

**Town of New Boston,
New Hampshire**

Source Water Protection Plan



South Branch of the Piscataquog River
(from the National Heritage Bureau)

Prepared by the
Southern New Hampshire Planning Commission (SNHPC)
for the
Town of New Boston

Funding provided through a
NH Department of Environment Services (DES)
Source Water Protection Grant

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Source Water Protection Advisory Committee

The formation of a local Source Water Protection Advisory Committee in New Boston was essential in the original development of this Plan in 2008 – 2009 by providing town specific data and input. The members of the advisory committee were:

Stuart Lewin, Planning Board Chairman
Nic Strong, Planning Coordinator
Brent Armstrong and Willard Dodge, 4H Foundation
Lynn Strong, Strong Beginnings Learning Center
Carol Eggers, New Boston Tavern
Capt. Timothy Frank, New Boston Air Force Station
Shannon Silver, Building Department Administrative Assistant & Health Officer
Burton Reynolds, Town Administrator
Rachel Kelly, Planner, Southern New Hampshire Planning Commission
Jack Munn, Senior Planner, Southern New Hampshire Planning Commission

1. Introduction

This Source Water Protection Plan (hereinafter referred to as the “Plan”) has been developed utilizing grant funds made available through the New Hampshire Department of Environmental Services (NH DES) 2007 - 2008 Local Source Water Protection Program. These grant funds were obtained by the Southern New Hampshire Planning Commission on behalf of the Town of New Boston as part of the Commission’s regional source water protection initiative. This initiative has been developed to encourage all municipalities within the region to prepare source water protection plans and adopt local ordinances to protect their drinking water sources.

Source water protection involves preventing the pollution of the groundwater, lakes, rivers and streams that serve as sources of drinking water for local communities. Communities often take for granted that a plentiful supply of high quality sources of drinking water, whether they are from groundwater or surface water, or both, will always be available. However, these natural resources are vulnerable to depletion and contamination and as such need to be protected.

Because residents of New Boston rely exclusively upon groundwater for their drinking water this Plan focuses on protecting the active public water systems located in New Boston as well as the aquifers serving private wells.

The purpose of a Source Water Protection Plan is to identify public water system vulnerabilities and offer recommendations to manage potentially contaminating land uses. This Plan inventories and assesses the threats to the active public water systems existing within the Town of New Boston and recommends changes to local protections (e.g. zoning ordinance and site plan regulations) as the preferred management strategy.

A Public Drinking Water System is defined as a “system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly “serves an average of at least twenty-five individuals daily at least 60 days out of the year” (Chapter Env-ws 300 NH Drinking Water Rules). The public water systems covered by this Plan are identified in the Well Summary Report contained within Section 6 of this document.

The overall goal of this Plan is to protect drinking water supplies. The Plan provides the Town of New Boston information (data and maps), guidance, priorities and actions to protect the Town’s groundwater (aquifers) and public drinking water sources from contamination. The Plan was prepared by the Southern New Hampshire Planning Commission with assistance offered by the New Boston Planning Board and the New Boston Source Water Protection Advisory Committee. The primary objective of the Plan is to identify the existing and Potential Contamination Sources occurring within the source water

protection areas of all identified public water supplies, including the Village Center, and to provide specific recommendations to manage these threats in order to maintain quality drinking water. The Plan is a working document that should be reviewed annually and updated every three years to remain current.

Groundwater & Sources of Contamination

The water stored in the cracks and openings of subsurface rock material is groundwater. Groundwater is one of the Earth's most critical natural resources. The term aquifer is used to describe an underground rock formation that stores and transmits groundwater.

The New Hampshire Department of Environmental Services (NH DES) estimates that 70 to 75 million gallons of groundwater are supplied for drinking water in New Hampshire per day and approximately 60 percent of the residents of the state rely on groundwater for their drinking water.¹

In New Hampshire, natural contaminants such as arsenic and radionuclides (radon, uranium, radium and gross alpha), are known to occur in a significant percentage of wells at concentrations that exceed health-based maximum contaminant limits (MCLs), particularly in bedrock wells under certain geologic conditions.² Because New Hampshire's groundwater can be somewhat corrosive, lead and copper from older plumbing are also frequently detected in tap water. Anthropogenic (human caused) contaminants are also detected in some areas, typically associated with certain land uses or previous contamination events.

The most common causes of groundwater contamination in New Hampshire are leaking underground storage tanks, mishandling of industrial chemicals, and urban runoff.³ In addition, emerging health studies indicate that some natural contaminants (such as arsenic and manganese) may produce human health effects at concentrations at or below current health-based guidelines and criteria.

In addition, certain land use activities including salt application near wells, leaking or malfunctioning septic systems, gas tanks and/or fluid transfers, vehicle washing and/or discharging, and hazardous waste transport and disposal may result in source water contamination. Groundwater can be contaminated when chemicals are spilled or discharged on the ground. Liquids can flow through the ground into groundwater, and both solids and liquids can be flushed downward by rain and snowmelt. Once contaminants reach groundwater, they often move along with the flow of groundwater.

¹ Model Groundwater Protection Ordinance, New Hampshire Department of Environmental Services and Office of Energy & Planning, February 1999, Revised June 2006, pg. 1.

² NH DES Drinking Water Protection Program, Private Well Working Group White Paper, February 15, 2008.

³ Model Groundwater Protection Ordinance, New Hampshire Department of Environmental Services and Office of Energy & Planning, February 1999, Revised June 2006, pg. 1.

Many of the contaminants present in homes and businesses and public buildings served by private or publicly owned water wells are often odorless, tasteless, and colorless. The only way to identify their presence is to have the water tested. Exposure to contaminants in drinking water from these wells is a public health issue for a significant percentage of private well users.⁴

The significance of this issue is growing, since private wells and the aquifers that they draw from now serve a greater percentage of the state's population than they did in the past and this trend is likely to continue with more diffuse development patterns.⁵ This is true particularly for the Town of New Boston as a majority of the residents and businesses within the community rely on their own private wells for water supply.

Well water testing is an important issue for many communities and private well owners across the state, and this issue is raised here for the Town's consideration. While owners and operators of public water systems in New Hampshire are subject to stringent reporting and water testing requirements issued by NH DES and the Environmental Protection Agency (EPA), exposure to contaminants in water from private wells is also a growing public health issue.

The U.S. Geological Survey (USGS) has reported that MTBE (methyl-*tert*-butyl ether), a highly mobile contaminant, strongly correlates with urban factors including population density, housing density, and percentage of urban land use or roads; posing a significant threat to groundwater throughout Southern New Hampshire.⁶ These findings emphasize the importance and need for managing both land use activities as well as the handling of potential contaminants.

Although MTBE has now been removed from the gasoline supply in the state, gasoline contains many other toxic compounds. Land uses associated with gasoline releases to groundwater remain a concern. Industrial solvents are especially potent contaminants; only 5 ounces of TCE (tetra-chloroethylene), a common industrial solvent, can make up to 7.8 million gallons of water unacceptable for drinking based on federal standards.⁷

New Boston is fortunate in that it requires private wells to have a valid water test performed with the results reviewed by the town Health Officer before a Certificate of Occupancy is issued. While there are many state and federal programs that directly or indirectly serve to protect groundwater, it is generally acknowledged among all programs that local land use controls and inspection

⁴ Ibid., pg.1.

⁵ The term "private well" refers to a water supply well that does not serve a public water system. This plan only focuses on public water supply wells, but the issue of contamination is often similar.

⁶ Methyl *tert*-Butyle Ether Occurrence and Related Factors in Public and Private Wells in Southeast New Hampshire, Joseph D. Ayotte, Denise M. Argue, and Fredrick J. McGarry (USGS 2004).

⁷ Ibid.

(including testing and/or monitoring) programs are necessary to maximize the effectiveness of groundwater protection.

Planning Approach and Methodology

A carefully researched and documented Source Water Protection Plan is an important step in source water protection to provide guidance, priorities and implementation actions necessary to protect public drinking water sources and groundwater (aquifers) from contamination. Actions taken by water system owners, managers, surrounding landowners, and the municipality are all important in achieving source water protection within the community.

Generally, a **Source Water Protection Plan** consists of the following elements:

- An inventory of active public water systems in the community;
- A delineation of wellhead protection areas (WHPAs);
- An inventory of Potential Contamination Sources (PCSs);
- An assessment of risks to drinking water sources posed by PCS's;
- A management program to minimize risks to the water source(s); and
- A contingency plan for responding to security threats and emergency loss of the water supply.

Drinking water source protection involves three main planning steps:

Step One: Source Inventory and Delineation

- **Public Water System Summary Report:** This report is an inventory of all the active public water systems (supplies and wells) within the community, utilizing the Source Water Assessment prepared by NH DES for each municipality in the state along with local knowledge provided by town officials and residents.

In the Town of New Boston, a total of 18 public water systems have been identified and addressed in this Plan. Eleven (11) of these wells are designated by NH DES, while the Committee identified seven (7) additional ones for inclusion.

- **Delineation of Wellhead Protection Areas (WHPA):** This delineation is typically based on technical studies that identify the surface area around public water well(s) that contribute groundwater to that well.⁸

⁸ There are a number of methods for delineating WHPAs for public water supply wells. The methods range from simple and inexpensive to complex and costly. Grant funds through NH DES are available for refining delineations. Only the WHPAs mapped by NH DES are accounted for in this plan.

In the Town of New Boston, a total of four WHPAs are currently delineated among the 11 public water systems. These WHPAs have been mapped by NH DES as concentric circles surrounding each well.

The circles vary from 1,000 to 1,500 feet in diameter. The size of the circles is based upon the production volume of the well(s) as approved by or reported to NH DES.

Step Two: PCS Inventory and Threat Assessment

- **Potential Contaminant Source (PCS) Inventory:** This inventory identifies all the PCSs within the WHPA that could pose a threat to drinking water.⁹
- **Threat / Vulnerability Analysis:** This analysis determines how susceptible the groundwater or aquifer is to contamination. A vulnerability of “low”, “moderate” or “high” has been assigned by SNHPC based on the hydrogeologic setting and the apparent visible physical risk of the potential contaminant source to pollute the groundwater. Because this grant project does not evaluate specific groundwater quality data which may or may not be available for each of the indentified public water wells in New Boston, the vulnerability analysis employed in this Plan is based upon SNHPC’s best field judgment, including as applicable consideration of the number of vulnerability rankings found within the NH DES Source Water Assessment Report for New Boston.

Step Three: Management and Protection Program

- **Management Program:** This plan is developed by a local Source Water Protection Advisory Committee consisting of the regional planning commission, the municipality, and interested and knowledgeable parties and consultants. It explains how the Town’s drinking water source(s) will be protected using strategies to address the most significant threats. These strategies, which can be both public or private actions, include:
 - Education / public participation
 - Land use controls (e.g., zoning ordinances or site plan regulations)
 - Health ordinance and groundwater reclassification
 - Best Management Practice (BMP) Compliance
 - Land conservation
- **Contingency Plan:** The contingency plan is typically included in a Source Water Protection Plan when addressing security issues and emergency loss of water supply. Generally, a contingency plan is required for municipal or privately owned domestic water supply and treatment systems, but not individual wells.

⁹ See Appendix A for definition of a PCS and Wellhead Protection Area.

The general steps for carrying out the three main planning efforts are reflected in the following figure:

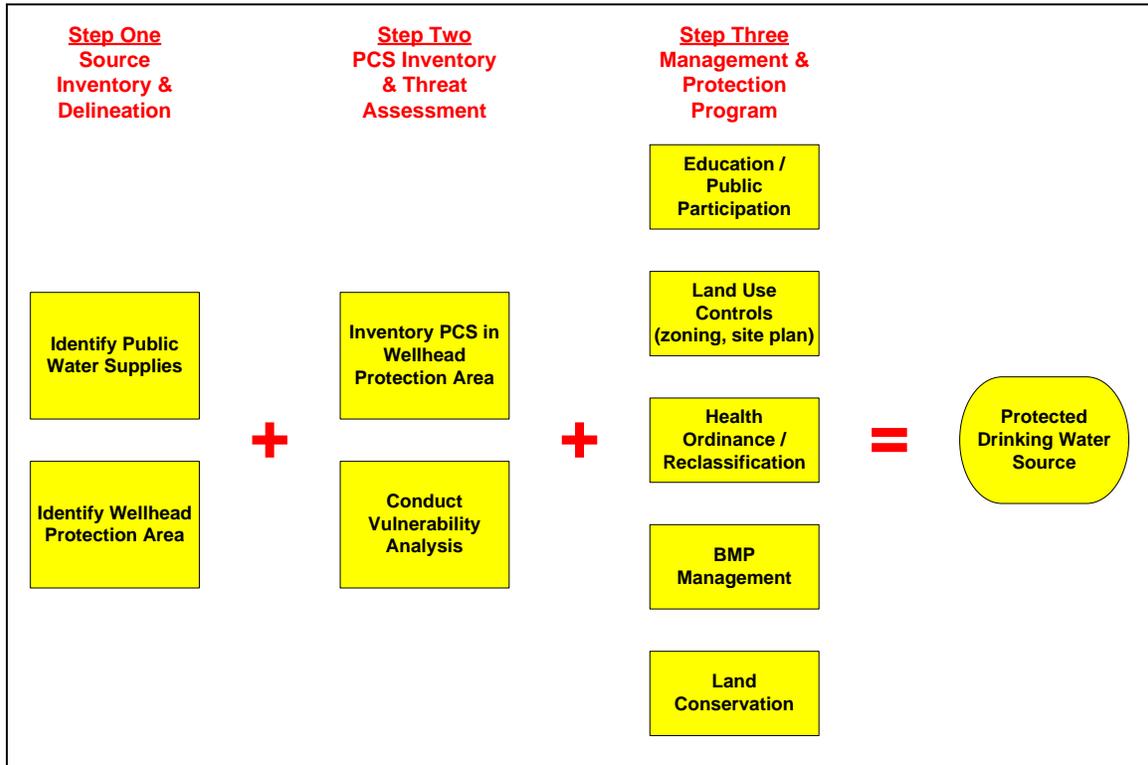


Figure 1: Planning Steps in Source Water Protection

Plan Approval, Implementation and Update

The Town of New Boston formed a Source Water Protection Advisory Committee to oversee the original development of this Plan. This Committee will be useful in implementing the Plan and future updates and amendments. The Town of New Boston Planning Board is ultimately responsible for developing and implementing the recommendations and proposed land use regulations contained within the Plan. This also includes drafting necessary warrant article(s) for town meeting consideration.

To obtain approval of the Plan, the Planning Board should hold a public hearing to seek public input and comment. After the public hearing and upon review of public comments, the Plan should be presented to and adopted by the Board of Selectmen and also included or referenced in the Town’s updated Master Plan as appropriate. Lastly, it should be the responsibility of the New Boston Planning Board, Town Administrator, Health Officer as applicable, and Board of Selectmen to update this Plan every three years. To assist the Town in updating the Plan, a dated review log is provided in the front of this document as well as a review and update check list in Appendix E.

2. Overview of Plan Contents

The location of the public water systems and the delineated wellhead protection areas located within the Town of New Boston are shown on the maps in Appendix A. Each map contains a chart and numbering system which identifies each public water system.

- The results of the **PCS Inventory & Threat Assessment** can be found in *Section 3* of this Plan.
- A review of the aquifers within the Town of New Boston and a discussion of the **Need for Aquifer Protection** can be found in *Section 4* this Plan.
- The **Management & Protection Program** can be found in *Section 5* of this Plan. This includes a review of the Town's existing land use regulations related to groundwater protection, and provides recommendations for changes to the Town's existing Groundwater Protection Ordinance and proposed groundwater protection performance standards for the Town to consider as part of the Planning Board's Site Plan Regulations.
- The **Well Summary Report** is provided in *Section 6* of this Plan. Each active public water well has been inventoried and photographed (where permitted) and the current owner/well operator and type of well is identified and described.
- *Appendix A* contains a summary of the definitions of the key terms used in this Plan.
- *Appendix B* contains a summary of the grant agreement and scope of work between NH DES and SNHPC to prepare this Plan.
- *Appendices C & D* contain the NH DES assessment report for public water supply sources and a summary of all Known Contamination Sources (KCS) within the Town of New Boston.
- *Appendix E* contains a checklist for use in performing the future updates to this Plan.
- *Appendix F* contains the wellhead location and wellhead protection area maps, plus full size copies of the additional maps referenced throughout this Plan.