	Site Address	Town
King Motor Sales	155 Portsmouth Avenue	Exeter
Foss Motors	133 Portsmouth Avenue	Exeter
Osram Sylvania	131 Portsmouth Avenue	Exeter
Globe Shopping Center	93 Portsmouth Avenue	Exeter
Robbins Auto Parts	76 Portsmouth Avenue	Exeter
Gary Blake Saab	58 Portsmouth Avenue	Exeter
Exeter Hospital	10 Buzell Avenue	Exeter
Exeter Sportsmen's Club	Portsmouth Avenue	Exeter
Municipal Parking Lot	Water Street	Exeter
Arjay Hardware	55 Lincoln Street	Exeter
Main Street School	40 Main Street	Exeter
Lincoln Street School	25 Lincoln Street	Exeter
Former Exeter Jr. High	Linden Street	Exeter
Seacoast School of Technology	30 Linden Street	Exeter
Unitil Electric	114 Drinkwater Road	Kensington

IV. WHPA Management Program

Protection of Lary Lane, Gilman, and Stadium WHPA is a partnership between the Town of Exeter, residents and landowners. Public education and outreach, land use controls, on-going inspections and other programs are needed to ensure an adequate Wellhead Protection Program. Management Program components may include:

A. Establishing a Committee to Oversee the Wellhead Protection Program

The Town of Exeter should develop a WHPP tailored to local needs. A WHPP Committee, comprised of people and institutions in Town with an interest in protecting groundwater, should be established to tackle the programs discussed below. Committee members could include representatives from the Board of Selectmen, DPW, the Water and Sewer Advisory Committee, Planning Department, Conservation Commission, the Health Officer and Emergency Management. Significant landowners and water users should also be invited to join the Committee, including Phillips Exeter Academy, Osram Sylvania, and the Exeter Area Chamber of Commerce. In addition, concerned and interested citizens should also be included.

B. Educating Residents and Landowners

Residents and landowners within the Wellhead Protection Areas should receive public outreach materials explaining how their land use activities can threaten groundwater resources. The Town of Exeter Department of Public Works (DPW) should implement an outreach and education campaign that builds on the stormwater awareness campaign established by the Town in 2005. The campaign could include the following:

- Post information about protecting ground and surface water on the Town's website and make information available at the Town Hall and Public Library and on the cable access channel. Sample materials are included in the Appendix of this Plan.
- Develop and distribute a letter and flyer to residents in the wellhead protection areas about land use activities that pose a threat to drinking water supplies. The flyer could be included in the water and sewer bill or property tax bill. Sample materials are included in the Appendix of this Plan.
- Post signs in public areas identifying the WHPA. Signs could be posted at Gilman Park, at the Academy fields and forest, and at the Seacoast School of Technology/Squamscott Community Commons Campus.

C. Reviewing and Updating WHPA Inventory

The NH Department of Environmental Services recommends the Town of Exeter conduct an annual inspection of the WHPA to identify potential threats to water resources. An inventory of Potential Contamination Sources, identified in this Plan, should also be reviewed annually by the WHPP Committee and updated as necessary.

D. Acquiring Land in the WHPA

The Town can purchase land or development rights within the WHPA to control land use activities. NH Department of Environmental Services offers two competitive grant programs that provide funds for land protection with the WHPA. More information may be found at the DES website, www.des.state.nh.us/DWSPP/.

E. Adopting and Enforcing Local Land Use Controls – Zoning, Site Plan Review and Subdivision Regulations, Health Regulations

The land use controls for the Town of Exeter spell out the Town's clear intent to protect groundwater. Residents have voted to establish an Aquifer Protection Overlay District, a Wetlands Conservation Overlay District, and Excavation of Earth Material regulations. In addition, the Town's Site Plan and Subdivision Regulations include requirements for Stormwater Management, Design and Construction Standards, Private Sewage Disposal (septic) Systems, and a Natural Resources Plan to assess the impact of development on natural resources, including groundwater.

The 2002 Town of Exeter Master Plan recommends the Town “consider the establishment of a water supply protection overlay zone in proximity to public water supply wellhead, intake areas, as wells as Dearborn Reservoir Watershed to prohibit land uses which carry unreasonable risk to public water supplies.” The NH Department of Environmental Services has developed a Model Groundwater Protection Ordinance, which is available at the DES website, www.des.state.nh.us/DWSPP/ordinanc.htm.

The NH Department of Environmental Services recommends municipalities adopt health regulations which require businesses that handle significant quantities (more than typically found in a home) of hazardous substances to implement management practices to prevent the occurrence of groundwater contamination. Proper procedures are specified in the DES Best Management Practices (BMP) rules, which can be applied locally through a health regulation. Local health regulations typically provide the local health officer with the authority to inspect handling practices for hazardous substances at certain types of businesses. In some communities, the regulations provide the authority to some other local official such as a water department employee, fire official, code enforcement officer, or building inspector. The purpose of inspections is not to catch business owners who are not following the rules. The purpose is to educate business owners about the right practices and to make sure they are following them. If business owners refuse to cooperate after repeated requests, the municipal official may take enforcement action to protect the public's interest in clean drinking water.

The State also recommends towns consider adopting regulations concerning residential underground storage tanks (USTs) which are exempt from state regulations. Exeter may choose to regulate these tanks to reduce the chance of groundwater contamination.

F. Monitoring Water Quality

The Exeter Conservation Commission has been monitoring surface water quality in the Exeter River, Little River, and Dudley Brook since 2001 as part of the NH Department of Environmental Services Volunteer River Assessment Program. In addition to collecting water quality data, the Conservation Commission also examines land use activity adjacent to testing sites. This monitoring program is a critical component of Exeter's wellhead protection plan as it provides important water quality information for local and state decision makers.

G. Collecting Household Hazardous Waste

The Town of Exeter has participated in annual household hazardous waste collection programs since the mid-1980's. Maintenance of this program is vital to prevent the improper disposal of household hazardous waste such as motor oil, batteries, paint, and pharmaceuticals. The Water and Sewer Department should work with DPW to promote this event, perhaps through announcements included in water and sewer bills to residents.

H. Emergency Response Planning

Exeter's WHPA are vulnerable to accidental spills along roadways and parking lots. The DPW and Fire and Police Departments should continue to work together to conduct emergency response planning, consisting of a detailed inventory of land uses and contaminants that may be released, development of communications protocols to minimize response times, and preparations for spill response. The Town's recent Natural Hazard Mitigation Plan includes a list of recommended actions.

V. REFERENCES

Drinking Water Source Assessment Report for Exeter Water Department, November 2002, NH Department of Environmental Services

Water System Evaluation Study, January 2002, CDM, Inc., available from the Town of Exeter website, <http://town.exeter.nh.us/NewPublications.cfm>

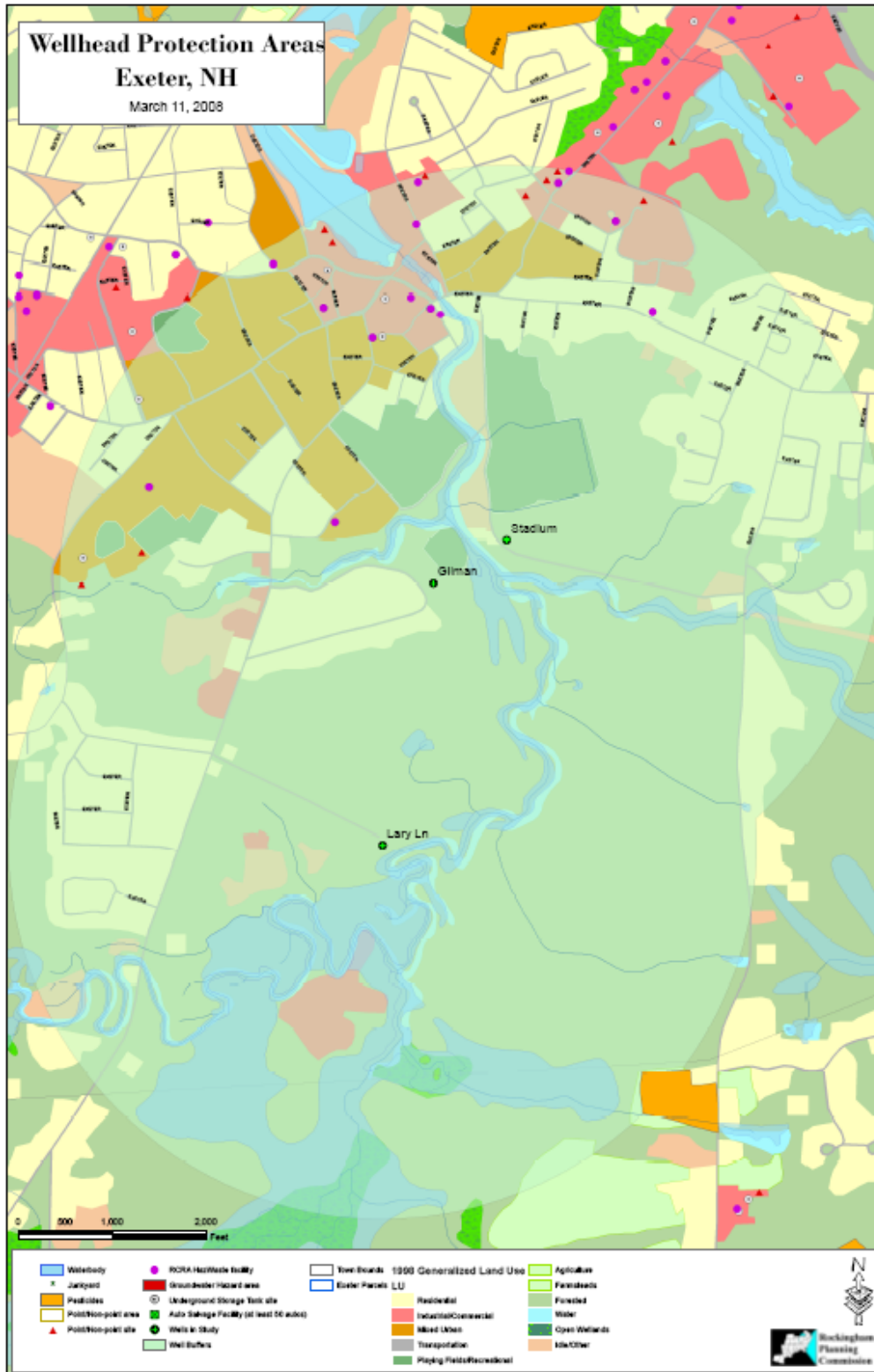
Town of Exeter Master Plan, 2003

Town of Exeter Zoning Ordinance, 2006

Town of Exeter Site Plan Review and Subdivision Regulations, 2003

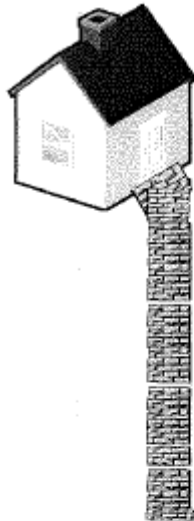
Town of Exeter Hazardous Mitigation Plan, 2007

VI. Map



Wellhead Protection Program
Town of Exeter, NH
March 2005

DO'S & DON'TS To Protect Exeter's Drinking Water



- **DO** take leftover household chemicals to the annual Household Hazardous Waste Collection Day, held 1st Saturday in October.
- **DO** take care of your septic system. Inspect the septic tank every year and have it pumped out every 3 to 5 years.
- **DO** avoid damage to your leachfield & distribution lines by keeping vehicles, livestock & other heavy objects off of it.
- **DO** check underground fuel tanks (UST) frequently for leaks. Have an UST removed if more than 20 years old and replace with an above ground tank that has a concrete slab underneath it, a cover & a secondary containment.

- **DO** use drip pans large enough to contain motor vehicle or power equipment fluids being replaced or drained.
- **DO** fully drain oil over a drip pan or pail before disposal. Store & transport used oil filters in a covered leak-proof container until properly disposed. (Household Hazardous Waste Day)
- **DO** refuel or repair engines over an impervious surface such as a concrete floor or tarp.
- **DO** drain all fluids from motor vehicle parts before removing them from vehicle.
- **DO** keep absorbent materials such as rags, pads, speedee-dri, kitty litter, or other clay based products handy to the work area & clean up all spills as soon as they occur. Store all used absorbents immediately in a leak-proof container and dispose of properly.



- **DO** test soil every two years to determine nutrient levels & pH before applying fertilizers.
- **DO** use slow release nitrogen sources of fertilizer.
- **DO** measure the area of your lawn to be fertilized to determine how much to use.
- **Do** calibrate or adjust spreader settings to match the recommended rate of fertilizers.
- **DO** use non-toxic & less-toxic alternatives to pesticides & household chemicals.
- **DO** follow package directions on pesticides, fertilizers, & other household chemicals.

- **DON'T** pour chemicals down the sink or toilet, including prescription drugs. Safely store them and take them to the Household Hazardous Waste Collection.
- **DON'T** use septic system cleaners or additives containing acids or chemical solvents such as trichloroethylene.
- **DON'T** overload your septic system with solids by using a garbage disposal, unless the system is specifically designed for one.
- **DON'T** have an underground storage tank removed by someone who is not familiar with state guidelines for UST removal.



- **DON'T** buy more pesticides or hazardous chemicals than you need.
 - **DON'T** over-use pesticides or household chemicals. More is not necessarily better.
 - **DON'T** use fertilizers if heavy rains are anticipated as the nutrients will be flushed from the lawn into drains and low areas.
 - **DON'T** apply fertilizers within 10 feet of catch basins, culverts, drainage ditches, wells, roadways & sidewalks, or 25 feet of rivers, streams & ponds.
- **DON'T** dispose of hazardous chemicals by pouring them down the drain or onto the ground.



Letters to Landowners

Sample Letter To Residents in Exeter's Wellhead Protection Areas

Date

Resident Name

Address

Dear _____

The purpose of this letter is to ask for your cooperation in ensuring safe drinking water for the Town of Exeter. If we are all careful, substances that could pollute our drinking water will never find their way into the Exeter's wells, rivers, and streams.

Your property is located within the area from water flows to the Lary Lane (Gilman or Stadium) well. As such, it is important that you are aware that what you do on your property could affect the quality of the water in the Exeter water system. Your activities can also affect the water quality at your own property.

No one wants to drink polluted water. Who would pour gasoline, motor oil, paint, garden or lawn chemicals, or household chemicals into their drinking water? Yet, the equivalent is down when someone pours any of these products down their toilet, sink, or into the ground. By following the chemical storage handling, and disposal tips on the enclosed flyers, you can avoid activities that could contaminate our drinking water.

Please take the time to review and follow the instructions on the flyer. We need your help to protect Exeter's drinking water supply. Visit www.town.exeter.nh.us for more information, or contact the Exeter Department of Public Works at 773-6157.

Sincerely,

DPW or Town Manager

Enclosure: *Do's and Don't to Protect Exeter's Drinking Water*

Wellhead Protection Program
Town of Exeter, NH
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