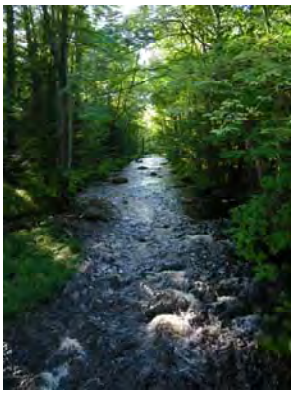


PISCATAQUOG RIVER MANAGEMENT PLAN UPDATE

2010

NHDES

SNHPC

Piscataquog River Local Advisory Committee

Special Acknowledgements

In Memory of:
Beverly Yeaple, PRLAC Committee Member

From the time of its formation, Beverly Yeaple served on the Piscataquog River Local Advisory Committee (PRLAC) as the representative from Deering. She contributed significantly to the publication of the first edition of this River Management Plan and participated regularly in the business of the Committee, serving for a time as its Chair. As this update to the plan is prepared, Bev unfortunately passed away. Her knowledge, dedication, good humor, and commitment to the protection of the Piscataquog River Watershed has set a high standard for those who follow and will not be forgotten.

June 2010

Cover photos provided by Southern New Hampshire Planning Commission

Prepared By:

Piscataquog River Local Advisory Committee
&
Southern New Hampshire Planning Commission
438 Dubuque Street – Manchester, NH 03102
Phone: 603-669-4664 Fax: 603-669-4350
www.snhpc.org

June 2010

Piscataquog River Local Advisory Committee Members:

Jane Beaulieu – Manchester
Andrew Cadorette – Goffstown
Linda Kunhardt – Francestown
Dick Ludders – Weare
John Magee – At-Large
Betsey McNaughten – Deering
John Turcotte – Goffstown
Janet White – New Boston

Acknowledgements:

Southern New Hampshire Planning Commission: David Preece, Executive Director; Linda Moore, Executive Secretary; Jack Munn, Chief Planner; Derek Serach, Planning Intern; and all other SNHPC Staff for their assistance with monthly agendas, meeting minutes, and technical support for this update.

Piscataquog Land Conservancy: Eric Masterson, Executive Director for their commitment to the Piscataquog River and its watershed. The Nomination Report prepared by the PLC was an invaluable resource in developing this Management Plan.

Town of Weare: Weare Town Library for their obliging accommodation in providing the Committee with a place to hold monthly meetings.

Former Committee Members: Pierre Bruno, New Boston; Claire Dodge, New Boston; Kathy Lee Luger, Deering; Michael Cunningham, Manchester for their contributions to the Committee and assistance in developing the original Management Plan.

NH Fish & Game Department and NH Department of Environmental Services for their technical assistance with updated materials addressing species lists, state laws, water quality reporting, and mapping information.

Graphics: Original Pen & Ink Drawings throughout plan prepared by Dodie Finlayson.

TABLE OF CONTENTS

List of Maps

EXECUTIVE SUMMARY

This update to the Piscataquog River Management Plan aims to enhance the overall protection and functioning of the Piscataquog River and its tributaries. Specifically, it is designed to assist and provide guidance to municipalities and other decision makers in protecting the river for its value as drinking water, natural areas and fish and wildlife habitat and mitigating threats and impacts that may result from human activities or natural causes.

One of the main goals of this plan is to maintain the high quality of all the natural resources found along the river and to promote a sustainable use of the water and the adjacent land for the benefit of the Public. An important theme in water management is to view the entire river and its tributaries as a single, comprehensive watershed system. All water resources in a watershed are hydrologically connected. Impacts of pollution to one part of the watershed can impact the entire system, and this is particularly true with respect to the river's headwater streams.

Protecting water quality all the way to the headwater streams is a watershed protection approach which is essential to preserve the water quality of the river for future generations. Even as improvements in wastewater and other treatment facilities are made or expanded, water quality goals continue to become harder to meet. Significant regional issues such as stormwater management, nonpoint source pollution, and flooding need innovative and cooperative solutions among all units of government, both state and local. Protection of the river and all of its tributaries is an ongoing watershed management issue, particularly in an era of dwindling financial resources as watershed protection can dramatically reduce the costs of providing safe, clean drinking water to the public.

For all these reasons – ecology, quality of life, and financial - municipalities must think and act on both a local and regional scale to protect the Piscataquog River in a responsible way and be mindful of the impacts of growth and the increasing demands for use of the river. As such, this plan aims to educate the public about the key natural resource issues related to the river and provide the latest tools to help shape future river management decisions and actions for the benefit of the public.

Frequently Used Acronyms

BMP – Best Management Practices
CSPA – Comprehensive Shoreland Protection Act
CTAP – Community Technical Assistance Program
DES – Department of Environmental Services
EPA – Environmental Protection Agency
FEMA – Federal Emergency Management Agency
IFPPP – Instream Flow Piscataquog Protection Program
LAC – Local Advisory Committee
NHB – Natural Heritage Bureau
NH DES – New Hampshire Department of Environmental Services
NHFG – New Hampshire Fish & Game
PLC – Piscataquog Land Conservancy
PRLAC – Piscataquog River Local Advisory Committee
PWA – Piscataquog Watershed Association (formerly the Piscataquog Land Conservancy)
RMPP – River Management Protection Program
VRAP – Volunteer River Assessment Program

1. INTRODUCTION

1.1 Purpose

The Piscataquog River Management Plan was developed by the Piscataquog River Local Advisory Committee (PRLAC) in accordance with the guidelines of RSA 483 to create a framework for long-term use and protection of the Piscataquog River. This Updated 2010 Management Plan achieves this purpose by defining a future for the river that respects the legitimate interest of property owners while recognizing that the river is an important community resource.

It is the goal of the PRLAC that all eleven (11) municipalities located within the Piscataquog River watershed adopt this 2010 Updated Management Plan as part of their Master Plan. These eleven municipalities include: the towns of Deering, Dunbarton, Francestown, Goffstown, Greenfield, Henniker, Lyndeborough, New Boston, Mont Vernon, Weare, and the City of Manchester. It is the hope of the PRLAC that this Updated Management Plan can become the basis for guidance that these communities and other organizations will use when undertaking any efforts that will affect the Piscataquog River or its watershed.

In association with this Updated Management Plan, the Southern New Hampshire Planning Commission (SNHPC) is also preparing a Land Conservation Plan for the entire Piscataquog River Watershed. The purpose of this conservation plan will be to seek and ensure further protection of ecologically important land and aquatic resources both within the watershed and along the river. The primary focus of the plan is to protect water quality, significant terrestrial and aquatic plant and wildlife habitat, riparian zones, intact and productive forest blocks, and headwater streams. The Land Conservation Plan will build upon previous work, including the

Conservation Plan for the Piscataquog Watershed prepared in 2005 by the Piscataquog Land Conservancy (PLC), formerly known as the Piscataquog Watershed Association (PWA).

Together the Updated Piscataquog River Management Plan and the Piscataquog Watershed Land Conservation Plan will provide the scientific documentation necessary for communities to pursue the protection of important lands and aquatic resources as well as enact necessary and innovative land use and environmental ordinances designed to bring about wise and smart use of the land and river system.

1.2 Background

In 1988, the NH General Court passed the Rivers Management and Protection Act. This Act was enacted in recognition of the fact that river protection is essential to the integrity of the state's public waters. The NH Rivers Management and Protection Program was implemented as a result of RSA 483:6 which allows any New Hampshire organization or resident to nominate a river for protection. In 1992, the PWA submitted the required nomination documentation to NH DES and the state legislature approved the incorporation of the North, South, and Middle Branches and the Main Stem of the Piscataquog River into the Rivers Management and Protection Program.

As part of the nomination process, RSA 483:8-a also provides for the appointment of a local river management advisory committee for each designated river. Municipalities located along the designated river can have at least one member on a local river management advisory committee. Members are nominated by the local governing body and appointed by the Commissioner of the NH DES.

The municipalities that currently make up the PRLAC are Deering, Francestown, Goffstown, Manchester, New Boston, and Weare. Local river advisory committees are required to have at least seven members, representing a broad range of interests in the vicinity of the designated river.

Below is a list of all the current New Hampshire designated rivers (a map of all the designated rivers can be found in Appendix 9.7).

NEW HAMPSHIRE DESIGNATED RIVERS	
Ammonoosuc River	Lamprey River
Ashuelot River	Lower Merrimack River
Cocheco River	Pemigewasset River
Cold River	Piscataquog River
Connecticut River	Saco River
Contoocook- North Branch Rivers	Souhegan River
Exeter River	Swift River
Isinglass River	Upper Merrimack River

1.3 Duties of the Local River Advisory Committee

RSA 483:8a defines four major duties of a Local River Advisory Committee (LRAC). These are as follows:

- To advise the Commissioner, the state advisory committee, and the municipalities through which the river flows on matters pertaining to the management of the river. Municipal officials, agencies and boards are responsible to inform the advisory committee of regulating action considered in managing the river corridor.

- To comment on any federal, state or local government project that would alter the resource values and characteristics for which the river was designated.

- To develop and assist in the adoption of a local river corridor management plan under RSA 483:10, Rivers Corridor Management Plans. In the absence of the local planning board, the local governing body may adopt these plans in accordance with RSA: 675:6, method of adoption, in relation to the adopted Master Plan.

- To report annually to the state advisory committee and Commissioner on the status of compliance with federal, state, and local regulations, ordinances and plans relevant to the designated river corridor.

It is important to note that under recent changes to RSA 482-A:3 effective July 1, 2010, Excavating and Dredging Permit, all local river advisory committees are required to receive a copy of wetland permit applications submitted to the municipal clerk that are located within a designated river corridor under RSA 483:4. River corridor means the river and land area located within a distance of 1,320 feet or ¼ quarter mile of the normal high water mark or the landward extent of the FEMA 100-yr floodplain. Copies of Alteration of Terrain, Shoreland and Wetland Permit applications are currently forwarded to LRACs at this time.

1.4 Content of the Plan

RSA 483:6 identifies various qualities that can be considered in the designation of a river for protection under the Rivers Management and Protection Act. The PRLAC focused on eight of these qualities in the creation of this Plan, including:

Water Quality, Instream Flow
Streambank Stabilization, Shoreland Protection,
Recreation Opportunities, Natural Resources,
Scenic Resources and Cultural Resources

For each of these attributes, background information is presented, goals discussed, and a table is provided to summarize key actions and implementation methods required to achieve the stated goals.

The Plan also contains various maps that pertain to the subject matter, several appendices providing reference material pertaining to fish, mammals, birds, amphibians and reptiles, and plants of the Piscataquog River Watershed, a matrix of federal state and local regulations pertaining to the river, and a bibliography of community, state and federal reports and references.

It should be noted that much of the information contained in the "background" section of each river attribute, has been taken from the nomination papers originally prepared by the PLC. This non-profit conservation organization was founded in 1970. Its main goal is to protect and preserve the river and its natural habitats. The PLC nominated the Piscataquog River in 1993 and actively pursued its adoption into the New Hampshire Rivers Management Protection Program.

1.5 Basis for Nomination of the Piscataquog River

The Piscataquog River consists of three branches: South, Middle and North, all of which were accepted into the New Hampshire Rivers Management and Protection Program in July 1993. Despite its proximity to Manchester, the largest city in New Hampshire, the Piscataquog River is predominantly a quiet stream. Its total length is approximately 70 miles, the North Branch consists of 29.3 miles, the Middle Branch 10.6 miles, the South Branch 20.5 miles and the Main Stem 11.9 miles. Over ninety percent is free-flowing, a claim few rivers in New England can make. A relatively large watershed, comprised of over a hundred thousand acres, much of the land along the river is protected and open to the public, providing for multi-recreational and educational use as well as affording excellent water quality. For a display of the Piscataquog watershed and its larger sub-watersheds refer to Map 1.

For nearly 30 years, the Piscataquog Land Conservancy, the Society for the Protection of New Hampshire Forests, the New England Forestry Foundation, the Audubon Society of New Hampshire, riverfront towns, state agencies and dozens of private landowners and river stewards have worked to protect the watershed of the Piscataquog River. As a result, over twenty-five thousand acres of land along the river are protected that make up twenty percent of the watershed these include private holdings and publicly owned lands. Large tracts of protected land are carefully managed for both timber production and protection of natural habitat.

The Piscataquog watershed is rich in geologic formations, especially glacial deposits. Most notable is an esker train along the South Branch which runs four miles along the river marking the remnants of a stream which once coursed its way through glacial ice. Other significant formations include glacial kettles, a gorge on the Lyndeborough/New Boston town line, and "the plains," a glacial deposit of sand and gravel which may have been the site of New Boston's first settlement. An ever-running natural spring southeast of the Lyndeborough/New Boston town line is yet another geologic highlight of the area.

Map 1

PISCATAQUOG RIVER MANAGEMENT PLAN

WATERSHED MAP

Henniker
Hopkinton
Concord
Hillsborough
Bow
Dunbarton
Weare
Deering
Merrimack River
Hooksett
Bennington
Manchester
Goffstown
Francestown
New Boston
Greenfield
Bedford
Lyndeborough
Amherst
Mont Vernon
Merrimack

North Branch Piscataquog River
Middle Branch Piscataquog River
South Branch Piscataquog River
Main Stem Piscataqoug River

Pleasant Pond
Dudley Pond
Weare Reservoir
Everett Lake
Mt William Pond
Gorham Pond
Deering Reservoir
Daniels Lake
Shattuck Pond
Pleasant Pond
Glen Lake
Dodge Pond
Haunted Lake
Bailey Pond

177
114
13
149
136
114
101

- Watershed Boundary
- Lakes
- Streams
- Town Boundaries

HUC 12 Watersheds

- Everett Lake
- Lower Piscataquog River
- Middle Branch Piscataquog River
- Rand Brook-South Branch
- South Branch Piscataquog River
- Upper Piscataquog River
- Weare Reservoir

Note:
The Piscataqoug River Watershed encompasses 220 square miles in 14 communities.

The Piscataqoug River Corridor lies within 7 communities and includes the River and lands 1/4 mile on each side of the River, measured from the high water mark.

0 1 2 3 4 Miles

Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
NH Department of Environmental Services

The individual municipalities represented on this map and the SNHPC make no representations or guaranties to the accuracy of the features and designations of this map.

Map Produced by
GIS Service SNHPC 2009.
Contact: gis@snhpc.org
Ph: (603) 669-4664

This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.

SNHPC

N W E S

New Hampshire Location Map

Piscataquog River Watershed

1.6 Piscataquog River Description Covered by Plan

The portions of the Piscataquog River designated for protection under the Rivers Management and Protection Act are:

North Branch

- As a **NATURAL RIVER** from the outlet of Deering Lake Dam in Deering, 6.25 miles to the Abijah Bridge in Weare.

- As a **RURAL RIVER** from the outlet of Lake Horace Dam in Weare, 8 miles to the Everett Dam flowage in Weare. Additionally, from the outlet of the Everett Dam in Weare, 8 miles to the river's convergence point with the South Branch.

Middle Branch

- As a **NATURAL RIVER** from the natural outlet of Haunted Lake in Francestown to the inlet of the upper cranberry bog at the New Boston town line, approximately 11.5 miles to its mouth in New Boston.

South Branch

- As a **NATURAL RIVER** from the outlet of Pleasant Pond in Francestown, 11.5 miles to New Hampshire Route 13 in New Boston.

- As a **RURAL RIVER** from New Hampshire Route 13 in New Boston, 7 miles to the confluence with the North Branch.

- As a **RURAL-COMMUNITY RIVER** from the confluence with the North Branch, 1.7 miles to New Hampshire Route 114 in Goffstown.

- As a **COMMUNITY RIVER** from New Hampshire Route 114 in Goffstown, one mile to Gregg Dam in Goffstown.

- As a **RURAL-COMMUNITY RIVER** from Gregg Dam in Goffstown, 6.9 miles to the river's mouth at Bass Island in Manchester.

The specific criteria for river classification (i.e.; **natural, rural, rural-community, community or rural-community)** are provided in RSA 483:7-a. and are summarized below and in the following Table 1.

> **Natural Rivers**: Free flowing rivers or segments characterized by the high quality of natural and scenic resources; shoreline primarily in natural vegetation; development limited to forest management and scattered housing; five mile minimum length; existing water quality shall not be lower than Class B (suitable for swimming and fishing - suitable for drinking with treatment).

Rural Rivers: Rivers or segments adjacent to lands partially or predominantly used for agriculture, forest management, dispersed or clustered residential development; some instream structures may exist resulting in minor modifications; three mile minimum length; existing water quality shall be at least Class B or have the potential for restoration to Class B.

Rural-Community Rivers: Rivers or segments which flow through developed or populated areas that possess existing/potential community resources values defined in plans or land use controls; have mixed land use reflecting some combination of open space, agriculture, residential, commercial and industrial land uses; are readily accessible by road or railroad; may include impoundments or diversions; three mile minimum length; existing water quality shall be Class B or have the potential for restoration to Class B.

Community Rivers: Rivers or segments which flow through developed or populated areas that possess existing/potential community resources values defined in plans or land use controls; mixed land use reflecting some combination of open space, agriculture, residential, commercial and industrial land uses; are readily accessible by road or railroad; may include impoundments or diversions or potential sites for new impoundments or diversions for hydropower, flood control or water supply purposes; may include urban centers of municipalities; one mile minimum length; existing water quality shall be Class B or have the potential for restoration to Class B.

The location of the above river classifications within the Piscataquog Watershed are shown on the following Map 2.

1.7 Piscataquog River Base Line Data

The PLC along with NH DES continues to monitor the Piscataquog River working with volunteers from schools and various organizations. This data provides valuable information regarding the environmental quality of the river and watershed.

While the importance of this data is recognized, it is also understood to be constantly changing. Therefore, it is recommended that individuals access the Surface Water Quality Assessment Program at the NH DES Watershed Management Bureau at the following web-site for up to date information: http://des.nh.gov/organization/divisions/water/wmb/swqa/index.htm.

In addition, it is important that the public and municipalities understand that this river management plan is only an advisory guide and that it provides a reference and base line for future work, goals development, and implementation.

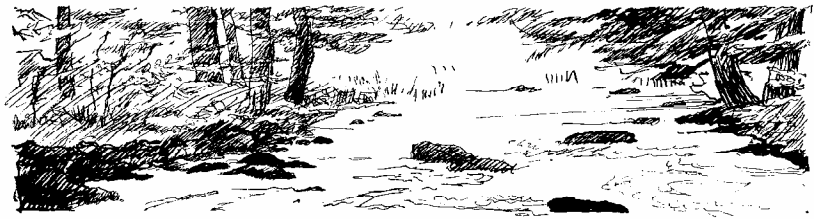


Table 1- River Classification & Regulations				
	River Classification			
Protection Standards	**Natural**	**Rural**	**Rural-Community**	**Community**
Dams and Encroachments				
Construction of New Dams	**No**	**No**	**No**	**Yes**
Reconstruction of Failed or Breached Dams	**No**	**Yes** (Only within 6 years of failure in same location & same level of impoundment)	**Yes** (Only within 6 years of failure in same location & same level of impoundment)	**Yes** (Anytime only if consistent with management and protection of river designation)
Channel Alterations	**No** (Except for public safety projects and the NH DES Commissioner may approve temporary alternations for repairs to grandfathered infrastructure,roads, or riprap or permanent alterations that restore channel's geomorphic characteristics to natural conditions)	**No** (Except for public safety projects and approved maintenance of a project, including public water supply intake, and NH DES shall encourage use of native vegetation to stabilize banks, and public safety projects)	**No** (Except for public safety projects and approved maintenance of project, including public water supply intake, and NH DES shall encourage use of native vegetation to stabilize banks)	**No** (Except for public safety projects and approved maintenance of project, including public water supply intake, and NH DES shall encourage use of native vegetation to stabilize banks)
Water Quality/ Water Quantity				
Water Quality	Maintained or restored to **Class A** or maintained at Class B	Maintained or restored to at least **Class B**	Maintained or restored to at least **Class B**	Maintained or restored to at least **Class B**

Table 1- River Classification & Regulations				
Protection Standards	**Natural**	**Rural**	**Rural-Community**	**Community**
Interbasin Transfer	**No**	**No**	**No**	**No**
Protected Instream Flow	**Yes**	**Yes**	**Yes**	**Yes**
Waste Disposal				
Any New Solid Waste Storage or Treatment Facility	**Not** (within 250 ft or less of normal high water mark – outside setback must have natural screen)	**Not** (within 250 ft or less of normal high water mark - outside setback must have natural screen)	**Not** (within 250 ft or less of normal high water mark – outside setback must with natural screen)	**Not** (within 250 ft or less of normal high water mark – outside setback must have natural screen)
New or Expansion of Existing Landfills	**Not** (Within river corridor or < 100 ft from 500-yr. floodplain, whichever is greater - outside setback must have natural screen)	**Not** (Within river corridor or < 100 ft from 500-yr. floodplain, whichever is greater - outside setback must have natural screen)	**Not** (Within river corridor or < 100 ft from 500-yr. floodplain, whichever is greater - outside setback must have natural screen)	**Not** (within 500yr Floodplain or < 100 ft from 500-yr. floodplain, whichever is greater - outside setback must have natural screen)
New Hazardous Waste Facilities	**Not** (Within designated river corridor)	**No Standard**	**No Standard**	**No Standard**
Resource Recovery Operation at Existing Landfill	**No Standard**	**Yes**	**Yes**	**Yes**

Protection Standards	**Natural**	**Rural**	**Rural-Community**	**Community**
Fertilizers/Land Application				
Manure, Lime, and Wood Ash	**No Standard***	**Yes** When used for agricultural purposes	**Yes** When used for agricultural purposes	**Yes** When used for agricultural purposes
Sludge and Septage	**No Standard**	**Not** Within 250 ft or less of normal high water mark – outside setback must be immediately applied to soil	**Not** Within 250 ft or less of normal high water mark – outside setback must be immediately applied to soil	**Not** Within 250 ft or less of normal high water mark – outside setback must be immediately applied to soil
Recreation Use				
Motorized Watercraft	**No**	**Yes** ("6 mph" speed only within 150 ft. of shoreline)	**Yes** ("6 mph" speed only within 150 ft. of shoreline)	**Yes** ("6 mph" speed only within 150 ft. of shoreline)

***NOTE:**

Effective April 1, 2008 under the NH DES Comprehensive Shoreland Protection Program no fertilizer, except limestone is permitted within the 50 foot wide Waterfront Buffer and all pesticide and herbicide applications must be by a licensed applicator only.

Low phosphorus and slow release nitrogen fertilizer, however, may be used beyond the 25 foot wide Buffer.

Map 2

PISCATAQUOG RIVER MANAGEMENT PLAN

RIVER CLASSIFICATIONS MAP

Henniker
Hopkinton
Concord
Bow
Hillsborough
Dunbarton
Weare
Deering
Hooksett
Bennington
Manchester
Goffstown
Francestown
New Boston
Greenfield
Bedford
Lyndeborough
Amherst
Mont Vernon
Merrimack

Pleasant Pond
Dudley Pond
Weare Reservoir
Everett Lake
Mt William Pond
Gorham Pond
Deering Reservoir
Daniels Lake
Shattuck Pond
Pleasant Pond
Glen Lake
Dodge Pond
Haunted Lake
Bailey Pond

177
114
13
149
136
101

North Branch Piscataquog River
Middle Branch Piscataquog River
South Branch Piscataquog River
Main Stem Piscataqoug River
Merrimack River

- Watershed Boundary
- Lakes
- Streams
- Town Boundaries

River Classifications

- Community
- Natural
- Rural
- Rural-Community

Note:
The Piscataqoug River Watershed encompasses 220 square miles in 14 communities.

The Piscataquog River Corridor lies within 7 communities and includes the River and lands 1/4 mile on each side of the River, measured from the high water mark.

0 1 2 3 4 Miles

Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
NH Department of Environmental Services

The individual municipalities represented on this map and the SNHPC make no representations or guaranties to the accuracy of the features and designations of this map.

Map Produced by
GIS Service SNHPC 2009.
Contact: gis@snhpc.org
Ph: (603) 669-4664

This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.

SNHPC

N W E S

New Hampshire Location Map

Piscataquog River Watershed

2. WATER QUALITY

2.1 Goals

- To identify and minimize present pollution problems and restore water quality.
- To prevent future degradation of water quality from both point source and non-point source pollution.

2.2 Key Actions to Achieve these Goals

TABLE 2: WATER QUALITY	
Key Action	**Implementation**
Establish additional water quality monitoring stations to supplement those already being monitored by the PLC and DES for the purpose of bracketing potential sources of water pollution, increasing the baseline of data, and providing additional educational opportunities.	Local area schools such as St. Anselm, UNH-Manchester, and others to undertake additional monitoring in coordination with the PLC. PRLAC to work with PLC, DES, and Volunteer River Assessment Program (VRAP) to coordinate and assist existing volunteer monitoring programs.
Encourage communities to continue to follow the New Hampshire Office of Emergency Management Guidelines for hazardous response and work with the surrounding communities on a regional plan to minimize the impact of any spills that could impact the Piscataquog River	Local fire departments along the river corridor to continue coordination and training in dealing with hazardous waste spills that may enter the Piscataquog River. Local fire departments continue to identify opportunities to improve hazardous waste incident response to protect the river.
Encourage communities containing portions of the Piscataquog River not covered by the Comprehensive Shoreland Protection Act (CSPA), to consider adopting Local Shoreland protection ordinances. These regulations should be equal to or more stringent than the State standards and be based on the State model ordinance.	PRLAC members to contact conservation commissions, planning boards, town officials and local environmental organizations to make them aware of the benefits of the ordinance. PRLAC to set up presentations on the CSPA and model ordinances by NH DES and Office of State Planning (OEP). In addition communities should consider other opportunities in water quality protection through the efforts of riparian buffers and/or a wetland setback zoning protection ordinance.

TABLE 2: WATER QUALITY	
Key Action	**Implementation**
Encourage communities and the Southern New Hampshire Planning Commission to take steps in creating a stormwater management plan for the river and its watersheds, documenting and mitigating the amount of impervious surfaces and non-point source pollution sites ***to*** improve water quality, aquatic habitat, and threats to infrastructure.	Coordination between each community, the PLC, PRLAC, and through the expertise UNH Stormwater Center and NH DES can help to formulate a strategy that is appropriate for the community and its goals.
Eliminate Combined Sewer Overflow (CSO) on the Piscataquog River in the urbanized areas.	Manchester Environmental Protection Division (EPD) to continue work towards separation of storm water and sewer. EPA and NH DES to provide assistance and support with this Key Action. Communities to identify ways of treating stormwater runoff.
Reduce or eliminate impact from leach fields, non-point source pollution and land application of sludge and septage.	PRLAC and conservation commissions to educate town officials and property owners regarding the effects of non-point source pollution. Local health officials to continue enforcing septic system rules. Local road agents and highway officials to pursue alternatives for deicing of roadways in the vicinity of the river.
Increase public awareness through education and training regarding the benefits of high water quality.	PRLAC and PLC to encourage area schools and colleges to incorporate the study of water quality in their biology curricula. PRLAC and PLC to host forums and speakers to increase awareness of the importance of water quality.

2.3 Background

The waters of the Piscataquog River are of high quality. Maintenance of this quality is fundamental to the value of the river and should be a high priority of the communities along the 65 miles of the river corridor.

The headwaters of each of the three branches of the river is a lake: Deering Reservoir (North Branch), Pleasant Pond (South Branch), Haunted Lake (Middle Branch). These lakes and the entire length of the river are fed by numerous streams. (See Map 1)

The Piscataquog River's water quality is directly affected by the quality of each of these sources. Continuing monitoring of water quality, strict control of point and non-point pollution sources and adequate planning for dealing with hazardous waste spills that can reach the Piscataquog River, are key objectives to insuring preservation of water quality.

The main governing regulations on water quality is the Federal Water Pollution Control or Clean Water Act (33 U.S.C.§ 1251 et. seq.) and its amendments. This Act established in 1972 facilitates rule legislation on an assortment of issues pertaining to water quality. The Clean Water Act over the years has gained more authority and enforcement ability through the persistence of the Army Corps of Engineers by the additions of amendments and court decisions defining their jurisdiction. In the past decade, the jurisdiction of the Clean Water Act has been challenged with several important decisions that restrict the Act's ability to protect some waters in the US, such as isolated wetlands. One of the most important cases was a split decision in Rapanos v. United States 547 U.S. 715 (2006) that questioned the Army Corps of Engineers' use of the term "waters of the United States" to include isolated wetlands that weren't physically "navigable waters". This decision has made the Clean Water Act unclear in many cases.

In recent decisions, it has been the courts task to decide whether or not there is a "significant nexus" or important hydrologic connection between non-navigable headwaters, such as first order streams and wetlands, to that of downstream navigable waters. Ongoing research suggests headwaters play a major role in influencing the quality of downstream river segments and will lead to their degradation if regulations aren't applicable. In the attempt to restore what many feel as the true intentions of the Clean Water Act when it was written, the Clean Water Restoration Act has been proposed by U.S. Senator Russell Feingold. This pending piece of legislation put forth in 2009 will effectively define "waters of the United States" to include all waters and remove the term "navigable waters" from the Act.

The Piscataquog River is considered a Class B River, meeting drinking water standards that can be remedied with treatment and the recreational purposes of the river. Many of the waters contained within the Piscataquog River are of high quality. Maintenance of this quality is fundamental to the value of the river and should be a high priority of the communities along the river corridor. Under rule Env-Ws 1702.24 "High Quality Surface Waters" are defined as follows:

> “all surface waters whose water quality is better than required by any aquatic life and/or human health water quality criteria contained in these rules or other criteria assigned to the surface water, or whose qualities and characteristics make them critical to the propagation or survival of important living natural resources."

Numerous headwaters of the river meet this definition, but to date the NH DES does not have an official listing of "High Quality Waters" found in the state. NH DES plans to include such a listing in their future 305b monitoring report (2010) to EPA and they are currently receiving feedback on how this listing should be structured on the DES website (http://des.nh.gov).

Recognizing the importance of high quality waters in New Hampshire, the state has enacted rule Env-Ws 1702.36 which defines "Outstanding Resource Water" (ORW) as "surface waters of exceptional recreational or ecological significance." This additional definition helps distinguish waters that are designated as "natural" waters and their upstream portions and also includes waters within national forest lands. The Piscataquog River, containing the "natural" designation for all three upstream portions of its branches, has a very large area delineated by NH DES as ORWs that is depicted in Map 3.

Under RSA 485-A:12 of the Federal Water Pollution Control Act, the NH DES maintains a list of impaired waters that are produced under the 305b monitoring report that is published every two years. This report includes a number of assessments for the entire state of New Hampshire. The impaired waters list, section 303d, lists waters that do not meet water quality standards, are in need of clean-up, and require that no further violations that would further degrade water quality occur.

A particular water assessment includes tests on various attributes that affect the abilities of the water to support a healthy environment for aquatic life and human uses. To aid in the number of assessments required by the 305b report produced by NH DES, the New Hampshire River Assessment Program (VRAP) is a voluntary group that tests and monitors the water quality of rivers throughout the state. Through this volunteer effort many samples are added to the 305b, providing valuable water quality data. For the most up to date 305b report, see NH DES's Surface Water Quality Assessment Program.[1]

To assist in identifying the existing impaired waters in the Piscataquog Watershed (see Map 3), a list of impaired waters within the watershed is provided in Appendix 9.2.2 and an additional data supplement is provided in Appendix 9.2.3, referencing information found on Map 3. This information is important in developing strategies on how to mitigate impacts to waters where water quality is compromised. It is also helpful in applying for future funding opportunities through the NH DES Watershed Restoration Grant that specifically addresses Impaired Waters clean-up.

One of the largest threats to water quality within the state is unidentifiable sources of pollution termed non-point source pollution. Non-point source pollution is caused by rainfall or snowmelt and carries natural and unnatural contaminants to different components that make up a watershed's streams, rivers, lakes etc.

To address this problem, NH DES has targeted different land uses that contribute to this source of pollution. These particular land uses include landfills, septic systems, agriculture, deforestation and impervious surfaces such as parking lots and roads. It is critical that these land uses and impervious surfaces be identified and mapped and that appropriate measures be enacted to minimize non-point source pollution to the river.

[1] See: http://des.nh.gov/organization/divisions/water/wmb/swqa/index.htm.

Map 3

PISCATAQUOG RIVER MANAGEMENT PLAN

IMPAIRED WATERS

- Comprehensive Shoreland Protection Act Protected Lakes
- Comprehensive Shoreland Protection Act Protected Streams
- Impaired Waters with 1 mile buffer
- Outstanding Water Resource
- Watershed Boundary
- Lakes
- Streams
- Town Boundaries

0 1 2 3 4 Miles

Henniker
Hopkinton
Concord
Bow
Hillsborough
Dunbarton
Deering
Weare
Hooksett
Bennington
Manchester
Francestown
Goffstown
New Boston
Greenfield
Bedford
Lyndeborough
Amherst
Mont Vernon
Merrimack

North Branch Piscataquog River
Middle Branch Piscataquog River
South Branch Piscataquog River
Main Stem Piscataqoug River
Merrimack River

Pleasant Pond
Dudley Pond
Weare Reservoir
Everett Lake
Mu William Pond
Gorham Pond
Deering Reservoir
Daniels Lake
Shattuck Pond
Pleasant Pond
Glen Lake
Kelley Falls Dam
Dodge Pond
Haunted Lake
Bailey Pond

177
114
13
149
136
114
101

Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
NH Department of Environmental Services
Society for the Protection of New Hampshire Forests

The individual municipalities represented on this map and the SNHPC make no representations or guaranties to the accuracy of the features and designations of this map.

Map Produced by
GIS Service SNHPC 2009.
Contact: gis@snhpc.org
Ph: (603) 669-4664

This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.

SNHPC

N W E S

New Hampshire Location Map

Piscataquog River Watershed

Impervious surfaces with the addition of carrying oils and solvents from use are subjected to salting in the winter further contributing to the possibility of contamination. Several studies indicate that impervious coverage percentages of the watershed ranging from four to twenty percent could pose a threat to stream health and aquatic life. Studies on NH coastal watershed place this range within seven to fourteen percent displaying effects on habitat, water quality, and aquatic life. It is the hope that in the near future more impervious coverage studies will be done within the NH region including the Piscataquog to understand these impacts on the entire watershed.

The NH DES has established the Non-point Source Pollution Program but stresses that all levels of government must work together to limit this problem. One local initiative that seems to be gaining popularity is the consideration of porous pavement installations. With many restrictions already in place for businesses to expand infrastructure, such as retention ponds that require costly upkeep, the installation of porous pavement could look more attractive in the future. This pavement limits the amount of run-off and recent research suggests it requires less salting. It is an important goal of this river management plan that in order to better understand these impacts, studies be undertaken to calculate the amount and potential impact of impervious surfaces within the watershed. This information will allow communities to effectively formulate strategies to address these impacts. Assistance can be obtained from the NH Rivers Council and the UNH Stormwater Center in developing impervious and porous pavement strategies.

Stratified Drift Aquifers in NH cover approximately fourteen percent of the entire state and are a major source of water for commercial, industrial, domestic and public uses. The central and southern portions of the state contain the largest and highest yield stratified drift aquifers that provide nearly a third of the water supply; surface waters and bedrock aquifers account for the rest. These areas are composed of sand and gravel that were formed during periods of cyclic deposition as the glaciers began to melt and retreat at the end of the last ice age. Aquifers are measured by their material composition and their ability to retain water, this value is called hydraulic conductivity. Scientists use this measure along with the saturated thickness of an aquifer to calculate the overall yield of an aquifer, otherwise known as transmissivity. The USGS standard for a relatively high yield or high quality aquifer is a transmissivity value of 2,000 ft^3/ day.

Watershed systems like the Piscataquog contain the most continuous sections of high yield stratified drift aquifers adding to the watershed's already high resource value. Added benefits are groundwater discharge and recharge areas which help maintain streamflow volume. Concerns to the quantity of this resource include water withdrawal and increased impervious surfaces slowing recharge rates. Concerns to the quality of this resource include potential contamination from hazardous waste sites, landfills, underground storage tanks and waste water discharge areas. In an effort to control and monitor these uses NH DES has created several programs such as Large Groundwater Withdrawal Permitting and Groundwater Discharge Permitting found under the Groundwater Protection Act. A map displaying the stratified drift aquifer distribution within the Piscataquog can be seen on Map 4. This map also shows areas identified by DES that could be of a potential threat to groundwater resources. A table of these areas can be found on the NH DES website under the OneStop information tool.

Map 4

PISCATAQUOG RIVER MANAGEMENT PLAN

STRATIFIED DRIFT AQUIFERS

- Site Remediation and Ground Water Hazards
- Stratified Drift Aquifers
- Watershed Boundary
- Lakes
- Streams
- Town Boundaries

0 1 2 3 4 Miles

Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
NH Department of Environmental Services
United States Geological Survey, 2000

The individual municipalities represented on this map and the SNHPC make no representations or guaranties to the accuracy of the features and designations of this map.

Map Produced by
GIS Service SNHPC 2009.
Contact: gis@snhpc.org
Ph: (603) 669-4664

This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.

SNHPC

New Hampshire Location Map

Piscataquog River Watershed

Henniker
Hopkinton
Concord
Bow
Hillsborough
Dunbarton
Deering
Weare
Hooksett
Merrimack River
Main Stem Piscataquog River
North Branch Piscataquog River
Middle Branch Piscataquog River
South Branch Piscataquog River
Manchester
Bennington
Francestown
New Boston
Goffstown
Greenfield
Lyndeborough
Bedford
Amherst
Mont Vernon
Merrimack
Pleasant Pond
Dudley Pond
Weare Reservoir
Everett Lake
Gorham Pond
McWilliam Pond
Deering Reservoir
Daniels Lake
Shattuck Pond
Pleasant Pond
Glen Lake
Dodge Pond
Haunted Lake
Bailey Pond
77
114
13
149
136
101

Map 5

PISCATAQUOG RIVER MANAGEMENT PLAN

NATURAL SERVICES NETWORK

- Natural Services Network
- Watershed Boundary
- Lakes
- Streams
- Town Boundaries

The Natural Services Network (NSN) identifies lands that provide important ecological services that are difficult and/or expensive to replicate. The four components that make up the NSN data layer are:

- Water Supply Lands
- Productive Soils
- Important Wildlife Habitats
- Flood Storage Lands

The Natural Services Network was created in 2007 as part of the I-93 Community Technical Assistance Program (CTAP) by New Hampshire GRANIT. New Hampshire Natural Services Network. Complex Systems Research Center, Institute for the Study of Earth, Oceans, and Space, University of New Hampshire, Durham, NH.

0 1 2 3 4 Miles

Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
NH Department of Environmental Services

The individual municipalities represented on this map and the SNHPC make no representations or guaranties to the accuracy of the features and designations of this map.

Map Produced by
GIS Service SNHPC 2009.
Contact: gis@snhpc.org
Ph: (603) 669-4664

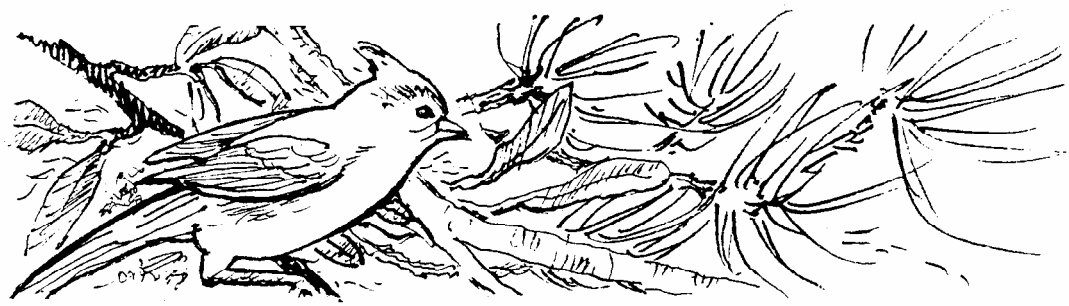
This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.

SNHPC

New Hampshire Location Map

Piscataquog River Watershed

Henniker
Hopkinton
Concord
Hillsborough
Bow
Dunbarton
Deering
Weare
Hooksett
Merrimack River
Main Stem Piscataquog River
North Branch Piscataquog River
Middle Branch Piscataquog River
South Branch Piscataquog River
Bennington
Manchester
Francestown
New Boston
Goffstown
Greenfield
Bedford
Lyndeborough
Amherst
Mont Vernon
Merrimack
Pleasant Pond
Dudley Pond
Weare Reservoir
Everett Lake
Mt William Pond
Gorham Pond
Deering Reservoir
Daniels Lake
Shattuck Pond
Pleasant Pond
Glen Lake
Dodge Pond
Haunted Lake
Bailey Pond
77
114
13
149
136
101



The Natural Services Network was created in 2007 under the Community Technical Assistance Program (CTAP), a program designed to assist communities that will be affected by the rebuilding of I-93 in NH. This spatial tool is being implemented by NH communities to identify important natural resources that are vital to human health, the environment, and the economy. This network portrays lands that contain high quality agriculture soils, flood storage lands, water supply lands, and important wildlife habitat. The combination of these resources into this one overlay allows communities to identify their "green infrastructure" or areas of natural importance. Identification of these areas could lead to careful planning, specifically from a watershed perspective, on how to protect these resources and avoid their future degradation. A map of this network can be seen on Map 5.

2.4 Watershed Grants and Protection Programs

To improve the water quality of the identified impaired waters or to ensure further protection of existing pristine high quality waters in the Piscataquog River Watershed, the Department of Environmental Services provides a variety of watershed restoration grants and programs to assist communities in achieving the goal of protecting the health of the Piscataquog River. The following is an updated list of a variety of watershed assistance grants and programs provided by NH DES:

- Impaired Waters - Watershed Restoration Grant
- High Quality Waters - Watershed Assistance Grant
- NH DES Drinking Water Source Protection Program
- Agricultural Nutrient Management Grant Program
- NH DES 604(b) Water Quality Planning Activities in Support of Rivers and Lakes Management and Protection Programs

To find more information or to participate in any of the above NH DES programs visit: http://des.nh.gov/organization/divisions/water/wmb/was/categories/grants.htm#warg.

3. INSTREAM FLOW

3.1 Goals

- To maintain sufficient water quality and quantity for instream public uses including: navigation, recreation, fishing, storage, conservation, maintenance and enhancement of aquatic life, fish and wildlife habitat, wildlife, protection of water quality and public health, pollution abatement, aesthetic beauty, and hydroelectric power production.
- To create an awareness of the NH DES Instream Flow Rules.
- To encourage water conservation.

3.2 Key Actions to Achieve these Goals

TABLE 3: INSTREAM FLOW	
Key Action	**Implementation**
To seek NH DES and State adoption of instream flows for the Piscataquog River.	PRLAC to work with other LACs' and interested parties to encourage NH DES to study and establish protected instream flows and water management plan under RSA 483 for the Piscataquog River. Upon completion of study and plan, work with NH DES to finalize and submit proposed rules to the Joint Legal Committee on Administrative Rules (JLCAR).
Educate community officials, businesses, and private water users about the need for Instream Flow Rules for the Piscataquog River.	Conservation Commissions to verify that significant users (> 20,000 gal/day) are registered with the State. (See Matrix reference in Appendix 9.3 for the source of these rules.) NH DES, PRLAC, and local conservation commissions to host a forum on the purpose and need for instream flow rules for the river.
Educate public on the finite nature of our water resources.	Include this topic as part of a forum on Instream Flow Rules.
Encourage water conservation.	City and or town officials to encourage water conservation when reviewing development along the river corridor. Towns to develop and regularly update their local water resource plans.

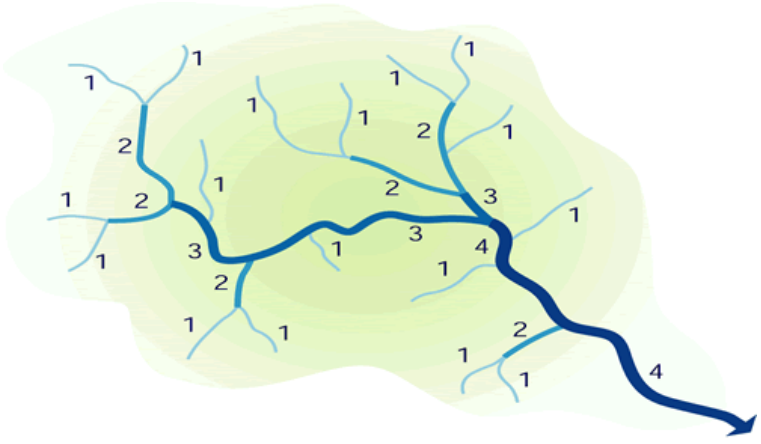
3.3 Background

The Rivers Management and Protection Act RSA 483 provides authority to establish protected instream flow rules for each designated river in New Hampshire. RSA 483:9-c gives the State the authority and responsibility to maintain a certain quality and quantity of water in the designated rivers for the support of instream public uses. The Act provides for the State's interest in surface waters; identifies the permitted instream public uses; and authorizes the NH Department of Environmental Services (NH DES) to adopt rules for their protection. In 2002, NH DES adopted instream flow rules for the Souhegan and Lamprey River under an Instream Flow Pilot Program (see website: http://des.nh.gov/organization/divisions/water/wmb/rivers/instream/index.htm).

Under RSA 483, instream public uses are defined as including the flow-dependent components of navigation, recreation, fishing, conservation, maintenance and enhancement of aquatic life, fish and wildlife habitat, protection of water quality and public health, pollution abatement, aesthetic beauty, public water supply, and hydropower production. Establishment of river-specific numeric criteria for stream flow protection and development of water management plans to implement these criteria and the above identified public uses are important and necessary elements of river management and protection.

Critical to establishing instream flow protection is the identification of stream order within a river system. Stream Order is a fundamental element of the hydrology of a river system and consists of a hierarchy of streams based on size. A first (1st) order stream is the stream's smallest headwaters. A second (2nd) order stream is formed when two first order streams merge. A third (3rd) order stream is formed when two second order streams merge and so forth.

The Piscataquog River features five different stream order classifications as it continues through the watershed. The largest segment, 5th order, is found along the portion of the river where the three different branches merge before Glen Lake. The diagram below illustrates the stream ordering process. A map of the all the stream orders found within the Piscataquog watershed is provided on Map 6.



Source: www.uwm.edu

Currently, close to six miles of the Piscataquog River is classified as impounded. Hydroelectric dams include the Greggs Falls Hydro Association, Hadley Falls, and Kelly Falls Hydro Company. Other dams along the river account for approximately 1,000 acres of water storage which includes Everett dam, a non-nominated section of the river. A map depicting these sites can be found on Map 7. It should be noted that many of the dams shown on this map are historical references only as many of these dams are destroyed or dilapidated and pose no threat or obstruction to the river. Currently, the only water withdrawal is the Berry Good Farm located in the Town of Goffstown. Berry Good Farm is a commercial blueberry operation that uses the river to supply its irrigation needs. There are currently no NH DES or EPA approved discharges into the Piscataquog River. In accordance with the Federal Power Act, under RSA 483:5 Coordination with Federal Statutes, once a designated river management plan has been developed, it is submitted to the Federal Energy Regulatory Commission (FERC) to be included in the Comprehensive Plans in the FERC's licensing process.

3.4 Instream Flow Protection Pilot Program

Currently no protected instream flow regulations exist for the Piscataquog River, however, a new law enacted in 2002 (HB 1499-A) put into place a pilot program that would protect instream flow on two of New Hampshire's designated rivers. As previously noted, the Lamprey River (Coastal Watershed) and the Souhegan River (Merrimack Watershed) were selected as the first two rivers to be inducted into the Instream Flow Protection Pilot Program.

The instream flow studies for these rivers have now been completed by NH DES and watershed management plans are currently under development. In addition, NH DES recently adopted Instream Flow Rules for the Souhegan River and is in the final stages of doing so for the Lamprey River. The Instream Flow Protection Pilot Program describes the process of conducting the required Instream Flow Study and developing a Watershed Management Plan addressing the implementation of the study results. Based upon the results of these two pilot programs, the rules will then be modified based on the recommendations of the Legislative Instream Flow Committee and applied to the remaining designated rivers across the state, including Piscataquog River.

Map 6

PISCATAQUOG RIVER MANAGEMENT PLAN

STREAM ORDER

- Watershed Boundary
- Lakes/Reservoirs
- Town Boundaries

Stream Order

- 5
- 4
- 3
- 2
- 1

0 1 2 3 4 Miles

Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
NH Department of Environmental Services

The individual municipalities represented on this map and the SNHPC make no representations or guaranties to the accuracy of the features and designations of this map.

Map Produced by
GIS Service SNHPC 2009.
Contact: gis@snhpc.org
Ph: (603) 669-4664

This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.

SNHPC

New Hampshire Location Map

Henniker
Hopkinton
Concord
Bow
Hillsborough
Dunbarton
Deering
Weare
Hooksett
Goffstown
Manchester
Bennington
Francestown
New Boston
Greenfield
Bedford
Amherst
Lyndeborough
Mont Vernon
Merrimack

North Branch Piscataquog River
Middle Branch Piscataquog River
South Branch Piscataquog River
Main Stem Piscataquog River
Merrimack River

Pleasant Pond
Dudley Pond
Weare Reservoir
Stark Pond
Everett Lake
Long Pond
Mt William Pond
Gorham Pond
Deering Reservoir
Ferrin Pond
Daniels Lake
Shattuck Pond
Pleasant Pond
Still Pond
Beard Pond
Dennison Pond
Dodge Pond
Glen Lake
Uncanoonuc Lake
Haunted Lake
Bailey Pond

77
114
13
149
136
101

Map 7

PISCATAQUOG RIVER MANAGEMENT PLAN

DAMS AND 100-YEAR FLOODPLAINS

- 100 Year FEMA Floodplain
- Major Dams
- Dams
- Watershed Boundary
- Lakes/Reservoirs
- Town Boundaries
- Streams

0 1 2 3 4 Miles

Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
NH Department of Environmental Services

The individual municipalities represented on this map and the SNHPC make no representations or guaranties to the accuracy of the features and designations of this map.

Map Produced by
GIS Service SNHPC 2009.
Contact: gis@snhpc.org
Ph: (603) 669-4664

This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.

SNHPC

New Hampshire Location Map

Piscataquog River Watershed

Henniker
Hopkinton
Concord
Bow
Hillsborough
Dunbarton
Deering
Weare
Hooksett
Bennington
Goffstown
Manchester
Francestown
New Boston
Greenfield
Bedford
Amherst
Lyndeborough
Mont Vernon
Merrimack

Weare Reservoir Dam
North Branch Piscataquog River
Everett Dam
Main Stem Piscataquog River
Merrimack River
Riverdale Dam
Gregg Falls Dam
Middle Branch Piscataquog River
Hadley Falls Dam
South Branch Piscataquog River
Kelley Falls Dam

Pleasant Pond
Dudley Pond
Weare Reservoir
Stark Pond
Everett Lake
Lang Pond
Gorham Pond
Mt William Pond
Deering Reservoir
Ferrin Pond
Daniels Lake
Shattuck Pond
Pleasant Pond
Still Pond
Beard Pond
Dodge Pond
Dennison Pond
Glen Lake
Uncanoonuc Lake
Haunted Lake
Bailey Pond

77
114
13
149
136
101

4. STREAMBANK STABILIZATION

4.1 Goals

- To recognize that the power of the river flow cannot be reduced with a streambank stabilization project.
- To develop guidelines which consider the effects of each streambank stabilization project.
- To avoid projects which are detrimental to the value of the river, to fish and to wildlife by altering the streambed in a way that destroys habitat.
- To preserve the natural beauty of the river.
- To work with NH DES in implementing a fluvial geomorphological study of the river and its tributaries. This study would aid in identifying fluvial erosion hazards and local mitigation strategies and encourage municipal adoption of fluvial erosion hazard ordinances to prevent human encroachment into these hazard areas.

4.2 Key Actions to Achieve these Goals

TABLE 4: STREAMBANK STABILIZATION

Key Action	Implementation
Establish regulations for streambank stabilization.	NH DES to develop fact sheets and policies for streambank stabilization. Community planning boards to adopt regulations that consider the effects of development projects within the river corridor. Community conservation commissions to establish contact with the U.S. Army Corps of Engineers for information resources and assistance.

TABLE 4: STREAMBANK STABILIZATION	
Key Action	**Implementation**
Minimize the erosion and degradation of streambanks caused by human activity.	Planning Boards adopt and enforce setback requirements consistent with the Comprehensive Shoreland Protection Act, as amended under RSA 483-B applicable to all designated rivers. DPW and road agents to use best management practices for culvert and road maintenance. Planning Boards and Code Enforcement Officer(s) ensure that appropriate erosion and sediment controls are installed before and maintained during, and after construction.
Support NH DES in conducting a fluvial geomorphological study of the river and its tributaries	Planning Boards review and incorporate identified fluvial erosion hazard mitigation strategies into local hazard mitigation plans and consider adopting local fluvial erosion hazard ordinances.
Ensure the proper design and construction of replacement and new stream crossings.	NH DES has adopted rules for the permitting of stream crossings. PRLAC and municipalities actively seek funds and partners for replacement of stream crossings that currently impact the stream and/or aquatic passage.
Limit stabilization projects to places where erosion is caused by human activity or threatens a road or structure.	PRLAC to distribute educational information such as Living with the River, published by the Connecticut River Joint Commission. PRLAC to review permit applications and make appropriate recommendations. DPW, road agents and landowners to encourage the planting of riparian species along the river corridor.

TABLE 4: STREAMBANK STABILIZATION	
Key Action	**Implementation**
Encourage the use of native vegetation to stablize streambanks, where possible.	PRLAC to identify sites and owners for demonstration projects. PRLAC and local Conservation Commissions to seek grants to help provide the resources to accomplish this key action (e.g. Natural Resource Conservation Service District or NH DES).
Promote projects that will eliminate non-native invasive species along the river corridor.	Conservation Commissions to pursue grants for funding to assist with the elimination of non-native invasive species. Conservation Commissions to pursue volunteers for work projects to eliminate non-native invasive species.

4.3 Background

A river is a dynamic system, constantly though subtly changing its course within its corridor. This cycle of erosion and deposition and gradual movement of the river channel is a natural process and inherent in the dynamics of the Piscataquog River. Throughout history, human communities have built structures along rivers. When the natural dynamics of the river threaten these structures, it is typical for landowners to protect their investment by undertaking construction to attempt to control the river and prevent erosion of stream banks. Often, this simply leads to shunting the erosive force of the river to locations downstream, leading to more streambank erosion. Achieving a logical and well thought out balance between the force of the river and the built environment should be the objective of streambank stabilization efforts.

To further understand the natural dynamics of a river system the science of fluvial geomorphology has been gaining momentum to help communities plan for the future. Over time, a stable river's course changes subtly within it banks and floodplains, and this stability buffers the river from dramatic changes during floods. Scientists assess the river system with regard to outside factors and a river's current erosion or aggregating status. Things that cause instability, and thus changes to a river's course, include nutrient deposition from agricultural activities, removal of shoreland vegetation, and physical manmade constructions like dams and stream crossings (culverts and bridges). A Fluvial Geomorphological study can identify and help to eliminate these potentially dangerous factors from interfering with a river's natural course within its valley. These factors over time have had the effect of disconnecting rivers from many of their important energy dissipating floodplains. This energy is diverted further downstream causing flooding and erosion to areas that are not well equipped for it.

A Fluvial Erosion Hazard Program uses on-site assessment techniques and spatial analysis to create an overlay of the areas susceptible to erosion damages from high flow events and flooding. The identification of theses hazard zones can lead to ordinances that protect these areas, potentially saving lives, property, and infrastructure damages that could save property owners and municipality thousands of dollars. Fluvial hazard areas differ from the National Floodplain Insurance Program flood hazard maps which identify primarily flood prone areas that are at risk for inundation.

The Exeter River Geomorphic Assessment and Watershed-based Plan was the first New Hampshire study to utilize this science to identify and assess future damages to this watershed. Raymond was the first town in New Hampshire to work on a Fluvial Erosion Hazard Program and developed a local ordinance designed to protect these areas along the Exeter River and Fordway Brook. Unfortunately, the ordinance did not pass in the town but on a positive note, the NH DES Innovative Land Use Planning Techniques Handbook was updated to include a model fluvial erosion hazard ordinance for the entire state. Recently, the state legislature put into place local enabling legislation, RSA 674:56 II. (a) and (b), which allows municipalities to adopt local fluvial erosion hazard ordinances.

Currently the management of these river/watershed based fluvial assessments are directed by NH DES and the State Geological Survey and federal and state funding has been provided through the EPA under section 319 of the Clean Water Act, the US Department of Homeland Security through the NH Department of Safety, and NH DES grants.

Working with NH DES and the State Geological Survey, the Southern New Hampshire Planning Commission successfully requested and the state has agreed to schedule and conduct a fluvial geomorphological assessment of the Piscataquog River and some of its tributaries within the next several years (e.g. possibly as soon as 2012/2013). When completed, this study will provide important information on streambank erosion, channel migration issues as well as the identification and implementation of strategies for local hazard mitigation.

Previous streambank restoration efforts located along the Piscataquog River have mostly included the removal of old dams that could replace natural flow. To learn more about the science behind the applied methods used for naturalized river channel design and bank stabilization projects, NH DES in May 2006 published a document called White Paper: River Restoration and Fluvial Geomorphology.

To access this literature, visit the Commissioner Publications section of the NH DES website at: http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/r-wd-06-27.pdf.

To view a current map of the watershed's 100-year floodplain provided by the Federal Emergency Management Agency (FEMA) refer to Map 7.

4.4 Recent River Restoration/Streambank Stabilization Projects

Recent river restoration projects relating to streambank stabilization efforts within the Piscataquog River Watershed have taken place within the City of Manchester and the Town of New Boston. In 2003 the Piscataquog Land Conservancy completed the Piscataquog River Streambank Restoration Project along the South Branch of the Piscataquog River in New Boston at Gregg Mill Bridge. The goal of this project was to correct water quality and instream biological problems resulting from streambank erosion by achieving the following objectives:

1. Protect and restore streambank and riparian vegetation by using bioengineering techniques.
2. Installing a berm along an adjacent highway to redirect the runoff from the road to an area of extensive riparian vegetation.

Additional motivation for this project was focused upon protecting the endangered fresh water brook floater mussels and improving fish habitat. Project details included the installation of two rock vanes and a porous rock weir 250 ft upstream from where Gregg Mill Road crosses the Piscataquog River. Additionally a large rock ice bumper was installed on the bank upstream from the vanes to minimize ice damage. The primary funder and technical on site assistance provider was NHDES. Other project assistance partners included NH DOT, St. Anselm College, NRCS, Trout Unlimited, NH Fish & Game, Thibeault Sand & Gravel Company, Dunbarton Fire Department, and the Piscataquog Land Conservancy.

Bass Island Park is a 1.2 acre passive recreational park located on the Piscataquog River on the West Side of Manchester. Prior to the 2006 Mother's Day flood and 2008 October floods the site improvements were made to this location to provide a new shoulder vessel boat launch, seating and trailway access along the edge of the river. Improvements, however, were demolished by flood damage.

The City of Manchester is currently in the progress of repairing this site complying with the original plan. In addition to reconstructing the shoulder vessel boat ramp and trailway access, streambank stabilization protection measures are being incorporated into site improvements, including, slope stabilization and reinforcing the river bank in effort to minimize erosion. Additional vegetation and landscaping will also be incorporated into the site. Site improvements are being funded by FEMA.

To find out more information regarding the Bass Island Park project contact the City of Manchester's Parks and Recreation Department at (603) 624-6565.

To find out more about available funding related to river restoration projects for the Piscataquog River Watershed see the following NHDES link:
http://des.nh.gov/organization/divisions/water/wmb/was/categories/grants.htm#warg.

Streambank at Bass Island Prior to Stablization

(Source: City of Manchester)

Streambank at Bass Island After Stablization

(Source: Southern New Hampshire Planning Commission)

4.5 Establishing Steambank Stabilization Guidelines

Stream crossing structures have been used for decades however they have a tendency to alter a stream's natural channel and its process of sediment transport, and species migration due to change in erosion and depositional patterns. Stream crossing infrastructure can reshape the natural geomorphology of a stream causing streambank and streambed instability.

Undersized crossings produce a higher stream velocity within them and at their outlet, reducing the ability of aquatic organisms to migrate upstream through the crossing. They also often create a scour pool immediately downstream leading to a phenomenon called perching, in which the streambed is gradually eroded to a lower elevation.

Stream crossings additionally can restrict the natural flow of sediment, organic material and ice, leading to changes in the stream's morphology downstream. In an effort to address these problems related to stream crossing infrastructure, NHDES convened a stakeholder group comprised of representatives from non-governmental organizations, Towns, and state federal government agencies. Two years of stakeholder workgroup meetings culminated with the University of New Hampshire publishing the New Hampshire Stream Crossing Guidelines in May 2009 (visit the following website at: http://www.unh.edu/erg/stream_restoration/nh_stream_crossing_guidelines_unh_web_rev_2.pdf).

It is the intent of this management plan to minimize the impact of stream crossings on aquatic ecosystems, road infrastructure and private landowners. To guide in this effort, the Department of Environmental Services has adopted Stream Crossing Rules which can be found at: http://des.nh.gov/organization/commissioner/legal/rulemaking/index.htm.

The practice of naturalized river channel design and bank stabilization has expanded over the past several decades. In February 2007, NHDES published the following "Guidelines for Naturalized River Channel Design and Bank Stabilization" found at: http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/r-wd-06-37.pdf.

With these guidelines in place, users participating in the planning, design, review, or construction of river management activities can now draw from an expanded toolbox containing a broad range of well established empirical, analog, and analytical channel and bank stabilization design methods. These guidelines have created the primary focus of river management in the State of New Hampshire; however, applicability will extend beyond state limits and beyond the region given the widespread use of the topics addressed.

5. SHORELAND PROTECTION

5.1 Goals

- To assist and encourage municipalities to adopt land use and environmental ordinances designed to protect the shorelands of water bodies and water courses of the Piscataquog River system not subject to protection under the CSPA. These water bodies and water courses should include first and second order (headwater streams and tributaries), third order streams and rivers, lakes and ponds, and other impoundments.
- To encourage municipalities to work with the State Shoreland Protection Program to enforce the provisions of the CSPA within their communities.
- To assist those municipalities which have urbanized shorelands, such as within the City of Manchester and the Town of Goffstown which are eligible for exclusion from the requirements of the CSPA.
- To encourage communities and the public to attend NH DES outreach and educational workshops and training on the CSPA.
- To assist and encourage communities to adopt riparian buffer ordinances and regulations which would help to protect and restore this critically important shorelands.

5.2 Key Actions to Achieve these Goals

TABLE 5: SHORELAND PROTECTION

Key Action	Implementation
Assist and encourage adoption of local shoreland and riparian buffer ordinances.	To provide information and educational materials, model ordinances and other shoreland protection guidelines to municipal planning boards and conservation commissions. SNHPC to assist planning boards and conservation commissions in developing these regulations. SNHPC to assist the NHDES and municipalities in understanding and enforcing the provisions of the CSPA as applicable.

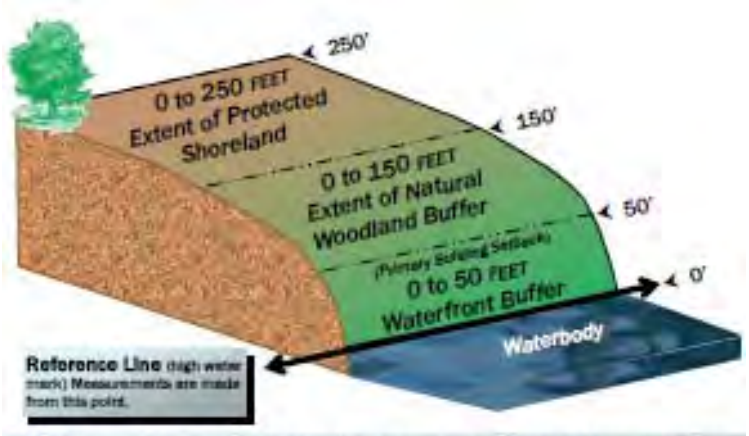
5.3 Background

There is nothing more important in maintaining the environmental health and quality of the Piscataquog River and its tributaries then protecting the shoreland and the riparian vegetation which lies adjacent to these waters. Perhaps one of the most important pieces of environmental legislation enacted by the State of New Hampshire is the Comprehensive Shoreland Protection Act (RSA 483-B) which is administered by the NH DES Shoreland Program.

The CSPA establishes minimum standards for activities within the Protected Shoreland that are designed to protect the water quality of the state's larger water bodies and to fulfill the state's role as trustee of those waters. Currently, the Protected Shoreland extends 250 feet landward from the reference line of public waters and fourth order and higher streams (see diagram below). To implement the CSPA, Shoreland Program staff provide permitting, compliance, outreach, and educational services related to activities within the Protected Shoreland.

The CSPA was originally enacted into law in the 1991 session of the Legislature. The Act establishes minimum standards for the subdivision, use, and development of the shorelands of the state's larger water bodies which includes: all lakes, ponds and impoundments greater than 10 acres, all 4th order and greater streams and rivers, all designated river segments under RSA 483 (The Rivers Management & Protection Act), and all waters subject to the ebb and flow of the tide (including tidal marshes, rivers and estuaries). These water bodies and water courses within the Piscataquog River watershed are shown in yellow on Map 3.

In April and July of 2008, the act was amended and several changes took effect including limitations on impervious surfaces, new vegetation maintenance requirements and the establishment of a permit requirement for many, but not all, construction, excavation and filling activities within the Protected Shoreland. Within the Protected Shoreland, there are setbacks and restricted use areas.



The Protected Shoreland showing setbacks and areas of restricted use.

Source: NH DES Shoreland Program Brochure

Two of the most important setbacks and restricted use areas within the Protected Shoreland include: the **Waterfront Buffer** which extends 0-50 feet from the Reference Line and the **Natural Woodland Buffer** (NWB) which extends 0-150 feet from the Reference Line.

Within the Waterfront Buffer, all new primary structures must be setback 50 feet from the reference line. Municipalities may have a greater setback, but not a lesser one. A 50 feet waterfront buffer must be maintained and tree coverage within this buffer is managed with a 50' x 50' grid and point system. Cutting trees and saplings is allowed as long as the sum of points for remaining trees and saplings equals 50 point or more per each 50'x 50' grid. To assist property owners and municipalities in enforcing this provision, the NH DES Shoreland Program has prepared a measuring template or ruler to determine tree size.

Natural ground cover (lawns excluded), including leaf litter, shall not be removed within the Waterfront Buffer. No cutting or removal of vegetation below 3 feet in height (excluding lawns) except for an allowable footpath to the water (up to 6 feet wide) that does not concentrate stormwater or cause erosion. Stumps, roots and rocks must remain intact in and on the ground and pesticide use is allowed only by a licensed applicator. In addition to these requirements only slow release nitrogen and low phosphorus fertilizer may be used beyond 25 feet from the reference line.

Within the Woodland Buffer, for lots over half an acre, fifty percent (50%) of the area of the lot within the buffer can not be covered by impervious surfaces and must remain in an unaltered state. For lots a half an acre or less, twenty-five (25%) of the area of the lot within the buffer must remain in an unaltered state. An unaltered state means native vegetation must be allowed to grow without cutting, limbing, trimming, pruning, mowing, or other similar activities. Impervious surface refers to modified surfaces that cannot absorb water, such as roofs, decks, patios, paved and gravel driveways (excluding bedrock).

The simplest and most effective way to protect streams, rivers, lakes and ponds and other water bodies is to leave an area of undisturbed native vegetation adjacent to the water body. These undisturbed areas act as buffers by performing functions that protect water quality and enhance wildlife habitat. Preserving and restoring riparian buffers is essential to surface water quality protection.

Clean water is an important part of New Hampshire's economy, shoreland property values, recreation and wildlife habitat. Vegetated shoreland buffers play a critical role in protecting water quality by managing stormwater to prevent erosion. Erosion can result in sediment reaching the water which can cause:

- Harm to fish and other species and their habitat.
- Algae blooms that can result in decreased water clarity, decreased dissolved oxygen, odor, and public health problems.
- Accelerated lake aging.

Under the general planning and zoning legislation of the state (RSA 674:17 and innovative land use controls (RSA 674:21), municipalities may adopt land use ordinances (zoning, subdivision,

site plan, etc.) to protect the shorelands of lakes, ponds, wetlands, rivers and streams and other water bodies within their boundaries which do not fall under the jurisdiction of the CSPA. In addition, these local ordinances can be more stringent than the minimum standards of the CSPA (see RSA 483-B:8, Municipal Authority). In fact, the CSPA encourages municipalities to adopt land use control ordinances designed to protect the shorelands of water bodies and water courses not subject to the CSPA. These waters can include 1st and 2nd (headwater streams and tributaries) as well as 3rd order streams and rivers, lakes and ponds, and other impoundments.

Examples of model ordinances designed to provide for local shoreland protection are available in the NH DES publication: *Innovative Land Use Planning Techniques, A Handbook for Sustainable Development* (October 2008). See following website for a copy of the handbook: http://des.nh.gov/organization/divisions/water/wmb/repp/documents/iluptcompletehandbook.pdf Also ordinances can be found in the publication of the Audubon Society of New Hampshire, UNH Cooperative Extension, Natural Resource Conservation Service and NH Office of State Planning (now Office of Energy and Planning) entitled: *Buffers for Wetlands and Surface Waters, A Guidebook for New Hampshire Municipalities* (Revised May 1997).

In addition to these various ordinance approaches, municipalities may elect to enforce the provisions of the CSPA by issuing cease and desist orders, and by seeking injunctive relief of civil penalties as provided by RSA 483-B:8, III (a) and (b). One of the advantages of local enforcement is that any civil penalties and fines collected by the court, can be remitted to the treasurer of the municipality prosecuting violations, for use of the municipality. In order to enforce the provisions of the CSPA, however, municipalities must have a knowledgeable code enforcement officer on hand who understands and can apply the provisions of the act on a case by case basis.

Under the CSPA, exemptions are provided for forestry and agricultural activities and these exemptions must also be considered when establishing a local ordinance. The CSPA also provides an urban exemption for situations in which specialized urban conditions exist. This exemption requires the governing body to make a formal request to the NH DES Commissioner to grant an exemption from the CSPA.

In summary, the CSPA minimum standards are designed to overlay other state and municipal permitting programs. This means that the state permitting programs such as Subsurface, Wetlands, and Alteration of Terrain as well as local building officials must ensure that any permits issued are in compliance with the CSPA.

5.4 Comprehensive Shoreland Protection Act: History of Changes

On July 1, 2005, Senate Bill 83 established a commission to study the effectiveness of the CSPA. Among other things, the Commission was charged with assessing land-use impacts around the state's public waters; size, type, and location standards pertaining to structures as outlined in the CSPA; shoreland buffer and setback standards; and nonconforming use, lot, and structure standards.

The Commission was comprised of 24 members representing a variety of stakeholders including the General Court, the conservation community, the regulatory community, natural resource scientists, agricultural interests, business and economic interests, and members of the general public. The final report of the Commission contained 17 recommendations for changes to the CSPA. Sixteen of those recommendations for change were enacted into law and became effective April 1, 2008. The changes are broad in scope and include impervious surface allowances, a provision for the waterfront buffer in which vegetation removal is restricted, shoreland protection along rivers designated under RSA 483 (Designated Rivers), and the establishment of a permit requirement for many construction, excavation or filling activities within the Protected Shoreland.

One of the important changes to the CSPA is that effective July 1, 2008 in accordance with RSA 483-B, a State Shoreland Permit is now required for construction, excavation and filling activities within the designated Protected Shoreland area, 250 ft from the reference line (ordinary high water mark for rivers). This provision applies to all designated rivers, however, exemption from the CSPA update is permitted for the following situations:

- Forest management not associated with shoreland development or land conservation and in compliance with RSA 227-J:9
- Management not associated with shoreland development or land conservation and in compliance with RSA 227-J:9 that served the purpose of managing a water supply watershed
- Agriculture conducted under best management practices as specified in RSA 483-B, III
- Projects that receive a permit under RSA 482-A (Ex: dredge and fill in wetlands)

For more information regarding eligibility for exemption from the Shoreland Protection Permit review the Shoreland Administrative rules Env-Wq 1406 Under the DES Water Division.

In addition to the State Shoreland Permit, effective April 1, 2008 is the Primary Building Setback regulations which require within the Waterfront Buffer all primary buildings to be setback at least 50 feet from the designated reference line. Under the CSPA, municipalities may enact their own setbacks only to enforce a greater protection distance further than 50 feet.

More recent updates to the CSPA include several fee changes which became effective September 13, 2009. In addition, developers will now be able to build multifamily housing within the Protected Shoreland as long as they meet zoning and septic requirements and the old provision requiring a minimum of 150 feet of frontage per household was removed. Also, a number of small ponds were removed from the act that didn't meet the requirements of at least 10 acres or more. Because the new law is based on single surface area instead of flowage rights a number of ponds may drop off the list of protected waters under the act.

For more information regarding the CSPA, visit the following NH DES website: http://des.nh.gov/organization/divisions/water/wetlands/cspa/index.htmm. Found on the NH DES website are Shoreland Protection Program Fact Sheets, permit application forms, frequently asked questions, publications and all the CSPA rules and regulations.

6. Recreation Opportunities

6.1 Goals

- To provide adequate access points in each community from which the public can enjoy the river.
- To establish access points in appropriate locations using sound conservation and design practices.
- To prevent overuse and decline of public access areas.
- To alleviate the occurrence of trespass on private property by those seeking to use a public resource.

6.2 Key Actions to Achieve these Goals

Table 6: Recreation Opportunities

Key Action	Implementation
Encourage maintenance of existing public access points.	Conservation organizations to adopt public access areas and portions of the river. Communities to encourage a "carry in-carry out" policy and/or provide trash receptacles at locations where regular collection can occur.
Develop guidelines for appropriate use of public areas.	Communities to assign policing, sign posting, trash removal and maintenance to the appropriate municipal agencies. Communities to avoid development of access points on undeveloped areas of the river, sections designated as "natural" or areas that can be considered "dangerous" for access.
Evaluate the need for additional public access areas and identify potential locations.	Communities to identify current public access points and determine need for additional access. Communities to determine feasibility of obtaining easements on lands currently used for informal access to the river.

Table 6: Recreation Opportunities	
Key Action	**Implementation**
Create travelways adjacent to the river.	Communities to develop recreational paths along the river corridor in a manner which will not adversely affect the natural environment or wildlife corridors. Former railroad rights-of-way should be utilized where possible. Communities to consider limiting motorized vehicles on travelways and public areas along the river corridor.

6.3 Background

History does not record the earliest time when the Piscataquog River was used for recreation, however the river has served a wide range of uses over the years. In the early 1900's, the Boston Chapter of the Appalachian Mountain Club used a section of the river in New Boston for paddling instruction and canoe races. At about the same time, property near the river in Manchester and Goffstown became desirable for its recreational value. Summer camp colonies developed along the river for nearby city dwellers, offering a peaceful place to relax and enjoy nature.

The river has always attracted diverse interests reliant upon the flowing waters. The tranquility of the river attracts some people, providing them a visit with nature, or a quiet place to read or relax besides perpetually flowing water. When the river is swollen and the water is far from tranquil, people come with canoes, kayaks and other means of flotation looking for adventure. The river calls anglers and those that fly-fish to waters teeming with life. For some, the river simply provides spectacular scenery in their daily travels. The river offers each person a unique experience, and the recreational opportunities afforded by the river are limited only by one's imagination.

The Piscataquog River is home to hundreds of boating enthusiasts. Whether on the quiet, more private sections or on the lakes, boaters can enjoy four seasons of rural New Hampshire at its finest. The lakes provide space for water skiing as well as other recreational endeavors favored by the boating public. The numerous access points along the river often include launch sites and parking. Known public access sites to water are displayed on Map 9.

The river corridor provides excellent and diverse recreational opportunities. Trails along the Piscataquog provide opportunities for hiking, biking and horseback riding and during the winter, people can enjoy cross-country skiing, snowshoeing and snowmobiling in some designated areas. Abandoned railroad lines are ideal for conversion into recreational pathways. Manchester and Goffstown have recently been converting these railroad corridors into pedestrian-friendly, paved trails that will run from Goffstown Village to downtown Manchester. This project will connect the Goffstown Rail Trail to the Piscataquog Trail connected by the recently built Hands

Across America pedestrian bridge crossing Interstate 293 and the Merrimack River. Featured in the Appendix 9.5 is a map portraying the system of rail trails provided by the Friends of the Goffstown Rail Trail Organization. Additional trails extend out into New Boston. Map 9 shows areas featuring railroads and also class VI roads, roads often used for walking or biking.

The Piscataquog is home to many beaches, parks, and swimming holes throughout, popular ones include public beaches on Glen Lake in Goffstown and Everett Lake featured in Clough State Park in Weare. To ensure minimal human health risks in pursuit of the use of these beaches, DES has monitored these waters for twenty years with the Public Beach Inspection Program. Bacteria levels are tested June through August and reported on over 170 different freshwater locations in NH. The program also makes the effort to determine where contamination sources could be coming from and participates in public outreach to educate on sanitation. To learn more or see local reports visit the NH DES Water Division: Public Beach Inspection Program at: http://des.nh.gov/organization/divisions/water/wmb/beaches/index.htm.

Beaches considered Impaired by DES are included in the Impaired Waters Data Supplement found in Appendix 9.2.3 and are also depicted on Map 3. To view the public and private conservation lands of the watershed please refer to Map 8. A number of parks or other recreational points of interest are depicted on Map 9 provided by the Office of Energy and Planning (OEP Recreation Points).

6.4 Recreation Projects

A great example of a successful recreation project within the watershed has been the work to improve access along Glen Lake in Goffstown, NH. In June 2003 the Town of Goffstown received a Federal EPA 319 grant for $64,625 provided by the NH Department of Environmental Services to perform this work. The Town of Goffstown had secured additional non-federal matching funds in the amount of $49,417.50 to contribute to this project. Recreation access improvements along Glen Lake during the construction of this project included the following:

1. Construct a concrete plank boat ramp with readying lanes. Install Best Management Practices (BMPs) to collect and treat runoff coming from the ramp.

2. Relocation of the autos with trailer parking from the immediate shoreline area between Elm Street and Glen Lake to across the road on the north side of Elm Street. Direct stormwater runoff to vegetated filter strips and/or treatment swales.

3. Construct a guardrail to limit parking along Elm Street and install boulders to confine the autos with trailer parking to the newly constructed area.

4. Construct walkways to control and direct pedestrian traffic so as to avoid particularly sensitive areas and enhance safety.

5. Construct BMPs along Elm Street at the top of the slope to Glen Lake to control and treat stormwater runoff from Elm Street and the surrounding area.

6. Terrace the steeper slopes along the shoreline to reduce slope length and steepness factors.

7. Plant terraced area with islands of low maintenance, indigenous species of grasses, shrubs, and trees.

8. Construct an informational kiosk on site for public education and outreach relative to water quality and watershed management issues.

To review the site plan or find out additional information regarding the 319 Glen Lake Project contact Jeff Marcoux, NHDES Watershed Assistance Specialist by email at Jeffrey.Marcoux@des.nh.gov or by phone at (603) 271-8862.

Map 8

PISCATAQUOG RIVER MANAGEMENT PLAN

OPEN SPACE

Watershed Boundary

Lakes

Streams

Town Boundaries

Conservation Lands

Privately Held Conservation Lands

Publicly Held Conservation Lands

Name	Conservation Land (Acres)	Area in Watershed	% of Conservation Land
Bedford	107	492	22
Bennington	12	221	5
Deering	3,554	12,813	28
Dunbarton	3,306	10,024	33
Francestown	4,171	19,315	22
Goffstown	2,325	19,003	12
Greenfield	893	3,842	23
Henniker	333	3,300	10
Hopkinton	42	45	92
Lyndeborough	1,269	4,610	28
Manchester	116	1,124	10
Mont Vernon	277	1,581	18
New Boston	5,258	25,458	21
Weare	6,040	37,357	16
Totals	**27,702**	**139,186**	**20**

0 1 2 3 4 Miles

Data Sources:
NH GRANIT Digital Data (1:24,000)
Conservation Lands Updated June 2008 by GRANIT
The Nature Conservancy
NH Department of Transportation
NH Department of Environmental Services

The individual municipalities represented on this map and the SNHPC make no representations or guaranties to the accuracy of the features and designations of this map.

Map Produced by
GIS Service SNHPC 2009.
Contact: gis@snhpc.org
Ph: (603) 669-4664

This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.

SNHPC

New Hampshire Location Map

Piscataquog River Watershed

Map 9

PISCATAQUOG RIVER MANAGEMENT PLAN

RECREATION POINTS

Railroad
Class VI Roads
Public Water Access Points
OEP Recreation Points
Watershed Boundary
Lakes
Streams
Town Boundaries

0 1 2 3 4 Miles

Data Sources:
NH GRANIT Digital Data (1:24,000)
Conservation Lands Updated June 2008 by GRANIT
The Nature Conservancy
NH Department of Transportation
NH Department of Environmental Services

The individual municipalities represented on this map and the SNHPC make no representations or guaranties to the accuracy of the features and designations of this map.

Map Produced by
GIS Service SNHPC 2009.
Contact: gis@snhpc.org
Ph: (603) 669-4664

This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.

SNHPC

New Hampshire Location Map

Piscataquog River Watershed

Henniker
Hopkinton
Concord
Bow
Hillsborough
Dunbarton
Deering
Weare
Hooksett
Bennington
Manchester
Francestown
Goffstown
New Boston
Greenfield
Lyndeborough
Mont Vernon
Bedford
Amherst
Merrimack

North Branch Piscataquog River
Middle Branch Piscataquog River
South Branch Piscataquog River
Main Stem Piscataquog River
Merrimack River

Pleasant Pond
Dudley Pond
Weare Reservoir
Everett Lake
Mt. William Pond
Gorham Pond
Deering Reservoir
Daniels Lake
Shattuck Pond
Pleasant Pond
Glen Lake
Dodge Pond
Haunted Lake
Bailey Pond

77
114
13
149
136
101

7. Natural Resources

7.1 Goals

- To preserve and maintain the natural resources of the Piscataquog River Watershed for present and future generations of both humans and wildlife.
- To protect the threatened and endangered species within the watershed.
- To encourage the natural flow of the river for fish and wildlife habitats and public water uses.
- To support educational initiatives and encourage public awareness for the natural resources of the watershed.

7.2 Key Actions to Achieve these Goals

Table 7: Natural Resources

Key Action	Implementation
Identify, protect, and enhance important spawning and rearing habitat within the corridor.	PRLAC to work with local conservation commissions, colleges and schools, environmental organizations, and federal and state agencies to identify important natural resources within the river corridor.
Identify and prioritize riparian and aquatic habitat areas impacted by past or ongoing disturbance, and explore opportunities for restoration.	PRLAC to encourage communities to seek grants from federal, state and private organizations to provide funding for restoration efforts.
Protect threatened, endangered, sensitive and native species.	Local officials (conservation commissions and planning boards) can use their authority to protect these areas through the review of wetland permits and intent to cut permits and through other public planning processes (such as the development of zoning ordinances).
Promote stewardship of the natural resources within the river corridor.	PRLAC to work with local conservation commissions, colleges and schools, environmental organizations and federal and state agencies to identify important natural resources within the river corridor.

Table 7: Natural Resources	
Key Action	**Implementation**
Maintain adequate flow conditions to support and enhance current resident fish and aquatic resources, and anadromous fish habitat. This includes avoiding and preventing illegal stream and river crossings which impact wetlands and aquatic habitat.	PRLAC and PLC to participate in the Instream Flow Rules to be developed by NHDES for the Piscataquog River. NHDES to enforce the protected flow once it's established. Work with municipalities in seeking funding and solutions to prevent, mitigate and remove illegal stream and river crossings as appropriate.
Sponsor and promote workshops to educate the public on federal, state and local regulations as they impact the river corridor	PRLAC, PLC, and local conservation commissions to work together on public support.
Promote land conservation within the watershed to enhance the natural resources of the river.	PRLAC to work with the PLC and Community conservation commissions to identify and help protect properties that are vital to the quality of the watershed
Support efforts of the Eastern Brook Trout Joint Venture (EBTJV) and the Eastern Brook Trout Coalition	SNHPC and PRLAC to work with the collation and NHFG to expand program among all eleven watershed communities as practical.

7.3 Background

The Piscataquog River and surrounding watershed supports diverse habitats for a wide variety of wildlife and plant species thanks to the extensive natural and protected lands along the river. A number of these species of plants and animals are significant and have been identified as threatened, endangered, or sensitive, and require special protection. An inventory of existing species located within the corridor has been assembled from information provided by The New Hampshire Fish and Game Department, The Audubon Society of New Hampshire, The New Hampshire Natural Heritage Program, and the Piscataquog Land Conservancy (PLC). This information is included in Appendices 9.1.1 through 9.1.5 of this document. Every effort should be made to protect and enhance the habitat for these species as well as the existing native species located in the watershed.

In the early days of European settlement in the region, mature stands of large white pine and red oak growing in the Piscataquog River watershed drew attention to the area. Settlers arrived to harvest the massive trees, some of which were reserved by the King of England for British Navy

ship masts. Today, this virgin forest is non existent and the river corridor sustains second and third growth vegetation.

The Piscataquog River is a relatively steep gradient stream with a predominantly cobble and gravel substrate, dominated by riffle/pool habitat. The three branches of the river, together with its tributaries and lakes, provide both novice and knowledgeable anglers with fine and rewarding fishing. It is a favored fishery of the Merrimack Valley Chapter of Trout Unlimited, which has selected the river for its "Adopt-A-River Program." The Piscataquog River is considered to be one of the two most important salmon nursery tributaries in southern New Hampshire. The river yields higher production levels of juvenile par, on average, than any other site. In addition, with many diversified river bottoms and several impoundments, the river supports a large warm water fishery as well as a notable trout fishery.

7.4 Fish

The Piscataquog River and its tributaries are home to at least 24 different species of fish (See appendix 9.1.1 for a list of fish species and 9.2.1 for the NHFG Fish Stocking Report 2008 and 2009). Although the river is managed as a cold-water fishery, it also supports a healthy population of warm water species. The slower moving impounded sections of the river are home to mostly warm water species while coldwater species inhabit those areas having steeper gradients.

As noted, the Piscataquog River is considered to be one of the most important nursery grounds for anadromous Atlantic salmon, which are stocked as fry into South Branch. The Atlantic salmon lives as an adult at sea but returns to freshwater rivers and small streams to spawn. The young Atlantic salmon remain in fresh water for one or more years, then descend to the sea to feed and grow. After spending a year or more at sea they return to fresh water to spawn.

Once the anadromous fish return to the Merrimack River in sufficient numbers, it will be necessary for the owners of several dams to begin construction of fish ladders and downstream by-passes along the Piscataquog River. According to the Strategic Plan for the Restoration of Atlantic Salmon to the Merrimack River prepared by U.S. Fish & Wildlife Service, an upstream passage will need to be constructed at Kelly Falls Dam in Manchester, and downstream by-passes are called for at the Gregg and Hadley Falls dams in Goffstown. These projects will help to encourage the restoration of the anadromous fish to the watershed.

Additional protection recommendations are discussed in the 2008 Merrimack River Basin Anadromous Fish Land Conservation Plan. The purpose of this project was to identify locations within four sub-watersheds of the Merrimack River Basin (including the South Branch Piscataquog) where land conservation projects would be most effective in protecting Atlantic salmon fisheries. Land conservation plays a key role in maintaining and improving water quality that provides specific living conditions Atlantic salmon require for survival. This 2008 Plan has identified the following protection factors to consider and recommendations to help ensure future protection of anadromous fish:

- Survey for the presence or absence of brook trout (are closely related to Atlantic Salmon & have similar water quality needs) throughout the watershed.
- Conservation priority may be further narrowed by evaluating land protection status across the four tributaries of the Merrimack Basin (S. Piscataquog, Baker, Smith & Souhegan Rivers).
- Land conservation easements and the creation of forest reservations are recommended to ensure further protection of anadromous fish.
- Monitor for specific Atlantic salmon water quality needs (cold water, suitable pH levels, normal nutrient loading & low sedimentation/siltation loading).
- Encourage further streambank stabilization efforts to prevent human-caused erosion levels causing excessive sedimentation downstream that can exceed the suitability of anadromous fish.
- Discourage development and poor forestry practices near the River to prevent slope erosion along river banks.
- Stream restoration, sound land-use practices and environmental regulations should be taken into consideration and used wisely when managing and protecting coldwater fisheries.
- Catchments defined by the top three classes (Low, Moderately Low and Moderate on map 7) should all be consider eligible for priority protection within the four sub-watersheds, however, extra consideration should be given to land area with clusters of higher-ranked catchments.

Refer to Map 11 to view the protection priority plans for the South Branch of the Piscataquog Watershed. The land protection prioritization of this map is based on the Merrimack River Basin Anadromous Fish Land Conservation Plan developed by Society for the Protection of NH Forests (SPNHF). Within the catchment protection priority area (South Branch) the level of protection was based on the amount of stocked salmon and land area within the watershed. The Piscataquog Watershed was studied and ranked alongside another three NH sub-watersheds (the Baker River, Smith River, and Souhegan River), the priority is relative based on these comparisons but highlights areas that are the most sensitive and have the most to lose from future development pressures. These catchment areas are also critical habitat for anadromous fish.

Wild brook trout are another valuable resource of the Piscataquog River Watershed currently still being threatened by habitat degradation due to historic (and possibly current) timber logging, poorly constructed stream crossings, acid deposition, non-point source pollution and changes in water quality and hydrology due to increased impervious surfaces (and thus stormwater runoff) in the watershed. As mentioned previously, brook trout and Atlantic salmon require similar water quality to sustain their wellbeing. Due to the similarities, recommended strategies suggested for the protection of Atlantic salmon may be applicable to ensuring the health of brook trout. For more information visit: http://www.easternbrooktrout.org/conservationstrategy.aspx.

To halt the widespread decline of wild brook trout, a diverse group of non-governmental organizations, academicians and state and federal agencies formed the Eastern Brook Trout Joint Venture (EBTJV). The objective of the EBTJV is to conserve wild brook trout and their habitats in the eastern United States, from Georgia to Maine, with the long-term goal "to implement a comprehensive conservation strategy to improve aquatic habitat, raise public awareness, and

prioritize the use of federal, state and local funds for brook trout conservation." The first step to protecting brook trout in the Piscataquog River Watershed is to identify those waterbodies which historically and those that currently contain brook trout; this work was conducted by the New Hampshire Fish and Game Department in recent years, and several tributaries to the River were identified as having apparently healthy populations of wild brook trout.

The second step is for the EBJTV and all eleven watershed communities to identify specific threats to brook trout in the watershed, and then implement strategies to protect and restore their habitat. For example, it is well documented that impervious surfaces in a watershed have a negative impact on water quality and aquatic habitat, and communities are encouraged to revise zoning ordinances to reflect this science. Stream crossings that preclude the passage of fish and areas of streambank erosion caused by human activities should all be identified and restored. There are many financial and scientific resources available for restoration work – NH DES and New Hampshire Fish & Game Department (NHFG) should be contacted for assistance.

Recently, a partnership was formed with Tout Unlimited, NH Fish and Game, the New Boston Conservation Commission, Saint Anselm College Biology Department, Southern NH Planning Commission, and the Russell Piscataquog River Watershed Foundation for the specific purpose of protecting, restoring and securing habitat for the Eastern Brook Trout in the Piscataquog Watershed. In 2010, the focus of the Piscataquog Watershed Eastern Brook Trout Coalition will be on research and restoration of eastern brook trout within the South Branch and the watersheds of priority tributaries: Rand, Cold, and Scataquog Brooks. In the future, the work of the coalition will be expanded to include other areas of the watershed, including the Middle Branch and other important tributaries. In addition, the coalition may consider land protection actions as deemed to be important to the focus area of the coalition.

Currently, funding for this effort is being provided through Trout Unlimited and the New Boston Conservation Commission within the focus areas of the town to conduct volunteer training and culvert assessment; engage interns to assist with compilation and collection of existing data; identify point and non-point sources of pollution and habitat degradation, and to sample selected streams and movement into spawning areas. Some of the anticipated outcomes of this work include: a report on the status of stream crossings and their impact on aquatic organism passage with focus on Eastern Brook Trout; collaboration with NH DOT to develop and implement a schedule of plantings and bank stabilization along Route 13, also known as the state designated John Stark Scenic Byway; and the presentation of scientific data on the biological importance of the South Branch of Piscataquog River and priority tributaries.

Historically, the NHFG has conducted surveys of the fish communities in the Piscataquog River Watershed since 1938. Surveys conducted by the NHFG in the last several years have documented that the Watershed is dominated by native fish species. Non-native fish species, such as largemouth bass) are primarily found in the Watershed's lakes and ponds, while the vast majority of the streams and rivers have only one species of non-native fish, the margined madtom, that has formed sustainable populations. Even so, the margined madtom appears to comprise only a very small proportion of the fish community and is not known to impact native fish species. Common carp inhabits portions of the Mainstem Piscataquog River in Manchester and Goffstown, and is likely restricted to those areas of the river because the habitat in upstream

portions of the river is not suitable to carp. Additionally, smallmouth bass are found in the mainstem and portions of the North Branch.

7.5 Mammals

The Piscataquog River and its corridor provide a diverse array of habitat for a large variety of mammals, including several endangered, threatened and sensitive species. Recently added to the state endangered list was the New England cottontail. Areas of particular interest in future management are shublands large enough to support the living and breeding habits of this species. Another species found on the state endangered list, the small-footed bat, was documented in New Boston. Appendices 9.1.1 through 9.1.4 provide lists of all species known and expected to occur within the river corridor.

7.6 Birds

Because of the extensive natural and protected lands along the river, the Piscataquog River Watershed supports a series of diverse habitats for a wide variety of birds. Birds of conservational interest include the pied-billed grebe, bald eagle, peregrine falcon, and the common nighthawk. With the exception of the common nighthawk, which moved from a threatened species to an endangered one, recent successes in conservation efforts, in addition to state programs, are responsible for downlisting several species. The bald eagle, pied-billed grebe, and the peregrine falcon were moved from the endangered list to the threatened list, while the Cooper's hawk was removed from the threatened list. A list of bird species found within the watershed is provided in Appendix 9.1.3.

7.7 Reptiles and Amphibians

Several species of reptiles of special concern have been observed inhabiting the watershed. They are the endangered species of the eastern hognose snake, the racer, and the Blanding’s turtle as well as the threatened spotted turtle. A list of reptiles and amphibians found within the watershed is provided in Appendix 9.1.4.

7.8 Vegetation and Forest Communities

Wildflowers deserving special protection that are now surviving within the Piscataquog River Watershed include the small spike-thrush (*Sagittaria rigida*), gall-of-the-earth (*Nabalus serpentarius*), one-sided rush (*Juncus secundus*), piled-up sedge (*Carex cumulata*), and slender crabgrass (*Digitaria filiformis*). A particularly attractive plant species found in the watershed is the small whorled pogonia (*Isotria medeoloides*). The largest-known population of this perennial wildflower is found in central New Hampshire and Maine. It was given federal listing as endangered in 1982, but habitat protection efforts have allowed the species to be reclassified as threatened. Biologists hope that with continued landowner awareness and concern the plant will survive. Other rare plant species that have been documented within the river watershed include the sessile-fruited arrowhead (*Sagittaria rigida*), american cancerroot (*Conopholis americana*),

sweet coltsfoot (*Petasites frigidus* var. *palmatus*), farwell's water milfoil (*Myriophyllum farwellii*), and fern-leaved false foxglove (*Aureolaria Pedicularia* var. *intercendens*). See Appendix 9.1.5, for a full list of the wildflowers of the watershed.

Also of note is a large ironwood (*Carpinus caroliniana*) community found along the banks of Peacock Brook and at its confluence with the Middle Branch of the Piscataquog River. This tree community is unusual in that this species does not normally cluster in such a massive group. Numerous wildlife species including turkey and ruffed grouse are attracted to the area for the nuts that these trees produce.

The flows of the Piscataquog create a variety of hydrologic conditions that support unique and relatively rare and high quality natural communities. The watershed exhibits areas that are periodically flooded. Forested portions that benefit from this flux of nutrients feature communities only found in higher nutrient sites. A common example is a silver maple-false nettle-sensitive fern floodplain forest which are found on some portions along the Piscataquog River. Floodplain forests provide many natural benefits including water quality, river stability, and provide excellent habitat for many birds including the rare red-shouldered hawk. A map depicting the floodplain forest distribution along the Piscataquog can be found on Map 12. Other forested areas influenced by water are swamps found within the watershed. A community of interest is the blackgum - red maple basin swamp featuring codominance of blackgum. Blackgum reaches its northern most distribution throughout southern and central NH and high quality sites are considered rare. This is one of the oldest tree species to grow in Northern America and common older age examples in NH can be found at approximately 200 years in age while some even older trees vary in age from 300 to 600 years. Wetland areas that feature low land vegetation are emergent marshes and fens, examples of high quality sites that are found within the watershed include the medium level fen and the emergent marsh - shrub swamp system. Lastly, natural communities can be fed by groundwater and are known as forested seeps, an example of this can be found in Weare with the circumneutral hardwood forest seep community type.

7.9 Related Organizations

The NHFG's Nongame and Endangered Wildlife Program was established in 1988. The program works to protect over 400 different species of the state's nongame wildlife using wildlife monitoring and management with the addition of public outreach and education. This program with the aid of other NH wildlife groups has effectively managed the come back of many rare and endangered species. The NHFG website and more information can be found at http://www.wildlife.state.nh.us/

The Natural Heritage Bureau (NHB) finds and reports rare plants and exemplary natural communities under the Native Plant Protection Act (1987) RSA 217-A. Their main goal is to protect the natural heritage of NH, to investigate the condition and distribution of rare plants and exemplary natural communities, and educate land owners about future management of this resource. NHB works in concert with the NH Fish and Game department to keep up to date documentation on rare wildlife for the NHFG’s Nongame and Endangered Wildlife Program.

The NHB website and more information can be found at http://www.nhdfl.org/about-forests-and-lands/bureaus/natural-heritage-bureau/

7.10 NH Wildlife Action Plan

In spring 2006 the NH Wildlife Action Plan (WAP) was adopted, to provide New Hampshire decision-makers with the appropriate planning tools for restoring and maintaining critical habitats and populations of the state's species of conservation and management concern (for more information see: http://www.wildnh.com/Wildlife/wildlifeplan.htm).

This plan is a pro-active effort to define and implement a strategy that will help keep species off the rare species list. The WAP addresses where the most vulnerable species and habitats are in relation to rapid land use changes to the natural landscape. These rapid changes impacting wildlife habitats include the impacts of the 19th century conversion of forests to fields, and today's land conversion to roads, housing, and businesses, which permanently alters natural habitats, degrading their value to native wildlife.

The Wildlife Action Plan demonstrates conservation planning tools and resources that can be applied to local conservation efforts of communities within the Piscataquog River Watershed, including conducting a Natural Resource Inventory (NRI), Wildlife Habitat Audit, addressing Wildlife Risk Assessments, conservation strategies, and how the WAP can be implemented. When conducting a NRI the first step is to create a map of natural resources describing their distribution across the local landscape. The WAP includes Geographic Information Systems mapping data of NH wildlife habitat and species and their level of need for protection which can be incorporated into a NRI. Currently the towns of Francestown and Weare are in the process of updating their NRI and the Town of Lyndeborough recently completed an updated NRI in February 2009. Additionally the watershed communities of Bedford (2000), Bennington (2005), Deering (2004), Greenfield (2003), Henniker (2002) and Mont Vernon (2002) have conducted a Natural Resource Inventory within the past decade. For more detailed steps on how to incorporate the WAP mapping data into a NRI visit contact the NH Fish & Game Department staff for assistance.

NH Fish and Game has developed a Wildlife Habitat and Natural Resource Protection Audit as a counterpart to the WAP. This audit provides an assessment of the current level of protection for wildlife habitat and natural resources by reviewing a Town's Master Plan, Zoning Ordinances, Subdivision and Site Plan Review Regulations with respect to 25 topics pertaining to wildlife habitat and natural resources (for a full list of topics visit NHFG at www.wildnh.com under the WAP). Currently no towns within the Piscataquog River Watershed have conducted a Wildlife Habitat Audit; however, within the SNHPC Region, the Town of Deerfield has recently completed an assessment and review of land use regulations with respect to wildlife habitat and natural resource protection (NH Audubon Society, December 2009).

Conservation management programs depend on an assessment of the degree of risks posed to species and habitats that are of the greatest concern. The Wildlife Action Plan provides qualitative risk assessments of factors that influence New Hampshire wildlife and their habitats. The evaluation of risk factors were based on a ranking process which provided a consistent basis

for comparing risk factors across all species and habitats, these factors were placed into categories of appropriate conservation action.

Communities within the Piscataquog Watershed are encouraged to take advantage of these innovative planning tools to assist in the implementation of conserving natural resources and retaining connected natural expanses for increased wildlife habitat. In addition to incorporating protection strategies within local Master Plans, ordinances, and land use regulations, Conservation Commissions and Open Space Committees need to be further informed about conservation science in an effort to preserve natural land networks. Local conservation strategies and objectives should be aided by the wildlife habitat risk assessments developed as part of the WAP. Technical assistance in educational outreach, implementation of conservation strategies and developing measurable monitoring plans of conservation efforts are available through NH Fish and Game.

To view current habitat protection ranking of lands within the Piscataquog River Watershed based on the NH Wildlife Action Plan see Map 10. Habitat protection ranking based on the condition of wildlife habitats was analyzed by ranking the biological, landscape and human impact factors that most affect each habitat type (for a description of habitat types visit NH Fish & Game under the WAP at http://www.wildnh.com/Wildlife/wildlife_plan.htm). Biological factors address overall biodiversity including rare plant and animal species**.** Landscape factors include size of habitat and its proximity to other patches of similar types of habitat. Human impact factors include density of roads around the habitat, dams, recreational use, and pollution. These three main ecological condition factors were individually scored per habitat type in the watershed and pulled together to generate an overall ranking score.

Map 10

PISCATAQUOG RIVER MANAGEMENT PLAN

WILDLIFE ACTION PLAN HABITAT RANKING

Watershed Boundary

Lakes

Streams

Town Boundaries

Wildlife Action Plan Habitat Ranking

Tier 1 - Highest Ranked Habitat by Ecological Condition in NH

Tier 2 - Highest Ranked Habitat by Ecological Condition in Biological Region

Tier 3 - Supporting Landscapes

Tier 4 - Habitat Not Top Ranked

0 1 2 3 4 Miles

Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
NH Department of Environmental Services
NH Fish and Game, Wildlife Action Plan, December 2006

The individual municipalities represented on this map and the SNHPC make no representations or guaranties to the accuracy of the features and designations of this map.

Map Produced by
GIS Service SNHPC 2009.
Contact: gis@snhpc.org
Ph: (603) 669-4664

This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.

SNHPC

N W E S

New Hampshire Location Map

Piscataquog River Watershed

Henniker
Hopkinton
Concord
Hillsborough
Bow
Dunbarton
Deering
Weare
Hooksett
Merrimack River
Main Stem Piscataquog River
Bennington
Manchester
Goffstown
Francestown
New Boston
Greenfield
Lyndeborough
Bedford
Amherst
Mont Vernon
Merrimack
North Branch Piscataquog River
Middle Branch Piscataquog River
South Branch Piscataquog River
Pleasant Pond
Dudley Pond
Weare Reservoir
Everett Lake
Mt William Pond
Gorham Pond
Deering Reservoir
Daniels Lake
Shattuck Pond
Pleasant Pond
Glen Lake
Dodge Pond
Haunted Lake
Bailey Pond
77
114
13
149
136
101

Map 11

PISCATAQUOG RIVER MANAGEMENT PLAN

"MERRIMACK RIVER BASIN ANADROMOUS FISH LAND CONSERVATION PLAN"

PREPARED BY: SOCIETY FOR THE PROTECTION OF NEW HAMPSHIRE FORESTS

- Watershed Boundary
- Lakes
- Streams
- Town Boundaries

South Branch Piscataquog River Catchment Protection Priority

- Moderate
- Moderately Low
- Low

0 1 2 3 4 Miles

Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
NH Department of Environmental Services
Society for the Protection of New Hampshire Forests

The individual municipalities represented on this map and the SNHPC make no representations or guaranties to the accuracy of the features and designations of this map.

Map Produced by
GIS Service SNHPC 2009.
Contact: gis@snhpc.org
Ph: (603) 669-4664

This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.

SNHPC

New Hampshire Location Map

Piscataquog River Watershed

Henniker
Hopkinton
Concord
Bow
Hillsborough
Dunbarton
Deering
Weare
Hooksett
Merrimack River
Main Stem Piscataqoug River
Manchester
Bennington
Goffstown
Francestown
New Boston
Middle Branch Piscataquog River
North Branch Piscataquog River
South Branch Piscataquog River
Greenfield
Lyndeborough
Amherst
Bedford
Mont Vernon
Merrimack
Pleasant Pond
Dudley Pond
Weare Reservoir
Everett Lake
Gorham Pond
Mt William Pond
Deering Reservoir
Daniels Lake
Shattuck Pond
Glen Lake
Kelley Falls Dam
Dodge Pond
Haunted Lake
Bailey Pond

7.11 Wetlands Protection

Currently 10 percent of New Hampshire's landscape is made up of wetlands. The protection of existing wetlands is critical to the health of the environment and its inhabitants. Wetlands perform multiple vital functions in ensuring the health of both wildlife and the increasing human population, these include filtering surface waters, recycling energy and nutrients, providing breeding and nesting grounds for wildlife, reducing storm flooding, and they are home to many rare plant species that only live in wetland communities. The Piscataquog River corridor is home to several high quality headwater wetlands, including the large wetland communities along Route 136 in New Boston, Francestown, and Greenfield, wetlands along River Road in Mont Vernon and the smaller wetland communities within Lyndeborough. Refer to Map 12 for a general display of the wetland areas found in the Piscataquog watershed.

Greenfield wetlands along Route 136
(Source: SNHPC)

Protecting these headwaters will ensure further protection of river communities downstream and is vital to the overall health of the watershed. The New Hampshire Department of Environmental Services Wetlands Bureau provides municipalities in the Piscataquog Watershed with assistance with wetlands protection practices and guidelines to ensuring their health into the future. Piscataquog Watershed municipalities are encouraged to review wetlands protection planning documents and related funding programs, available on the NHDES Wetlands Bureau webpage at: http://des.nh.gov/organization/divisions/water/wetlands/index.htm.

A recent development that is promising in assisting wetland protection was the establishment of the Aquatic Resource Mitigation Fund in 2006. In order to assess the proper appropriation of this fund a committee was commissioned for the Merrimack Watershed Area. The Site Selection Committee, who prioritize and vote on funding for mitigation projects, and DES employed the environmental consulting firm Vanasse Hangen Brustlin, Inc. (VHB) to develop a critical tool for prioritizing potential wetland restoration sites. Using spatial data VHB was able to highlight

wetland areas that were disturbed, yielding potential restoration candidate sites. VHB then weighed the sites priority for restoration on its position within the landscape, the overall benefit from restoration, and the ability for the restoration to remain intact over time. Committee members used this information in addition to site visits and weighing other criteria, such as the possibility of future development pressures, to decide which sites will receive the overall best benefit from the Aquatic Resource Mitigation Fund.

Of particular note was the grant awarded in 2009 to the Stewart Property in Francestown that will help to restore a 55 acre site, protecting 5,000 feet along the Rand Brook and the South Branch of the Piscataquog River. The plan will focus on restoration of active cow pasture to natural riparian vegetation. It will include the removal of invasive species and enhance the exemplary natural communities of the forested floodplains and floodplain vernal pools found on the property, enhancing and ensuring future quality in both water and wildlife habitat. To view these potential sites within the Piscataquog use VHB's interactive GIS tool that can be found at www.restorenhwetlands.com.

Map 12

PISCATAQUOG RIVER MANAGEMENT PLAN

FOREST FLOODPLAINS AND WETLANDS

Henniker
Hopkinton
Concord
Bow
Hillsborough
Dunbarton
Deering
Weare
Hooksett
Merrimack River
Main Stem Piscataqoug River
Manchester
Bennington
Goffstown
Francestown
New Boston
Greenfield
Lyndeborough
Bedford
Amherst
Mont Vernon
Merrimack

North Branch Piscataquog River
Middle Branch Piscataquog River
South Branch Piscataquog River

Pleasant Pond
Dudley Pond
Weare Reservoir
Everett Lake
Mc William Pond
Gorham Pond
Deering Reservoir
Daniels Lake
Shattuck Pond
Pleasant Pond
Glen Lake
Dodge Pond
Haunted Lake
Bailey Pond

177
114
13
149
136
114
101

Forested Floodplain
Watershed Boundary
Town Boundaries
Lakes/Reservoirs
Wetlands
Streams

0 1 2 3 4 Miles

Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
NH Department of Environmental Services
NH Fish and Game, Wildlife Action Plan, December 2006

The individual municipalities represented on this map and the SNHPC make no representations or guaranties to the accuracy of the features and designations of this map.

Map Produced by
GIS Service SNHPC 2009.
Contact: gis@snhpc.org
Ph: (603) 669-4664

This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.

SNHPC

N W E S

New Hampshire Location Map

Piscataquog River Watershed

8. Scenic Resources

8.1 Goals

- To preserve existing features and areas within the watershed recognized as scenic.
- To identify and protect additional scenic features in the watershed.

8.2 Key Actions to Achieve these Goals

Table 8: Scenic Resource

Key Action	Implementation
Document existing scenic features in each community.	PRLAC to work with each community to develop an inventory of existing features to be protected. Those listed in the nomination papers prepared by the PLC shall be included at the outset.
Identify new scenic features in each community.	PRLAC to work with each community to develop an inventory of new features to be protected. PRLAC to encourage communities and Regional Planning Commissions to research the status of abandoned roads and rail rights-of-way along the river for public acquisition.
Develop regulations that would help to preserve scenic features.	PRLAC to work with each community to adopt and enforce the provisions of the Comprehensive Shoreland Protection Act particularly as they relate to setbacks and buffers. PRLAC to work with each community to adopt local ordinances in each town restricting the placement of signs along the river corridor.

8.3 Background

The predominately rural nature of the landscape through which the Piscataquog River flows provides a wealth of natural scenic features that include open fields, farm expanses and views of the river. Further adding to this beauty are the forested roadsides that greet the traveler as well as views of the Uncanoonuc mountains to the east and Crotched Mountain and Mount Monadnock to the west. Preservation of these sites and identification of additional sites are the priority goals here. A particular focus should be the acquisition of abandoned railroad rights-of-way along the river. The PLC has already secured some of these areas in New Boston, and Goffstown and Manchester each recently acquired the railroad corridors along the Piscataquog in their respective communities, and have turned these areas into pedestrian and bike friendly paths.

9. Cultural Resources

9.1 Goals

- To protect the cultural value of the Piscataquog River and adjacent corridor by identifying key resources.
- To protect and preserve the cultural resources located along the Piscataquog River.

9.2 Key Actions to Achieve these Goals

Table 9: Cultural Resources

Key Action	Implementation
Encourage communities to inventory known sites of historic and cultural significance.	Communities to use local commissions and organizations to help identify sites.
Encourage written agreements with landowners to protect known sites on a voluntary basis.	Local historical societies to work with the New Hampshire Division of Historic Resources to identify and contact interested landowners. Sites on public land should be protected through the appropriate agency.
PRLAC review all permit applications and comment on any possible impacts on cultural resources.	NH Rivers Coordinator should ensure that all local wetland, shoreland and other similar permit applications reach the PRLAC in a timely fashion.

9.3 Background

The Piscataquog River Valley was one of the first areas to be developed when this region of New Hampshire was settled. For decades, saw and power mills and other mills for varied uses relied upon the river for their operations. The river valley also supported other factories, farming and forestry.

The Piscataquog River provided essential resources for early inhabitants. In the late 1700s and into the 1800s, its primary use was as a source of power for the numerous mills and shops. A site along the Piscataquog River was once home to the first shoe factory in the nation, which produced nearly 23,000 pairs of boots in its first year.

Francestown, Deering, Weare, and New Boston still contain many reminders of their early history in the ruins of the water-powered mills along the river's banks. The lower segment of the Piscataquog River was an important link in the transportation of cargo around Manchester. Dam locks were built at the river's mouth in 1818 to facilitate the passage of boats to and from the Merrimack River.

Records of these river-centered activities are abundant and can be found in locally printed and verbal histories. (Written historic resources include: A Timetable of History by Terry Knowles, Weare Historical Society; New Boston's Mills and Factories by Charles and Rena Davis, New Boston Historical Society; and History of Manchester, Derryfield 1751-1810, Chandler E. Potter.)

Many structures that have survived and represent a significant piece of New Hampshire's heritage have been given a historical designation. These designations are recognized on a state and national level and the Piscataquog watershed region has many fine examples.

Schoolhouses include the Clinton Grove Academy and the North Schoolhouse in Weare, and the Goffstown High School, Grasmere Schoolhouse, and Aiken Academy in Goffstown. Of particular significance is Page's schoolhouse, a one room schoolhouse that served the area where Caleb Page lived, father to Molly Stark. Molly Stark was the wife of Captain John Stark who is known for his leadership role in the Battle of Bunker Hill during the Revolutionary War and is attributed for coining New Hampshire's motto "Live Free or Die". During his time away Molly resided in her father's house.

Page's Corner School House, Dunbarton, NH

(Source: SNHPC)

Many historic houses and farms include the Richards house in Goffstown, the Gregg Montgomery house in Francestown and the Chase Amos house in Weare. The Chase Amos house was owned by Chase Amos in the mid to late 1800's and was used to manufacture carriages for several years. Chase Amos was the owner of the only surviving mill site featured along the Piscataquog River, the Chase Amos mill is part of the National Historic Registry.

Other notable structures include town churches, public libraries, cemeteries, town meeting halls, and important buildings that served different functions over time such as Simon's store and the Stone Memorial Building in Weare. To view designated historical sites within the Piscataquog Watershed see map 13. This map displays the level of historical designation of sites within the region. The different levels of historical designation assist in the effort to preserve historic value of historical sites in the Piscataquog region. The clustered regions within Francestown represent two significant historic districts, one ten building district is dedicated to when the construction of several buildings was erected for the soapstone mill that was Francestown's leading industry at the time. The other district is featured in Francestown's Mainstreet area and includes a total of 44 different properties.

To further recognize the connection of historic, cultural, and recreational features the state designated the circular route of NH 13, NH 77, and NH 114 that travels through Goffstown, Weare, Dunbarton, and New Boston as the General Stark Scenic Byway. This route comprises elements of historic significance to the area and the United States while also providing small town downtown areas, state parks, and scenic vistas. This route was designated by the state in 2008 following the guidelines of the National Scenic Byway program overseen by the Federal Highway Administration. Adoption of the route as a National Scenic Byway is still pending. For more information regarding this resource, a Corridor Management Plan was developed by the General Stark Byway Council and is available on the Southern New Hampshire Planning Commission website (www.snhpc.org). Refer to Map 13 for a display of mill sites, National and State Registered Historic Sites, and the routes designated as part of the General Stark Scenic Byway.

Map 13

PISCATAQUOG RIVER MANAGEMENT PLAN

HISTORIC SITES

- General John Stark Scenic Byway
- National Register Historic Sites
- State Register Historic Sites
- Local Historic Sites
- Mill Sites
- Watershed Boundary
- Lakes
- Streams
- Town Boundaries

0 1 2 3 4 Miles

Data Sources:
NH GRANIT Digital Data (1:24,000)
Conservation Lands Updated June 2008 by GRANIT
NH Department of Transportation
NH Department of Environmental Services
State of New Hampshire
Town of Weare
Town of New Boston
Nashua Regional Planning Commission
Central New Hampshire Planning Commission

Historic sites are from the National Register of Historic Places and was updated in 1994.

The individual municipalities represented on this map and the SNHPC make no representations or guaranties to the accuracy of the features and designations of this map.

Map Produced by
GIS Service SNHPC 2009.
Contact: gis@snhpc.org
Ph: (603) 669-4664

This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.

SNHPC

N W E S

New Hampshire Location Map

Piscataquog River Watershed

Henniker
Hopkinton
Concord
Bow
Hillsborough
Dunbarton
Weare
Deering
Hooksett
Merrimack River
Goffstown
Manchester
Bennington
Francestown
New Boston
Greenfield
Bedford
Lyndeborough
Amherst
Mont Vernon
Merrimack

North Branch Piscataquog River
Middle Branch Piscataquog River
South Branch Piscataquog River
Main Stem Piscataquog River

Pleasant Pond
Dudley Pond
Weare Reservoir
Everett Lake
McWilliam Pond
Gorham Pond
Deering Reservoir
Daniels Lake
Shattuck Pond
Pleasant Pond
Glen Lake
Dodge Pond
Haunted Lake
Bailey Pond

77
114
13
149
136
101

10. Information and Resources

Appendices

APPENDIX 9.1.1

FISH OF THE PISCATAQUOG RIVER WATERSHED

Alewife (*Alosa pseudoharengus*)
Bass, largemouth (*Micropterus salmoides*)
Bass, smallmouth (*Micropterus dolomieui*)
Bluegill (*Lepomis macrochirus*)
Bullhead, brown (*Ameiurus nebulosus*)
Bullhead, yellow (*Ameiurus natalis*)
Carp (*Cyprinus carpio*)
Chub, creek (*Semotilus atromaculatus*)
Chubsucker, creek (*Erimyzon oblongus*)
Dace, blacknose (*Rhinichthys atratulus*)
Dace, longnose (*Rhinichthys cataractae*)
Eel, American (*Anguilla rostrata*)
Fallfish (*Semotilus corporalis*)
Madtom, margined (*Noturus insignis*)
Perch, yellow (*Perca flavescens*)
Pickerel, chain (*Esox niger*)
Pumkinseed (*Lepomis gibbosus*)
Salmon, Atlantic (*Salmo salar*)
Sculpin, slimy (*Cottus cognatus*)
Shiner, bridle (*Notropis bifrenatus*) *
Shiner, common (*Luxilus cornutus*)
Shiner, golden (*Notemigonus crysoleucas*)
Shiner, spottail (*Notropis hudsonius*)
Sucker, white (*Catostomus commersoni*)
Sunfish, redbreast (*Lepomis auritus*)
Trout, brook (*Salvelinus fontinalis*)
Trout, brown (*Salmo trutta*)
Trout, rainbow (*Oncorhyncus mykiss*)
White Perch (*Morone Americana*)

*** Threatened Species**

APPENDIX 9.1.2

MAMMALS OF THE PISCATAQUOG RIVER WATERSHED

Bat, big brown
Bat, silver-haired
Bat, small-footed**
Bear, black
Beaver
Bobcat
Chipmunk, eastern
Cottontail, New England**
Coyote
Deer, white-tailed
Fisher
Fox, gray
Fox, red
Hare, snowshoe
Mink
Mole, hairy-tailed
Mole, star-nosed
Moose
Mouse, Deer
Mouse, House
Mouse, Meadow Jumping
Otter
Porcupine
Raccoon
Rat, Norway
Shrew, Masked
Shrew, Short-tailed
Skunk, Striped
Squirrel, Gray
Squirrel, Northern Flying
Squirrel, Southern Flying
Vole, Meadow
Vole, Southern Red-backed
Vole, Woodland
Weasel, Long-tailed
Weasel, Short-tailed
Woodchuck

*** Threatened Species**
**** Endangered Species**

APPENDIX 9.1.3

BIRDS OF THE PISCATAQUOG RIVER WATERSHED

(B) Breeds In NH
(IB) Irregular breeder In NH
(R) year-round resident n NH
(M) migrant through NH
*** Threatened Species**
**** Endangered Species**

Bittern, American (B)
Blackbird, Red-winged (B)
Bluebird, Eastern (B)
Bobolink (B)
Bunting, Indigo (B)
Bunting, Snow (W)
Cardinal, Northern (R)
Catbird, Gray (B)
Chickadee, Black-capped (R)
Cormorant, Double crested (M)
Creeper, Brown (R)
Crossbill, White-winged (IB/W)
Crow, American (R)
Duck, American Black (B)
Duck, Black
Duck, Ring-necked
Duck, Wood
Eagle, Bald*
Falcon, Peregrine*
Finch, House (B)
Finch, Purple (B)
Flicker, Northern (B)
Flycatcher, Alder (B)
Flycatcher, Great Crested (B)
Flycatcher, Least (B)
Flycatcher, Olive-sided (M)
Flycatcher, Willow (B)
Gnatcatcher, Blue-gray (B)
Goose, Canada (B)
Goldeneye (M)
Goshawk, Northern (R)
Grebe, Pied-billed*
Grosbeak, Evening (R)
Grosbeak, Pine (W)
Grosbeak, Rose-breasted (B)
Grouse, Ruffed (R)
Harrier, Northern** (M)
Hawk, Cooper's (R)
Hawk, Red-shouldered (B)
Hawk, Sharp-shinned (R)
Heron, Great Blue
Hummingbird, Ruby-throated (B)
Jay, Blue (B)
Junco, Dark-eyed (B/W)
Kingbird, Eastern (B)
Kingfisher, Belted (B)
Kinglet, Golden-crowned (B/W)
Kinglet, Ruby-crowned (B)
Loon, Common* (B)
Mallard
Meadowlark, Eastern (B)
Merganser, Common
Merganser, Hooded
Mockingbird, Northern (B)
Nighthawk, Common** (B)
Nuthatch, Red-breasted (B/W)
Osprey (M)
Ovenbird (B)
Owl, Barred (B)
Owl, Eastern Screech (B)
Owl, Great Horned (B)
Owl, Northern Saw-whet (B)
Parula, Northern (B)
Phoebe, Eastern (B)
Raven, Common (B)
Redpoll, Common (W)
Redstart, American (B)
Robin, American (B)
Sapsucker, Yellow-bellied (B)
Shrike, Northern (W)
Sparrow, American Tree (W)
Sparrow, Chipping (B)
Sparrow, Field (B)
Sparrow, Fox (M)
Sparrow, Lincoln's (M)
Sparrow, Savannah (B)
Sparrow, Song (B)
Sparrow, Swamp (B)
Sparrow, White-crowned (M)
Sparrow, White-throated (B)
Starling, European (R)
Swallow, Bank (B)
Swallow, Barn (B)
Swallow, Tree (B)
Swift, Chimney (B)
Tanager, Scarlett (B)
Teal, Blue-winged
Teal, Green-winged
Thrasher, Brown (B)
Thrush, Gray-cheeked (M)
Thrush, Hermit (B)
Thrush, Swainson's (M)
Thrush, Wood (B)
Titmouse, Tufted (R)
Towhee, Eastern (B)
Turkey, Wild (R)
Veery (B)
Vireo, Red-eyed (B)
Vireo, Warbling (B)
Vireo, Yellow-throated (B)
Warbler, Bay-breasted (M)
Warbler,
Black-and-white (B)
Warbler, Blackburian (B)
Warbler,
Black-throated-blue (B)
Warbler,
Black-throated-green (B)
Warbler, Blackpoll (M)
Warbler, Blue-winged (B)
Warbler, Canada (B)

Warbler, Cape May (M)
Warbler, Chestnut-sided (B)
Warbler, Magnolia (B)
Warbler, Nashville (B)
Warbler, Palm (M)
Warbler, Pine (B)
Warbler, Prairie (B)
Warbler, Tennessee (M)
Warbler, Yellow (B)
Warbler, Yellow-throated
Waterthrush, Loisiana (B)
Waterthrush, Northern (B)
Waxwing, Cedar (B)
Whip-poor-will (B)
Wood-Pewee, Eastern (B)
Woodpecker, Downy (R)
Woodpecker, Hairy (R)
Woodpecker, Pileated (R)
Wren, House (B)
Wren, Winter (B/W)
Yellowthroat, Common (B)

APPENDIX 9.1.4

REPTILES AND AMPHIBIANS OF THE PISCATAQUOG RIVER WATERSHED

Frogs and Toads
Bullfrog (*Rana catesbeiana*)
Green frog (*Rana clamitans*)
Northern leopard frog (*Rana pipiens*)
Pickerel frog (*Rana sylvatica*)
Spring peeper (*Pseudacris crucifer*)
Gray treefrog (*Hyla versicolor*)
American toad (*Bufo americanus*)

Snakes
Brown snake (*Storeria dekayi*)
Common garter snake (*Thamnophis sirtalis*)
Eastern hognose snake (*Heterodon platirhinos*)**
Eastern ribbon snake (*Thamnophis sauritus*)
Milk snake (*Lampropeltis triangulum*)
Northern water snake (*Nerodia sipedon*)
Racer (*Coluber constrictor*)*
Redbelly snake (*Storeria orripitomaculata*)
Ringneck snake (*Diadophis punctatus*)
Smooth green snake (*Opheodrys vernalis*)

Salamanders
Blue-spotted salamander (*Ambystoma laterale*)
Dusky salamander (*Desmognathus fuscus*)
Eastern newt (*Notophthalmus viridescens*)
Four-toed salamander (*Hemidactylium scutatum*)
Redback salamander (*Plethodon cinereus*)
Spotted salamander (*Ambystoma maculatum*)
Spring salamander (*Gyrinophilus porphyriticus*)

Two-lined salamander (*Eurycea bislineata*)

Turtles
Blanding's turtle (*Emydoidea blandingii*)**
Common musk turtle (stinkpot) (*Sternotherus odoratus*)
Painted turtle (*Chrysemys picta*)
Snapping turtle (*Emydoidea blandingii*)
Spotted turtle (*Clemmys guttata*)*
Wood turtle (*Glyptemis insculpta*)

**** Endangered Species**
*** Threatened Species**

APPENDIX 9.1.5

VEGETATION (EXCLUDING TREES) OF THE PISCATAQUOG RIVER WATERSHED

Alexanders, Common Golden	(*Zizia aurea*)
Arbutus, Trailing	(*Epigaea repens*)
Arum, Arrow-	(*Peltandra virginica*)
Arrow-wood, Northern	(*Viburnum dentatum* var. *lucidum*)
Aster, Flat-topped White	(*Aster umbellatus*)
Aster, White Wood	(*Aster divaricatus*)
Aster, Whorled Wood	(*Aster acuminatus*)
Avens	(*Geum spp*.)
Bachelor's button	(*Centaurea cyancus*)
Baneberry, White	(*Actaea alba*)
Bedstraw	(*Galium spp*.)
Beechdrops	(*Epifagus virginiana*)
Beggar-ticks	(*Bidens frondosa*)
Bellflower, Creeping	(*Campanula rapunculoides*)
Bellwort, Large-flowered	(*Uvalaria grandiflora*)
Bet, Bouncing	(*Saponaria officinalis*)
Bladderwort, Greater	(*Urticularia Vulgaris*)
Bloodroot	(*Sanguinaria candensis*)
Blueberry, Highbush	(*Vaccinium corymbosum*)
Blueberry, Lowbush	(*Vaccinium angustifolium*)
Bluets	(*Houstonia caerulea* var. *caerulea*)
Bindweed, Hedge	(*Calystegia septium*)
Boneset	(*Eupatorium spp*.)
Bower, Virgin's	(*Clematis virginiana*)

Brambles	(*Rubus spp*.)
Bunchberry	(*Cornus canadensis*)
Burdock, Common	(*Acticum minus*)
Butter-and-Eggs	(*Linaria vulgaris*)
Buttercup	(*Ranunculus spp*.)
Buttonbush	(*Cephalanthus occidentalis*)
Cabbage, Skunk	(*Symplocarpus foetidus*)
Campion, Bladder	(*Silene vulgaris*)
Carrot, Wild	(*Daucus carota*)
Cat-tail, Common	(*Typha latifolia*)
Celandine	(*Chelidonium majus*)
Chickweed	(*Stellaria media*)
Chokeberry	(*Aronia spp*.)
Chrysogonum	(*Chrysogonum virginianum*)
Cinquefoil	(*Potenilla spp*.
Columbine	(*Aquilegia canadensis*)
Comfrey	(*Symphytum officinale*)
Coreopsis, Lance-leaved	(*Coreopsis lanceolata*)
Corydalis, Yellow	(*Corydalis aurea*)
Daisy, Ox-eye	(*Chrysanthemum leucanthemum*)
Dame's Rocket	(*Hesperis matronalis*)
Dandelion	(*Taraxacum officinale*)
Dogbane	(*Apocym spp*.)
Dogwood, Red Osier	(*Cornus sericea*)
Dogwood, Silky	(*Cornus amomum spp*.)
Elecampne	(*Inula helenium*)
Everlasting, Pearly	(*Anaphalis margaritacea*)
Flag, Blue	(*Iris versicolor*)
Flower, Cardinal-	(*Lobelia cardinalis*)
Foamflower	(*Tiarella cordifolia*)
Forget-me-not	(*Myosotis scorpioides*)
Gentian, Striped	(*Gentiana spp*.)
Gill-over-the-ground	(*Glechoma hederacea*)
Goldenrod	(*Solidago spp*.)
Goldthread	(*Coptistrifolia* var. *groenlandica*)
Grass, Blue-eyed	(*Sisyrinchium atlanticum*)
Groundnut	(*Apios americana*)
Hawkweed	(*Hieracium spp*.)
Heal-All	(*Prunella vulgaris* var. *vulgaris*)
Hellebore, False	(*Veratrum viride*)
Hemlock, Poison	(*Conium maculatum*)
Hemlock, Water	(*Cicuta maculata*)
Hepatica	(*Hepatica spp*.)
Honeysuckle	(*Lonicera spp*.)
Honeysuckle, Northern Bush	(*Diervilla lonicera*)
Horehound, Water	(*Lycopus uniflorus*)

Hyacinth, Grape	(*Muscari spp*.)
Jack-in-the-pulpit	(*Arisaema triphyllum* var. *triphyllum*)
Jimsonweed	(*Datura stramomium*)
Leatherleaf	(*Chamaedaphne calculata spp*.)
Laurel, Pale	(*Kalmia polifolia*)
Laurel, Sheep	(*Kalmia angustifolia*)
Lettuce, White	(*Prenanthes alba*)
Lily, Blue-bead	(*Clintonia borealis*)
Lily, Canada	(*Lilium canadense*)
Lily, Day-	(*Hemerocallis fulva*)
Lily, Trout	(*Erythronium americanum*)
Lily, Wood	(*Lilium philadelphicum*)
Lily, Yellow Water	(*Nuphar variegata*)
Lily-of-the-valley, Wild	(*Convallaria majalis*)
Lobelia, Brook	(*Lobelia dortmanna*)
Loosestrife, Garden	(*Lysimachia vulgaris*)
Loosestrife, Purple	(*Lythrum salicaria*)
Loosestrife, Whorled	(*Lysimachia quadrifolia*)
Madder, Wild	(*Galium obtusum*)
Maleberry	(*Lyonia ligustrina*)
Mallow spp.	(*Malva spp*.)
Marigold, Marsh	(*Caltha palustris*)
May-apple	(*Podophyllum peltatum*)
Meadow-sweet	(*Spiraea alba* var. *latifolia*)
Milkweed	(*Asclepias spp*.)
Mint	(*Mentha spp*.)
Moccasin-flower, Pink	(*Cypripedium acaule*)
Moccasin-flower, White	(*Cypripedium acaule* var. *alba*)
Moneywort	(*Lysimachia nummularia*)
Monkey-Flower	(*Mimulus rigens*)
Morning-glory, Common	(*Ipomoea purpurpea*)
Motherwort	(*Leonurus cardiaca*)
Mullein	(*Verbascum thapsus*)
Mustard, Field	(*Sinapis arvensis*)
Mustards	(*Sisymbrium spp*.)
Nettle, Stinging	(*Urtica dioica* var. *dioica*)
Nightshade, Common	(*Solanum dulcamara*)
Oats, Wild	(*Avena fatua*)
Orchid, Bog	(*Habenaria spp*.)
Orchid, Purple Fringed	(*Platanthera psycodes*)
Parsnip, Water	(*Sium suave*)
Partridge-berry	(*Mitchella repens*)
Pea, Beach	(*Lathyrus maritimus*)
Pepperbush, Sweet	(*Clethra alnifolia*)
Phlox, Garden	(*Phlox paniculata*)
Pinesap	(*Monotropa hypopithys*)

Pipissewa	(*Chimaphila umbellata* var. *cisatlantica*)
Plantain, Rattlesnake	(*Goodyera spp*.)
Plant, Pitcher-	(*Sarracenia purpurea*)
Pink, Maiden	(*Dianthus deltoides*)
Pink, Moss	(*Phlox subulata*)
Pink, Wild	(*Dianthus plumarius*)
Pipes, Indian	(*Monotropa uniflora*)
Pogonia, Rose	(*Pogonia ophioglossoides*)
Polygala, Fringed	(*Polygala pauciflora*)
Pokeweed	(*Phytolacca americana*)
Primrose, Evening	(*Oenothera spp*.)
Pussytoes	(*Antennaria spp*.)
Ragweed, Common	(*Ambrosia artemisiifolia*)
Ragwort, Golden	(*Senecio aureas*)
Raspberry, Purple Flowering	(*Rbus odoratus*)
Rhodora	(*Rhododendron canadense*)
Robin, Ragged	(*Lychnis flos-cuculi*)
Root, Indian Cucumber-	(*Medeola virginiana*)
Rose, Pasture	(*Rosa carolina*)
Roses	(*Rosa spp*.)
Rue, Tall Meadow	(*Thalictrum pubescens*)
Rue-Anemone	(*Anemonella thalictroides*)
Salsify	(*Tragopogon porrifolius*)
Sandwort	(*Minuartia spp*.)
Sarsaparilla, Bristly	(*Aralia hispida*)
Sarsaparilla, Wild	(*Aralia nudicaulis*)
Saxifrage, Swamp	(*Saxifrage pensylvanica*)
Seal, False Solomon's	(*Smilacina racemosa*)
Seal, Solomon's	(*Polygonatum spp*.)
Senna, Wild	(*Cassia hebecarpa*)
Shadbush	(*Amelanchier spp*.)
Shinleaf	(*Pyrola spp*.)
Skullcap, Common	(*Scutellaria galericulata*)
Slipper, Yellow Lady's	(*Cypripedium spp*.)
Smartweed	(*Polygonum spp*.)
Snakeroot, Black	(*Sanicula spp*.)
Sorrel, Wood	(*Oxalis acetosella*)
Sow-thistle	(*Sonchus oleraceus*)
Speedwell, Common	(*Veronica officinalis*)
Speedwell, Purslane	(*Veronica peregrina* var. *peregrina*)
Starflower	(*Trientalis borealis*)
Steeplebush	(*Spirea tomentosa*)
Stitchwort, Lesser	(*Stellaria spp*.)
St. Johnswort, Common	(*Hypericum perforatum*)
St. Johnswort, Marsh	(*Triadenum virginicum*)
Strawberry	(*Fragaria spp*.)

Sundew	(*Drosera spp*.)
Sunflower, Tickseed	(*Bidens aristosa*)
Susan, Black-eyed	(*Rudbeckia hirta* var. *hairta*)
Swallowwort, Black	(*Vincetoxicum nigrum*)
Tobacco, Indian	(*Lobelia inflata*)
Tea, Labrador-	(*Ledum groenlandicum*)
Thimbleweed	(*Anemone spp*.)
Thumb, Lady's	(*Polygonum persicaria*)
Touch-me-not, Spotted	(*Impatiens capensis*)
Trefoil, Birdsfoot-	(*Lotus comiculatus*)
Trefoil, Showy-tick	(*Desmodium spp*.)
Tresses, Ladies	(*Spiranthes spp*.)
Trillium	(*Trillium spp*.)
Turtlehead	(*Chelone glabra*)
Twisted-Stalk	(*Streptopus spp*.)
Vervain, Blue	(*Verbena hastata*)
Vetch	(*Vicia spp*.)
Vetch, Crowned	(*Coronilla varia*)
Violet spp.	(*Viola*)
Watercress	(*Rorippa spp*.)
Waterlilies	(*Nymphaeu odorata*)
Water-Plantain	(*Alisma subcordatum*)
Weed, Pickerel	(*Pontederia cordata*)
Weed, Spotted Joe-Pye	(*Eupatorium maculatum spp. maculatum* var. *foliosum*)
Weed, Sweet Joe-Pye	(*Eupatorium spp*.)
Weed, Quick	(*Galinsoga spp*.)
Willow-Herb, Northern	(*Epilobium glandulosum*)
Wintergreen	(*Gaultheria procumbens*)
Yarrow	(*Achillea millefolium ssp. lanulosa*)

Rare Plant Species

Arrowhead, Sessile-fruited	(*Sagittaria rigida*)*
Cancerroot, American	(*Conopholis Americana*)*
Coltsfoot, Sweet	(*Petasites frigidus* var. *palmatus*)**
Foxglove, Fern-leaved False	(*Aureolaria pedicularia* var. *intercendens*)*
Gentian, Fringed	(*Gentianopsis crinita*)
Milfoil, Farwell's Water	(*Myriophyllum farwellii*)**
Pogonia, Small Whorled	(*Isotria medeoloides*)*
Sandbur, Common	(*Cenchrus longispinus*)**
Spike-rush, Small	(*Eleocharis parvula*)*
Wild lupine	(*Lupinus perennis*)*
Violet, Bird’s-foot	(*Viola pedata*)*

*** Threatened Species** **** Endangered Species**

APPENDIX 9.1.6

OTHER SPECIES OF CONCERN

Zanclognatha martha

This moth insect species known habitat occurs in pine barren forest communities. Pine barren communities consist mainly of pitch pine and feature nutrient-poor soils. These communities are maintained by disturbances such as fire. A very low distribution of this habitat is found in NH and other parts of the northeast and is becoming increasingly sparse from development pressures. In relation to its threatened habitat the Zanclognatha is featured on the threatened list of NH. The larvae of the moth are thought to lay on the forest floor over the winter months with adults emerging from mid-July to August where they can be seen flying at night. Very little is known as to what the habitat needs are of this moth but it is able to maintain populations within the pine barrens community type which has gained considerable attention to conservation groups. Pine barrens also provide habitats for many other unique species and the need for conservation and active management for these areas is critical. Three recorded sites are known to occur in NH including a site found along the Piscataquog River.

(Source: Mississippi State University)

Brook Floater
Alasmidonta varicose

Brook floater mussels occur on the east side of the Atlantic slope in the United States. However, there range and existing populations have been dramatically reduced, and in fact, completely extirpated in many rivers. In New Hampshire, they still persist in the Blackwater, Piscataquog, Suncook, Soucook Rivers and in the Merrimack River main stem, and in one river in the Connecticut River Watershed, the North Branch of the Sugar River. Brook floaters exist in very low numbers or have been extirpated from the Nissitissit River in Hollis, Golden Brook in Windham, and Beaver Brook in Pelham where a population was first reported in 1952. In

the coastal drainage, brook floater populations are in danger of extirpation. They appear to be gone from the Exeter River and are scattered in very low numbers in the Lamprey River.

Long-term monitoring of the Piscataquog River Henry Bridge population shows a decline in mussel density from 0.4 per meter squared in 1996 to 0.02 in 1999 (Wicklow, Saint Anselm College, unpublished data). A mussel bed on the South Branch of the Piscataquog River, monitored periodically since 1993, has been nearly extirpated.

The two most severe threats to brook floater mussels are altered hydrology from the construction of dams (i.e., how they alter the flow of the River) and non-point source pollution. Dams isolate populations, and very low flow events, caused by the operations of dams, have led to documented cases in which many brook floater mussels were lost to predation in the Piscataquog River.

The PRLAC, working with the Public, local municipalities and landowners, should continue to provide assistance in the protection and especially the restoration of this imperiled species.

(Information obtained by NH Wildlife Action Plan Species Profiles, NH Fish & Game)

(Source: Massachusetts Department of Fish and Wildlife)

Appendix 9.2.1

Fish Stocking Report 2008 - NH Fish & Game Department

http://www.wildlife.state.nh.us/Fishing/fish_stocking_report_2008.html

Body of Water	Town	Species	Age	# of Fish	Pounds of Fish
Piscataquog River	Goffstown	Brown Trout	1+ YR	1,015	594
Piscataquog River	Goffstown	Eastern Brook Trout	1+ YR	440	156
Piscataquog River	Goffstown	Eastern Brook Trout	2+ YR	500	500
Piscataquog River	Goffstown	Eastern Brook Trout	3+ YR	60	180
Piscataquog River	Goffstown	Rainbow Trout	1+ YR	360	303
Piscataquog River - Middle	New Boston	Brown Trout	1+ YR	300	150
Piscataquog River - Middle	New Boston	Eastern Brook Trout	1+ YR	510	255
Piscataquog River - South Branch	New Boston	Brown Trout	1+ YR	1,395	664
Piscataquog River - South Branch	New Boston	Eastern Brook Trout	1+ YR	700	350
Piscataquog River - South Branch	New Boston	Rainbow Trout	1+ YR	1,970	1,970
Piscataquog River - West Branch	Weare	Brown Trout	1+ YR	330	165
Piscataquog River - West Branch	Weare	Eastern Brook Trout	1+ YR	690	345
Piscataquog River - West Branch	Weare	Rainbow Trout	1+ YR	650	603
Deering Reservoir	Deering	Rainbow Trout	1+ YR	900	900

Fish Stocking Report 2009 - NH Fish & Game Department

http://www.wildlife.state.nh.us/Fishing/fish_stocking_report_2009.html

Body of Water	Town	Species	Age	# of Fish	Pounds of Fish
Piscataquog River	Goffstown	Brown Trout	1+ YR	1,980	660
Piscataquog River	Goffstown	Eastern Brook Trout	1+ YR	940	189
Piscataquog River	Goffstown	Eastern Brook Trout	2+ YR	500	556
Piscataquog River	Goffstown	Eastern Brook Trout	3+ YR	60	86
Piscataquog River	Goffstown	Rainbow Trout	1+ YR	360	150
Piscataquog River - Middle	New Boston	Brown Trout	1+ YR	510	243
Piscataquog River – Middle	New Boston	Eastern Brook Trout	N/A	0	0
Piscataquog River - South Branch	New Boston	Brown Trout	1+ YR	1,390	680
Piscataquog River - South Branch	New Boston	Eastern Brook Trout	1+ YR	700	280
Piscataquog River - South Branch	New Boston	Rainbow Trout	1+ YR	1,500	1,037
Piscataquog River - West Branch	Weare	Brown Trout	1+ YR	1,020	493
Piscataquog River - West Branch	Weare	Eastern Brook Trout	N/A	0	0
Piscataquog River - West Branch	Weare	Rainbow Trout	1+ YR	930	611
Deering Reservoir	Deering	Rainbow Trout	1+ YR	900	600

***Note:** The number and size of fish stocked in 2009 was not typical for the Piscataquog Watershed.

Appendix 9.2.2

Impaired Waters Tables NHDES 2008

Town	River Branch	Water Size	Use Desc	Impairment Name	DES Category	TMDL Priority	Source Name
Weare	Piscataquog	.2 Miles	Aquatic Life	pH	5-M	Low	Source Unknown
Deering	Piscataquog	6.36 Miles	Aquatic Life	pH	5-p	Low	Source Unknown
Weare	Piscataquog	7.53 Miles	Primary Contact Recreation	Escherichia coli	5-p	High	Source Unknown
New Boston	Piscataquog	1.82 Miles	Aquatic Life	pH	5-M	Low	Source Unknown
			Primary Contact Recreation	Escherichia coli	5-M	High	Source Unknown
New Boston	Middle Branch	6.46 Miles	Aquatic Life	pH	5-M	Low	Source Unknown
Weare	Middle Branch	6.13 Miles	Aquatic Life	pH	5-p	Low	Source Unknown
New Boston	Middle Branch	.45 Miles	Aquatic Life	pH	5-M	Low	Source Unknown
Goffstown	Piscataquog	3.59 Miles	Aquatic Life	pH	5-M	Low	Source Unknown
Manchester	Piscataquog	2.5 Miles	Aquatic Life	pH	5-P	Low	Source Unknown
			Primary Contact Recreation	Escherichia coli	4B-P		Combined Sewer Overflows
			Secondary Contact Recreation	Escherichia coli	4B-M		Combined Sewer Overflows
Francestown	South Branch	.05 Miles	Aquatic Life	pH	5-M	Low	Source Unknown
Francestown	South Branch	7.85 Miles	Aquatic Life	Dissolved Oxygen Saturation	5-M	Low	
New Boston	South Branch	1.82 Miles	Aquatic Life	pH	5-M	Low	Source Unknown
			Recreation	Escherichia coli		High	
New Boston	South Branch	7.210 Miles	Aquatic Life	Aluminum	5-M	Low	
				pH			
New Boston	South Branch	5.76 Miles	Aquatic Life	pH	5-M	Low	Unknown
			Recreation	Escherichia coli		High	Illicit Connections/Hook-ups to storm sewers
New Boston	South Branch	4.1 Miles	Aquatic Life	pH	5-P	Low	Unknown

AUID Assessment Number	BEACH Y/N	Location	Impairment
NHIMP700060802-04	N	Merrimack River	E. coli
NHLAK700030105-02-04	Y	Otter Lake-Greenfield State Park/Middle Beach	E. coli
NHLAK700060602-01-02	Y	Everett Lake-Clough State Park	E. coli
NHLAK700060607-01-02	Y	Glen Lake-Public (State Owned)	E. coli
NHLAK700060607-02	N	Kelly Falls Pond, Goffstown	Chlorophyl, E. coli
NHLAK700060801-02	N	Maxwell Pond, Manchester	Dissolved Oxygen Saturation, Oxygen Dissolved
NHLAK700060803-03	N	McQuesten Pond	Chlorophyl
NHRIV700060602-06	N	Piscataquog River	E. coli
NHRIV700060604-08	N	South Branch Piscataquog River	Dissolved Oxygen Saturation
NHRIV700060604-09	N	Brennan Brook	Dissolved Oxygen Saturation, Oxygen Dissolved
NHRIV700060604-10	N	Rand Brook	Dissolved Oxygen Saturation, Oxygen Dissolved
NHRIV700060606-05	N	South Branch Piscataquog River	E. coli
NHRIV700060607-22	N	Piscataquog River	E. coli
NHRIV700060803-14-02	N	Merrimack River	Aluminum, Dissolved Oxygen Saturation, E. coli
NHRIV700060905-12	N	McQuade Brook	Chloride
NHRIV700060607-02	N	Bog Brook	Dissolved Oxygen Saturation, Oxygen Dissolved
NHRIV700060607-20	N	Catamount Brook	Chloride, E. coli
NHRIV700060801-05-01	N	Black Brook	Lead
NHRIV700060905-18	N	Riddle Brook	E. coli
NHLAK700060601-01	N	Deering Reservoir, Deering	Dissolved Oxygen Saturation
NHLAK700060601-01-02	Y	Deering Reservoir - Deering Lake Beach	Dissolved Oxygen Saturation
NHLAK700060601-01-03	Y	Deering Reservoir - Hopkinton Independent School Beach	Dissolved Oxygen Saturation
NHLAK700060601-05-01	N	Weare Reservoir, Weare	Cyanobacteria
NHLAK700060601-05-02	Y	Weare Reservoir-Town Beach/Chase Park	Cyanobacteria, E. coli
NHRIV700060603-07	N	Piscataquog River	E. coli
NHRIV700060607-15	N	Harry Brook	E. coli
NHRIV700060906-01	N	Beaver Brook	E. coli
NHRIV700060606-02	N	South Branch Piscataquog River	Aluminum

Appendix 9.3 Matrix of Existing Water Regulations: Federal, State, and Town Ordinances

Topic	Federal	State	Deering	Dunbarton	Francestown	Greenfield	Goffstown	Henniker	Lyndeborough	Manchester	Mont Vernon	New Boston	Weare
1. ZO Amended:			**March 28th, 2006**	**March 8th, 2005**	**Decem. 1st, 2009**	**March 10th, 2009**	**August 24th, 2009**	**March 10th, 2009**	**March 10th, 1998**	**June 2nd, 2009**	**March 10th, 2007**	**March 10th, 2009**	**March 17th, 2008**
2. Water Quality	**Clean Water Act: 1972 (33 USC 1251 - 1376)** Restore and maintain the chemical, biological and physical integrity of U.S. waters. **Wild and Scenic Rivers Act (16 USC Chapter 28)**	**RSA 485-A:** Water quality shall be maintained at class A or B standards. **RSA 482-B:** NH water well board **RSA 483-A:** NH lakes mgmt. and protection program **RSA 484:** Water mgmt. and protection compacts **RSA 485:** NH safe drinking water act **RSA 485-A:** Water pollution and waste disposal **RSA 485-C:** Groundwater protection act **RSA 486:** Aid to municipalities for water pollution control **RSA 486-A:** Aid to public water systems **RSA 487:** Control of marine pollution and aquatic growth **RSA 488:** Water management **Env-Ws 437**	**ZO - 3.5:** Wetlands **ZO - 4.2**: Aquifer protection district **ZO - 4.3**: National Floodplain Development District **ZO - 4.4**: Shoreland Protection District **ZO - 4.5**: Watershed Protection District	**ZO - 5**: Wetlands Conservation District **ZO - 7**: Extraction Regs **ZO - 10:** Floodplain Development Ordinance **SPRR VI, E, 3, 4,** Stormwater Management & Erosion Control Plan **SPRR VII** General Stds.	**ZO Article II-A** Conservation Overlay Districts, Wetland and Vernal Pool, Steep Slope, Flood Plain, Aquifer Protection, and Shoreland Protection	**Subdivision Regulations Appendix C** Storm Water Management and Erosion Control **Subdivision Regulations** Floodplain Development Ordinance **ZO- Section III Districts I. Special Purpose Districts** 2. Wetland Conservation District	**ZO, Section 12** - Storm Water. Devlopment Regulations, **Section 3, A&C.** Development Regulations, **Section6, A, b, F, G, H, & L.** Devlopment Regulations, **Appendix C,** Storm Water Management.	**Subdivision Regulation:** Water and waste water facilities standards of review **203-23 Water and Sewage; Sewer Ordinance**	**Article 1000** - Wetlands District **Article 1265.01** - Off-Highway Recreational Vehicle (OHRV) Facilities Ordinance, Regulated Uses **Zoning Ordinances, Appendix A, Section 2**, Subdivision Standards, Slope and Soil Specifications	**Arcticle 6.09** Minimum Setbacks from Wetlands **Article 7.10** Manchester Groundwater Management Zone **Article 7.11** Lake Massabesic Protection Overlay District **Article 8.10** Excavation of Earth Materials	**Chapter II, Articles III and IV**	**ZO - 204.7** Groundwater Reource Conservation District **ZO - 204.9** Steep Slopes Conservation District	**ZO - 28**: Wetlands Zone **ZO - 29**: Aquifer Protection Ord. **SR 8.4 SPRR XI-I EPO**
3. Instream Flow	**Federal Power Act (16 USC 791) Clean Water Act (33 USC 404) Wild and Scenic Rivers Act (16 USC Chapter 28)**	**RSA 482:** Dams, mills and flowage **RSA 483 (also 227-F):** NH rivers mgmt. and protection program **Env-Wr 700**	**ZO - 3.5**: Wetlands **ZO - 4.2**: Aquifer protection district **ZO - 4.3**: National Floodplain Development District **ZO - 4.4**: Shoreland Protection District **ZO - 4.5**: Watershed Protection District **Regulation A-3.8**	No references	**ZO Article II-A**	No references	No references	No references	No references	No references	No references	No references	No references

Appendix 9.3 Matrix of Existing Water Regulations: Federal, State, and Town Ordinances

Topic	Federal	State	Deering	Dunbarton	Francestown	Greenfield	Goffstown	Henniker	Lyndeborough	Manchester	Mont Vernon	New Boston	Weare
4. Streambank Stabilization	**Wild and Scenic Rivers Act (16 USC Chapter 28)**	**RSA 485-A:17 RSA 482-A RSA 483:9 RSA 483-B:** Comprehensive shoreland protection act **RSA 674:56 (A&B):** Fluvial erosion hazard ordinance	**Subdivision Regulations: Append A ZO - 4.4**: Shoreland Protection District **ZO - 4.5**: Watershed Protection District	**ZO - 5**	**ZO Article II-A** Flood Hazard Building Code	**Subdivision Regulations** Floodplain Development Ordinance **Non-Residential Site Plan Regulations** Section X Special Flood Hazard Zones	**ZO Section 13 -** Flood Hazard (FH) District. **ZO Section 15.3.1.2** Flood Hazard Districts (FHD). **Development Regulations Section 6** N&O.	**Standards of Review 203-16, Buffers**	No references	No references	No references	No references	**SR 8.4.2 SPRR XI-E**
4-A Sedimentation and Erosion Control	**Soil Conservation Act (16 USC 590a)** Directs Natural Resource Conservation Service to prevent soil erosion through local regulations and watershed improvement projects. **Clean Water Act (33 USC 1329)** relates to regulation of nonpoint source pollution.	**RSA 485- A:17 RSA 155-E:** Earth excavation regulations **Env-Ws 415**	**Subdivision Regulations: Append A ZO - 4.4:** Shoreland Protection District **ZO - 4.5:** Watershed Protection District **Subdivision Regs. 6 Subdivision Regs. A-3.11**	**ZO - 5 ZO - 7 ZO - 10 SPRR VI-E, 3,4 SPRR VII**	**ZO Article II-A** Flood Hazard Building Code **Subdivision regulations. Site Plan regulations.**	**Subdivision Regulations Appendix C** Storm Water Management and Erosion Control **Earth Excavation Regulations**	**ZO Section 11** Excavation of Earth materials **11.6.3. ZO Section 11** Prohibited Projects **11.7.4. Development Regulations Appendix D** Erosion Control Standards.	**Standards of Review 203-29:** Erosion and Sedimentation Control Plan **203-15**: Excavation, Grading, Filling, and Landscaping **ZR 133-14**: Excavation	**Article 1260** - Off-highway Recreational Vechicle (OHRV) Facilities Ordinance **Zoning Ordinances, Appendix A, Section 2,** Erosion/ Stormwater Control	**Article 6.09** Minimun Setbacks from Wetlands **Article 8.10** Excavation of Earth Materials	**Chapter III, Article V**	**ZO** - Open Excavation **ZO** - Removal of Earth Products	**EPO SR 8.4.2 SPRR XI-E**
4-B. Timber Harvesting		**RSA 227-J**	**ZO - 4.4:** Shoreland Protection District **ZO - 4.5**: Watershed Protection District	**SPRR IV-B,4** Scope of Review	**ZO Article II-A**	No references	No references	No references	**Article 404.10** Conservation Lands **Article 701.00** Rural Lands One District, Permitted Uses **Article 801.00** Rural Lands Two District, Permitted Uses **Article 901.00** Rural Lands Three District, Permitted Uses **Article 1001.00** Wetlands District, Permitted Uses **Article 1103** Planned Residential Development, Open Space	**Article 8.07** Forestry Uses	**Chapter V - 501.5** Timber Removal (under excavation)	**ZO** - Forestry and Conservation Districts	**ZO 28.6.1** Best Management Practices

Appendix 9.3 Matrix of Existing Regulations: Federal, State, and Town Ordinances

Topic	Federal	State	Deering	Dunbarton	Francestown	Greenfield	Goffstown	Henniker	Lyndeborough	Manchester	Mont Vernon	New Boston	Weare
4-C. Site Development Roads & Bridges	**Rivers & Harbors Act of 1899: (33 USC 401) Clean Water Act (33 USC 1344) Need federal permit to construct dams, bridges, piers, etc, in any navigable water. Wild and Scenic Rivers Act (16 USC Chapter 28)**	**RSA 485-A:17 RSA 482-A:3V Res 5401.02(a) RSA 481:** State dams, reservoirs, and other water conservation projects **RSA 482-A:3 Env-Wt 100-800 RSA 230 RSA 231 RSA 47:17 RSA 48-B**	**RSA 231:157**: Scenic Road Designation **ZO 3.5**: Wetlands **ZO 6.6 Subdivision Regulation 6.7**	**ZO - 10 LSCR V, IX SPRR VI, VII, VIII**	**ZO Article II-A,** Flood Hazard Building Code **Subdivision regulations Site Plan regulations**	**ZO Section IV General Regulations and Restrictions, Subdivision Regulations, Driveway Regulation Revised**	**Development Regulations**	No references	**Street and Road Design Standards**	**Article 5.10** TABLE OF PRINCIPLE USES **Article 5.11** TABLE OF ACCESSORY USES **Article 6.09** Minimum Setbacks from Wetlands	**Chapter III, Articles IV, VII**	**Subdivision Regulations Site Plan regulations**	**SR 8.1 - 8.3 SPRR VI-A,B,E**
4-D. Site Development Buildings, Septic & Landscaping	**Clean Water Act (33 USC 1345)** Relates to disposal or use of sewage sludge	**RSA 482-A:3 RSA 485 A:29 Env-Wt 100-800 RSA 674:** Local land use planning regulatory powers **RSA 674:1** Master Plans **RSA 674:21:** Innovative land use controls **RSA 674:22&23:** Growth Management **RSA 674:35:** Subdivsion regulations **RSA 674:43:** Site plan regulations **RSA 155-A1**: Building codes **Env-Ws 1000 Env-Ws 700 RSA 485-A Env-Ws-1008.03 Env-Ws 800**	**Subdivison Regs. A-3.11 ZO - 3.5** Wetlands **ZO 6.6 Subdivision Reg. 6.4**: Septic **ZO - 3.5:** Wetlands **ZO - 4.4:** Shoreland Protection District	**ZO - 6, 10 LSCR V, IX SPRR V-N SPRR VI, VII, VIII**	**ZO Article II-A, Article 3.4** Flood Hazard Building Code **Subdivision regulations Site Plan regulations**	**ZO Section IV General Regulations and Restrictions, Subdivision Regulations**	**Development Regulations ZO Section 5** 5.13 Landscaping Bussiness in Agricultural District	**ZR 133-152**: Subdivisions **Article X:** Lot Size Regulations **Article IV:** General Provisions **Sewer Ord. Standards of Review 203-23:** Water and Sewage	**Article 400** General Provisions	**Article 5.10** TABLE OF PRINCIPLE USES **Article 5.11** TABLE OF ACCESSORY USES **Article 6.09** Minimum Setbacks from Wetlands	**Chapter II - 302.1 Chapter III,** Subdivision regulations **Chapter III - 410.3**	**Subdivision Regulations Site Plan regulations**	**ZO - 3.6, 28, 29 ZO - 31**: Floodplain Development Regs. **SR 8.4, 8.5 SPRR XI-B,E, I,L**

Appendix 9.3 Matrix of Existing Regulations: Federal, State, and Town Ordinances

Topic	Federal	State	Deering	Dunbarton	Francestown	Greenfield	Goffstown	Henniker	Lyndeborough	Manchester	Mont Vernon	New Boston	Weare
4-E. Agricultural Practices along the river corridor	**Soil Conservation Act (16 USC 590a)** **Clean Water Act (33 USC 1342)** Requires NPDES permit for point discharge. **Clean Water Act (33 USC 1329)**	**RSA 485-A** **RSA 483-B** **RSA 430** **RSA 432:** Soil conservation and farmland preservation **RSA 483** **RSA 483-B** **Pes-1001** **RSA 431:33-35** **RSA 483-B** **RSA 674:32**: Uses of agricultural land **RSA 21:34:** Farm and agriculture	**ZO - 4.4**: Shoreland Protection District **ZO - 4.2:** Aquifer protection district **ZO - 3.2**: Use of agricultural land **1996 Town Warrant Article**: Prohibition of Sludge Use	**ZO - 5** **SPRR VII**	**ZO Article II-A** **Article V**	**ZO Section III Districts** G. Rural/ Agriculture District, H. Rural/ Agriculture District Boundaries	**ZO Section 5** 5.5 Agriculture and Horticulture Operations	No references	**Article 404.10** Conservation Lands **Article 501** Village District, Permitted Uses **Article 701.00** Rural Lands One District, Permitted Uses **Article 801.00** Rural Lands Two District, Permitted Uses **Article 901.00** Rural Lands Three District, Permitted Uses **Article 1001.00** Wetlands District, Permitted Uses **Article 1103** Planned Residential Development, Open Space	**Article 5.10** TABLE OF PRINCIPLE USES **Article 5.11** TABLE OF ACCESSORY USES **Article 8.08** Agriculture and Livestock	Border of Mont Vernon is >1 mile from South Branch of the Piscataquog River	No references	**ZO - 3.11:** Right to Farm **ZO - 28.6.2:** Use of Fertilizers, Pesticides, and Herbicides **ZO - 29**
4-F. Industrial & Municipal Practices along the river corridor	**Clean Water Act (33 USC 1342)** Establishes regulation of municipal and industrial stormwater discharges	**RSA 485-C:11** **RSA 485-C:12** **RSA 485-A:13, I(a)** **RSA 485-C:12** **RSA 485-A:17** **RSA 483** **Env-Wm 1901** **RSA 485-A:151** **RSA 227-J:10** **RSA 483-B**	**ZBA Approval** **ZO - 4.4:** Shoreland Protection District **ZO - 4.4.5 (c.d)**: Storage of Petroluem **ZO - 4.4.5 9 (a)** Storage of Road Salt **ZO - 4.4.5 (g)** Disposal of Snow **ZO - 4.4.5 (a)** Location of Landfills	**ZO - 5** **SPRR VII**	**ZO Article II-A** Flood Hazard Building Code	**ZO Section III Districts A.** Business District, **I. Special Purpose District** 1. Industrial Districts	**Development Regulations, Appendix B,** Cistern Standards	**Article III:** General Provisions **Article VIII:** Commercial District Regs.	**Article 501** Village District, Permitted Uses **Article 701.00** Rural Lands One District, Permitted Uses **Article 801.00** Rural Lands Two District, Permitted Uses **Article 901.00** Rural Lands Three District, Permitted Uses **Article 1001.00** Wetlands District, Permitted Uses	**Article 7.01** Amoskeag Millyard Mixed Use District (AMX) **Acticle 8.10** Excavation of Earth Materials	Border of Mont Vernon is >1 mile from South Branch of the Piscataquog River	No references	**ZO - 28, 29** **EPO** **SR 8.4** **SPRR XI**

Appendix 9.3 Matrix of Existing Regulations: Federal, State, and Town Ordinances

Topic	Federal	State	Deering	Dunbarton	Francestown	Greenfield	Goffstown	Henniker	Lyndeborough	Manchester	Mont Vernon	New Boston	Weare
5. Recreation Opportunities	**Americans with Disabilities Act (42 USC Chapter 126)**	**RSA 215-A:** Off highway recreational vehicles and trails **RSA 215-C:** Snowmobiles **RSA 216:** Mgmt. of certain recreational and historic sites **RSA 216-F:** Multi-use statewdie trail system **RSA 270:73-74** **RSA 270-D:2** **RSA 270:121** **RSA 482-A** **RSA 483:9** **Env-Wt 100-800** **Saf-C-402** **Saf-C-404** **Saf-C-407** **Saf-C-413** **RSA 215-A** **RSA 275-C**	**Protected Lands Map:** www.deering.nh.us **Deering Reservior Boat Access** **ZO - 6.4.4**: Open space Density Bonus	**LSCR V, N** **SPRR VI**	**ZO Article II-A.6** **Article V** **Article VII 7.13** **Master Plan** (revised 1996)	**ZO Section XI** Open Space Development Ordinance	**ZO Section 13 Overlay District Description** 13.5 Open Space Developments	**ZR 133-121:** Open Space Ownership and Management	No references	No references	**Chapter I-305** Open Space Development Regulations **Chapter II-301.6** **Chapter II-301.7**	**ZO - 402** Recreational Camping Park Standards	No references

Appendix 9.3 Matrix of Existing Water Regulations: Federal, State, and Town Ordinances

Topic	Federal	State	Deering	Dunbarton	Francestown	Greenfield	Goffstown	Henniker	Lyndeborough	Manchester	Mont Vernon	New Boston	Weare
6. Natural Resources	**Dept. of Transportation Act of 1966: (49 USC 1651 - 59, Section 4 (f))** No U.S. Dept. Transportation projects **Fish and Wildlife Coordination Act: (16 USC 661 -661c)** **Endangered Species Act (16 USC 1531-43)**	**RSA 207**: General provisions as to fish and game **RSA 207:19-21** **RSA 208** **RSA 209** **RSA 210** **RSA 212-B** **RSA 211** **RSA 212:** Endangered species conservation act **RSA 213** **RSA 212:A** **RSA 217-A:** NH native plant protection **RSA 221:** Reforestation of land **Res - N 100-300** **RSA 482-A:** Fill and dredge in wetlands **RSA 162-C:6:** Land conservation investment program	**See nomination papers** **ZO - 3.5** Wetlands **ZO - 4.2** Aquifer protection district **ZO - 4.3** National Floodplain Development District **ZO - 4.4** Shoreland Protection District **ZO - 4.5** Watershed Protection District	**ZO - 5,6,10** **LSCR V,B** **SPRR VII, VIII**	**ZO Article II-A, Article V,** Flood Hazard Building Code, **Master Plan** (revised 1996)	**ZO Section XI** Open Space Development Ordinance **Subdivision Regulations** Floodplain Development Ordinance **ZO Section III Districts I. Special Purpose Districts** 2. Wetland Conservation District **Non-Residential Site Plan Regulations** Section X Special Flood Hazard Zones	**ZO Section 1 1.3.6** General Provisions **ZO Section 2 2.3.1** Conservation and Open Space District **Section 2 2.4.2.1** Flood Hazard District **ZO Section 3 3.11** Table of Principal Uses **ZO Section 13 13.5** Open Space Developments **ZO Section 15.3.7.6** Development Regulations **Section 6 M** Development Regulations **Appendix E** Open Space Development	**ZR Article XIV:** Natural Preserve Areas **Article XXI:** Floodplain Development **Article XXII:** Wetlands Conservation **133-37:** Areas of Special Flood Hazard **Standards of Review 203-30:** Flood Hazard Areas	**Article 1000** Wetlands District	**Article 6.09** Minimum Setbacks for Wetlands **Article 7.03** Floodplain District **Acticle 7.11** Lake Massabesic Protection Overlay District **Article 8.10** Excavation of Earth Materials	**Chapter III-604**	**ZO - 204.6** Wetlands Conservation and Stream Corridor Districts	**ZO - 28,29,31** **SR 4.2** **SPRR VI**

Appendix 9.3 Matrix of Existing Regulations: Federal, State, and Town Ordinances

Topic	Federal	State	Deering	Dunbarton	Francestown	Greenfield	Goffstown	Henniker	Lyndeborough	Manchester	Mont Vernon	New Boston	Weare
7. Scenic Resources	**Federal Scenic and Cultural Byway Program**	**RSA 483-B** **RSA 482-A:26** **RSA 485-A:39** **RSA 674:32** **RSA 236:111-129** **RSA 236:90-110** **RSA 230;** **RSA 231** **RSA 47:17;** **RSA 48-B** **RSA 236: 69-89**	**RSA 231:157** Scenic Road Designation **RSA 79-A:** Current Use **Town Master Plan** **Subdivision Regulations - General**	**ZO - 5** **SPRR VII**	**ZO Article II-A, Article III, IV, Master Plan** (revised 1996)	**ZO Section IV General Regulations and Restrictions** Advertising Signs, Junkyards, Outdoor Lighting	**ZO Section 6** Sign Regulations **ZO Section 8** Outdoor Lighting	**Standards of Review 203-31:** Building Facade	No references	No references	**Chapter III-604** Preservation of Existing Features **Chapter V-501.6** Visual Barriers	**ZO** Obstruction of Vision **ZO** Signs **ZO** Exterior Lighting **ZO** Landscaping Requirements	**General John Stark Scenic and Cultural Byway Council** **ZO - 3.9, 24.9, 27** **SR 8.5**
8. Cultural Resources	**National Register of Historic Places (16 USC 470a) Dept. of Transportation Act of 1966: (49 USC 1651 - 59, Section 4 (f))** **National Natural Landmarks (16 USC section 463)** In some instances, there may be National Natural Landmarks on some rivers listed on the Nationwide Rivers Inventory.	**RSA 227-C** Governs identification and protection of state historic resources and properties. **RSA 227-M**: Community heritage program **RSA's 674:20&23:** Historic Districts	**Town Master Plan** **Town Historic Sites**	**SPRR VIII, B, 10**	**Master Plan** (revised 1996)	No references	**ZO Section 13 Overlay District Description** 13.4 Historic District	**Article XXIX** Historic District	No references	**Article 7.01** Amoskeag Millyard Mixed Used District (AMX) **Article 7.05** Historic Districts	**Chapter III-604** Preservation of Existing Features	No references	**General John Stark Scenic and Cultural Byway Council** **SPRR VII**
9. Public Awareness	(See other sections)												

APPENDIX 9.4

BIBLIOGRAPHY
Community, State and Federal References

Deering:

- Master Plan for the Town of Deering, NH. 2005.
- Zoning Ordinance for the Town of Deering, NH. Amended 2008.
- Subdivision Regulations for the Town of Deering, NH. 1994.
- Water Resource Management and Protection Plan, Town of Deering, NH. Prepared by Edward Cobbett, Chairman Deering Conservation Commission.

Francestown:

- Master Plan for the Town of Francestown, NH, Adopted 1995, Amended 1/23/96 & 10/15/96, Updated 2010.
- Zoning Ordinance for the Town of Francestown, NH Amended 2008.

Goffstown:

- Master Plan for the Town of Goffstown, NH. Adopted 2009. *Update in Progress
- Wellhead Protection Program, Goffstown Village Water Precinct. Prepared by the Southern New Hampshire Planning Commission. June 1996.
- Water Resource Management and Protection Plan, Town of Goffstown, NH. Prepared by the Southern New Hampshire Planning Commission. January 1990.

Manchester:

- Master Plan - Manchester, New Hampshire. Prepared by the Manchester City Planning Board. *Update in Progress.
- Zoning Ordinance for the City of Manchester, NH - 2001- Amended 2009
- City of Manchester Code of Ordinances. 2008
- Water Resource Management and Protection Plan, City of Manchester, NH. Prepared by the Southern New Hampshire Planning Commission. June 1990.
- Manchester Parks & Recreation 1992 Recovery Action Plan. Prepared by City of Manchester Parks and Recreation Commission. January 1992.
- Manchester's Riverfronts. Planning and Design for Recreation on the Merrimack and Piscataquog Rivers. Prepared by Conway School of Landscape Design, Inc. June 1980.
- Manchester's Riverfronts. Planning and Design for Recreation on the Merrimack and Piscataquog Rivers - Appendix. Prepared by Conway School of Landscape Design, Inc. June 1980.
- Manchester Historic Resources Survey. Prepared for City of Manchester Planning Board by Oz/Trementozzi, Saucier & Flynn and Lisa Mausolf. November, 1993.

New Boston:

- Master Plan for the Town of New Boston, NH. Revised 2006.
- Water Resource Management and Protection Plan, Town of New Boston, NH. Prepared by the Southern New Hampshire Planning Commission. January 1989.
- Source Water Protection Plan, July 2009

Weare:

- Master Plan for the Town of Weare, NH. 2005.
- Water Resource Management and Protection Plan, Town of Weare, NH. Prepared by the Southern New Hampshire Planning Commission. January 1990.

Private Organizations:

- Piscataquog River Nomination - New Hampshire Rivers Management & Protection Program. Prepared by the Piscataquog Land Conservancy - P.O. Box 362, New Boston, NH 03070, 1992.
- Conservation Plan for the Piscataquog Watershed. Prepared by the Piscataquog Land Conservancy- P.O. Box 362, New Boston, NH 03070, 2005.

State:

- New Hampshire Stream Crossing Guidelines. Prepared by the University of New Hampshire. May, 2009.
- Guidelines for Naturalized River Channel Design and Bank Stabilization. Prepared by New Hampshire Department of Environmental Services. February, 2007.
- White Paper: River Restoration and Fluvial Geomorphology. Prepared by New Hampshire Department of Environmental Services. May, 2006.
- The Critical Edge: Shoreland Protection Reference Guide. Prepared by New Hampshire Department of Environmental Services, Public Information Office (603-271-2975). 1999.
- A Bikeway and Pedestrian Master Plan for the Southern New Hampshire Planning Commission Region. Prepared by the Southern New Hampshire Planning Commission. 2003.
- Merrimack River Management Plan for Hooksett, Manchester and Bedford. Prepared by the Southern New Hampshire Planning Commission. October, 1990.
- Lower Merrimack River Corridor Management Plan. Prepared by Nashua Regional Planning Commission. May, 2008.
- Statewide Comprehensive Outdoor Recreation Plan (SCORP), New Hampshire Outdoors 2008-2013. Prepared by the New Hampshire Office of Energy & Planning. December, 2007.
- A Management Plan for the South Branch Piscataquog River. Prepared by the Southern New Hampshire Planning Commission. March, 1982.
- Piscataquog River Management Plan. Prepared by Piscataquog River Local Advisory Committee-Southern NH Planning Commission. September, 1999.
- Merrimack River Basin Anadromous Fish Land Conservation Plan. Prepared by the Society for the Protection of New Hampshire Forests. January, 2008.

Federal:

- The New Hampshire Heritage Trail Development Handbook. Prepared by the River and Trail Conservation Assistance Program, National Parks Service, North Atlantic Region Office of Planning and Design. September 1989.
- Strategic Plan for the Restoration of Atlantic Salmon to the Merrimack River - 1990 through 2004. Prepared by the Merrimack River Policy and Technical Committees - U.S. Fish & Wildlife Service, April 1990.

APPENDIX 9.5

SOURCE LIST of Community, State, Federal and Private Organizations & Municipal Offices

Deering:
Office of the Selectmen
Town of Deering
762 Deering Center Road
Deering, NH 03244
Phone: 603-464-3248
Fax: 603-464-3804
www.deering.nh.us/

Francestown:
Office of the Selectmen
Town of Francestown
27 Main Street
Francestown, NH 03043
Phone: 603-547-3469
Fax: 603-547-2818
www.francestown-nh.gov/

Goffstown:
Office of Selectmen
Town of Goffstown
16 Main Street
Goffstown, NH 03045
Phone: 603-497-8990
Fax: 603-497-8993
www.goffstown.com

Lyndeborough:
Office of Selectmen
Town of Lyndeborough
9 Citizens' Hall Road
PO Box 6
Lyndeborough, NH 03082
Phone: 603-654-9653
Fax: 603-654-5777
www.town.lyndeborough.nh.us/

Manchester:
Office of the Mayor
City of Manchester
One City Hall Plaza
Manchester, NH 03101
Phone: 603-624-6500
Fax: 603-624-6576
www.manchesternh.gov/

New Boston:
Town Administrator
New Boston
7 Meetinghouse Hill Road
New Boston, NH 03070
Phone: 603-487-5504
Fax: 603-487-2975:www.new-boston.nh.us/

Weare:
Office of the Selectmen
Town of Weare
15 Flanders Memorial Road
Weare, NH 03281
Phone: 603-529-7525
Fax: 603-529-4554
www.weare.nh.gov/

FEDERAL AGENCIES

Federal Emergency Management Agency
442 John W. Mccormack
Poch Bldg.
Boston, MA 02110
(617) 223-9540
www.fema.gov

Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426
1-866-208-3372
www.ferc.gov

National Park Service
Rivers and Trails
Conservation Assistance
Program
CT/MA/RI Field Office
15 State Street
Boston, MA 02109
(617) 223-5123
www.nps.gov

U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751
(978) 318-8238
www.nae.usace.army.mil

National Park Service
Rivers and Trails
Conservation Assistance
Program
NH/VT Field Office
54 Elm St
Woodstock, VT 05091
(802) 457-4305
www.nps.org

U.S. Department of Agriculture
Natural Resources
Conservation Service
(NRCS)
Federal Building,
2 Madbury Road
Durham, NH 03824-2043
(603) 868-7581
www.usda.gov

U.S. Department of the Interior
New England Field Office
Fish and Wildlife Service
70 Commercial St,
Suite 300
Concord, NH 03301- 5087
(603) 223-2581
www.fws.gov

U.S. Environmental Protection Agency
New England Region 1
1 Congress Street, Suite 1100
Boston, MA 02114-2023
(888) 372-7341
www.epa.gov

U.S. Forest Service
White Mountain
National Forest
HeadQuarters
71 White Mountain Dr.
Campton, NH 03223
(603) 528-8721
www.fs.fed.us

U.S. Geological Survey - NH/VT District
331 Commerce Way
Pembroke, NH 03275-3718
(603) 226-7800
www.usgs.gov

STATE AGENCIES

NH Fish and Game Department
11 Hazen Drive
Concord, NH 03301
(603) 271-3211
www.wildlife.state.nh.us

NH Department of Resources & Economic Development (DRED)
172 Pembroke Road
P.O. Box 1856
Concord, NH 03302-1856
(603) 271-2411
• Division of Forests and Lands
(603) 271-2214
• NH Natural Heritage Inventory
(603) 271-2215
• Division of Parks and Recreation
(603) 271-3553
www.dred.state.nh.us

NH Department of Transportation
John O. Morton Bldg.
7 Hazen Drive
P.O. Box 483
Concord, NH 03302-0483
(603) 271-3734
www.nh.gov/dot/index.htm

NH Office of Energy and Planning
4 Chenell Drive
Concord, NH 03301-8501
(603) 271-2155
www.nh.gov/oep

Public Utilities Commission
21 South Fruit St, Suite 10
Concord, NH 03301-2429
(603) 271-2431
www.puc.state.nh.us

Waste Management Division
NH Department of Environmental Services
29 Hazen Drive
P.O. Box 95
Concord, NH 03302-0095
(603) 271-2900
http://des.nh.gov/organization/divisions/waste/index.htm

NH Wetlands Bureau
NH Department of Environmental Services
29 Hazen Drive, Concord, NH 03301
Mailing address:
P.O. Box 95
Concord, NH 03302-0095
(603) 271-4054
http://des.nh.gov/organization/divisions/water/wetlands/index.htm

UNH Cooperative Extension Service
State Office
59 College Road
Taylor Hall
Durham, NH 03824-2618
(603) 862-1520
http://extension.unh.edu

UNH Cooperative Extension Service
Hillsborough County
329 Mast Road
Goffstown, NH 03045
(603) 641-6060
http://extension.unh.edu

NH State Historic Preservation Office
Division of Historical Resources
19 Pillsbury Street
P.O. Box 2043
Concord, NH 03301-3570
(603) 271-3483
www.nh.gov/nhdhr

NH Department of Agriculture
Pesticide Control Board
25 Capitol Street, 2nd Floor
Room 220
P.O. Box 2043
Concord, NH 03302-2042
(603) 271-3550
http://agriculture.nh.gov

NH Land Conservation Stewardship Program
4 Chenell Drive
Concord, NH 03301-8501
(603) 271-6809
http://nh.gov/oep/programs/clsp

NH Department of Agriculture
25 Capitol Street, 2nd Floor
P.O. Box 2042
Concord, NH 03302-2042
(603) 271-3551
http://agriculture.nh.gov

Office of the Commissioner
NH Department of Environmental Services
29 Hazen Drive
P.O. Box 95
Concord, NH 03302-0095
(603) 271-4974
http://des.nh.gov/organization/commissioner/index.htm

Water Division
NH Department of Environmental Services
29 Hazen Drive
P.O. Box 95
Concord, NH 03302-0095
(603) 271-3434
http://des.nh.gov/organization/water/index.htm

REGIONAL PLANNING AGENCIES

Central NH Regional Planning Commission
28 Commercial St Ste. 3
Concord, NH 03301
(603) 226-6020
www.cnhrpc.org

Nashua Regional Planning Commission
9 Executive Drive, Ste. 201
Merrimack, NH 03054
(603) 424-2240
www.nashuarpc.org

Southern New Hampshire Planning Commission
438 Dubuque Street
Manchester, NH 03102-3546
(603) 669-4664
www.snhpc.org

PRIVATE ORGANIZATIONS

Piscataquog Land Conservancy
5a Mill St
New Boston, NH 03070
(603) 487-3331
www.pwa-nh.org

Rusell Piscataquog River Watershed Foundation
134 Colburn Rd
New Boston, NH 03070
(603) 801-3120

American Rivers
New England Region
37 Phillips Place
North Hampton, MA 01060
(413) 585-5896
www.amrivers.org

National Environmental Policy Institute
1401 K St., NW Suite M-103
Washington, DC 20005-5635
(202) 857-4784

National Audubon Society
225 Varick St, 7th Floor
New York, NY 10014
(212) 979-3000
www.audubon.org

Society for the Protection of NH Forests
54 Portsmouth Street
Concord, NH 03301
(603) 224-9945
www.spnhf.org

Merrimack River Watershed Council
600 Suffolk St, Fifth Floor
Lowell, MA 01854
(978) 275-0120
www.merrimack.org/main

New Hampshire Rivers Council
54 Portsmouth Street
Concord, NH 03301-5486
(603) 228-6472
www.nhrivers.org

Friends of the Earth
1717 Massachusetts Ave. Ste. 600
Washington, D.C. 20036
(202) 783-7400
www.foe.org

The River Management Society
PO Box 9048
Missoula, MT 59807-9048
(406) 549-0514
email: rms@river-management.org
www.river-management.org

National Wildlife Federation
11100 Wildlife Center Dr
Reston, VA 20190-5362
(1-800) 822-9919
www.nwf.org

Sierra Club
85 Second Street, 2nd Floor
San Francisco, CA 94105
(415) 977-5500
www.sierraclub.org

Trout Unlimited
1300 N. 17th St, Ste. 500
Arlington, VA 22209-2404
(1-800) 834 -2419
www.tu.org

The Wildlife Society
5410 Grosvenor Lane, Suite 200
Bethesda, MD 20814-2144
(301) 897-9770
www.wildlife.org

The Nature Conservancy
New Hampshire Field Office
Concord, NH 03301
22 Bridge St, 4th Floor
(603) 224-5853
www.nature.org

Appalachian Mountain Club
5 Joy St. Boston, MA 02108
(617)-523- 0636
www.outdoors.org

LAND TRUSTS

Piscataquog Land Conservancy
5a Mill St
New Boston, NH 03070
(603) 487-3331
www.pwa-nh.org

Society for the Protection of NH Forests
54 Portsmouth Street
Concord, NH 03301
(603) 224-9945
www.spnhf.org

Harris Center for Conservation Education
83 King's Highway
Hancock, NH 03449
(603) 525-3394
www.harriscenter.org

New England Forestry Foundation
PO Box 1346
Littleton, MA 01460
(978) 952-6856
www.newenglandforestry.org

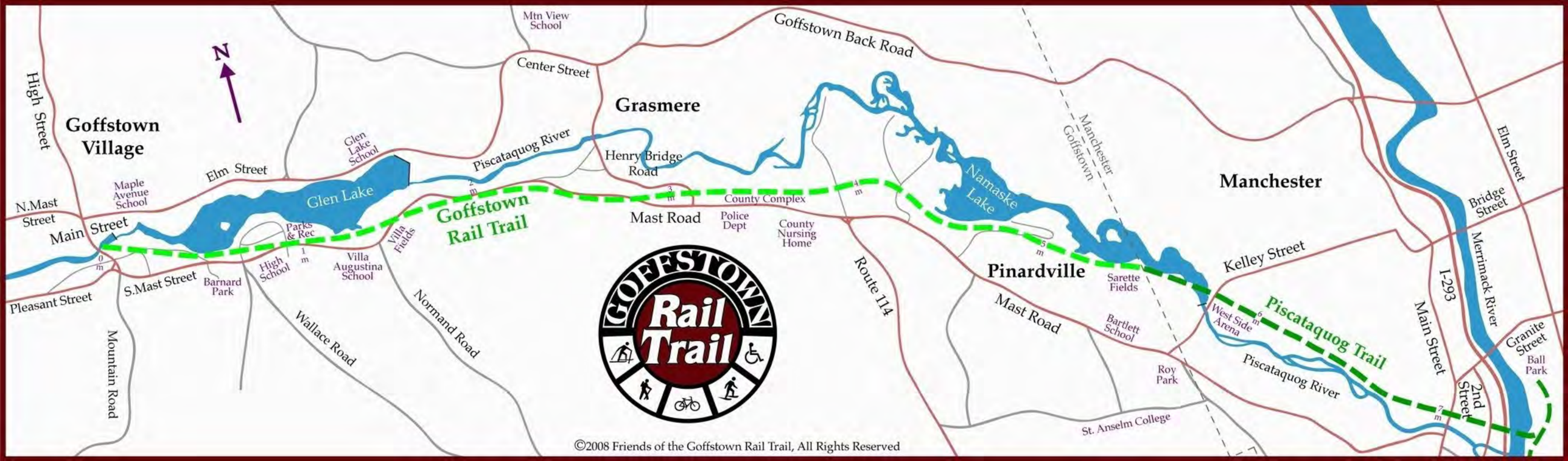
New England Wildflower Society
Garden in the Woods
180 Hemenway Rd.
Framingham, MA 01701
(508) 877-7630
www.newfs.org

Upper Valley Land Trust
19 Buck Rd.
Hanover, NH 03755
(603) 643-6626
www.uvlt.org

Trust for Public Lands
New Hampshire Office
3 Shipman Place
(802) 223-1373
www.tpl.org

Appendix 9.6

Piscataquog Rail Trail Map



Appendix 9.7

NHDES Designated Rivers Map

DESIGNATED RIVERS

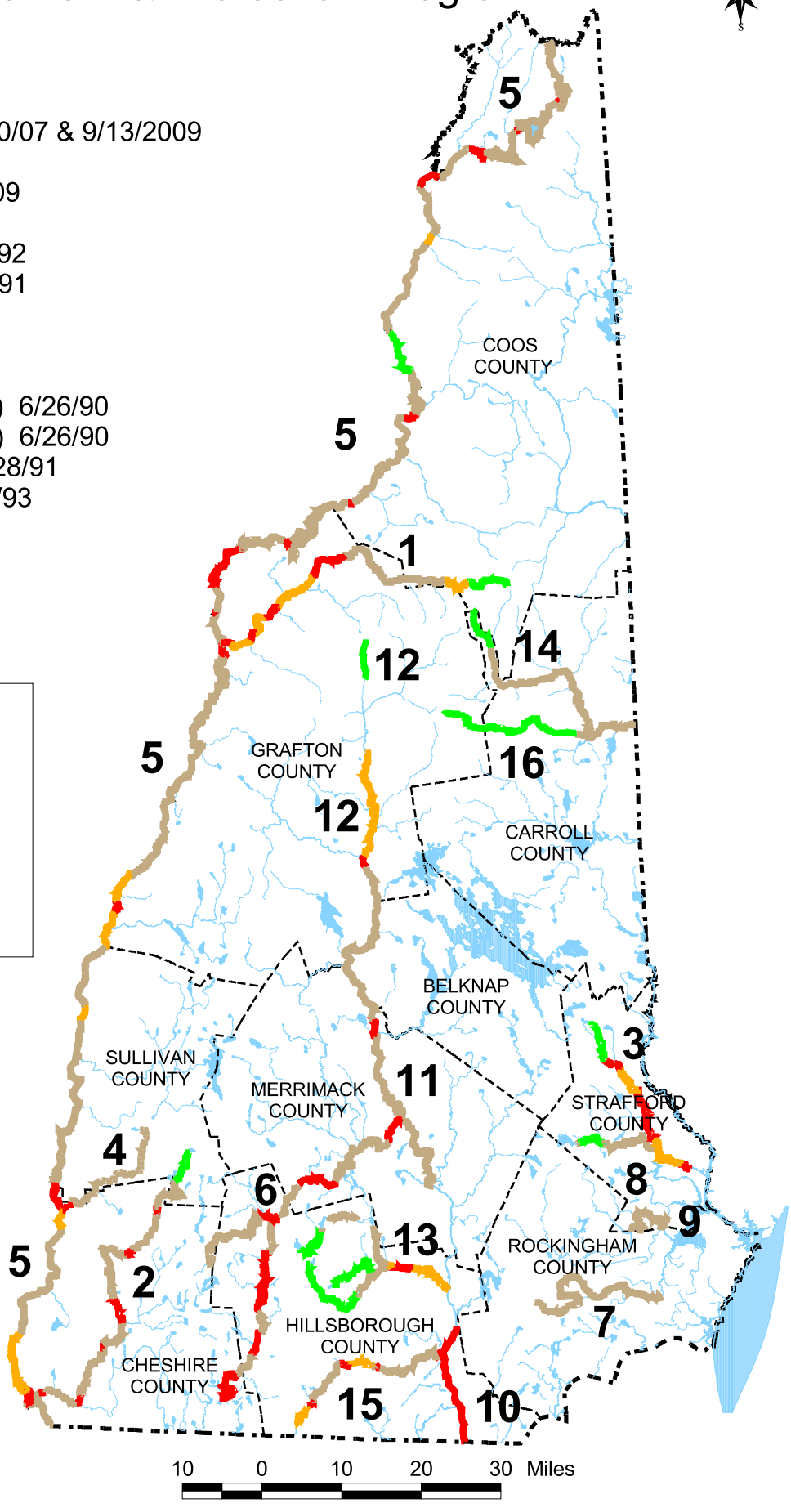
NH Rivers Management & Protection Program

Designated Rivers

1. Ammonoosuc River 8/10/07 & 9/13/2009
2. Ashuelot River 6/07/93
3. Cocheco River 7/21/2009
4. Cold River 7/20/99
5. Connecticut River 7/14/92
6. Contoocook River 6/28/91
7. Exeter River 8/11/95
8. Isinglass River 6/30/02
9. Lamprey River 6/26/90
10. Merrimack River (Lower) 6/26/90
11. Merrimack River (Upper) 6/26/90
12. Pemigewasset River 6/28/91
13. Piscataquog River 7/16/93
14. Saco River 6/26/90
15. Souhegan River 5/28/00
16. Swift River 6/26/90

RIVER CLASSIFICATION

- Community
- Rural-Community
- Rural
- Natural



NEW HAMPSHIRE DEPARTMENT OF Environmental Services