

TOWN OF MILFORD
WELLHEAD PROTECTION PROGRAM

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Prepared by the

Nashua Regional Planning Commission

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Project Summary

The Milford Wellhead Protection Program is a multi-stage strategy designed to protect the Curtis wellfield, Milford's primary source of municipal water. The program was based upon data collected and recommendations made in the 1993 study entitled the *Town of Milford Wellhead Protection Program*. In 1993 the Curtis Wellhead Protection Area (WHPA) was delineated and the Potential Contaminant Sources (PCSs) were identified. The primary recommendation of the 1993 Study was to form a "local entity". A permanent committee was formed and the PCS list was updated. A total of 29 PCSs were found in the study area.

The committee wrote a Health Ordinance and presented it to the Board of Health/Board of Selectmen. The ordinance was adopted giving the Health Officer has the authority to enforce the Best Management Practices recommended by the State of New Hampshire in September 1999.

The continuation of this project includes approaching owners, scheduling the PCS inspections and providing the necessary educational materials. Letters regarding the program and the inspection database have been tailored to the Milford project and are provided for the Town's use. A web-site and educational materials were developed for the community describing the program and the importance of groundwater protection.

The existing land use regulations were reviewed with respect to the level of protection provided to groundwater resources and specific recommendations for amendments to the land use regulations have been provided to the Planning Director.

Introduction

The Town of Milford relies completely on groundwater as its primary source of municipal drinking water. The municipal system is located in Amherst while the majority of the rural areas are served by on-site individual wells. In an effort to protect future municipal supplies as well as groundwater resources throughout the Town, the Milford Planning Board initiated a Wellhead Protection Program. The program is designed to provide residents and businesses with the information required to make better decisions regarding actions that could have a negative impact on groundwater resources.

A Health Ordinance was developed and endorsed by the Board of Selectmen on September 20, 1999. The PCS inventory and inspection program will be conducted in the WHPA (See Map1.) which is located in a coarse grained, stratified drift aquifer running along the Souhegan River south-east through Amherst. (See Map 2.)

The key to protecting groundwater resources is preventing contaminants from reaching the source. Contaminants, such as gasoline, oil, fertilizers and pesticides, and industrial solvents, are generally introduced into the groundwater system through human activities. It only takes a small quantity of some substances to contaminate millions of gallons of groundwater. For instance, the NH Department of Environmental Services (DES) notes in the *Guide to Groundwater Protection* that only five ounces of trichloroethylene, a common degreasing solvent, can render over 7 million gallons of water unsafe to drink based on federal standards. The *Guide* also identifies leaking underground storage tanks, improper handling of industrial solvents and road salt as the most common sources of groundwater contamination in New Hampshire.

To address the issues of groundwater protection, the New Hampshire Legislature adopted RSA 485-C, the Groundwater Protection Act in 1991. The stated purpose of the Act is "to protect the natural quality of the groundwater resource of the state by assisting local groundwater protection efforts and by establishing procedures and standards for the classification of groundwater." The Act identifies 19

categories of potential contaminant sources (PCSs) which are businesses and activities that use potentially hazardous chemicals in sufficient quantities as to pose a threat to the groundwater resources if a release were to occur. The Act also authorized the DES to develop and adopt rules to administer the program. One key component of the rules is the best management practices (BMPs) developed for the 19 PCSs. The rules require that all PCSs utilize the BMPs in their operations and compliance is enforceable by the DES.

The Wellhead Protection Program for Milford follows a simple seven step process: 1) delineate the study area; 2) establish a permanent committee; 3) identify the PCSs in the study area; 4) conduct a public information meeting on the program; 5) distribute educational materials to all PCS businesses in the protection area and inform the PCSs of the upcoming inspection program; 6) perform inventory inspections of all PCSs in the protection area; and 7) continue to educate the public on the importance of groundwater protection and what they can do to help. In addition, to the education component, the program includes recommendations for the Planning Board to adopt new or amend the Town's existing land use regulations to include provisions for groundwater protection.

Delineate the Study Area

Two WHPA delineations were performed, one for the two existing wells and one for the existing wells plus the potential well. NRPC requested assistance from a hydrogeologist at DES in performing the delineations because the presence of the Souhegan River made the calculations more complex. It was uncertain if the river would serve as a significant source of recharge or as a groundwater flow boundary. Each situation could result in a dramatically different WHPA.

The hydrogeologist at DES determined that the river serves as a line source of recharge and not as a barrier to flow. Therefore, it was determined that the WHPA extends into Milford.

In the description of the delineations that follows, rather than showing the uniform flow equation calculations as performed by the hydrogeologist, only the results are given.

When entered into the uniform flow equation, these values result in a down gradient boundary of 2,338 feet and a total width for the WHPA of 14,693 feet. These distances were then plotted on the applicable USGS quad sheet.

The upgradient boundary was assumed to be the 4,000 foot maximum radius. The calculated down and side gradient boundaries were then extended upgradient to meet the 4,000 foot radius. The purple delineation line shows this on Map 2. As can be seen, the WHPA delineation for the existing Curtis wells is oval in shape, and extends an approximately equal distance into Amherst and Milford from the center just north of the Souhegan River.

The formula was then applied to the two existing wells plus the potential well. When entered into the uniform flow equation, these values result in a down gradient boundary of 3,827 feet and a total width for the WHPA of 24,044 feet. These distances were again plotted on the USGS quad sheet.

The information and the digitized parcels were then entered in a GIS format. The effect of the proposed well is to pull the WHPA to the east, so that it extends further into Amherst in the area north of the Souhegan River. The WHPA for the proposed well and the existing wells are marked by a purple line (map 2).

Establish a Permanent Committee

On December 17th, 1998 a meeting was held with town officials to discuss the next steps to be taken and establish a timetable. The meeting began with the distribution of an updated PCS list and an explanation and description of the GIS parcel database being developed under this grant to track PCSs. The attendees recommended specific individuals for the permanent local wellhead protection committee and a discussion followed concerning the committee's potential functions and activities. There are nine members on the Committee including two Selectmen, the Director of Planning, the Health Officer, two members of the Conservation Commission, and other environmentally conscious members of the community. Subsequent meetings were held throughout 1999 to write a Health Ordinance and to draft letters to be sent to the PCSs.

Identify Potential Contaminant Sources

The Groundwater Protection Act defines a potential contaminant source (PCS) as a human activity or operation upon the land surface that "poses a reasonable risk that regulated contaminants may be introduced into the environment in such quantities as to degrade the natural groundwater quality." (RSA 484-C:7) Table 1 contains a list of the 19 activities identified as PCSs in the Act. More detailed definitions can be found in the full text of the Act attached in Appendix A.

Table 1
Categories of Potential Contaminant Sources

Vehicle service and repair shops	Salt storage and use
General service and repair shops	Snow dumps
Metalworking shops	Cleaning services
Manufacturing facilities	Food processing plants
Underground/above-ground storage tanks	Concrete, asphalt and tar manufacture
Waste and scrap processing and storage	Cemeteries
Transportation corridors	Hazardous Waste Facilities
Septic systems	Stormwater infiltration ponds or leaching catch basins
Laboratories and certain professional offices (medical, dental, veterinary)	Fueling and maintenance of earth moving equipment
Uses of agricultural chemicals	

A substantial amount of the work for this project involved the identification of PCSs in the study area. A number of sources were used to compile the list of PCSs in Milford. These included the NH DES Site Remediation and Groundwater Hazard Inventory All Sites List (February 1998), the EPA CERCLIS and RCRIS Site Inventory List (June 1997), and a list of Milford businesses compiled by NRPC from the 1998 Bell Atlantic Telephone Book. Once the initial list of potential PCSs was compiled from these sources, the Building/Health Officer was consulted to confirm the list and to identify new businesses or businesses that may have closed. The PCSs in the study area are listed in Table 2 and depicted on Map 1. The majority of the PCSs are classified as small quantity generators that generate less than 220 pounds of hazardous materials in a calendar month.

Table 2
Identified Potential Contaminant Sources in Milford

Milford Snow Dump	Darkroom Designs
Fox Meadows Condominium	Judith White Construction
Casual Clean Center	Charles Vennetti Repairs
Longley Apartments	St. Joseph's Clinic
Draper Fuel Company	Saphikon Corporation
Contromatics Division	Norton Corporation
Ciardelli Fuel Co., Inc.	Laurel Brook Company
HYTEN Die	White Duck Car Wash
Suburu of Milford	Dunkin Donuts
Riverside Cemetery	Heritage Estates
Milford Waste Water Treatment Plant	Shaw's Supermarket
Bird Bath Dry Cleaning	Ponemah Green Corporation
Cemetery	Joshua Road PRD
John B. Kenison, Dentist	

Information Meeting

Prior to conducting the education program and the PCS inspections, the Wellhead Protection Committee held a public meeting to inform residents, businesses and other interested agencies/organizations about the program. Press releases were sent to the local papers to advertise the meeting. The PCS businesses were sent invitations to the meeting.

The meeting included a discussion of the purpose of the program, the basics of the Groundwater Protection Act, the best management practices for PCSs, the PCS inventory, and the educational component for non-PCS businesses and residents. A preliminary time frame for conducting the PCS inventories and inspections was established and made public at the meeting. Businesses were informed that they would be receiving a letter from the Town to arrange a convenient time for the PCS inventory and inspection.

Education

The key to preventing ground water contamination is education. This is particularly important in the study area given the highly permeable characteristics of the stratified drift deposits. The PCS businesses, non-PCS businesses and Town residents need to be informed of the threats improper handling, application and disposal of potentially hazardous materials pose to the groundwater resource.

The initial step in the education process is the first contact letter and the accompanying fact sheets. Each business/resident will receive a copy of the DES *Clean drinking water is up to you!* fact sheet which outlines some of the basic steps that can be taken to protect groundwater from contamination. In addition, all PCS businesses will receive a copy of the BMP fact sheet, the BMP section of the rules and a copy of the inventory form to perform a self-audit prior to the compliance inspection. Sample letters, copies of the relevant fact sheets, the BMP section of the rules and the inventory form is included in Appendices C, D and E respectively.

Household educational materials could be broadly distributed to Milford residents through a number of avenues. Pamphlets could be made available at the Town hall for residents to pick up at their convenience. Articles and inserts could be included in the local newspaper which would assure a broad distribution of the materials. Town staff could distribute information when permits are issued such as the septic system folders designed by the Granite State Designers and Installers or the brochures

produced by the UNH Cooperative Extension. Local realtors are another outlet for distributing educational materials. A packet of information on everything from septic systems to lawn care to proper disposal of household hazardous wastes could be given to new homeowners. The Town could also investigate the option of including information on the annual household hazardous waste collections sponsored by the Nashua Region Solid Waste Management District in Town mailings. The collections are scheduled for the first Saturday of the month April through November, except for no collection in July, and are open to all Milford residents.

The Town should take every opportunity to distribute educational materials through the avenues discussed above, the school system and the web page. (Appendix F) A description of the program, the fact sheets and articles are posted on the Town's web page to inform residents of the actions they can take to protect the groundwater resource. Something as simple as a weekly series of groundwater information bites in the local newspaper and on the web page could be used to educate residents on how to protect groundwater resources.

Storm drains were stenciled throughout the Town by the Girl Scouts and the Milford DPW. Stenciling helps to remind residents that storm drains may release water (and whatever else) directly to the Souhegan River and may be a potential non-point source contaminant.

PCS Compliance Inspections

The purpose of the compliance inspection is to convey information on the groundwater protection program and determine the business's compliance with the BMPs. Compliance inspections should be scheduled in advance with the owner of the business or the person in charge. The Wellhead Protection Committee will call a couple of days prior to the scheduled date of the inspection to make sure that the person in charge will be present and that they received the inspection form and the copy of the BMPs. Upon arrival for the inspection, they will explain the purpose of the program and briefly describe the contents of the inspection form. When the inspection is finished, they will inform them of the timeframe regarding the results of the inspection.

If the business is in compliance with the BMPs the Committee will send a letter thanking them for their cooperation and stating that they are in compliance within thirty days of the inspection. If violations were identified during the inspection, the committee would send a letter thanking them for their cooperation, outlining the violations and the corrective actions required to bring the operation into compliance, and specify a date by which the violations should be corrected, generally thirty days is a reasonable time frame. Also inform them that a follow-up inspection will be scheduled by the Health Officer to determine compliance at a later date and give them the option to contact the Health Officer if they have any questions regarding the letter, the violations or the corrective actions.

At the PCS inspection the Committee will take advantage of the opportunity to distribute additional educational materials. One important item, particularly for the small quantity generators, is the small quantity generator program that is part of the Nashua Region Solid Waste Management District annual Household Hazardous Waste Collections. The program provides small businesses with the opportunity to legally and safely dispose of hazardous wastes for a fee on the first Saturday of the month, April through November except for July. The only criteria is that the business register with the hazardous waste contractor prior to the date of the collection. A pamphlet on the program is attached as Appendix G.

Regulatory Review

The local land use regulations provide a number of opportunities to protect the Town's groundwater resources. Milford has a Floodplain Management District, Wetland and Aquifer Protection District.

From simply making groundwater issues a priority when reviewing subdivision and site plans to proposing specific aquifer protection regulations, the Planning Board has the opportunity to preserve this critical resource. The following recommendations and proposals regarding the local land use regulations of the Town were made to assist the Planning Board in improving groundwater protection in the community.

Subdivision and Site Plan Review

The subdivision and site plan review process is one of the most effective tools a Planning Board can use to minimize potential negative impacts to groundwater resources. Through the process, the Board reviews projects prior to construction and can assess the potential impact of the proposed development/use on groundwater. To aid in the assessment, the Board can enlist the assistance of a consulting engineer to review the plan at the owner's expense. The Board has the authority to require modifications to the plans to protect groundwater resources. Particular attention should be given to drainage systems, stormwater runoff, type of proposed use, and best management practices (BMPs)

Based on a review of Milford's Subdivision and Site Plan Review Regulations, the Board should amend the regulations to update the stormwater management requirements. Specifically, the regulations should require that stormwater runoff be designed to prevent groundwater contamination from infiltrating, particularly in the aquifer, while still facilitating groundwater recharge. In situations that involve an industrial or a petroleum related site, however, the Board may want to prohibit direct infiltration of stormwater runoff. The Board should also look into requiring the use of innovative stormwater treatment methods that can remove significant percentages of nutrients, bacteria, heavy metals and petroleum hydrocarbons from runoff prior to discharge.

In addition to amendments to the stormwater management regulations, the Board should also consider adopting erosion and sedimentation control regulations. While the Town currently deals with erosion control through the subdivision/site plan review process, there are no formal requirements for providing plans in the regulations. There are also no standards to guide applicants in preparing the plans. A model Erosion and Sediment Control Regulation is attached in Appendix H. The changes to the stormwater management regulations would also improve conditions for surface waters.

The regulations should also require that all PCS businesses comply with the BMPs prescribed in the rules. The Board can incorporate this requirement by reference in the regulations. Again, if the review of the BMPs is beyond the capabilities of Town staff, the Board can use the services of a consulting engineer to review the proposals at the expense of the applicant. The Board may also want to incorporate water conservation BMPs designed to reduce water consumption. A series of water conservation BMPs developed by the DES as part of the Merrimack River Initiative are attached in Appendix H.

Aquifer Protection District

Although there are regulations in place, a revision is necessary to address the problems of additions or alterations to "grandfathered" properties within the Aquifer Protection District. The Nashua Regional Planning Commission provided the Wellhead Protection Committee with examples from the New Hampshire Office of State Planning. (Appendix I)

Excavation Regulations

Although there are regulations in place, a revision is necessary to address sand and gravel excavations located in aquifer areas. Currently there are no operations in the WHPA but it would be prudent to have regulations in place. Because of the high permeability of sand and gravel soils, these areas are vulnerable to contamination from activities on the land surface. A contaminant spilled on the surface would be transmitted very quickly through the soil into the groundwater. In addition, if the proposed reuse of the site is residential or commercial the regulations should require that a certain depth of material above the seasonal high water table be maintained to allow for on-site septic systems, if required, and the proper management of stormwater runoff.

Conclusion

The Town has been very interested and supportive of the Program. Members of Girl Scout Troop 1316, the Souhegan Watershed Association, Milford Department of Public Works and the Conservation Commission and the Hillsborough County Extension Service all participated in stenciling storm drains throughout the Town. The nine members of the Wellhead Protection Committee will continue the PCS inspections and distribution of educational materials. Their goal is to achieve the maximum protection by law for all groundwater and surface waters in Milford.



Director of Public Works and crew helped with the storm drain stenciling



Wellhead Protection Committee

APPENDICES NOT INCLUDED IN DIGITAL COPY

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