Fall 2011

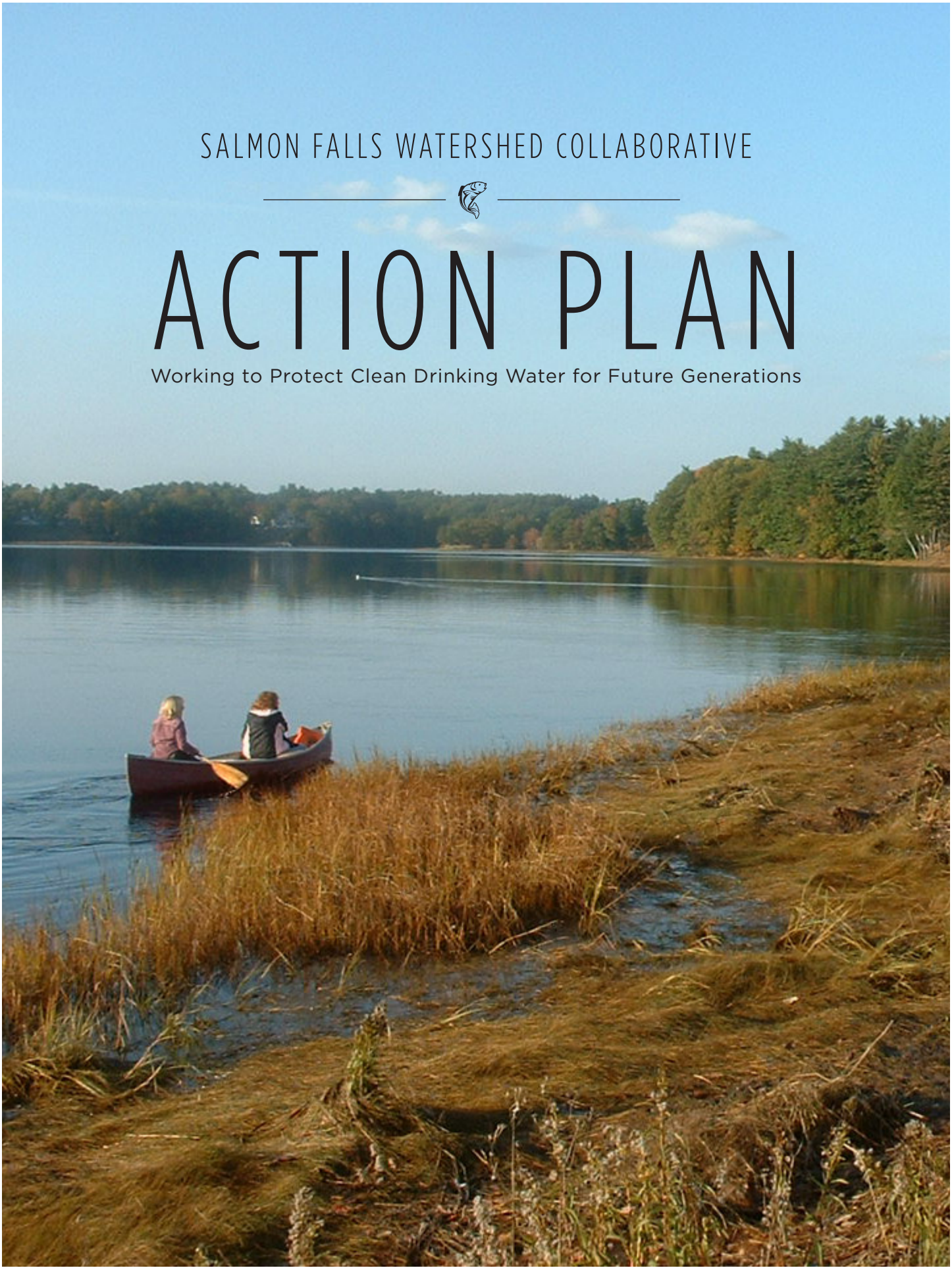
# Salmon Falls Watershed Collaborative Action Plan

Salmon Falls Watershed Collaborative

SALMON FALLS WATERSHED COLLABORATIVE

# ACTION PLAN

Working to Protect Clean Drinking Water for Future Generations



# ACKNOWLEDGEMENTS

Funding support for the Salmon Falls Watershed Collaborative's efforts has been provided by the New Hampshire Department of Environmental Services, Maine Center for Disease Control and Prevention, and the U.S. Environmental Protection Agency as part of the national Source Water Collaborative. The success of the Salmon Falls Watershed Collaborative is made possible by the generous donation of time and expertise of all of the partners involved.

AWWA
Acton Wakefield Watersheds Alliance

Incorporated a Parish 1729 · Somersworth · A Town 1754. A City 1893.

NHDES

United States Environmental Protection Agency

PREP
Piscataqua Region Estuaries Partnership

wellsreserve
Wells National Estuarine Research Reserve

NEMO
Maine

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

Granite State
Rural Water Association

York County Soil & Water Conservation District

mrwa
Maine Rural Water Association

South Berwick Water District

Maine Center for Disease Control and Prevention
An Office of the Department of Health and Human Services
Paul R. LePage, Governor
Mary C. Mayhew, Commissioner

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# OVERVIEW OF THE SALMON FALLS WATERSHED

The Salmon Falls River watershed drains an area of 232.5 square miles (148,801 acres) that include portions of eight towns in Maine and ten towns in New Hampshire (Trowbridge, 2009). The watershed is shared by the two states, and is an important tributary river to the Gulf of Maine (Figure 1). The Salmon Falls River is the source of water for the Berwick Maine Water Department and Somersworth New Hampshire Water Works. For the purposes of this Action Plan, the Salmon Falls watershed area referred to in this document does not include the Great Works River sub-watershed in Maine, or the larger coastal watershed referred to as the Piscataqua-Salmon Falls watershed that encompasses all of New Hampshire's coastal rivers. The Salmon Falls watershed boundaries as defined in this document are consistent with the watershed boundaries used by the Piscataqua Region Estuaries Partnership to track long-term environmental indicators on a watershed scale (e.g., impervious surface trends, water quality trends, etc.). Significant water features of the watershed include Great East Lake, Lovell Lake, Lake Murdock, Little River, Branch River, and the main stem of the Salmon Falls River. The watershed includes hundreds of small streams, ponds, and wetlands. Landscapes range from forested floodplains and peat lands, to open grasslands and mixed pine, oak and hemlock forests (WNERR, 2006).

The landscape in the upper reaches of the watershed includes large areas of forested and agricultural land. Development is concentrated mainly around the lakes and ponds. Parcels of state and privately managed conservation land are located in Milton, Brookfield, and Middleton, NH. The Milton Municipal Wastewater Facility empties to the Salmon Falls River.

The middle section of the watershed is characterized by increased development around the town centers and major roads. Large blocks of forest, wetland, and agricultural land are scattered throughout the area. Several parcels of municipal, public, and privately controlled conservation land are located in Lebanon and Berwick, ME, and Rochester, NH.

The lower section of the watershed is highly developed around the centers of Berwick and South Berwick, ME, and Somersworth, NH. High levels of impervious surface contribute to increased levels of stormwater runoff within this portion of the watershed. Several parcels of state, municipal, and privately managed conservation land are located in the towns of South Berwick, ME, and Somersworth and Rollinsford, NH. The Salmon Falls River receives the outflow from the waste treatment plants in Berwick and South Berwick, ME, and Somersworth and Rollinsford, NH (WNERR, 2006).

The Salmon Falls River runs for 37.5 miles from its headwaters at Great East Lake to its confluence with the Cocheco River. It forms the border between several Maine and New Hampshire towns. There are 15 dams on the river, the last forming the head of tide at the Route 4 bridge in South Berwick, ME (WNERR, 2006).

## WHAT IS A "WATERSHED"?

A watershed is simply the area of land that is drained by a specific river system. Much of the rainfall that falls on the land will drain into the river network. These rain "catchments" are defined by the ridges that separate the land into different drainage areas. Therefore, rain that falls in the Salmon Falls watershed can be expected to eventually end up in the Salmon Falls River.

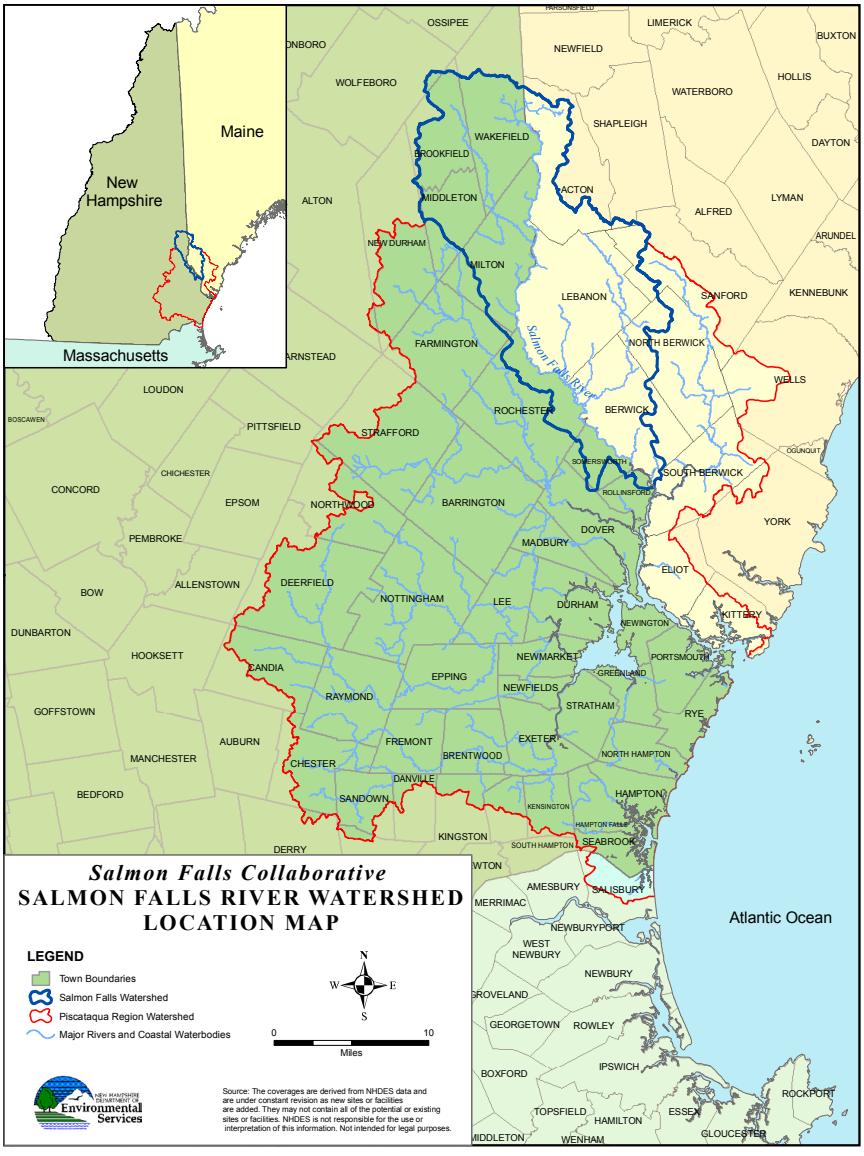


**Figure 1:** *Locator map of the Salmon Falls River watershed. The river forms part of the boundary between Maine and New Hampshire, and is a major tributary to the Great Bay estuary.*

# THE SALMON FALLS RIVER WATERSHED: AN IMPORTANT DRINKING WATER SOURCE AREA

Within the entire Salmon Falls River watershed there are 12 community water systems and 20 non-community water systems in New Hampshire, and 6 community water systems and eleven non-community water systems in Maine. There are two large municipal water systems that rely on the Salmon Falls River as their source: the Berwick Water Department in Maine and the Somersworth Water Works in New Hampshire. Thousands of private well owners also rely on the groundwater in the watershed to supply their household water needs. Approximately 28,000 people currently rely on public water supply sources and an unknown number rely on private wells in the Salmon Falls watershed to provide clean drinking water (Figure 2).

An important consideration in drinking water protection efforts is to understand where future water supplies are likely to come from. There are limited areas of stratified-drift aquifers in the Salmon Falls watershed that have the potential to deliver water at a fast enough rate to be a viable public water supply (Figure 3). Only a small fraction of the total stratified-drift aquifer area within the watershed remains unconstrained (i.e., away from contaminated or developed areas) and is likely to support new large municipal wells (greater than 75 gallons per minute). Highly productive stratified-drift aquifers are critical to protect from contamination and inappropriate development. The potential for bedrock aquifers to support additional public water supply sources has not been evaluated.

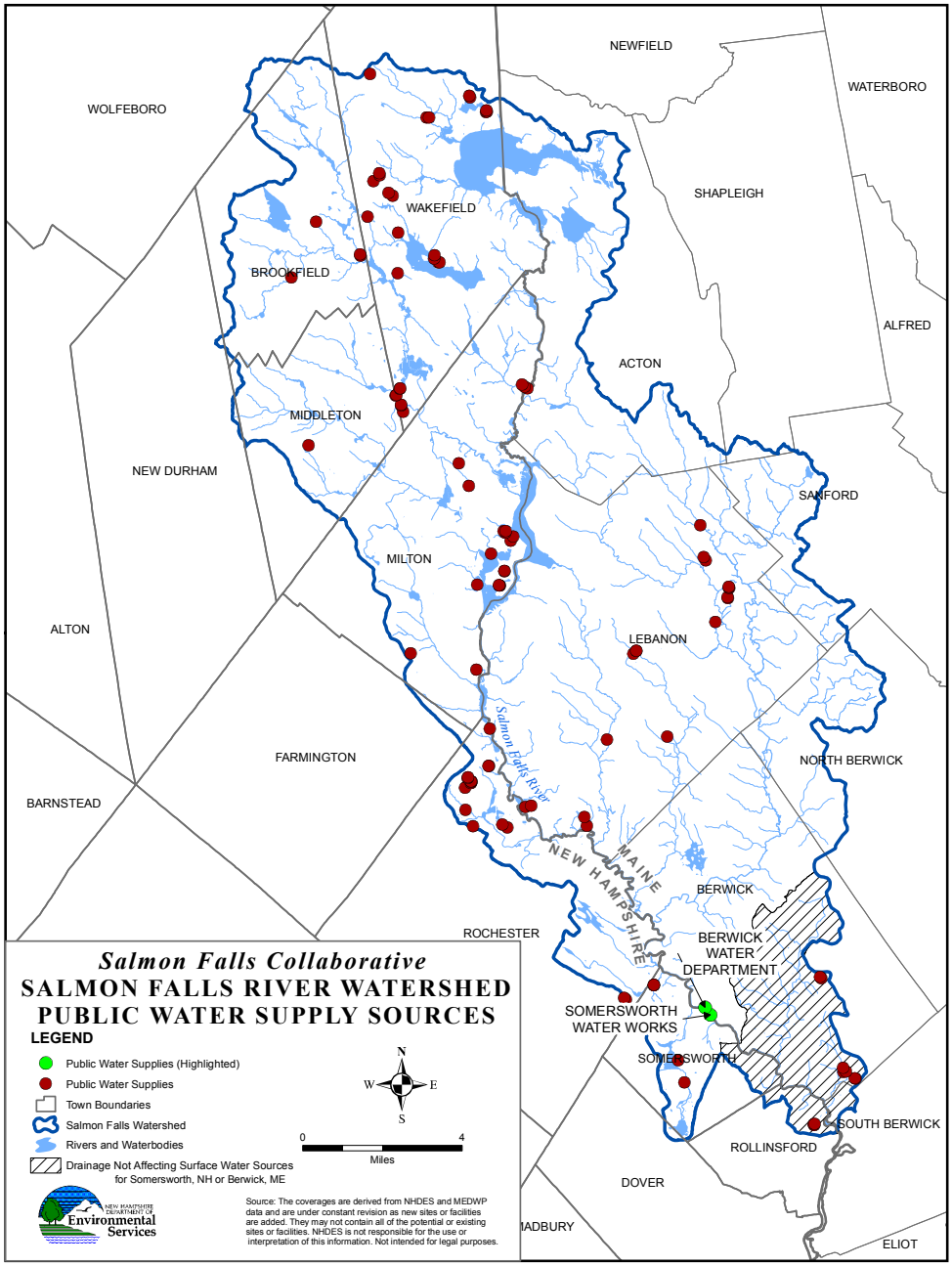


**Figure 2:** *Public water supplies in the Salmon Falls River watershed. The green markers indicate major municipal supplies for Berwick, ME and Somersworth, NH.*

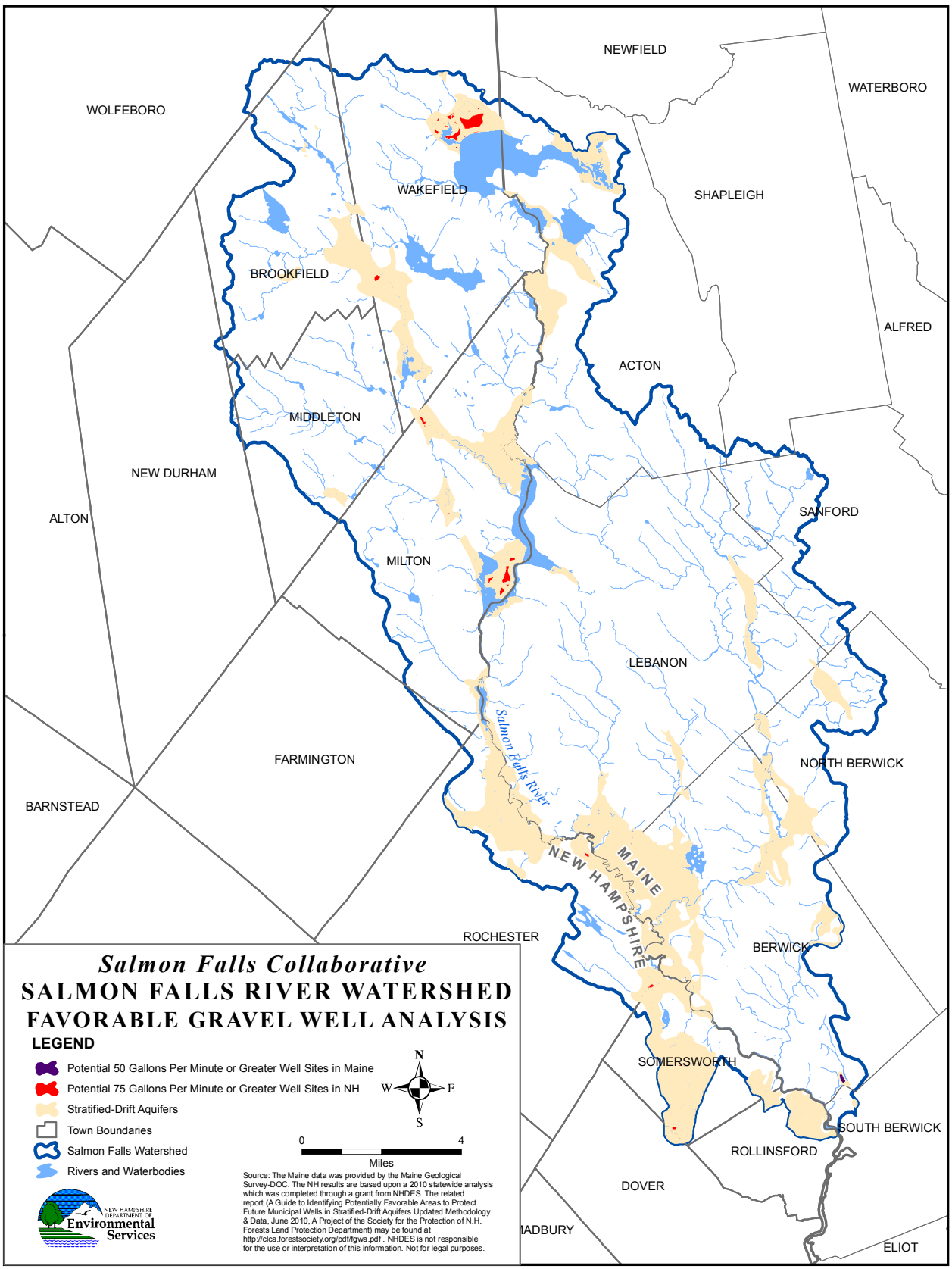


**Figure 3:** *Favorable gravel well analysis showing locations of stratified drift aquifer formations potentially suitable for municipal well development.*

# WHY WAS THE SALMON FALLS WATERSHED COLLABORATIVE FORMED?

Protecting sources of clean, safe drinking water is the top priority of members of the Salmon Falls Watershed Collaborative. The Collaborative is not a new organization, but rather a network of professionals and citizens committed to clean drinking water for the benefit of current and future generations. Members of the Collaborative joined together because they recognized that effective actions transcend political boundaries and require the work of a diverse group of professionals, organizations and citizens. Members of the Collaborative are interested in protecting all of the water-related services provided by natural areas to local businesses, communities and residents. Forests, shoreland buffers, wetlands, developed areas, aquifers, small streams, lakes and ponds, and rivers are all part of a system that collects, filters, and stores water. The Collaborative promotes and coordinates actions to protect irreplaceable water resources and to minimize the cost of providing clean, safe drinking water.

### Goals of the Salmon Falls Watershed Collaborative

- Protect water supply sources in the Salmon Falls River watershed through coordinated land and water conservation, planning, and management.
- Develop and sustain mutually beneficial partnerships to accomplish shared goals for clean water.

### Guiding Principles

The Salmon Falls Watershed Collaborative aims to:

1. Serve as a model for local, state and federal collaboration to accomplish shared goals for watershed protection and restoration.
2. Use transparent and inclusive processes for citizen engagement and public participation in the development of actions to balance use with protection to sustain high quality drinking water sources in the watershed.
3. Align the work of the Collaborative with existing stakeholder-generated plans to accomplish shared goals economically and efficiently.
4. Provide support and services to members, municipalities and water suppliers to facilitate the protection and sustainability of high quality drinking water sources in the watershed.
5. Foster the adoption, testing and evaluation of science-based best management practices to protect, sustain and restore high quality drinking water sources in the watershed.
6. Recognize and respect the interactions of economic development, private property rights and responsibilities to sustain shared water resources.
7. Adapt scientific information, data and maps to audience needs and present them in formats that produce results.
8. Develop indicators of success to evaluate the work of the Collaborative.

### Membership of the Salmon Falls Watershed Collaborative Planning Team:

Acton Wakefield Watersheds Alliance
Berwick (ME) Water Department
Granite State Rural Water Association
Great Bay National Estuarine Research Reserve
Maine CDC Drinking Water Program
Maine Nonpoint Education for Municipal Officials
Maine Rural Water Association
Moose Mountains Regional Greenways
New Hampshire Department of Environmental Services
—New Hampshire Source Water Protection Program
Piscataqua Region Estuaries Partnership
Society for the Protection of New Hampshire Forests
Somersworth (NH) Planning Department
South Berwick (ME) Water District

Southeast Watershed Alliance
Strafford Regional Planning Commission
The (national) Source Water Collaborative
USDA Forest Service
USDA Natural Resource Conservation Service
U.S. Environmental Protection Agency
Wells National Estuarine Research Reserve
York County Soil and Water Conservation District

## PURPOSE OF THE PLAN:

The actions identified in the plan are aimed at addressing the critical challenges that threaten water quality in the Salmon Falls watershed now and in the future. The intended purposes of this plan are to:

- Improve the coordination and effectiveness of numerous organizations that work on protecting clean water within the Salmon Falls watershed.
- Clearly communicate trends in water quality, threats to water quality, and solutions aimed at restoring and preserving water quality to citizens and community leaders in the watershed.
- Prioritize the use of limited technical and financial assistance resources in the most efficient way possible to achieve clean water protection goals.
- Leverage additional private and public investment in water protection actions that provide the greatest benefit for current and future generations of watershed residents and ecosystems.

## THE NEED FOR THE SALMON FALLS ACTION PLAN:

The Salmon Falls River is fed by an ecologically diverse land area shared by the states of Maine and New Hampshire, and drains into the Great Bay estuary, a coastal ecosystem of national importance. Approximately 28,000 people currently rely on public water systems in the Salmon Falls watershed to provide clean drinking water in addition to an unknown number who rely on private wells. While the watershed is a critical drinking water source area for many people, it is also threatened by increases in polluted runoff resulting from future population growth and the associated conversion of forested land to developed areas. A recently published report by the U.S. Forest Service entitled "Private Forests, Public Benefits" (http://www.fs.fed.us/openspace/fote/benefits_download.html) identified the rivers in the Piscataqua Region **as the most threatened in the nation with regard to a potential decline in water quality due to conversion of private forested lands to housing.**

Coastal New Hampshire and southern Maine have seen rapid population growth, which is poised to resume in the future. As forested land is converted to housing, roads, and parking lots, the potential for polluted runoff to contaminate aquifers, streams, and lakes greatly increases. Sources of pollution include petroleum and sediment from roadways and parking lots, pesticides and fertilizers from agriculture and lawns, treated wastewater from sewage treatment plants and septic systems, and air pollution from automobiles and power plants.

This pollution washes easily from hardened surfaces and is transported by stormwater runoff into waterways. In addition to water quality changes, development can change the hydrology of a watershed in ways that reduce groundwater levels and affect flows and shapes of streams. Relative to other towns the region, the communities along the Salmon Falls River have much lower percentages of their lands permanently protected from development.

**Without bold steps to conserve natural landscape cover, carefully plan land use, utilize smarter "low impact development (LID)" approaches, and address potential contamination hotspots, the drinking water in the Salmon Falls watershed is likely to become threatened with reduced quality and increasing costs of treatment.** The Salmon Falls Action Plan was therefore developed to guide the implementation of these key measures to ensure clean water now and for the future. The communities within the Salmon Falls watershed currently have a window of opportunity to protect the region from the poorly planned development patterns that have befallen other regions of the country, and to maintain a long-term network of connected natural areas that will provide clean water into the future.

It is important to note that the Salmon Falls watershed is part of the geographic region covered by the Piscataqua Region 2010 Comprehensive Conservation and Management Plan (PREP, 2011). This plan provides a holistic strategy for the regional protection and restoration of water quality and wildlife habitat. The plan is officially recognized and receives partial implementation funding support from the U.S. Environmental Protection Agency. The actions identified in the Salmon Falls Action Plan are consistent and complimentary with the Comprehensive Conservation and Management Plan actions (most specifically LU-17 "develop and implement source water protection for current and future community and public water supplies"), but have a slightly different emphasis since they have been developed with a sharp focus on drinking water source protection.

# ENVIRONMENTAL STATUS & TRENDS IN THE SALMON FALLS WATERSHED

## OVERVIEW OF WATER QUALITY ASSESSMENT

The Federal Water Pollution Control Act, commonly called the Clean Water Act (CWA), requires each state to submit two surface water quality documents to the U.S. Environmental Protection Agency (EPA) every two years. Section 305(b) of the CWA requires submittal of a report (commonly called the "305(b) Report") that describes the quality of its surface waters and an analysis of the extent to which all such waters provide for the protection and propagation of a balanced population of shellfish, fish, and wildlife, and allow recreational activities in and on the water.

The second document is typically called the "303(d) List" which is so named because it is a requirement of Section 303(d) of the CWA. The 303(d) List includes surface waters that are impaired (i.e., do not meet water quality standards) or threatened by a pollutant or pollutant(s). The 303(d) list determines which rivers or lakes require a comprehensive water quality study (i.e., called a Total Maximum Daily Load or TMDL study) designed to meet water quality standards.

Simply put, under the Clean Water Act states identify what rivers, lakes, and streams are too polluted to support safe fishing, swimming, drinking water, harvesting shellfish, and habitat for aquatic life and what pollutants are responsible. States must then develop and implement strategies to fix these pollution problems and restore clean water.

The data for each assessment unit is evaluated based on a state's consolidated assessment and listing methodology (CALM). Surface waters are placed into categories that indicate whether they support certain "designated uses" (e.g., fishing, swimming). These categories range from "Attaining all designated uses" (e.g., supports all designated uses and no use is threatened) to "impaired or threatened for one or more designated uses" and require a TMDL.

### Assessment Units and Support for Designated Uses

Assessment Units form the basic unit of record for conducting and reporting water quality assessments for surface waters of the state. Within each unit, surface water quality is classified in terms of whether it supports certain "designated uses" (e.g., swimming, fishing, drinking water). Each assessment unit is assigned one of the following categories related to specific (designated) uses:

- Fully Supporting: A use is "fully supporting" if there is sufficient data or evidence for the core indicators to determine that the use is fully supporting and there is no other data or evidence indicating an impaired or threatened status.
- Not Supporting: A use is not supporting (i.e., impaired) if there is sufficient data or evidence to indicate impairment.
- Insufficient Information: This option is assigned to any use that has some, but not enough usable data or information to make a final assessment decision.
- Not Assessed: This option is assigned to any use which does not have any usable data or information to make an assessment decision.

### WATER QUALITY ASSESSMENT

For more details concerning state water quality assessment methodology and supported use determinations see New Hampshire's 2010 Consolidated Assessment and Listing Methodology (CALM) http://des.nh.gov/organization/divisions/water/wmb/swqa/index.htm or the companion report in Maine (2010 Integrated Water Quality Monitoring and Assessment Report) http://www.maine.gov/dep/blwq/docmonitoring/305b/index.htm

The majority of lakes and rivers in the Salmon Falls watershed have not been assessed in terms of their capacity to support certain designated uses and the specific source(s) of contaminants that are causing impairment are often not well defined or are unknown. New water quality data from various sources is incorporated into the state assessments every two years as it becomes available.

## SURFACE WATER QUALITY: A TWO-STATE WATERSHED REVIEW

Where it has been assessed, water quality in the Salmon Falls watershed is generally good, with a few exceptions where streams are considered polluted in terms of being unsafe for either swimming or aquatic life. However, based on what has been experienced in watersheds all over the country, as watersheds become more developed,

water quality can be expected to deteriorate as a result of polluted runoff from developed areas.

The available assessment data compiled from New Hampshire and Maine indicates that a relatively small percentage of the rivers or lakes evaluated (approximately seven percent) are known to be impaired for primary contact recreational use (i.e., swimming or wading) and/or aquatic life, both highly-valued uses of surface waters in the watershed. Within the watershed there are approximately 441 miles of rivers and 4,427 acres of lakes. Approximately 30 miles (seven percent) and 66 acres (two percent) are polluted to the extent that they do not meet minimum water quality standards to safely swim in the water (Figure 3). Approximately 30 miles (seven percent) and 265 acres (six percent) are polluted to the extent that they do not support the aquatic life that is supposed to be able to live there (Figure 4). Overall, approximately 40 miles (nine percent) and 337 acres (eight percent) are too polluted to support swimming activities or healthy aquatic life.

Assessment data indicates the Salmon Falls River itself, from south of Riverlawn Avenue in Rochester to the head of tide dam, is classified as either "severely" or "marginally" impaired and not supporting swimming due to Escherichia coli (bacteria) or aquatic life due to low pH (acidic water). With respect to this portion of the Salmon Falls River, the sources of bacteria and pH contamination causing impairment are unknown. Recent water quality results from 2010 water quality sampling in the Salmon Falls River south into Rollinsford/South Berwick (below the intakes for the Somersworth and Berwick public water supplies) indicate that water quality at most sites on multiple instances did not comply with required Clean Water Act standards (FB Environmental, 2010). Other potential contaminants that may affect the use of the Salmon Falls River as a source of drinking water have not been identified.

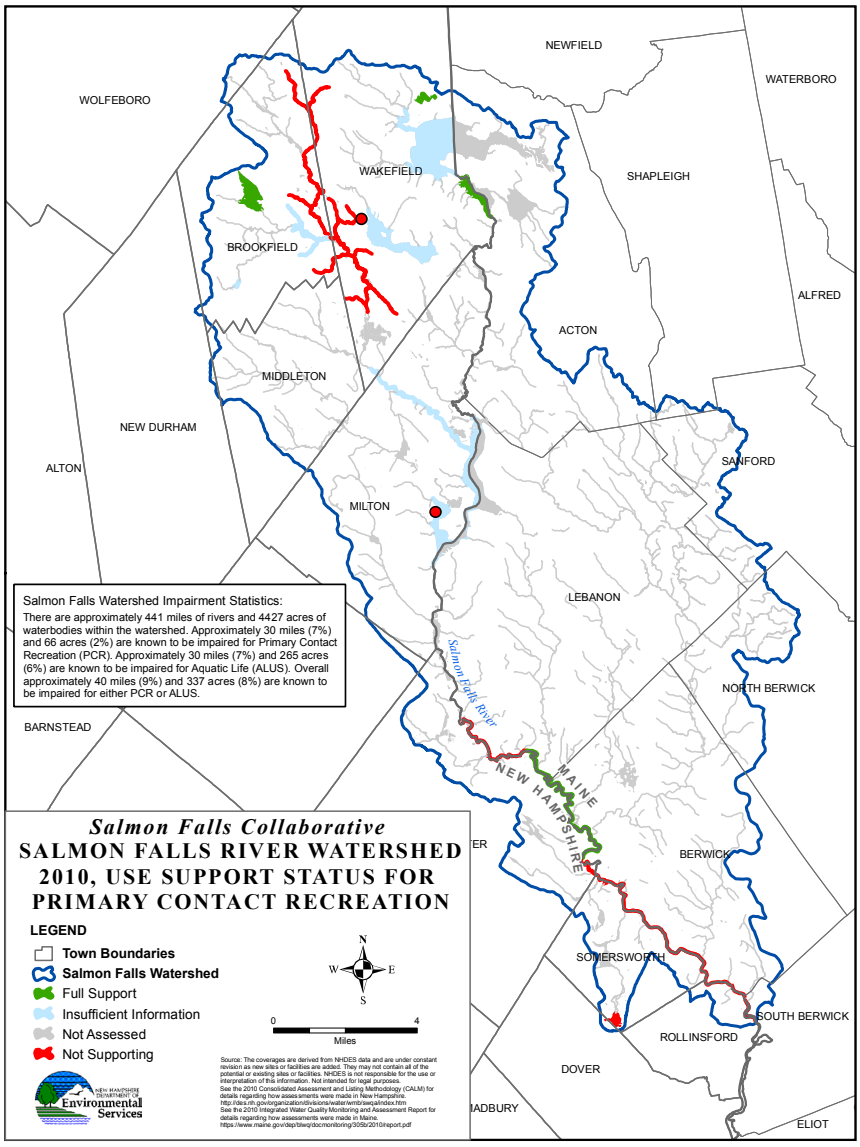


**Figure 4.** *Known areas within the Salmon Falls River Watershed that do not meet clean water standards in support of primary contact recreation (e.g., swimming and wading). Polluted areas shown in red. Note many of the streams have not been assessed.*

## TRENDS IN IMPERVIOUS COVER

Impervious surfaces such as paved parking lots, roadways, and building roofs increase the pollutant load, sediment load, volume, and velocity of stormwater flowing into rivers. Studies conducted in other regions of the country have demonstrated water quality deterioration where impervious surfaces cover greater than approximately 10 percent of the watershed area (CWP, 2003). In 2005, a study in the New Hampshire Seacoast Region demonstrated that the percent of urban land use within stream buffer zones and the percent of impervious surface in a watershed can be used as indicators of stream quality (Deacon et al. 2005).

Between 1990 and 2005 impervious area within the Salmon Falls watershed increased by 81 percent. Impervious area in

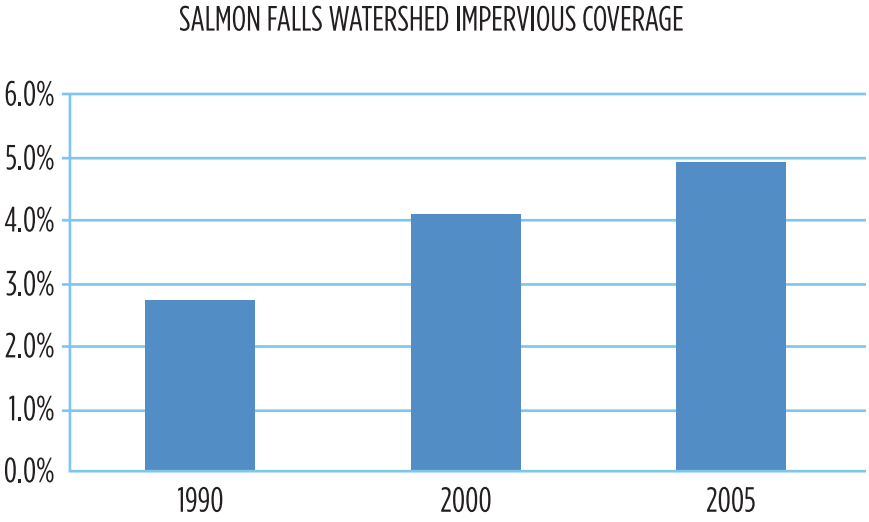


**Figure 6.** *Impervious surface trends in Salmon Falls watershed between 1990-2005.*

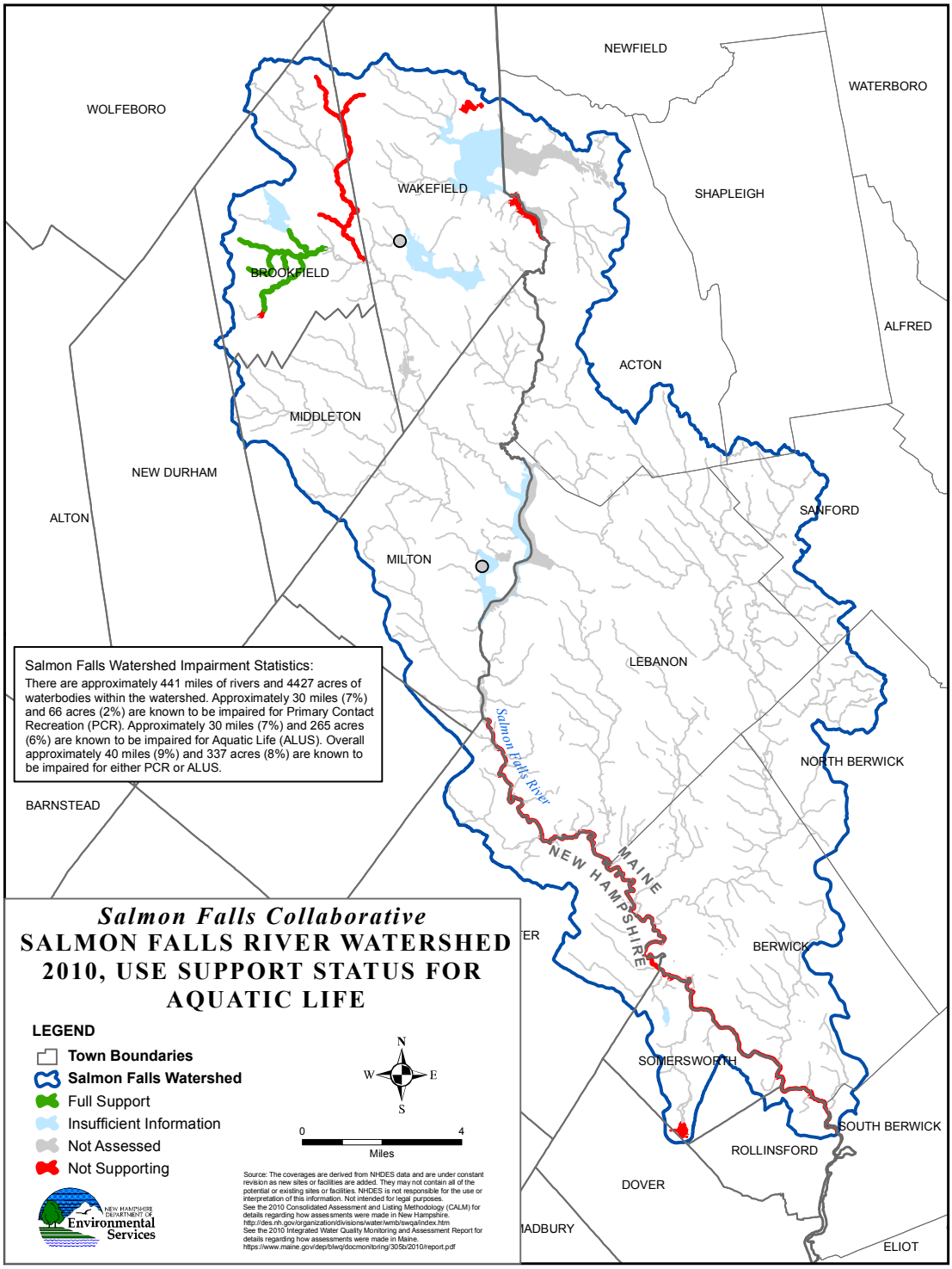



**Figure 5.** *Known areas within the Salmon Falls River watershed that do not meet clean water standards in support of aquatic life. Polluted areas shown in red. Note many of the streams have not been assessed.*

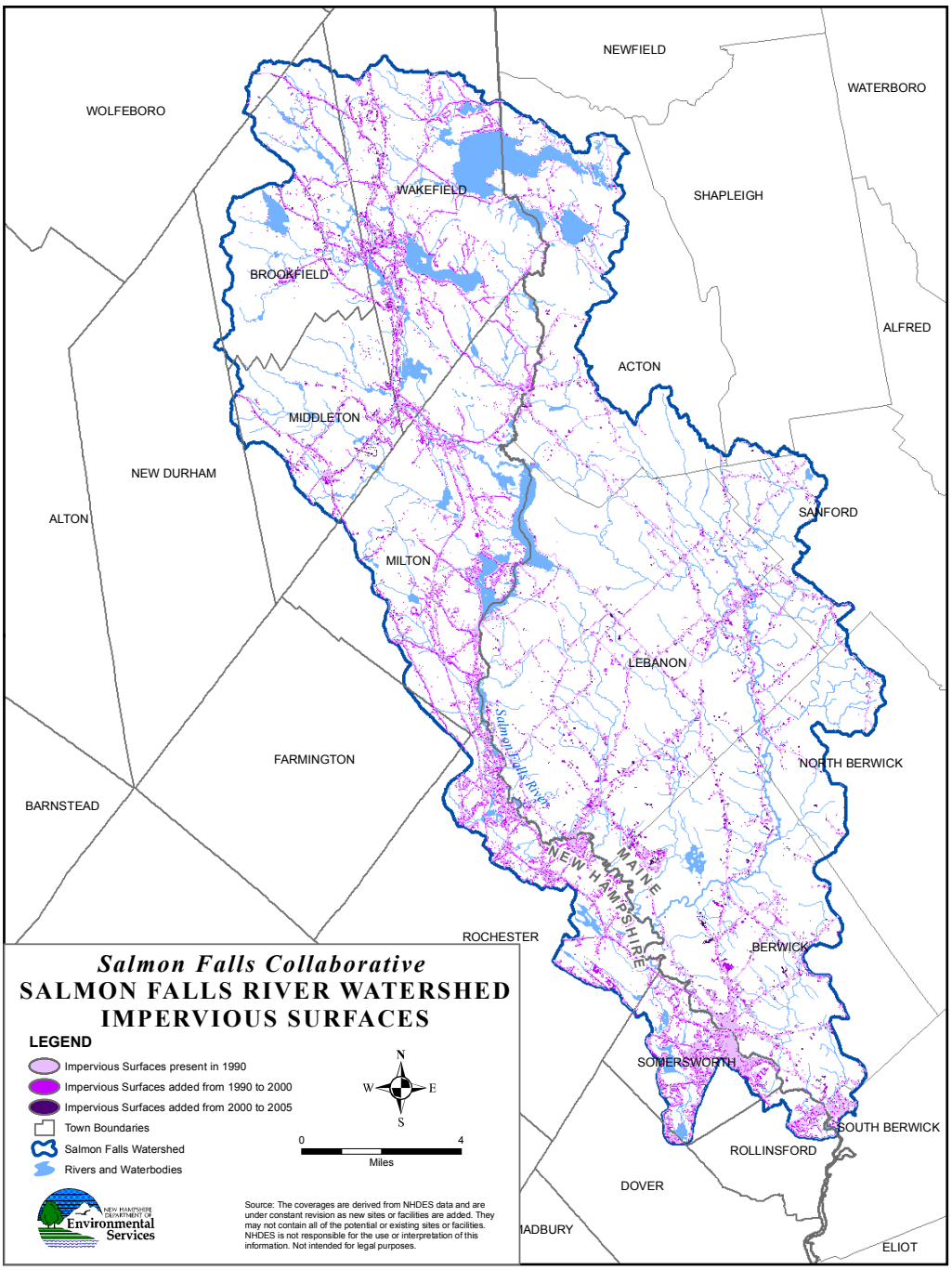


**Figure 7.** *Map of impervious surfaces in the Salmon Falls watershed.*

1990 represented 2.7 percent of the total watershed area and in 2005 that figure rose to 4.9 percent (Trowbridge, 2009). Impervious surfaces, in comparison to pervious surfaces, greatly increase the volume and velocity of stormwater runoff during storm events, and exacerbate flooding, erosion, and/or pollutant loading to surface waters.

## LAND CONSERVATION TRENDS

As of 2009, approximately 18,068 acres of conservation land was recognized in the Salmon Falls watershed based on data obtained by NH GRANIT and the Wells National Estuarine Research Reserve (Trowbridge, 2009). This represents approximately 8.8 percent of the land area within the watershed. This percentage is far less permanent conservation land than is found in most of the rest of the New Hampshire seacoast region. However, the opportunities for land conservation are very good, with many large parcels of undeveloped land still available.

# OVERVIEW OF DRINKING WATER PROTECTION STRATEGIES

The flow of water knows no boundaries. Protecting drinking water quality and quantity for community water systems and private wells requires collaborative actions by municipalities, businesses, private land owners and all levels of government working across borders. This is the model of the Salmon Falls Watershed Collaborative to engage and inspire governments, organizations and citizens in collaborative actions to sustain the Salmon Falls watershed.

Community drinking water systems rely on wells that tap groundwater and aquifers and on surface water sources in rivers and lakes. Given the diversity of sources, a water provider's strategy for drinking water protection should be carefully tailored to site-specific conditions and based on a good understanding of the key contributing areas that warrant special protections.

Protecting clean community drinking water supplies requires a multi-faceted approach involving mapping sourcewater areas, conserving land, restricting certain types of development over aquifers and adjacent to surface waters, effective control over both point and non-point sources of pollution, and education of municipal officials and private landowners.

Pollution prevention is the safest and most cost effective way for community water systems to meet strict federal Safe Drinking Water Act standards ensuring reliable long-term supplies of clean drinking water. Removing contaminants from groundwater or surface water sources can be extremely expensive and technically challenging to achieve. The most effective way to protect drinking water sources is by controlling land uses — either through acquisition of the land or easements, or through land use controls. Land use controls can include zoning ordinances, site plan review regulations, and subdivision regulations (NHDES, 2008).

The Action Plan for the Salmon Fall Watershed Collaborative is based upon four science-based principles for protecting high-quality waters as watersheds develop:

1. Conserving undeveloped lands that are essential to protecting a reliable quantity of clean water – particularly forests along rivers, streams, lakes and ponds, and above aquifers to filter pollutants from water running over the land.
2. Employing science-based practices of Low Impact Development and stormwater management to reduce the amount of hard surfaces and direct runoff to vegetated areas to filter out pollutants and let water soak into the ground.
3. Apply state and local shoreland and aquifer protection rules and policies to keep pollution out of drinking water sources, protect recharge and pollution filtration areas and absorb damaging flood waters.
4. Implementing "best management practices" (BMPs) at commercial sites using large volumes of substances that have the capacity to contaminate aquifers, lakes or rivers that are current or future sources of clean drinking water.

The Salmon Falls watershed Collaborative members and participants at the 'Beyond Borders Workshop' found that a great deal of analysis work had already been completed in the watershed. This work will be used to guide communities and engaged citizens in protecting high priority lands, closing gaps in local waterway protection regulations, and improving ways municipalities and developers work together to protect clean water.

This section describes the approach of the Salmon Falls watershed Collaborative to implement a comprehensive drinking water source protection strategy. The approach is intended to engage and inspire governments, organizations and citizens in collaborative actions to sustain what they value most about the Salmon Falls watershed. This section includes some of the exciting work already completed in the Salmon Falls watershed which provides an excellent foundation for successfully maintaining clean water into the future.

## 1. CONSERVE LAND MOST IMPORTANT FOR PRODUCING CLEAN DRINKING WATER

Forests are a crucial first barrier against contamination of drinking water supplies (Dudley and Stolton 2003, National Research Council), but will be threatened in the future by development. Once natural landscapes are fragmented with roads, paved over, or developed into sprawling suburbs their ability to provide high-quality wildlife habitat and clean drinking water is permanently degraded or lost. Fortunately, significant portions of the Salmon Falls watershed currently retain large undeveloped areas of critical wildlife habitat and high quality waters. In order to ensure that these exceptional qualities of the region are maintained for the benefit of future human and wildlife populations, it is essential that the communities of the region identify and protect the remaining undeveloped lands with the greatest value for supporting diverse and abundant wildlife populations and maintaining clean water. Keeping key forest lands forested can be accomplished with a combination of land conservation and assistance to forest landowners.

### Identification of High Priority Lands in Existing Science Based Plans Will Guide the Collaborative:

Many of the highest priority lands for permanent protection have been mapped within The Land Conservation Plan for Maine's Piscataqua Region Watersheds (Walker et al, 2010) and The Land Conservation Plan for New Hampshire's Coastal Watersheds (Zankel et al, 2006). However, additional land conservation priorities for drinking water protection can be identified through the expertise of water district managers, municipal boards and planners, land trusts, and state source water protection officials.

**Salmon Falls Watershed Collaborative Action Strategy #1.**

Assist watershed municipalities, land trusts, water suppliers, and land owners with conserving and maintaining lands most important for producing clean water.

## 2. PROTECT DRINKING WATER THROUGH LOW IMPACT DEVELOPMENT AND IMPROVED STORMWATER MANAGEMENT

A set of practices known as Low Impact Development (LID), has shown strong promise in reducing the negative impacts of development on water quality (EPA, 2000). LID practices involve reducing the amount of hard surfaces (pavement, etc.) on a development site, and directing runoff to vegetated areas to filter out pollutants and let water soak into the ground. Requiring that LID approaches are used for all significant new development and re-development is one tool that municipalities have to minimize and treat stormwater issues at their source. Municipalities in New Hampshire and Maine typically incorporate development standards and stormwater management regulations into either their subdivision and site plan review regulations, or into their zoning ordinances.

### Salmon Falls watershed municipalities are beginning to improve local development policies for the protection of clean water.

The Piscataqua Region Environmental Planning Assessment (Sowers, 2010) noted that no towns within the Salmon Falls watershed had adopted low impact development regulations as of 2010. Only one town (Rochester) in the Salmon Falls watershed had a stormwater management ordinance. All towns lacked stormwater management regulatory standards considered up-to-date with today's recommended standards for water quality protection (NHDES, 2008). Adoption of LID standards and modern stormwater management treatment requirements are inexpensive and highly effective actions that municipalities can take in the Salmon Falls watershed to protect clean water. Several towns in the watershed (Acton, Somersworth, Wakefield, South Berwick) have initiated projects to adopt improved local development regulations that require LID approaches and more effective pollution control of stormwater runoff.

**Action Strategy #2. Assist watershed municipalities with protecting drinking water by adopting low impact development (LID) technologies, stormwater best management practices (BMPs), and improved land use development regulations.**

## 3. PROTECT WATER THROUGH SHORELAND AND AQUIFER PROTECTION REGULATIONS

The simplest and most effective way to protect clean water in streams, rivers, lakes and estuaries is to leave an area of undisturbed native vegetation adjacent to these water bodies and their tributaries. These undisturbed areas act as filters for pollutants and provide important wildlife habitat. Preserving and restoring shoreland buffers is essential to surface water quality protection (NHDES, 2008). Since almost all surface waters in the Salmon Falls watershed eventually drain to the mainstem of the river where Somersworth, New Hampshire and Berwick, Maine draw their drinking water from, the water quality protection offered to even very small intermittent streams directly affects these public water supplies.

State and local shoreland and aquifer protection rules and policies help to prevent pollution. By protecting shorelands and aquifer recharge areas from development these areas can filter pollution and allow rainwater to refill groundwater storage areas. Undeveloped shoreline areas can also absorb damaging flood waters providing protection for properties near the water.

Without enforceable state and local regulations, shoreland areas can be converted from natural vegetation to lawns, buildings, parking lots, and other incompatible land uses that negatively impact water quality. Clearly, strong local regulations protecting the shorelands of streams are critical to protecting the long-term water quality of the Salmon Falls River.

### Analysis of gaps in buffer protection policies among watershed towns provides a starting place for increased pollution prevention actions

The New Hampshire Department of Environmental Services has completed a GIS (geographic information system) based "buffer gap analysis" to identify and characterize riparian buffer protection. For each town on the New Hampshire side of the Salmon Falls watershed maps are available that show the extent to which local shorelands are protected via regulations or land conservation.

The Southern Maine Regional Planning Commission (SMRPC) completed an analysis of developable lands within shoreland zones of municipalities within the Salmon Falls watershed (SMRPC, 2010). The analysis indicates that existing shoreland zones in many areas are highly vulnerable to additional development pressure – with up to 1400 new residences potentially allowed in the limited residential shoreland zone alone.

The Piscataqua Region Estuaries Partnership (PREP) recently completed an evaluation of environmental planning policies that includes assessments of all of the municipalities within the Salmon Falls watershed (Sowers, 2010). One of the topics researched in this report was the level of local protection offered to shoreland zones along streams, rivers, and lakes. The study found that the width of protected vegetation along Salmon Falls waterways varies significantly depending upon the municipality and state (Figure 8). Data generated via this study were incorporated into the New Hampshire Department of Environmental Services Buffer Gap Analysis map products described above.

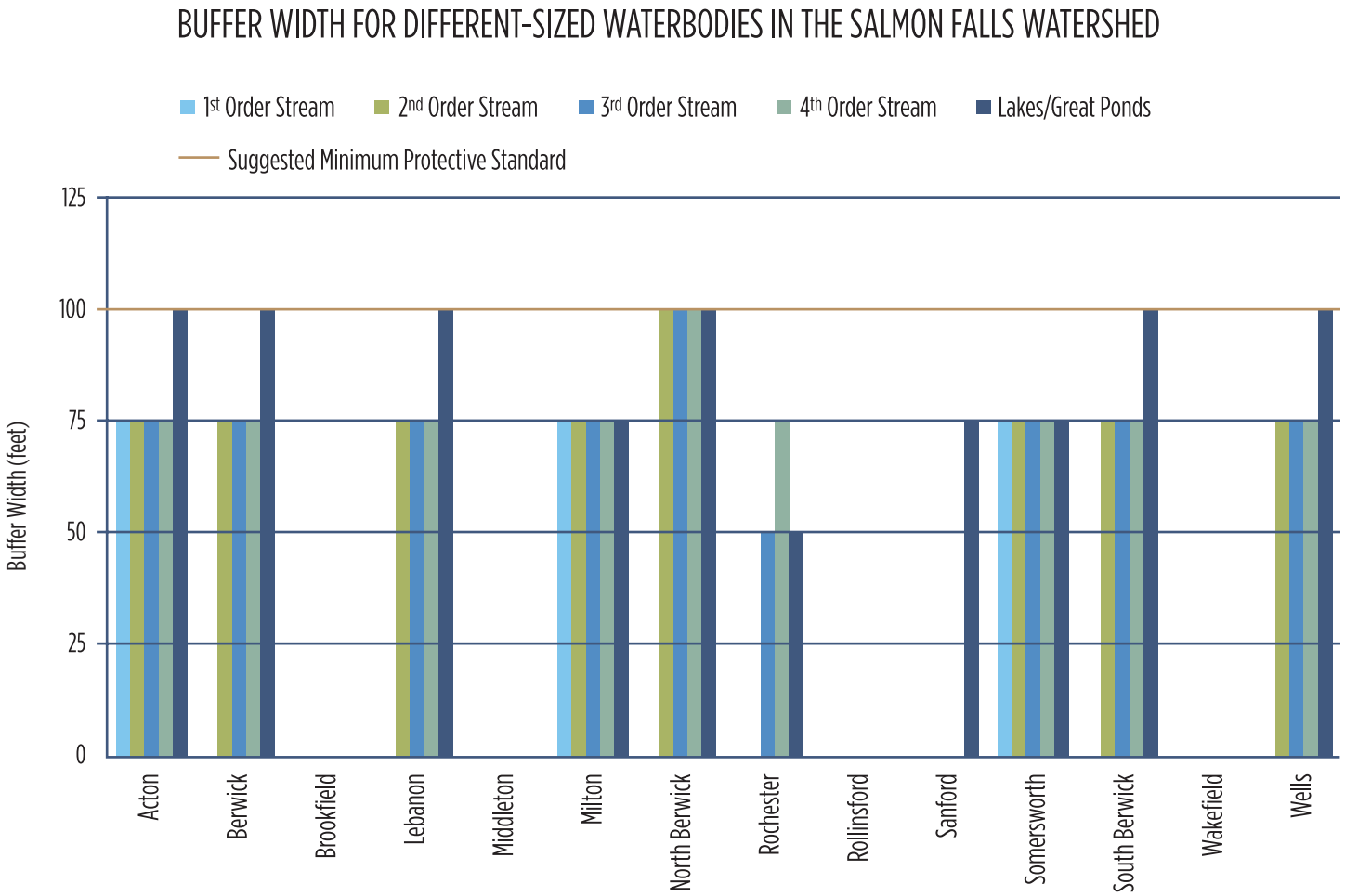


**Figure 8.** *Shoreland buffer widths protected by local regulations in the Salmon Falls watershed (Sowers, 2010).*

### Communities with strong Wellhead and Aquifer Protection policies set the example for towns desiring to take the next step

To protect groundwater sources, municipalities can adopt regulations that restrict land use development within wellhead and aquifer protection areas. These regulations are often in the form of an overlay district within the municipal zoning ordinance, and typically prohibit uses such as gas stations, auto salvage yards, landfills, large parking lots, etc., and can also limit the overall amount of impervious surfaces in order to retain infiltration capacity of the landscape for the recharge of aquifers.

To protect surface water supplies, municipalities can access information from state agencies or local sources to delineate areas contributing surface water and define a source water protection district or overlay that protects natural water quality buffers (a 300-400' wide zone of natural vegetation along a reservoir for instance).

**Action Strategy #3. Assist municipalities and water suppliers with protecting aquifers and waterways by adopting local regulations that minimize pollution risk.**

| Municipality Name | Wellhead Protection Regs? | Aquifer Protection Regs? | Source Water Protection District? | Prohibition on Large Ground Water Withdrawals & Export? |
|---|---|---|---|---|
| Acton | no | yes | no | yes |
| Berwick | no | yes | no | no |
| Brookfield | no | no | no | no |
| Lebanon | no | no | no | no |
| Middleton | no | yes | no | no |
| Milton | yes | yes | yes | no |
| North Berwick | no | yes | no | no |
| Rochester | no | yes | no | no |
| Rollinsford | yes | yes | no | no |
| Sanford | yes | yes | yes | no |
| Somersworth | yes | yes | no | no |
| South Berwick | yes | yes | no | no |
| Wakefield | yes | yes | no | no |
| Wells | no | yes | yes | yes |
| | 43% | 86% | 21% | 14% |

**Figure 9.** *Drinking water protection policies of municipalities in the Salmon Falls watershed (Sowers, 2010).*

## 4. IDENTIFY, MANAGE, AND CLEAN UP POTENTIAL SOURCES OF CONTAMINATION

Whether a public drinking water system draws water from a surface supply such as a river or a groundwater supply such as an aquifer, they can both be threatened by contamination from nearby development. Public drinking water sources are vulnerable to contamination by easily identifiable "point" sources of pollution (for example landfills, junkyards, waste storage lagoons, leaking underground storage tanks) as well as harder-to-define "non-point source" pollution such as runoff from parking lots, roads, fertilized lawns, and farms. Potential Contamination Source (PCS) inventories are often conducted to assess potential threats from point sources.

While the Salmon Falls River itself is used by both Berwick and Somersworth as a water supply source, many public water systems in the watershed rely on wells, as do watershed residents who are not served by public water systems. Protecting the groundwater that supplies these wells relies on two main strategies: managing existing threats and preventing new threats in high-impact areas. Both of these strategies rely mainly on local groundwater protection ordinances and on wellhead protection programs carried out by water systems.

Data from public water supply wells in New Hampshire show, not surprisingly, that as the number of potential contamination sources (PCSs) near a well increases, so does the likelihood that contaminants will be found in the well. Many local groundwater protection programs focus on these contamination sources – in some cases prohibiting new sources in key areas and in other cases inspecting existing sources to make sure they employ best management practices.

The New Hampshire Department of Environmental Services maintains a statewide inventory of potential contamination sources as part of their Geographic Information System (GIS) database for public water supplies. The Maine Department of Environmental Protection maintains a comparable inventory within the state's Environmental Geographic Analysis Database

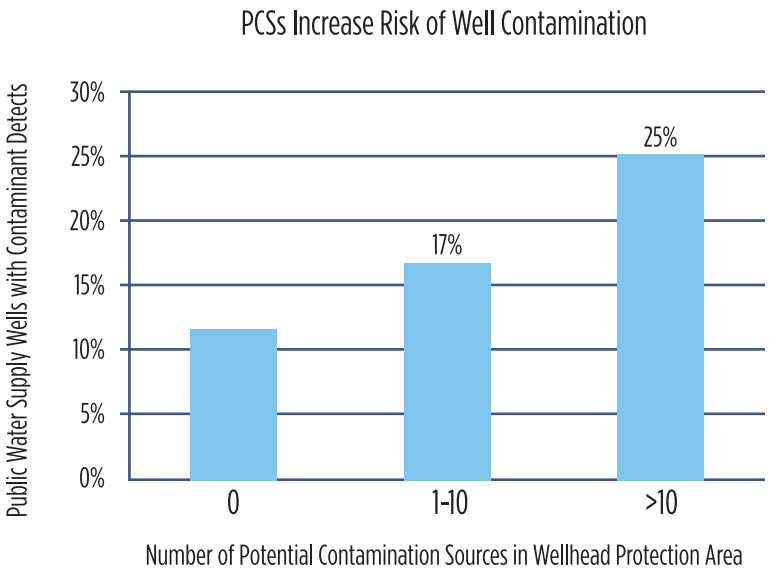


**Figure 10.** *Relationship between the presence of potential contamination sources in the wellhead protection areas, and the number of contaminant detections in the actual wells (Susca, 2008).*

(EGAD). State data indicates there are at least 267 potential contamination sources within the watershed. The majority (161) of the 267 potential contamination sources are in Maine while the remaining (106) potential contamination sources within the watershed are found in New Hampshire. Most potential contamination sources operate within the watershed up-gradient of the intake locations (the point where water is piped from the Salmon Falls River), then treated and used as a source of drinking water. Forty of the 267 potential contamination sources in the southern portion of the watershed are within a drainage area that discharges south of the municipal intakes.

## Managing Potential Contamination Sources (PCSs)

The risk posed by activities that are considered Potential Contamination Sources can be minimized by ensuring that best management practices (BMPs) are being used on sites that store or use hazardous materials. These BMPs are common-sense practices that minimize the likelihood that contaminants will be released to the ground and can make their way to drinking water sources. These practices include basic "housekeeping" practices, e.g., cleaning up spills, use of funnels or drip pans, and structural controls such as impervious surfaces, berms or dikes to prevent releases to the ground. They are generally inexpensive to implement compared to the cost of cleaning contaminated drinking water or treating people for health effects from pollution. These BMPs have the added force of being required by law in New Hampshire. Financial incentives, training, and guidance materials are provided to public water systems and municipalities by the New Hampshire Department of Environmental Services and Maine Department of Environmental Protection to assist in the adoption of local management programs. Certain potential contamination sources, like gas stations or auto salvage yards, may hold state permits (e.g., to operate a large commercial aboveground storage tank) that require periodic inspection by state or federal agencies — however most sources are not inspected by state or federal inspectors. Neither Maine's nor New Hampshire's environmental agencies have enough personnel to inspect all potential contamination sources statewide. Consequently, municipalities and water districts can often play a vital role in the inspection of local potential contamination sources to ensure the safety of drinking water.

**As part of the Salmon Falls watershed Collaborative, the Maine Rural Water Association and Granite State Rural Water Association recently updated Potential Contamination Source Inventories for a large portion of the watershed.**

In 2011, staff from the Maine Rural Water Association and the Granite State Rural Water Association field-verified the location

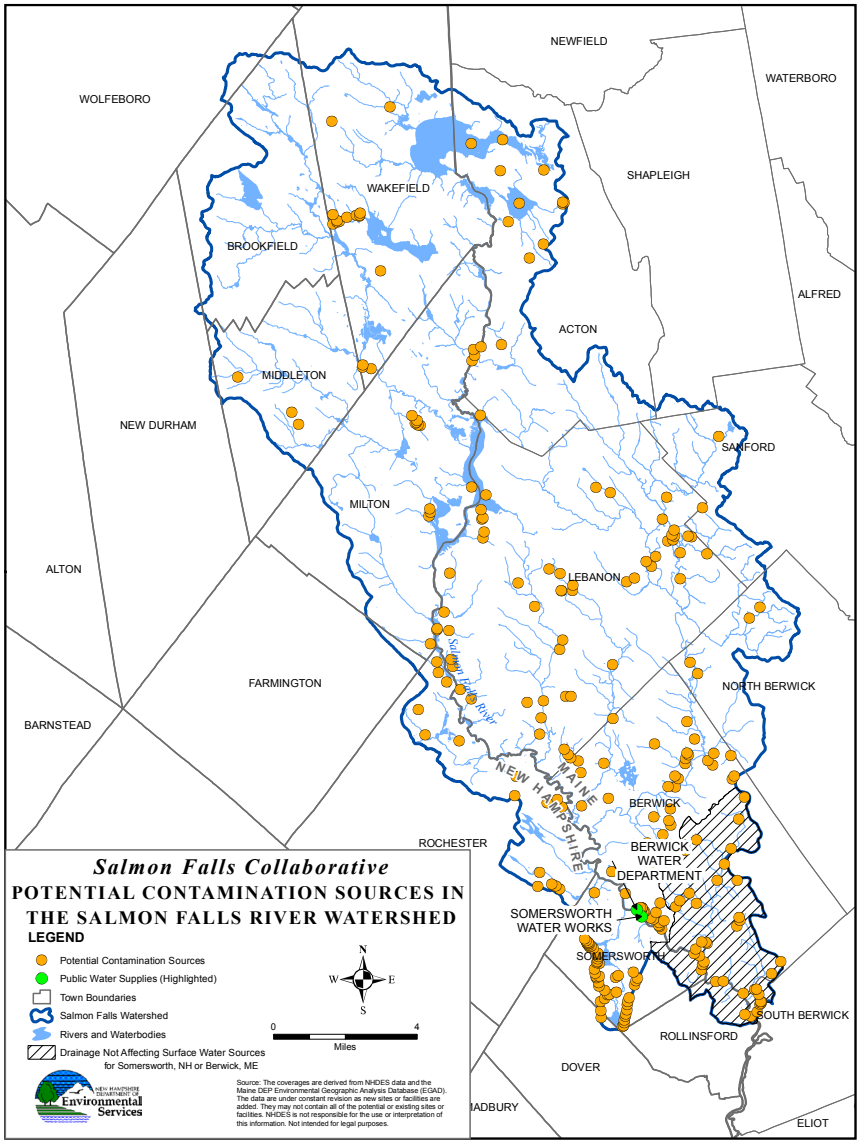


**Figure 11**. *Map of known potential contamination sources for Salmon Falls watershed public water supplies.*

and status of many of the potential contamination sources listed within statewide databases for the Salmon Falls watershed. Field work to verify the inventory of potential contamination sources was focused within the wellhead protection areas (protective radius area around a well) and hydrologic areas of concern (a smaller watershed area surrounding a surface water intake) for Somersworth, New Hampshire. While confirming the status of many potential contamination sources in priority protection areas, limited resources did not allow for determinations concerning the need to conduct inspections at specific sources.

Within the hydrologic area of concern for the Somersworth surface water intake (which includes the 1,000 foot radius from the Berwick intake) the most numerous types of potential contamination sources were found to be vehicle service and repair shops, laboratories/professional services, and manufacturing facilities. Within the watershed communities, the most numerous potential contamination sources were those that had experienced documented spills or releases — potentially indicating the need for improved management practices at commercial sources and/or greater oversight of residential fuel delivery and (home heating oil) tanks. A summary by town that includes an updated potential contamination source inventory is found within Chapter 3 of the Salmon Falls watershed Drinking Water Source Protection Guide (Wong and Scegell, 2011).

Within the watershed in New Hampshire, four public water systems conduct local BMP inspection programs within the wellhead protection areas (WHPA) associated with their production wells. When New Hampshire water systems are required to implement management programs, they must conduct on-site inspections of potential contamination sources within protection areas and educational mailings at least once every three years. In the New Hampshire portion of the watershed, eleven public water systems (with groundwater sources) do not have any potential contamination sources in their WHPAs, but 16 WHPAs do have potential contamination sources located within protective areas.

Potential contamination source inventories serve as a critical element of a source water protection plan. Additional land use analysis and field surveys can identify non-point source areas that may contribute pollution to drinking water sources. Information from these inventories can be used to prevent future contamination and clean up existing sources of pollution.

**Action Strategy #4. Prevent pollution and restore degraded waters through identification and clean up of sources of contamination in the Salmon Falls watershed.**

# DEVELOPING AN ACTION PLAN FOR DRINKING WATER PROTECTION IN THE SALMON FALLS WATERSHED

The state drinking water source protection programs in Maine and New Hampshire conceived the idea of forming the Salmon Falls Watershed Collaborative to foster interstate cooperation to improve water quality in the Salmon Falls River, which serves as a source for public water systems in both states. After a number of agencies, municipalities, and organizations were invited to participate it became clear that the Piscataqua Region Estuaries Partnership was best positioned to manage the initiative, in light of the Salmon Falls watershed's key position within the Great Bay estuary watershed and its location along the Maine/New Hampshire border. The Wells National Estuarine Research Reserve Coastal Training Program was contracted to handle project management, organize a stakeholder workshop and work with members of the Collaborative to develop an Action Plan to protect and improve water in the region.

A Planning Team composed of members from a diverse group of organizations with interest in being members of the newly formed Collaborative began meeting by monthly conference call in February 2010 to plan the stakeholder workshop. In addition to monthly conference calls the Planning Team held quarterly face-to-face meetings and hosted one watershed field trip for stakeholders in the summer of 2010. A stakeholder workshop was held in October 2010 to assess priorities of local citizens, water supply providers, and land conservation organizations. The intent of this workshop was to help the members of the Collaborative define priorities and develop an Action Plan for the watershed. The Planning Team for the workshop continued to collaborate during the next year to develop the Action Plan, a website and this report to guide the future work of the Collaborative.

The workshop "Working beyond Borders to Protect Water in the Salmon Falls watershed, Maine and New Hampshire" used Collaborative Learning methods (Daniels & Walker, 2001; Feurt, 2003; 2006; 2007; 2008; 2009) to engage watershed stakeholders in the development of the Action Plan. Eighty-two people attended the workshop at the Spring Hill Conference Center in Berwick, Maine on October 27, 2010. After hearing from watershed leaders working on all aspects of source water protection, participants worked in small groups to identify locally important values of water, their concerns for water, what they considered to be the threats to water and ideas for protecting and improving water quality through their work.

The Action Plan draws heavily from the information generated by participants during the workshop. During the months following the workshop the members of the Collaborative continued to refine the Action Plan by combining the workshop results with information, reports and studies created by all of the member organizations. The Action Plan reflects the priorities and ideas generated from the 2010 workshop and complements existing water protection work being done by many different organizations, water districts, and municipalities. The next section of this document provides the highest priority actions to protect clean drinking water in the Salmon Falls watershed. These actions are organized as "Action Strategies."

# ACTION STRATEGY – 1

## ASSIST WATERSHED MUNICIPALITIES, LAND TRUSTS, WATER SUPPLIERS, AND LAND OWNERS WITH CONSERVING AND MAINTAINING LANDS MOST IMPORTANT FOR PRODUCING CLEAN WATER.

The Salmon Falls Watershed Collaborative supports the conservation and maintenance of land that produces clean and safe drinking water. The Land Conservation Plan (LCP) for NH[1] and ME[2] co-occurence mapping and local expertise from natural resource groups and community members will be used to identify priority areas for conservation and maintenance. These community-supported maps will be relayed to local decision-makers to support land conservation and maintenance through funding and ordinances within the Salmon Falls watershed.

### Issues Addressed:

- Land Protection
- Source Water Protection
- Stakeholder Engagement

### Lead Organizations:

- NH DES
- NRCS
- ME CDC
- ME NEMO
- PREP
- USEPA
- WNERR

### Cooperators:

- Land Trusts
- MtA2C
- Municipalities
- Planning Boards
- Property Owners
- RPCs
- Water Suppliers

### Funding:

- ME CDC
- MDEP
- NH DES
- NRCS
- PREP
- USEPA

## ACTIVITIES

1. Hold a series of workshops designed to help land owners keep working forests and agricultural lands productive (e.g., through farm management plans).
2. Identify priority areas for land conservation linked to drinking water source protection by refining and synthesizing existing geographic information systems analysis (GIS).
    - Use overlays such as aquifers and source water protection areas.
    - Integrate the land conservation focus areas identified by the LCP-NH[1] and LCP-ME[2]; land trust priority parcels; water supplier conservation plans; and municipal land conservation plans.
3. Host a day-long Salmon Falls watershed-wide workshop targeted to representatives of municipalities, land trusts, water suppliers and watershed groups who will be ambassadors to their municipal leadership or related organization responsible for protecting drinking water.
    - Capture local input into the design and format of local maps to ensure effective use and build capacity to accomplish land conservation goals.
4. Provide resources (GIS, funding opportunities, grant writing, website) and skill building linked to a suite of locally relevant land conservation strategies (including easements, acquisitions, information about funding sources and policy).
5. Develop policies and ordinances such as land use change tax fees, mitigation fees, and impact fees to facilitate conservation funding for source water protection.

## MEASURING PROGRESS

### Outputs

- Forest management plans prepared.
- Parcels most important for land protection identified and gaps and overlaps in the conservation focus areas highlighted.
- Priority land protection areas integrated into land trust, water suppliers, and municipal conservation plans.
- Outreach to local decision makers through workshop ambassadors that focuses on the highest priority conservation and maintenance areas.
- Source water presentations made to groups and key decision makers for each local situation identified in the workshop.

### Outcomes

- Well-managed sustainable forests.
- Protection and/or maintenance of lands that incorporates highest priority drinking water source protection areas with local and regional conservation priorities.
- Funding for land conservation groups within the Salmon Falls watershed.

### Implementation Metrics

- Municipalities have conservation overlay districts that have conservation focus areas from regional plans.
- Number of acres where forest management plans are implemented.

**CRITICAL GUIDANCE**

[1]Zankel, M.,C. Copeland, P. Ingraham, J. Robinson, C. Sinnott, D. Sundquist, T. Walker, and J. Alford. 2006.

[2]Walker, S., T. Smith, P. Schumacher, J. Czapiga, D. Sowers, J. Oman-Saltmarsh, and P. Dest. 2010. Piscataqua Region Estuaries Partnership, D.B. Truslow Associates, and Mettee Planning Consultants. 2010.

# ACTION STRATEGY – 2

## ASSIST WATERSHED MUNICIPALITIES AND WATER SUPPLIERS WITH PROTECTING DRINKING WATER BY ADOPTING LOW IMPACT DEVELOPMENT (LID) TECHNOLOGIES, STORMWATER BEST MANAGEMENT PRACTICES (BMPS), AND IMPROVED LAND USE DEVELOPMENT REGULATIONS.

As population and development increase in the region, the adoption of LID technologies and stormwater BMPs will help protect the quality and quantity of drinking water by reducing the volume of stormwater and pollution leaving a given site. There are on-going efforts within the Salmon Falls watershed to promote and install LID technologies and stormwater BMPs as the current standard of practice for new development and re-development projects. Improved local land use development regulations that require and incentivize LID practices are a top priority for preventing water pollution as the region becomes more developed.

### Issues Addressed:

- Groundwater
- LID
- Nutrients
- Pollution Prevention
- Stormwater management

### Lead Organizations:

- AWWA
- ME NEMO
- NH DES
- PREP
- RPCs
- UNH-SC
- WNERR

### Cooperators:

- Departments of Public Works
- Developers
- Engineers
- Landscape Architects
- Land Use Planners
- Municipalities
- Planning boards
- Property Owners
- Watershed organizers

### Funding:

- ME CDC
- MDEP
- NH DES
- NRCS
- PREP
- USEPA

## ACTIVITIES

1. Conduct and sponsor field trips and trainings to showcase examples of LID and stormwater BMPs in the Salmon Falls watershed.
    - Target local decision-makers, engineers, landscape architects, and public works employees in the watershed.
    - Use existing NEMO and UNH-SC training resources.
2. Conduct stormwater utility feasibility studies to evaluate sustainable funding options for stormwater management improvements and maintenance costs.
3. Develop and communicate LID model ordinances and regulations.
    - Utilize existing model regulations from NH, ME, and other municipalities as examples.
    - Utilize PREP's Community Technical Assistance Grant Program for funding support.
4. Identify and implement stormwater/LID demonstration projects in targeted communities.
    - Include a way to measure economic and performance benefits of select LID and stomwater management projects.
5. Create a resource list of practitioners who provide LID and stormwater design and installation services.

## MEASURING PROGRESS

### Outputs

- Outreach campaign to municipal staff, boards and developers on adopting LID technologies and stormwater BMPs.
- Participation in UNH-SC, NEMO, WNERR, and AWWA workshops for municipal staff, boards, and targeted audiences.
- Stormwater utility feasibility studies.
- List of LID practitioners that work within the watershed.

### Outcomes

- Prevention of pollution loading into the Salmon Falls Watershed.
- Adoption of LID technologies and stormwater BMPs in each municipality.
- Improved local development regulations that require and incentivize the use of LID and best stormwater management practices.
- Land being developed with minimal impact.

### Implementation Metrics

- Municipalities require that LID techniques are used to the maximum extent practicable for new development and redevelopment.
- Municipal stormwater management regulations reflect NHDES model.
- Acres of impervious surfaces in coastal watersheds.

**CRITICAL GUIDANCE**

New Hampshire Department of Environmental Services. 2010.

Horsley Written Group. 2007.

Peterson, J., A. Stone, and J. Houle. 2009.

Piscataqua Region Estuaries Partnership, D.B. Truslow Associates, and Mettee Planning Consultants. 2010.

# ACTION STRATEGY – 3

## ASSIST MUNICIPALITIES AND WATER SUPPLIERS WITH PROTECTING AQUIFERS AND WATERWAYS BY ADOPTING LOCAL REGULATIONS THAT MINIMIZE POLLUTION RISK.

The Salmon Falls Watershed Collaborative believes that the development, adoption, and implementation of land use regulations that protect vegetation along waterways, carefully manage development above important aquifers, and minimize risk to public water supplies are essential elements needed to protect the quality of drinking water in the Salmon Falls watershed.

### Issues Addressed:

- Drinking Water
- Land Protection
- Source Water Protection
- Stakeholder Engagement

### Lead Organizations:

- ME NEMO
- NH DES
- RPCs

### Cooperators:

- Municipalities
- Planning Boards

### Funding:

- MDEP
- NH DES

## ACTIVITIES

1. Assist governments at all levels to develop, adopt, and implement drinking water/aquifer protection/source water protection ordinances, regulations, and policies.
2. Apply and expand the Buffer Gap Analysis (BGA) process in all Salmon Falls watershed communities. Use BGA as a source water protection indicator tool for future source water protection policy goals.
3. Provide outreach and technical assistance to municipalities to help them adopt local regulations that maintain substantial buffers of natural vegetation along waterways.
4. Develop a clean water score/report card/green certification program that synthesizes key elements into a community-specific assessment.

## MEASURING PROGRESS

### Outputs

- Outreach and technical assistance to local decision-makers and communities in the watershed on adopting regulations/ordinances for drinking water protection.

### Outcomes

- Local government adoption of regulations for drinking water protection and protection of healthy stream corridors.
- Clean water score card.

### Implementation Metrics

- Number of municipalities with at least 75-foot wide shoreland buffer protections on first order steams and 100-foot on all larger waterways.
- Municipalities that have adopted a groundwater protection ordinance.

**CRITICAL GUIDANCE**

Horsley Written Group. 2007.

New Hampshire Department of Environmental Services, New Hampshire Association of Regional Planning Commissions, New Hampshire Office of Energy and Planning, New Hampshire Local Government Center. 2008.

Piscataqua Region Estuaries Partnership, D.B. Truslow Associates, and Mettee Planning Consultants. 2010

# ACTION STRATEGY – 4

## PREVENT POLLUTION AND RESTORE DEGRADED WATERS THROUGH IDENTIFICATION & CLEAN UP OF SOURCES OF CONTAMINATION IN THE SALMON FALLS WATERSHED.

Public drinking water sources are vulnerable to contamination by easily identifiable "point" sources of pollution (for example landfills, junkyards, waste storage lagoons, leaking underground storage tanks) as well as harder to define "non-point source (NPS)" pollution such as runoff from parking lots, roads, fertilized lawns, and farms. Potential Contamination Source inventories are often conducted to assess potential threats from point sources. Potential Contamination Source inventories were recently conducted by the MRWA and GSRWA for most of the towns that make up the watershed[1]. These inventories serve as a critical element of a source water protection plan. Additional land use analysis and field surveys can identify additional point and NPS areas that may contribute pollution to drinking water sources.

### Issues Addressed:

- Groundwater
- Pollution Prevention
- Restoration
- Source Water Protection
- Stormwater Management

### Lead Organizations:

- AWWA
- GSRWA
- MRWA
- NH DES_WAS
- USEPA
- YCSWCD

### Cooperators:

- Departments of Public Works
- Municipalities
- Property Owners
- Public Water Suppliers
- Watershed organizers

### Funding:

- ME CDC
- NH DES
- USEPA

## ACTIVITIES

1. Utilize Potential Contamination Source inventories as a basis for outreach to site owners/managers on how to prevent and mitigate contamination.
    - Update Potential Contamination Source inventory.
2. Conduct watershed surveys to document and assess sources and potential sources of contamination and illicit discharges to public water supplies.
    - Use this information to guide planning and mitigation.
3. Reduce and mitigate NPS pollution.
    - Prioritize sites for restoration.
    - Target small community water suppliers for demonstration projects to reduce pollution in source water areas.
4. Ensure that all water supplier personnel that inspect Potential Contamination Sources are properly trained.
5. For water suppliers whose source water protection areas include Potential Contamination Sources, offer assistance with inspection programs.

## MEASURING PROGRESS

### Outputs

- Data collection for all sources and potential sources of surface water contamination/illicit discharges and erosion areas within the Salmon Falls Watershed.
- Local inspectors trained.
- Completed Potential Contamination Source inventories and management plans.
- Education and outreach programs to prevent pollution.

### Outcomes

- NPS pollution reduction and mitigation demonstration projects in source water protection areas.
- Potential Contamination Source operators are aware of risks and manage their activities to minimize risk.

### Implementation Metrics

- Number of Potential Contamination Sources inspected and followed up by local inspectors to ensure implementation and compliance.

**CRITICAL GUIDANCE**

[1]Maine Rural Water Association and Granite State Rural Water Association. 2011.

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Schmitt, C. 2002.

# ACTION STRATEGY – 5

## ENGAGE AND INSPIRE GOVERNMENTS, ORGANIZATIONS, AND CITIZENS IN COLLABORATIVE ACTIONS TO SUSTAIN THE SALMON FALLS WATERSHED.

Protecting sources of clean and safe drinking water is the common goal for the members of the Salmon Falls Watershed Collaborative. Effective actions transcend political boundaries and require the work of a diverse group of professionals, organization, and citizens. The Salmon Falls Watershed Collaborative will continue to share information and pursue opportunities for cooperation and collaboration in support of its common goal.

**Issues Addressed:**

- Stakeholder Engagement

**Lead Organizations:**

- Salmon Falls Watershed Collaborative

**Cooperators:**

- All organizations and communities within the Salmon Falls Watershed

**Funding:**

- MDEP
- NH DES

## ACTIVITIES

1. Create a one-stop web-resource that showcases and provides resources for local/regional low impact development technologies, stormwater best management practices, and nonpoint source pollution control.
2. Make the Salmon Falls Watershed Collaborative a model for watershed groups.
    - Use appropriate social marketing, collaborative learning, public participation, and science communication.
3. Coordinate uniform messaging for water suppliers, municipal separate storm sewer systems, NERRS, and PREP about connections to the land and water.
    - e.g., Forest to Faucet, Rubber Ducky Campaign, Water Words that Work.
4. Provide trainings and workshops that promote the Salmon Falls Watershed Collaborative message for maintaining and protecting drinking water sources.
5. Incorporate the Salmon Falls Watershed Collaborative goal into local school programs.

## MEASURING PROGRESS

### Outputs

- Website as a public resource.
- Uniform marketing message.
- Trainings and workshops.
- Email newsletter.

### Outcomes

- Expanded knowledge about drinking protection in the Salmon Falls watershed.
- Increased collaboration among groups, organizations and towns within the Salmon Falls watershed.

### Implementation Metrics

- Number of Salmon Falls Watershed Collaborative newsletter subscribers.
- Number of hits and downloads on Salmon Falls Watershed Collaborative website.

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## APPENDIX I:
## WATER PROTECTION RESOURCES AVAILABLE IN THE SALMON FALLS WATERSHED

This appendix provides information on where to find technical assistance and financial support for water resource protection activities. This list is not exhaustive and many more resources exist. Resources are organized by the following categories:

- Land Protection
- Planning and Regulation
- Best Management Practices
- Education
- Land Protection

### Land Conservation Plans:

- The Land Conservation Plan for Maine's Piscataqua Region Watersheds (http://www.prep.unh.edu/resources/pdf/the_land_conservation-BwH-etal.10.pdf)
  The plan provides a scientific and experienced-based guide for the protection of natural resources vital to thriving communities. It is designed to assist citizens who are involved in sustaining and improving their communities by serving on select boards, planning boards, conservation commissions, economic development boards, schools, or non-profit community organizations such as land trusts, watershed coalitions, conservation groups, and recreation clubs.
- The Land Conservation Plan for New Hampshire's Coastal Watersheds (www.rpc-nh.org/coastal-conservation.htm)
  The overarching goal of this land conservation plan is to focus conservation on those lands and waters that are most important for conserving living resources – native plants, animals, and natural communities – and water quality in the coastal watersheds.
- Piecing together the Puzzle: Farms, Forests and Water
  Great Works Regional Land Trust, 2009, Ogunquit, Wells, the three Berwicks, and Eliot, 52 pp. (www.gwrlt.org)
- Mt. Agamenticus to the Sea Conservation Initiative, Conservation Plan, 2005, York, Eliot, South Berwick, Wells, and Ogunquit, 18 pp. (www.mta2c.org/mta2c_conservation_plan.pdf)
- Town of Sanford, Headwaters; A Collaborative Conservation Plan for the Town of Sanford, 2009, 51 pp. (http://tos.wwwbus.metrocast.net/ConservationPlan/SanfordConservation/Plan09.pdf)

### Land Conservation Organizations:

- Great Works Regional Land Trust
  (http://www.gwrlt.org)
- Strafford Rivers Conservancy
  (http://www.straffordriversconservancy.org/)
- Moose Mountains Regional Greenways
  (www.mmrg.info)
- Mt. Agamenticus to the Sea Conservation Initiative
  (www.mta2c.org)

- Sanford-Springvale Mousam Way Land Trust
  phone: 207-324-5609
- Three Rivers Land Trust (services Acton, Alfred, Lebanon, Sanford/Springvale, and Shapleigh)
  (www.3rlt.org)
- York Land Trust
  (www.yorklandtrust.org)
- Maine Coast Heritage Trust
  (www.mcht.org)
- The Nature Conservancy
  (www.nature.org)
- The Trust for Public Land
  (http://www.tpl.org)
- Piscataqua Region Estuaries Partnership
  (www.prep.unh.edu)
  PREP's Coastal Watershed Land Protection Transaction Grants program provides up to $4,000 per project towards the real estate transaction costs (property surveys, appraisals, attorney fees, etc.) associated with permanent land protection projects. Contact Derek Sowers at 603-862-2641 for more information.

### Planning and Regulation

- Piscataqua Region Estuaries Partnership
  (www.prep.unh.edu)
  PREP's Community Technical Assistance Program (CTAP)provides grants of up to $8,500 per project to assist municipalities in improving their environmental land use regulations or conservation planning efforts. To learn more about this program contact Rachel Rouillard at 603-862-3948.
- New Hampshire DES Drinking Water Source Protection Program
  The primary role of the Drinking Water Source Protection Program is to provide technical and financial assistance, and to enforce state regulations that serve to protect the state's sources of drinking water. More information is available at (http://des.nh.gov/organization/divisions/water/dwgb/dwspp/index.htm)
  Contacts: Paul Susca, paul.susca@des.nh.gov (603) 271-7061;
  Pierce Rigrod, pierce.rigrod@des.nh.gov (603) 271-0688
  - Technical Assistance – Program staff are available to meet with local planners, water suppliers, and citizens groups to review available information about potential threats to drinking water, discuss options for improved protection, and provide training. The program also holds a full-day source water protection workshop each year in either April or May.
  - Guidance documents – The program publishes model ordinances, fact sheets, and a quarterly newsletter that can be found at (http://des.nh.gov/organization/divisions/water/dwgb/dwspp/categories/publications.htm)
  - Information about water resources and water supply threats – Standard products include Drinking Water Resource Maps, Riparian Buffer Gap Maps, and Drinking Water Source Assessment Reports.
- Maine CDC Drinking Water Program
  (www.medwp.com)
  Contacts: Andrews Tolman, andrews.l.tolman@maine.gov (207)287-6196;
  Erika Bonenfant erika.bonenfant@maine.gov (207) 287-5681
  - Provides assistance to public water systems in Maine for a variety of source-protection related activities. Wellhead Protection Grants, up to $10,000, are available to groundwater systems annually on a competitive basis, in the spring. Capacity Development Grants may also be used for source protection planning, and require a 50% PWS match, up to $10,000. Application deadline for 2011 Capacity Grants will also be in the spring. Land Acquisition Loans are also available to Public Water Systems and Land Trusts for protection of land integral to the water source.
  - Technical Assistance: Staff can provide updates to source water assessments, emergency management plans, and capacity assessments.
  - Model Ordinances and Best Management Practices, as well as newsletters, are available at www.medwp.com, along with information on grants and loans.
- Southern Maine Regional Planning Commission
  Springvale, ME 04083
  phone: 207-324-2952
  (www.smrpc.org)
  SMRPC has been conducting economic development, environmental, land use and transportation planning and providing technical assistance to the municipalities in the southern Maine region for over 40 years.

- Strafford Regional Planning Commission
  150 Wakefield St. Suite 12 • Rochester, NH 03867
  Phone: (603) 994-3500 • Fax: (603) 994-3504 • E-mail: srpc@strafford.org
  (www.strafford.org)
  Strafford Regional Planning Commission's (SRPC) mission is to plan and act to achieve sustainable development and improve the quality of life by balancing economic progress with environmental protection and community well being. SRPC, a political subdivision of the state, has been active in regional planning for 39 years as one of the nine Regional Planning Commissions established by the New Hampshire legislature. SRPC serves in an advisory role to local governments and other agencies on transportation, land use, and natural resources planning.
- Natural Resources Outreach Coalition
  Amanda Stone
  UNH Cooperative Extension
  36 County Drive, Laconia, NH 03246-2900
  Tel/Fax: 603-364-5324
  (http://extension.unh.edu/CommDev/NROC/CANROC.cfm)
  The Natural Resources Outreach Coalition (NROC) is a multi-organizational initiative offering coordinated assistance to New Hampshire communities wishing to protect their natural resources while accommodating growth.
- Maine Department of Inland Fisheries & Wildlife Beginning with Habitat Program
  Steve Walker, Manager
  41 State House Station
  284 State Street, Augusta, Maine 04333-0041
  phone: 207-287-5254
  fax: 207-287-6395
  email: steve.walker@maine.gov
  (www.beginningwithhabitat.org)
  Beginning with Habitat compiles habitat information from multiple sources, integrates it into one package, and makes it accessible to towns, land trusts, conservation organizations and others to use proactively. Each Maine town is provided with a collection of maps, accompanying information depicting and describing various habitats of statewide and national significance found in the town, and with tools to implement habitat conservation in local land use planning efforts. BwH is designed to help local decision makers create a vision for their community, to design a landscape, and to develop a plan that provides habitat for all species and balances future development with conservation.
- Granite State Rural Water Association
  322 Village St, Penacook, NH 03303
  phone: 603-753-4055
  (www.gsrwa.com)
  GSRWA works directly with select communities on the development of Source Water Protection Plans (SWPP). Work will include the coordination of meetings with NH Department of Environmental Services (NHDES) personnel, community planning boards, conservation committees, and utility commissioners. GSRWA will assist with completing inventories of possible contamination sources (PCS) within the source water area utilizing GPS and GIS technologies. The SWPP steering committees from each community will work with GSRWA to prioritize risks to the water supply and implement protection strategies. GSRWA can also provide on-site training and technical assistance in the implementation of existing SWPPs.
- The Maine Rural Water Association (MRWA)
  MRWA is a private, non-profit organization with a very simple goal—representing rural water and wastewater systems throughout Maine. The Association is run by and for rural systems. This program includes training classes for system personnel and administrators on federal and state rules, operation and maintenance, and finance; an information network on keeping you in touch with your neighbor's system, regulatory agencies, and the legislature; and an effective voice in matters that concern you. MRWA also provides on site technical support on leak detection, process control, compliance, and source water protection.
  For more information contact Susan Breau-Kelley at sbreau@mainerwa.org or call 207 737-4092.

### Best Management Practices (Stormwater)

- Piscataqua Region Estuaries Partnership
  (www.prep.unh.edu)
  PREP's Local Grant Program provides grants of up to $10,000 to organizations implementing a high priority action from PREP's Piscataqua Region Comprehensive Conservation and Management Plan. To learn more about this program contact Derek Sowers at 603-862-2641.

- UNH Cooperative Extension
  Julia Peterson
  University of New Hampshire
  Durham, NH 03824-3512
  phone: 603-749-1565
  julia.peterson@unh.edu
  Extension provides New Hampshire citizens with research-based education and information, enhancing their ability to make informed decisions that strengthen youth, families and communities, sustain natural resources, and improve the economy.
- The University of New Hampshire Stormwater Center
  Jamie Houle
  University of New Hampshire
  Durham, NH 03824
  phone: 603-767-7091 Fax: 603-862-3957
  james.houle@unh.edu
  (www.unh.edu/unhsc/)
  The UNH Stormwater Center studies stormwater-related water quality and quantity issues. The mission of the Center is to test stormwater control measures, disseminate test results and evaluations, and demonstrate innovative stormwater management technologies.
- See "New Hampshire DES Drinking Water Source Protection Program" under Planning and Regulation, above. The Program has rules that require "potential contamination sources" to use best management practices for groundwater protection and trains local officials and water systems to conduct inspection programs to ensure that the BMPs are being implemented.

### Education

- Maine Non-point Education for Municipal Officials (NEMO)
  NEMO is an educational program for land use decision makers that addresses the relationship between land use and natural resource protection, with a focus on water resources, nonpoint source pollution, and stormwater runoff. Maine NEMO can present educational programs that will be customized to your community's location and knowledge base.
  For more information contact LaMarr Clannon at 207-771-9020 or lcannon@maine.rr.com.
- Coastal Training Program
  Wells National Estuarine Research Reserve
  342 Laudholm Farm Road, Wells, Maine 04090
  207-646-1555 x111
  (http://www.wellsreserve.org/education/coastal_training)
  The Coastal Training Program (CTP) provides technical assistance to communities and organizations in southern Maine including: meeting facilitation; stakeholder engagement; training design, and evaluation design. CTP trainings and workshops focus on: water quality and pollution; watershed planning and management; development, land use, and conservation planning; geographic information and global positioning systems; climate change adaptation and hazard resiliency; habitat restoration, and invasive species management.
- Collaborative Learning for Ecosystem Management
  A guide to conducting collaborative learning projects for watershed planning and collaborative projects. Available from the Wells National Estuarine Research Reserve Coastal Training Program or on line from: (http://www.wellsreserve.org/sup/downloads/collaborative_learning_guide.pdf)
  University of New Hampshire Stormwater Center
  Jamie Houle
  University of New Hampshire
  Durham, NH 03824
  phone: 603-767-7091 Fax: 603-862-3957
  james.houle@unh.edu
  UNHSC offers tours of their demonstration and research site where participants can learn first hand about the design, performance, and maintenance requirements of various stormwater management and Low Impact Development technologies and practices.

## APPENDIX II:
## ACRONYMS, ORGANIZATIONAL GROUPINGS, & COLLABORATIVE MEMBERS USED IN THE ACTION PLAN

| | |
|---|---|
| AWWA | Acton Wakefield Watershed Alliance |
| BWD | Berwick (Maine) Water Department |
| GSRWA | Granite State Rural Water Association |
| GBNERR | Great Bay National Estuarine Research Reserve |
| MDEP | Maine Department of Environmental Protection |
| ME CDC | Maine Center for Disease Control |
| ME DWP | Maine Drinking Water Program |
| ME NEMO | Maine Nonpoint Education for Municipal Officials |
| MRWA | Maine Rural Water Association |
| MMRG | Moose Mountains Regional Greenways |
| MtA2C | Mount Agamenticus to the Sea Conservation Initiative |
| NERRS | National Estuarine Research Reserve System |
| NH DES | NH Department of Environmental Services |
| NH DES-WAS | NH DES Watershed Assistance Section |
| PREP | Piscataqua Region Estuaries Partnership |
| RPCs | Regional Planning Commissions |
| SPNHF | Society for the protection of New Hampshire Forests |
| SPD | Somersworth (New Hampshire) Planning Department |
| SBWD | South Berwick (Maine) Water District |
| SWA | Southeast Watershed Alliance |
| SRPC | Strafford Regional Planning Commission |
| SWC | The (National) Source Water Collaborative |
| UNH-SC | University of NH-Stormwater Center |
| USDA FS | USDA Forest Service |
| USDA NRCS | USDA Natural Resource Conservation Service |
| US EPA | US Environmental Protection Agency |
| WNERR | Wells National Estuarine Research Reserve |
| YCSWCD | York County Soil and Water Conservation District |