CONTOOCOOK AND NORTH BRANCH RIVERS CORRIDOR MANAGEMENT PLAN

Including the Towns of:
Antrim, Bennington, Boscawen, Concord, Deering, Greenfield, Hancock, Henniker, Hillsborough, Hopkinton, Jaffrey, Peterborough, Rindge, and Stoddard, NH

CONTOOCOOK AND NORTH BRANCH RIVERS LOCAL ADVISORY COMMITTEE

February 2011

With Assistance from:

Central New Hampshire Regional Planning Commission
Southwest Region Planning Commission

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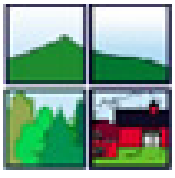

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Cover photo by Michelle Hamm.

TABLE OF CONTENTS

MAPS

APPENDICES

ABBREVIATIONS

CNBRLAC	Contoocook and North Branch Rivers Local Advisory Committee
CNHRPC	Central New Hampshire Regional Planning Commission
CSPA	Comprehensive Shoreland Protection Act
CWA	Clean Water Act
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
LID	Low Impact Development
MPM	Monadnock Paper Mills
NFIP	National Flood Insurance Program
NHDES	New Hampshire Department of Environmental Services
NHFGD	New Hampshire Fish and Game Department
NPDES	National Pollutant Discharge Elimination System
RMPP	Rivers Management and Protection Program
SPNHF	Society for the Protection of New Hampshire Forests
SWRPC	Southwest Region Planning Commission
USACE	United States Army Corps of Engineers
VRAP	Volunteer River Assessment Program
WMA	Wildlife Management Area

EXECUTIVE SUMMARY

This plan is intended for use by the representatives on the Contoocook and North Branch Rivers Local Advisory Committee (CNBRLAC) from the fourteen riverfront communities, municipal officials and members of municipal boards and committees, and people working to protect the rivers and riverfront lands through state agencies, non-profit or volunteer groups. It is comprised of five main sections which cover regulations, watershed resources, community input to the plan, goals and objectives, and an implementation plan and schedule.

CNBRLAC has established eight goals relating to the protection and management of the Contoocook and North Branch Rivers. The goals are supplemented by 31 objectives and an implementation plan that detail the committee's strategies and timeline for achieving each goal.

Plan Goals:

Goal 1: Protect water quality and quantity for current and future uses.

Goal 2: Maintain proper stream channel integrity to ensure high water quality, stable flow patterns, and intact riparian habitat.

Goal 3: Identify, remove, minimize, and prevent the spread of invasive plant species along the rivers.

Goal 4: Preserve and enhance wildlife habitat dependent upon the river so as to support present and future wildlife populations.

Goal 5: Maintain and encourage safe and responsible public access and use of the rivers' resources.

Goal 6: Minimize impacts of development within the river corridor.

Goal 7: Protect and preserve important historical and cultural resources.

Goal 8: Implement a workable River Corridor Management Plan.

Summary of Findings

Water Quality

The rivers and riverfront lands provide valuable resources such as treated drinking water, hydroelectric power, wastewater assimilation, wildlife habitat, and recreation. The quality of the water is important for many of these uses. While the Contoocook and North Branch rivers generally enjoy high water quality, the United States Environmental Protection Agency in 2010 found impairments for dissolved oxygen, pH, Chlorophyll-a, phosphorus, and E. coli at several points along the rivers. Some impairments can be attributed to natural soil conditions and wetlands, while others are the result of human actions such as pollutant loading, erosion, and changes to water levels in impoundments. Nonetheless, water quality has significantly improved in recent decades as protection and remediation efforts have been implemented.

Water Quantity

Users of the rivers also rely on consistent water quantity with naturally varying flows. A number of dams along the Contoocook regulate the river's flow and control water levels in several impoundments. Between dams, the river flows freely and affords both slow moving meanders and world-class rapids. Floods, low flow, and peak flow events are concerns which must be addressed through limits on structures and land uses, requirements for vegetative conditions, preservation of undeveloped floodplains, and regulation of flood control dams.

Wildlife and Plant Resources

According to the New Hampshire Natural Heritage Bureau, the rivers are home to several exemplary natural communities and rare or endangered plant and animal species. Wildlife resources for the rivers and uplands include otters, mink, beaver, mallard and wood ducks, deer, Canada geese, moose, many cool water fish, and, in the rivers' tributaries, many wild brook trout which are listed as a species of greatest conservation need in the State Wildlife Action Plan. Volunteer efforts are needed in the riverfront communities to eradicate from the rivers and shorelands invasive aquatic plant species such as milfoil, purple loosestrife, and yellow iris, and invasive upland species such as Japanese knotweed and common reed, which negatively effect water quality and recreational use.

Recreational Resources

The rivers provide an abundance of recreational opportunities both in the river channels and on adjacent uplands. The Contoocook has segments of Class II and III-IV

rapids and the North Branch has sections of Class V rapids for paddlers. Fishing is a popular activity in the rivers, which New Hampshire Fish and Game stocks with trout. Motor boating and swimming are also popular warm weather activities. In the winter months, the frozen river channel is used for other activities, such as ice fishing, snowmobiling, ice sailing, and mountain biking. Land-based recreational resources include rail trails that pass through four of the riverfront Towns and many other public trails and areas where birdwatchers and nature photographers can observe riverine and other wildlife habitats. Future access to private property for land-based recreation depends on appropriate use and behavior, which can be encouraged by management strategies such as public education and signage.

Historical and Cultural Resources

Historical and cultural resources in the corridor communities include covered bridges, historic village centers, stone walls, Indian trails, mill ruins, scenic roads, and State and municipal parks. These features offer valuable learning opportunities in addition to contributing to the aesthetic beauty of the river corridor. A number of sites and structures along the rivers have achieved state or national historical recognition, and many more opportunities exist to augment recognition and appreciation.

Land Use Management and River Corridor Planning

For maximum shoreland protection, riverfront communities have the option to adopt shoreland protection districts that are more stringent than state regulations, or other overlay districts that include riverfront lands such as groundwater protection districts. Communities may enact area requirements within zoning districts to limit coverage by impervious surfaces (which carry runoff and non-point source pollution), and actively promote vegetated open space which can filter pollutants contained in runoff. Municipalities can also establish uniform setbacks from the river through general ordinances which apply along the river regardless of zoning districts.

Planning for the long-term health and usability of the river will require a combination of strategies:

- **Coordination** among CNBRLAC, local boards, regional planning commissions, NHDES, and other State agencies
- **Educational outreach efforts** to advocate for improved stewardship of the river with regard to issues such as habitat protection, stormwater runoff, litter, invasive species, and impacts of various land uses on water quality
- **Engagement with riverfront and other watershed communities** to involve as many stakeholders as possible in protection and management efforts

The Planning Process and Community Input

Community input, primarily through a stakeholder survey and public meetings, was vital to the production of this plan. Public input has been sought through posting the survey online, and advertising and organizing the public visioning forum and public meeting to solicit public comment for the final draft. The goals and objectives for each resource category were formulated by CNBRLAC members and reviewed during subsequent meetings. The objectives under each resource category are also included in the implementation plan and schedule which shows the responsible parties and an approximate timeline for each objective.

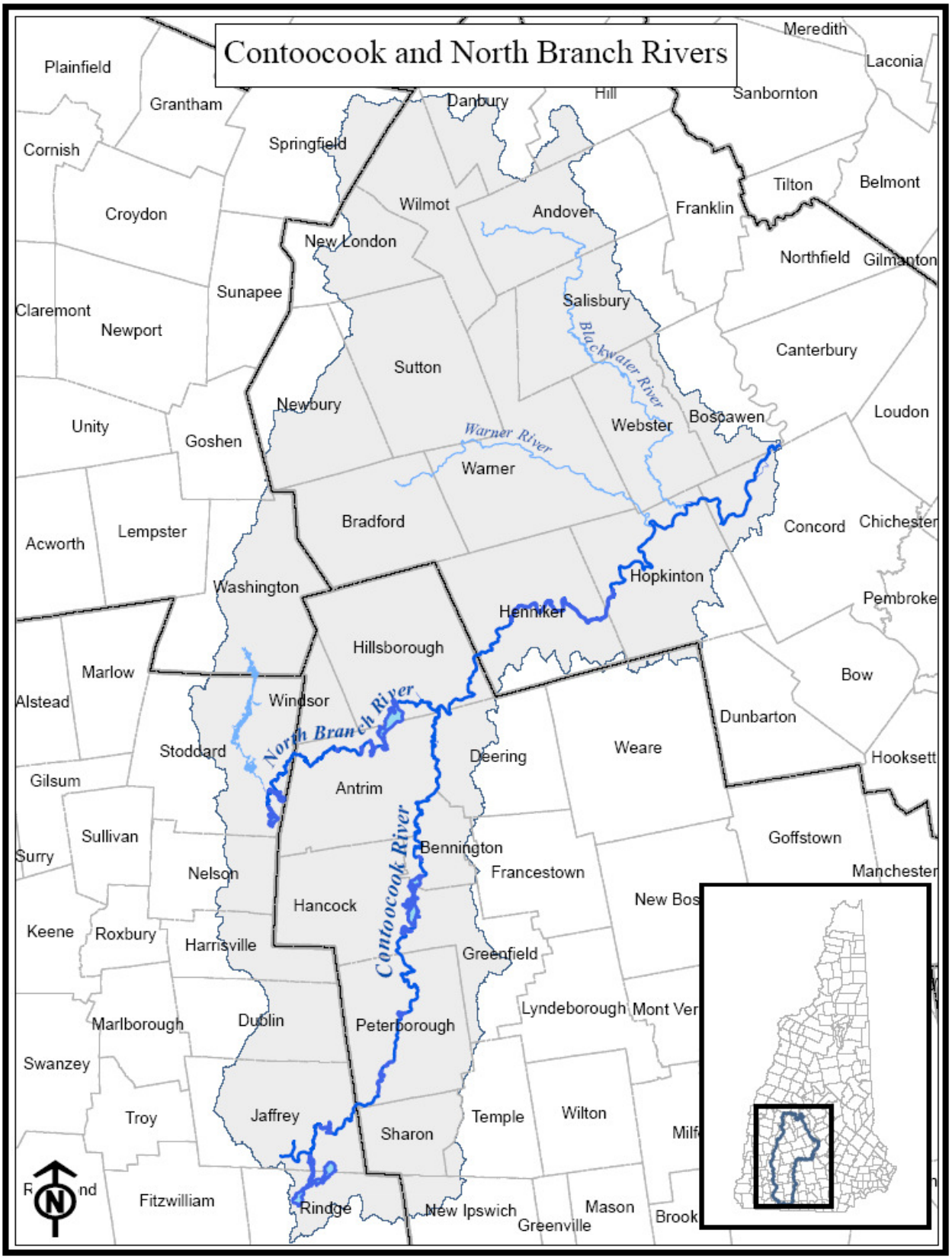
1 Introduction

The Contoocook River begins at Pool Pond in Rindge and flows north for 71 miles to its confluence with the Merrimack River in Concord. The river serves as the drainage basin for a 757 square mile watershed (which includes parts of at least 37 municipalities). The more natural and free-flowing North Branch River flows for 16 miles east from its headwaters in Stoddard, its confluence with Highland Lake in Stoddard which supplies most of the river's water, to Hillsborough, where it joins the Contoocook. The rivers were created as the result of the drainage of a glacial lake. Together the river corridors pass through fourteen communities in Cheshire, Hillsborough and Merrimack Counties. It is from these communities, which include Antrim, Bennington, Boscawen, Concord, Deering, Greenfield, Hancock, Henniker, Hillsborough, Hopkinton, Jaffrey, Peterborough, Rindge, and Stoddard, that members of the Contoocook and North Branch Rivers Local Advisory Committee (CNBRLAC) are drawn. See **Map 1** for an overview of the watershed.

The landscape of the river corridors includes urban town centers, wetlands, forests, residential and agricultural areas. Most of the land along the North Branch is undeveloped and the river contains several sections of rapids. Both Rivers are often used recreational resources that provide opportunities for all kinds of water sports, wildlife and nature observation, and recreation along nearby multi-use trails. The rivers are also a water source for municipal and agricultural purposes, a power source harnessed by hydropower facilities, and the locale for many historically valuable sites.

The Contoocook and North Branch Rivers were designated for protection under the New Hampshire Rivers Management and Protection Program (RMPP) in 1991. This designation ensures greater protection of water quantity, quality and channel integrity, and guards against construction of new dams and siting of solid and hazardous waste facilities. However, invasive species, recreational abuses such as litter and bank erosion, land development, and lack of public awareness about proper stewardship practices all pose threats to the health of the rivers. Without appropriate care the rivers will become less useable for recreational pursuits and cease to meet water quality standards as defined by state statutes, which could result in the rivers no longer being designated fishable or swimmable.

Map 1. Watershed Overview



The goal of drafting 2010 Contoocook and North Branch Rivers Management Plan, and presenting it to the municipalities, is to promote the adoption of volunteer and

regulatory measures to preserve the ecological conditions and opportunities along the rivers for present and future generations. The Plan was developed through the efforts of the CNBRLAC volunteers and input from local residents, with assistance from the Central New Hampshire Regional Planning Commission (CNHRPC) and the Southwest Region Planning Commission (SWRPC). CNBRLAC advised each step of the plan update process, which spanned from the fall of 2009 to the spring of 2010. A survey and public meeting were used to solicit public input for the drafting of the plan, and an additional public meeting was used to provide comments on the draft plan document. For the preparation of this plan, valuable technical assistance was provided by the New Hampshire Department of Environmental Services (NHDES), New Hampshire Fish and Game Department (NHFGD), and SWRPC. Financial assistance was provided through a water quality planning grant authorized under section 604(b) of the Clean Water Act.

This plan includes an explanation of local, state, and federal regulations protecting rivers, descriptions of various categories of resources located within the river corridors and Contoocook River Watershed, a section describing community input, and a goals and objectives section to serve as a guide for CNBRLAC and for any efforts made to better protect the river. The purpose of this plan is to identify key areas of concern, formulate management strategies for addressing them, prioritize the importance of these strategies, and create an action plan and preliminary timeline for implementing these. The management plan includes recommendations for short-term, intermediate, and long-term measures to protect the rivers. Concerns addressed by recommendations in the plan include water quality and quantity, stream channel integrity, wildlife and plant habitat, invasive species and other contamination hot spots, recreation, land use and development, stormwater management and floodplains, and river corridor and watershed planning.

This plan is intended for several different audiences. First, it is a tool that CNBRLAC can use to guide and focus its work in the coming years. Second, municipal boards and committees may refer to the plan or adopt it as an element in an open space or master plan. Third, it fulfills state requirements pursuant to RSA 483:10. Finally, the plan may be referenced by residents of the Contoocook River watershed or other concerned citizens seeking information about the Contoocook and North Branch Rivers. For those wishing to gain a brief overview of the plan, the Executive

Summary may be all that is necessary to read. Others looking for more detailed information are invited to read on through the plan and its appendices.

2 Regulatory Framework

Protections for the Contoocook and North Branch Rivers fall into a three-tier framework, including local, state, and federal regulations. Basic land use regulations guiding development and allowed uses are prescribed by local zoning ordinances and regulations. State regulations apply to permitting, siting various types of facilities, and buffer protections for the rivers themselves. Federal law governs major impacts and alterations to navigable rivers and mandates impact mitigation for any federally sponsored projects. A brief synopsis of applicable regulations is below; for more detailed information, consult individual municipal governments or the NHDES Water Division at http://des.nh.gov/organization/divisions/water/index.htm.

2.1 Local Regulations

Local communities have a wide variety of regulatory tools at their disposal for protecting river and watershed resources. Overlay zoning districts allow communities to designate geographic areas for protecting the river and other water resources, while deferring to the underlying base zoning district for regulations not covered by the overlay. Many communities have either Shoreland Protection or Groundwater Protection districts, or both, which protect land along the rivers. Communities may also establish other location requirements such as setback or area requirements, and prohibit certain uses, such as excavation. Area requirements as part of zoning are typically enacted by the Planning Board while general ordinances for buffer setbacks or prohibited uses might be established by other boards or at Town Meeting. A more detailed discussion of local regulations currently in effect in Towns along the river corridors can be found in Section 3.4.

2.2 Rivers Management and Protection Program

NH RSA 483 establishes New Hampshire's Rivers Management and Protection Program (RMPP). The purpose of the RMPP is to ensure the continued viability of the state's rivers as valued assets for the benefit of

present and future generations. Designated rivers are classified in one of four categories: natural, rural, rural-community, or community rivers. Each classification carries different criteria and management objectives, based on water quality and existing development. A river may be split into segments with various designations along its length. The Contoocook and North Branch Rivers carry both "rural" and "community" classifications (see **Appendix A**). Rural segments are characterized by lands used for agriculture, forestry, and dispersed or clustered residential areas. Community segments are those that flow through developed areas with mixed land uses and are readily accessible by road. RSA 483 includes the following articles:

- 483:7-a, which states that rivers must meet Class B water quality standards, standards that both rivers currently meet. Class B is defined as water that is suitable for fishing, swimming, and other recreational uses, and for use as a drinking water supply after adequate treatment, pursuant to RSA 485-A:8.

- 483:8-a III, which requires the establishment and regular meeting of a local advisory committee for each State designated river. CNBRLAC is charged with developing and updating a local river corridor management plan. CNBRLAC meets monthly to review development applications within the river corridor, dredge and fill permits from the New Hampshire Department of Environmental Services (NHDES), and other projects. The committee also has the following roles and responsibilities:

    1. To advise NHDES, the state Rivers Management Advisory Committee (RMAC) and the municipalities through which the rivers flow on river-related matters.

    2. Reports biennially to the RMAC and NHDES and annually to the riverfront communities on the status of compliance with federal and state laws and regulations, local ordinances, and plans relevant to the river, its corridor and tributary drainage areas.

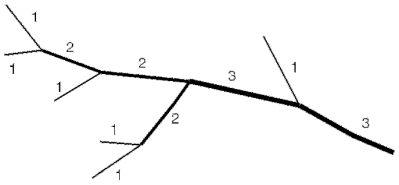
- 483:9-a (for rural river segments) and 483:9-b (for community river segments), which set out protections for rivers under these classifications. Protection measures govern dam construction, hydroelectric power facilities, interbasin transfers, channel alteration, the establishment of protected instream flow levels, water quality, solid waste facilities, and speed limits for motorized watercraft. The statute prohibits the construction

of new dams in "rural" sections of designated rivers, limiting new dam construction in the rivers only to the "community" sections of the rivers. Regulations for solid waste facilities, including location, setbacks, and buffers, are also more restrictive for "rural" segments than for the "community" segments.

About Stream Order

Stream order is a way of describing the hierarchy of stream size (for perennial streams only):

- **1st Order:** smallest, unforked stream
- **2nd Order:** Formed where two 1st order streams meet
- **3rd Order:** Formed where two 2nd order streams meet
- **4th Order:** Formed where two 3rd order streams meet:



Where a lower order stream meets one of a higher order, no increase in hierarchy results.

2.3 Comprehensive Shoreland Protection Act

The NH RSA 483-B Comprehensive Shoreland Protection Act (CSPA) regulates land uses within established setbacks of fourth order or greater streams or rivers. Both the Contoocook and North Branch Rivers meet this threshold. In total, the CSPA is aimed at protecting water quality from non-point source pollution, by requiring shoreland vegetation and limiting impervious surface area. Agricultural uses are exempt from these provisions but must conform to best management practices established by the NH Department of Agriculture, Markets, and Food.

The protected shoreland is divided into three tiers of buffers, for 250', 150', and 50' from the river. The entire 250' shoreland area prohibits solid waste and hazardous waste facilities and requires that NH DES approve the subdivision of land. A state CSPA permit is required in addition to, or as a condition of, local planning board approval. The maximum amount of impervious surface area allowed on a lot within the protected shoreland is 30%. If a property owner or developer wished to exceed 20%, adequate tree coverage must be present within the waterfront buffer and a stormwater management plan must be implemented. Also, new lots created within the protected shoreland must have at least 150 feet of shoreline frontage. Within the area between 50 and 150 feet from the reference line, based on lot size, a percentage of vegetation must remain in an unaltered state.

The minimum setback for all new primary structures (new homes) is 50 feet from the reference line. Trees and saplings within the waterfront buffer, 50 feet from the reference line, can be removed in accordance with a grid and point system, but all natural ground cover including stumps, roots, and rocks must remain intact on and within the ground. The only exception in which ground cover can be removed is for a six foot wide footpath to the water. No fertilizer application except limestone is allowed within 25' of the water and only low phosphorus, slow release nitrogen fertilizer may be used for the area that is between 25 and 250 feet from the river.

2.4 Additional State Regulations

There are a number of additional state regulations that affect land use and development along the Contoocook and North Branch Rivers. These regulations include:

- NH RSA 155-E prohibits excavation within 75' of the Contoocook, North Branch, and other designated rivers.
- NH RSA 482-A:3 requires a permit from NH DES for structures adjacent to wetlands. Much of the land along these rivers is adjacent to wetlands. This RSA also requires a DES Wetlands permit for any excavation, dredge and fill activities, or dock construction in or adjacent to any waters of the state.
- NH RSA 485 prohibits within wellhead protection areas the siting or operating of a hazardous waste disposal facility, snow dump, junk or salvage yard or wastewater septage lagoon, or outdoor storage area for road salt or other deicing chemicals in bulk.
- NH RSA 485:13, I(a) prohibits discharging of sewage or wastes into surface waters without a permit.
- NH RSA 485-A:15 prohibits the disposal of any litter or refuse in, on the ice over, or on the banks of surface waters.
- NH RSA 485-A:17 requires a permit for any terrain alteration in or on the border of surface waters in such a way that will alter natural runoff.
- NH RSA 485-A:29 requires a permit from NH DES to construct a septic system and an inspection before the system is used.

- NH RSA 430 states that all pesticide applications at agricultural sites must comply with rules adopted by the Pesticides Control Board of the NH Department of Agriculture.
- RSA 431:33-35 requires that manure and chemical fertilizer handling must be done in accordance with Best Management Practices as published by the NH Commissioner of Agriculture, Markets and Food.

2.5 NHDES Departmental Rules

Many rules not included as part of the Revised Statutes are also established and enforced by NH DES. These DES rules include:

- Env-Wq 1400 - Shoreland Protection Rules, which outline tree harvesting guidelines and other specifics relating to the CSPA
- Env-Wq 1700 - Surface Water Quality Regulations, which affect water quality protection, road and building construction, erosion and sedimentation, lumber harvesting practices, pesticide application, dredge and fill activities, pollution and runoff, and road salt use.
- Env-Wt 100-800 NH Wetlands Program Rules relate to water quality protection, road and building construction, dredge and fill activities, and water sports.
- Env-Wq 1400 Shoreland Protection Standards relate to protection of water quality, pollution and runoff, lumber harvesting practices, pesticide and fertilizer application, and underground storage facilities and aboveground petroleum storage facilities.
- Env-Wq 1500 Alteration of Terrain Rules govern permitting for construction and excavation activities that change the shape of the land and interfere with natural runoff processes.

NH DES also issues discharge permits for state surface waters (under Env-Ws 401) and Groundwater Management and Groundwater Release Detection Permits (Env-Wm 1403), and enforces regulations for the removal, transportation, and disposal of sludge (Env-Ws 800) and septage management (Env-Ws 1600).

2.6 Federal Clean Water Act

Enacted in 1972, the federal Clean Water Act (CWA) (3 USC 1251-1376) requires that state and local governments restore and maintain the chemical, biological, and physical integrity of U.S. waters. The Clean Water Act (33 USC 1342) requires a National Pollutant Discharge Elimination System (NPDES) permit for point discharge of pollutants and also (33 USC 1329) regulates nonpoint source pollution. The CWA (33 USC 1344) requires a federal permit to construct dams, bridges, piers, etc., in any navigable water. In addition, in terms of water withdrawals and dam regulation, the CWA states (33 USC 404) that permits for dams may be conditioned both to assure sufficient flows and restrict withdrawals for the protection of fish and wildlife. The CWA (33 USC 1345) also regulates the disposal or use of sewage sludge. The CWA (33 USC 1344) also establishes a permit system for dredge and fill activities in navigable waterways, and the CWA (33 USC 1342) regulates municipal and industrial storm water discharges.

2.7 National Environmental Policy Act (NEPA)

The National Environmental Policy Act (NEPA) requires federal agencies to consider environmental impacts when making project planning decisions. Projects receiving federal funds must undergo environmental review and provide environmental assessments or environmental impact statements describing the impacts associated with proposed actions and project alternatives.

2.8 Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act mandates Federal agencies to make all reasonable efforts to avoid negative impacts to rivers designated as Wild and Scenic, as well as those listed in the Nationwide Rivers Inventory as potential Wild and Scenic Rivers. This legislation relates to water quality, as well as any construction along the river and any dredge and fill activities. The Act also has a bearing on water quantity, including water withdrawals. The Contoocook and North Branch Rivers are not currently designated as Wild and Scenic.

2.9 Rivers and Harbors Act

The Rivers and Harbors Act makes it a misdemeanor to alter the course, condition or capacity of any river regulated by the Act. It also makes it a misdemeanor to discharge refuse matter of any kind into navigable waters of the U.S. or their tributaries without a permit, or to conduct dredge and fill activities in a regulated river without a permit. The Act is administered by the U.S. Army Corps of Engineers.

2.10 Federal Power Act

According to the Federal Power Act, every hydroelectric project on a navigable stream requires a Federal Energy Regulatory Commission permit.

2.11 Department of Transportation Act

Enacted in 1966, the Department of Transportation Act established the USDOT and articulated the department's overall mission. It is important for the regulation of both wildlife and fish habitat and historical and cultural resources. The Act states that no U.S. Dept of Transportation projects are allowed on public land that is important for wildlife, waterfowl refuge of national, state or local significance, recreation, or historic properties unless there is no prudent and feasible alternative and there has been all possible planning to minimize harm.

3 Watershed Resources

The Contoocook River watershed provides a host of resources for its human and non-human inhabitants. The Contoocook and North Branch rivers have been recognized for their outstanding natural and cultural resources under the New Hampshire Department of Environmental Services' (NHDES) Rivers Management and Protection Program (RMPP). These rivers provide water resources for the communities they pass through, aquatic and riparian habitat for numerous plant and animal species, recreational opportunities, and a variety of river-oriented land uses. Because the rivers have been important travel and settlement corridors over the centuries, many historic and cultural resources can also be found along their banks.

3.1 Water Resources

The headwaters of the Contoocook River originate in Pool Pond in Rindge. Unlike many rivers in the region, the Contoocook flows north, passing through fourteen communities on its 71-mile path to Concord, where it empties into the Merrimack River (see **Map 1**). The North Branch River rises in the town of Stoddard and flows east for sixteen miles through Antrim to Hillsborough, where it joins the Contoocook mainstem. The rivers are used for water and hydroelectric power supply, wastewater assimilation, wildlife habitat, and recreation. Water quality, quantity, and stream channel integrity all play important roles in supporting river uses.

3.1.1 Water Quality

As designated rivers under RMPP, the Contoocook and North Branch rivers must meet Class B water quality standards as defined in RSA 485:A-8. A Class B designation indicates that the water is suitable for fishing, swimming, and other recreational uses, and for use as drinking water if adequately treated. A variety of factors can influence water quality, including pollutant loading (point source and non-point source), the presence or absence of naturally vegetated riparian buffers, channel erosion, water quantity, invasive plant and animal species, and litter.

NHDES reports to the US Environmental Protection Agency every two years on impairments to water quality for the state's surface waters as part of the requirements of the Clean Water Act. This report, known as the 303(d) list, identifies impairments based on a variety of parameters relating to pollutants, nutrients, oxygen content, and other factors. The 2010 303(d) list identifies sections of the Contoocook and North Branch rivers, as well as several associated water bodies as being impaired for dissolved oxygen, pH, Chlorophyll-a, phosphorus, and E. coli. One stretch of the Contoocook in Hopkinton is also listed as impaired for copper, mercury, lead, and zinc. Sources are listed as either unknown, municipal point sources, or industrial point sources (see **Appendix B**).

In 2006, NHDES published a draft Total Maximum Daily Load (TMDL) study for the Upper Contoocook between Jaffrey and Peterborough to address dissolved oxygen and nutrient-related chlorophyll impairments associated with the Jaffrey wastewater treatment facility. This draft study recommended revisions to the National Pollutant Discharge Elimination System (NPDES) permit levels and upgrades to the facility to reduce pollutant loading and improve river water quality.[1]

Since 2005, the Contoocook and North Branch Rivers Local Advisory Committee (CNBRLAC) has been conducting annual water quality monitoring studies through the Volunteer River Assessment Program (VRAP). The most recent report summarizes the findings of the 2009 monitoring season, when river monitors sampled sixteen sites for five different water quality indicators: temperature, dissolved oxygen, pH, turbidity, and specific conductance (see **Appendix C**). Among these indicators, only pH levels did not meet Class B water quality standards. According to the 2009 report, low pH levels are likely the result of natural conditions such as soils, geology, or the presence of wetlands; although, acid precipitation may also contribute.

[1] NHDES, 2006. DRAFT Total Maximum Daily Load (TMDL) Study for Dissolved Oxygen and Nutrients in the Contoocook River (Jaffrey to Peterborough). Available online at http://des.nh.gov/organization/divisions/water/wmb/tmdl/reports_appendices.htm#contoocook.

CNBRLAC members identified a number of areas along the rivers where bank erosion and litter have become a problem (see **Map 2**). Bank erosion can cause sedimentation and turbidity, as well as the danger of catastrophic stream channel changes during floods. Litter is not only a visual nuisance but also introduces substances into the aquatic environment that may interfere with normal ecological functions. Committee members also noted some areas along tributaries, particularly in Henniker, where runoff is causing pollution and sedimentation that affect the mainstem.

Stormwater runoff is one of the most significant threats to surface water quality in New Hampshire. Sediments and pollutants are carried into streams and rivers following rainfall events, particularly in developed areas where impervious surfaces (concrete, pavement) prevent the infiltration of stormwater into the ground. Vegetated areas along river banks, called riparian buffers, help to slow and filter runoff as it drains into the river. The Comprehensive Shoreland Protection Act (CSPA), codified in RSA 483-B, regulates development within a 250-foot buffer around all major rivers and lakes or impoundments greater than ten acres in size. However, stormwater runoff is a threat in all areas, not only in immediate riparian zones. Low impact development (LID) techniques, such as rain gardens, swales, and reduction and separation of impervious areas, and post-construction stormwater management standards can significantly reduce the amount of runoff from building sites.

Other possible causes of non-point source pollution include septic systems, road salt and sand application, fuel storage tanks, agriculture, and timber harvesting. While state-mandated best management practices (BMPs) are either recommended or required when constructing or undertaking these activities, existing sites may not be following such BMPs and are not often regularly inspected.

Taken as a whole, the water quality of the Contoocook and North Branch Rivers has improved substantially in recent decades as wastewater and solid waste facilities have been upgraded or removed.[2] For example, the Town of Jaffrey received $13.4 million

[2] CNBRLAC, 1994. Contoocook and North Branch Rivers Corridor Management Plan. Available online at http://des.nh.gov/organization/divisions/water/wmb/rivers/documents/management_plan_contoocook.pdf.

through a state revolving fund in 2006-2007 to upgrade its wastewater treatment facility and improve discharge water quality into the Contoocook, as recommended by the 2006 TMDL study.[3] Impairments for several pollutants are identified on the 303(d) list, mostly due to municipal point sources where sources are known. VRAP monitoring efforts demonstrate that, despite these impairments, the river generally meets its required water quality standards under the RMPP. Additional monitoring, ongoing facility improvements, and landowner education are key to ensuring that water quality continues to improve.

3.1.2 Water Quantity

Instream flow is important for maintaining ecological balance and human water use needs for a river. Flow characteristics can vary by season and by area in a river. There are 28 active dams along the Contoocook and North Branch rivers controlling stream flow for various purposes, including flood control, hydropower generation, recreation, and conservation (see **Appendix D**). The West Henniker Dam on the Contoocook was removed in 2004 under a statewide river restoration program. Between dams, the rivers generally have natural flow characteristics that fluctuate seasonally and with precipitation levels.

Major water users can also have significant flow impacts. Under the RMPP, instream flows are protected for the Contoocook and North Branch rivers; however, specific flows have not yet been established. Entities that use more than 20,000 gallons of water per day are required to register with NHDES and report usage (see **Appendix E**). Hydroelectric facilities must also be licensed by the Federal Energy Regulatory Commission (FERC).

For example, at the time of this writing, Monadnock Paper Mills (MPM) in Bennington is undergoing a relicensing process with FERC. As part of the relicensing process, MPM has initiated a series of studies in the Powder Mill Pond vicinity on recreation, instream flow, and macroinvertebrates.

[3] NHDES, 2008. New Hampshire 2008 Section 305(b) and 303(d) Surface Water Quality Report. Available online at http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/r-wd-08-5.pdf.

The United States Geological Survey (USGS) monitors stream flow at four gage locations along the Contoocook in Peterborough, Henniker, Hopkinton, and Penacook (Concord), as well as on the North Branch River in Antrim.[4] NHDES releases annual reports on water use by registered users versus stream flow. The most recent report at the time of writing is for 2006. Because protected flows have not yet been established for the Contoocook and North Branch rivers, NHDES uses a general standard. In 2006, a small portion of the North Branch River near its mouth was not in compliance with the general standard only during the month of September. A short section of the Contoocook near its confluence with the Merrimack was not in compliance for much of the year, and during September a larger portion (7.6 miles) of the river was not in compliance. These results were generally consistent with prior years since the annual study began in 2003.[5] Instream flow studies to establish protected flows have begun to be established on designated rivers throughout New Hampshire (the Souhegan and Lamprey rivers have been completed to date), and it is hoped that such levels will soon be established for the Contoocook to better assess use versus stream flows.

3.1.3 Stream Channel Integrity

Stream channel integrity fluctuates naturally in rivers, depending on soil types, topography, and stream flow characteristics. Stable stream channels help to minimize sedimentation caused by erosion as well as reducing impacts to riparian land uses. Peak flows and flood events represent the most significant threats to channel integrity. River banks can be quickly eroded or even breached during these events causing a change in the river's course.

CNBRLAC members reported recent river bank erosion at several sites along the Contoocook and North Branch rivers, including near Henniker's Azalea Park, Grimes Field in Hillsborough, downstream of Steele Pond on the North Branch in Antrim, off of US 202 in north Bennington, and downstream of Powder Mill Pond in Bennington

[4] Real-time data is available at the USGS Water Information System website: http://waterdata.usgs.gov/nwis.
[5] NHDES, 2006. Contoocook Annual Water Uses versus Stream Flow. Available online at http://des.nh.gov/organization/divisions/water/wmb/rivers/instream/studies.htm.

(see **Map 2**). The best ways to prevent erosion and promote stream channel integrity are to maintain vegetated riparian buffers, practice proper erosion control methods during alteration of terrain, and protect floodplains to manage water flow and storage during storm events.

NHDES has begun to conduct fluvial erosion hazard studies along the state's rivers to identify areas prone to erosion or channel relocation during storm events. The purpose of these studies is to provide municipal planners with information on erosion-prone areas so that fluvial erosion hazard overlay districts can be established where appropriate. In such districts, underlying zoning would not change; however, limits on structures, land use activities, or even vegetative conditions could be employed to mitigate erosion hazards. NHDES has limited resources to conduct such hazard assessments and may not be able to study the Contoocook until 2014 or later.[6]

Floodplains provide a storage area for water when it exceeds the river's banks, allowing the river to gradually return to its normal levels. Along the Contoocook, the Hopkinton Dam and other smaller structures have been erected for flood control. Major flood control areas occur upstream of the Hopkinton Dam through west Hopkinton and Henniker, and natural floodplains are present along much of the river's length (see town-specific maps in **Appendix F**). The North Branch has fewer floodplains except in the area of Robb Reservoir at its headwaters in Stoddard.

A study of recent major flood events in New Hampshire was commissioned by NHDES and released in 2008.[7] The study focused on south central and southeastern parts of the state. Among its major recommendations were to improve floodplain protection through local ordinances, to implement BMPs for stormwater management, and to implement fluvial erosion hazard overlay districts. Thirteen of the fourteen communities along the Contoocook and North Branch rivers have adopted floodplain ordinances that meet Federal Emergency Management Association (FEMA) guidelines. Local

[6] Shane Csiki, NHDES New Hampshire Geological Survey, personal communication, May 6, 2010.
[7] FEMA, 2008. Independent Evaluation of Recent Flooding in New Hampshire. Available online at http://www.fema.gov/library/viewRecord.do?id=3374.

ordinances can place even more stringent requirements on development to protect both property owners and the floodplain.

The complexity of interactions among water quality, quantity, and stream channel integrity must be taken into consideration when tackling resource protection for the Contoocook and North Branch rivers. Because the river system supports such a wide variety of uses and natural services, a systematic, watershed-level approach is recommended to address issues affecting the rivers' elemental water resources.

3.2 Plant and Wildlife Resources

The Contoocook River straddles two ecoregions, rising in the Hillsboro Inland Hills and Plains subsection of the Vermont-New Hampshire Uplands and, nearer to its confluence with the Merrimack, the Gulf of Maine Coastal Plain of the Lower New England ecoregion.[8] The North Branch lies solely in the Vermont-New Hampshire Uplands. The uplands topography is marked by low mountains, numerous small lakes and narrow valley streams, while the coastal plain area is less mountainous and characterized by rolling glacial drumlins. Soils in the uplands are mostly shallow and stony, while those in the coastal plain region tend toward deeper glacial till. A wide variety of plant and animal species characteristic of these ecoregions are found along the rivers. According to committee members, the composition of the forest in the river corridors and the watershed has shifted with pines decreasing and hardwoods increasing, which could be the result of natural succession or timber harvesting.

The New Hampshire Natural Heritage Bureau (NHNHB) tracks exemplary natural communities as well as rare plants and animals. In the Contoocook and North Branch watershed, NHNHB lists five exemplary ecological systems, seventeen exemplary natural communities, one endangered invertebrate species, 23 rare and endangered plant species, and 19 rare and endangered vertebrates (see **Appendix G**). While some documented occurrences are years or even decades old, species and natural communities may still be present.

[8] Sperduto, Daniel, and William Nichols, 2004. Natural Communities of New Hampshire. NH Natural Heritage Bureau. Available online at http://www.nhdfl.org/library/pdf/Natural_Communities2ndweb.pdf.

3.2.1 Invasive Plant Species

Invasive aquatic and upland plant species have become increasingly problematic along the Contoocook and North Branch Rivers. These plants proliferate and crowd out native species, often dominating large areas of impoundments, flowing water, and shore banks. The rivers have not been comprehensively surveyed to date, although NHDES has documented the occurrence of several species along the Contoocook, including the aquatic species variable milfoil, purple loosestrife, and yellow iris. Common reed, also known as phragmites, is an upland species that NHDES has documented. To date, no documented occurrence of invasive species has been reported to NHDES along the North Branch River. CNBRLAC members have done their own survey of the rivers and identified areas affected by the species mentioned above, as well as Japanese knotweed and pickerel weed, in several areas (see **Map 2**).

NHDES and the US Army Corps of Engineers (USACE) have both used aquatic herbicides to control invasive species in certain areas along the rivers. NHDES has been applying herbicide to control milfoil on Contoocook Lake at the river's headwaters for fifteen years. The agency has treated other water bodies such as Powder Mill Pond and Cheshire Pond at various times. USACE has made applications on the Hopkinton Everett reservoir to control milfoil. These applications may be affecting water quality and recreational use. In 2008, there was a serious cyanobacteria bloom in the Hopkinton Reservoir following herbicide use, which caused USACE to shut down recreational use for several months.[9]

Because NHDES has limited resources to survey, monitor, and mitigate the effects of invasive species, the department has established a volunteer program called Weed Watchers for that purpose. Volunteers are trained in the identification, documentation, and removal of invasive species. It is recommended that CNBRLAC seek volunteers from riverfront communities to establish local Weed Watcher groups.

[9] John Magee, NHFGD Fish Habitat Biologist, personal communication, 1/25/10.

3.2.2 Wildlife Resources

Wildlife in the Contoocook and North Branch river corridor is generally representative of that seen in central and southern areas of New Hampshire. According to the NH Fish and Game Department (NHFGD), otters, mink, beaver, mallard and wood ducks, and deer are common sightings along the rivers. Large numbers of Canada geese are often seen in the vicinity of Monadnock Paper Mill and upstream to Bennington Bog. Moose have been reported recently north of the paper mill in Antrim along US 202.

Most of the same species are seen along the North Branch River, although fewer geese congregate along it. Recent bobcat sightings have been reported near NH Route 9 in Antrim, and NHFGD biologists have been tracking a bobcat in this area using a radio collar. Moose are more common along NH Route 9 in Stoddard and Antrim near the North Branch as well.[10]

A list of wildlife and bird sightings on Powder Mill Pond in Hancock is available in **Appendix H1 and H2**. This list is based on sightings over the past ten years by bird and nature authors Don and Lillian Stokes. Some of the species sighted were passing through during migratory periods, while others inhabit the area year-round.

The Contoocook provides mainly coolwater fish habitat for species such as yellow perch, white sucker, blacknose and longnose dace, tessellated darter, common shiner, sunfish, and fallfish. Walleye and smallmouth bass are two common non-native species, and NHFGD stocks the river upstream of the Hopkinton Dam with brown trout, a favorite of anglers. The North Branch has less slow-moving water than the Contoocook, and is therefore dominated more by fluvial species (blacknose and longnose dace and fallfish). It is also important to note that many of the tributaries to both the Contoocook and the North Branch are home to wild brook trout, a species of greatest conservation need according to the NH Wildlife Action Plan.

[10] John Magee, NHFGD Fish Habitat Biologist, personal communication, 1/25/10.

3.3 Recreational Resources

Residents and visitors enjoy diverse recreational activities on and along the rivers during all four seasons. Much of the rivers are navigable, if not by powerboat, then by canoe or kayak. Recreational activities reported by survey respondents include boating, swimming, fishing, bird or wildlife watching, canoeing/kayaking, walking, hunting, skiing, nature photography, and in the winter season, snowmobiling, ice sailing, and even mountain biking and motor vehicle racing on ice. Over 86% of survey respondents reported recreational activities on or along the rivers, suggesting the importance of protecting and enhancing recreational resources. The provision of adequate recreational access and responsible use of the river corridor will involve ongoing management and public outreach efforts in order to maintain the rivers' valuable amenities. Existing recreational access points are shown on **Map 2**.

3.3.1 Water-Based Recreation

The Contoocook boasts whitewater areas that draw paddlers from all over the state and region. Between Jaffrey and Peterborough Class II rapids can be found. The well known "Freight Train" section between Hillsborough and West Henniker offers Class III-IV rapids. Following the removal of the West Henniker Dam in 2004, the stretch was extended by three-quarters of a mile with two additional rapids for paddlers to traverse. Farther downstream in Henniker, paddlers can find more Class II rapids. The North Branch has sections of Class V rapids in Hillsborough between NH Route 9 and the fire station, and in Antrim between Liberty Farm Road and the fire station.

Canoeing and quiet water kayaking are other popular recreational uses of the river and its impoundments. CNBRLAC members and community members have identified the need to remove fallen trees in some sections that are preventing boat passage. Where fallen trees are likely to detach from the bank and create hazards as they are carried downstream, removal may be the best action to take. However, fallen trees play an important role for many aquatic species, providing shade and structure for fish, frogs, waterfowl, and

other organisms. Ecological needs must be balanced with recreational needs to ensure ongoing support for all uses.

Fishing is a very popular activity along the rivers' entire length, drawing anglers from across the state and the region. Many areas that do not have easy boat access support shorebank fishing and wading, both on public lands and informally on privately owned land. The rivers provide many opportunities for fly fishermen, trollers, and casters aiming for trout, walleye and smallmouth bass. Water bodies such as Contoocook Lake, Cheshire Pond and Powdermill Pond are also popular for catching largemouth bass, perch, bluegill, and black crappie. The NHFGD stocks the rivers with brown trout, eastern brook trout, and rainbow trout.

In summer months, many residents and visitors also use the rivers and impoundments for motor boating and swimming. Contoocook Lake, Elm Brook State Park on Hopkinton Lake, and Manahan Park on Franklin Pierce Lake all have public beaches as well as boat ramps. Other boat launches can be found in Peterborough, Hancock, Bennington, Hillsborough, Henniker, and Concord along the river, as shown on **Map 2**. Freezing temperatures do not suspend recreation on the rivers. In winter, the rivers are used for ice fishing, snowmobiling, ice sailing, and even mountain bike and motor vehicle racing on the lakes.

3.3.2 Land-Based Recreation

Numerous public, semi-public, and private sites along the Contoocook and North Branch rivers offer recreational opportunities year-round. Walking was the most common land-based activity reported by survey respondents, followed by birding and wildlife watching, nature photography, cross-country skiing, and hunting. Many landowners generously allow access on or through their property for various uses, if permission is requested. This is a wonderful practice because it opens up much larger areas for recreation beyond publicly owned facilities. However, the extent to which people are able to use private lands for recreation in the future will depend on respectful use and behavior. While most survey respondents who allow access on their property reported no

problems, a number cited litter, noise, inconsiderate motorboat operation, and unauthorized uses such as motor vehicles or hunting. Management strategies such as public education and clear signage can help to minimize problematic behavior.

Public trails parallel or cross the rivers in several locations. For example, rail trails in Rindge, Jaffrey, Peterborough, Bennington and Deering are open to non-motorized travel (see **Map 3**). An abandoned rail line in West Henniker near the Contoocook Valley Paper Mill site may soon be developed into a rail trail as well. Additional trails adjacent to the rivers are located in Hillsborough (Contoocook Riverwalk), Henniker (Azalea Park and near Amey Brook), Hopkinton (Mast Yard State Forest) and Concord (Lehtinen Park, Jim Hill River Walk, and O'Reilly-Fleetham Trail).

For birdwatchers, nature photographers and hunters, the Powder Mill Pond Wildlife Management Area (WMA) owned by NHFG in Greenfield, provides forest, field, and riverine wildlife habitat. The tract contains 126.5 acres and includes a boat ramp and parking. Several properties along the river are protected by the Society for the Protection of New Hampshire Forests (SPNHF) and are open to the public for passive recreation day use. These include the McCabe Forest in Antrim, Dawson Memorial Forest in Hillsborough, and Nature Conservancy-owned land along the North Branch in Antrim. The US Army Corps of Engineers also owns significant acreage that is open to the public at sites such as Stumpfield Marsh in Hopkinton and Old Concord Road Trails in Henniker.

The access points and trails displayed on **Maps 2 and 3** suggest the range and distribution of recreational opportunities along the entire length of the Contoocook and North Branch Rivers. They are not meant to be exhaustive datasets, but rather a starting point in the cataloguing of recreational resources. Although efforts were made to depict only sites that are open to the public, some sites on the maps may be informal or privately owned. Recreational users should check with landowners before using an access point if unsure about permitted uses.

Additional access points or improvements to existing facilities are planned in several locations. The Monadnock Paper Mill recently improved its canoe put-in and installed picnic tables near the company's parking lot in

Bennington. The Town of Bennington is also planning to install granite steps at a site on the Contoocook north of the Paper Mill. In Peterborough, improvements are planned at the old thermometer factory to enlarge parking and cartop boat access. There are two potential access points along the river in Hillsborough, including one at the Wood Woolen Mills site. This site was a former brownfield that has recently been rehabilitated and will eventually include parking and boating access.

3.4 Land Use and Development

The level of development and distribution of land uses along the rivers directly affects all aspects of the rivers' resources. Impervious surface area associated with development affects the land's ability to absorb and filter stormwater. The closer development is to the river's edge or to a tributary, the greater the impact on water quality. Developed areas pressure or eliminate habitat for plants and animals and can disrupt wildlife from their natural life cycles, impeding movement. Land uses involving hazardous materials or extensive excavation pose a threat to water quality as well.

CNHRPC and SWRPC conducted an audit of local regulations to assess the types and levels of protection provided to the Contoocook and North Branch Rivers. This section summarizes the findings of the regulatory audit. Full results can be found in **Appendix I**.

3.4.1 Local Land Use Controls

Allowed and Prohibited Uses

Many communities have Shoreland Protection Districts which protect the land abutting the river with greater restrictions than the state restrictions (see **Appendix I** for a summary table and descriptions of local land use controls). These districts are overlay districts which still use the regulations from the underlying or base districts but apply the overlay district standards where they are stricter. Antrim, Boscawen, Concord, Deering, Jaffrey, and Peterborough all have their own Shoreland Protection Districts. Common uses prohibited in these districts are automobile repair shops or junkyards, underground petroleum tanks, excavation of sand, gravel or other earth materials, the use of common fertilizers on lawns, landfills and other solid and hazardous waste facilities,

and various industrial uses. Not all local Shoreland Protection overlay districts are stricter than State standards. Even where local standards are stricter, enforcement plays a critical role in the effectiveness of the regulations.

Other overlay districts, namely aquifer protection zones and other types of zones protecting groundwater resources are also in place in many communities in the river corridor. Like other overlay districts, these districts have stricter standards which apply in areas along the rivers. Antrim, Bennington, Boscawen, Deering, Greenfield, Hancock, Hopkinton, Peterborough, and Rindge all have this type of district. The areas under protection are commonly land overlaying stratified drift aquifers and/or public wellheads. The districts typically ban the same types of facilities as Shoreland Protection Districts: automobile repair shops or junkyards, underground petroleum tanks, excavation of sand, gravel or other earth materials, landfills and other solid and hazardous waste facilities, and other industrial uses.

Similar uses can be prohibited in underlying base zoning districts such as residential or agricultural districts. Industrial and other uses are prohibited in many of the other zoning districts located along the river, common among which are residential districts and agricultural districts. For example, in Jaffrey storage of hazardous materials is prohibited in all base districts along the river which may extend the contiguous restricted land area adjacent to the river beyond the 250' buffer for hazardous materials storage required in the State CSPA statute. Most of the residential districts along the river have minimum lots sizes of half-an-acre or greater, which reduces the number of units that can be built and is one means of limiting development.

In spite of state designated river restrictions and local overlay zoning restrictions, many uses are allowed at least in some quantities by-right in riverfront communities. In Concord single-family homes, agriculture and forestry, low-impact outdoor recreation, and parking lots and garages are allowed by-right along some stretches of the river. In Jaffrey, single-family and multi-family dwellings, agriculture and forestry, recreational facilities, commercial uses and light industrial uses are allowed along the river. Although industrial

uses are sometimes allowed in residential districts such as Greenfield's General Residential district, industrial uses are typically only allowed within commercial or industrial districts. Industrial districts are located along the river only in Bennington, Boscawen, Concord, Hopkinton, Jaffrey, Peterborough and Stoddard, and not in the other seven communities.

Location Requirements

Many of the corridor communities, whether through Shoreland Protection Districts, other zoning overlay districts, or general ordinances, have location requirements in the form of mandated setbacks from the river. The most common location requirements are the setback requirements for buildings and septic systems, and the minimum buffer required for natural vegetation. Concord, which has the most extensive local Shoreland Protection District of the communities, requires a minimum natural vegetative buffer along the river of 75'compared with the state standard of 50'. Nine of the other communities either have stricter building setbacks or septic setbacks than the state standards. Some of the Towns require greater setbacks than the State, such as Deering, which has a 150' building setback and 125' septic setback, and Jaffrey which has a 200' septic setback. Communities can also use general ordinances as opposed to zoning districts to establish setbacks, such as Henniker which has a general ordinance requiring a 75' building setback from the river.

Communities may also establish minimum requirements for the amount of impervious surface which developers can build or the amount of open space which developers must provide. Rindge requires 30% of open space coverage within lots in the Shoreland Protection District (the CSPA does not require open space). Bennington, Concord, Deering, and Rindge limit the amount of impervious surface in zoning districts that include lots abutting the river to less than the State maximum of 30%. Bennington and Rindge have the requirement in aquifer protection districts not Shoreland Protection Districts. The location of these districts may be more scattered along the river corridor and may be narrower or wider in areas depending on aquifer boundaries.

Excavation

Most of the communities only allow excavation in zoning districts abutting the river by special exception or conditional use permit. Many local Shoreland Protection districts ban excavation. Bennington requires a special permit for excavation in agricultural zones, which abut much of the river. Hancock prohibits excavation in all districts unless it is for Town purposes.

3.4.2 Identified Development Patterns and Trends

Several communities have directly addressed land use as it relates to the Contoocook or North Branch rivers. Their master plans identify growth and development trends and may establish policy goals relating to river protection.

The Concord Master Plan (2008) has as one of its land use goals to conserve important open space outside the Urban Growth Boundary to which it hopes to limit urban growth. Concord has in its future land use plan commercial and high density residential use in Penacook, and a small area of industrial use at the Boscawen border. Flooding in Concord has historically occurred along the Merrimack River and not the Contoocook.

The Boscawen Master Plan (2002) identifies the need to require post-construction storm water management systems on site plans for sites near rivers, streams or brooks, or groundwater resources. The Boscawen Master Plan also describes the objective of the Mill Redevelopment District to accommodate a variety of commercial and industrial uses along the Contoocook River near the Concord border. The Master Plan recognizes the drawback of having industrially-zoned land on the floodplain in terms of water quality and flood attenuation. Like many of the communities in the river corridors, the Deering Master Plan (2004) recognizes the protection of its aquifer and wildlife habitats as important priorities. Also like many other communities in the river corridors, Deering has experienced significant growth in the number of developed residential units and population. Deering identifies the obtainment of a public access point along the Contoocook as a goal in its Master Plan.

The Jaffrey Natural Resource Inventory (2009) identifies the Jaffrey downtown from Contoocook Lake to Cheshire Pond and to the Mountain Brook Reservoir as one of the top five conservation priorities. The 2003 Peterborough Master Plan has an Open Spaces chapter that identifies land along the Contoocook River as a priority for protection and the "Contoocook River Project" in 2001 conserved over 80 acres along the River that were slated for 12 house lots. The Natural Resource section of the 2006 Rindge Master Plan identifies pursuing easements for buffers along the Contoocook River and updating this management plan.

3.4.3 Open Space

Open space provides scenic beauty and recreational opportunities for residents, and habitat for wildlife. Within river corridors, open space also provides natural vegetation that helps to remove pollutants. All of the corridor communities currently include conservation land along the rivers (see **Map 2**). Protected land can be owned in fee by local, state or federal government agencies. Public or private entities can hold conservation easements that prevent development without affecting ownership status. Deed restrictions can prohibit development as well, and are carried over when ownership changes. For example, Stoddard recently received a grant through the U.S. Forest Service Forest Legacy program to protect a large tract of land and provide public recreational access. To date there has been no established plan for the tract and access points have not yet been established.

Riverfront communities recognize the importance of setting aside open space as a way to protect river resources, wildlife, water quality, and recreational areas. Recent achievements of open space protection along the rivers include a section on Cheshire Pond in Jaffrey, a stretch of the North Branch River from Stoddard to Antrim, land along the Freight Train rapids in West Henniker, and riverfront farmland in Contoocook. CNBRLAC will continue to encourage municipalities to conserve open space along the rivers, and will help conservation commissions to identify particularly valuable or threatened parcels desirable for acquisition.

A cluster subdivision overlay district is one way in which communities can promote the protection of open space while accommodating new development. Cluster developments allow developers to build residential developments using a lot size smaller than the minimum lot size allowed while preserving another portion of a property as open space. Developers are generally granted permission to build the same number of lots under the new configuration as under a traditional subdivision layout for that property. All of the communities, with the exception of Hancock, have either a zone where cluster residential development is allowed by-right or another residential zone with a requirement for the minimum amount of open space. Many of the communities allow cluster developments by-right in any residential district. Deering requires cluster development for subdivisions over a certain number of lots, and Hopkinton requires that all subdivisions be developed as cluster developments unless receiving a special use permit. Communities may also identify conservation of land along the river as a community goal in planning documents such as Master Plans and Natural Resource Inventories (see section 3.42 above for examples).

3.4.4 Stormwater and Floodplain Management

Regulating development within floodplains assists in protecting property from flood damage. Maintaining undeveloped floodplains also offers benefits for the health of the river and its ecosystem, as well as for the total watershed, as floodplains absorb and store runoff. The land regulated by floodplain ordinances typically includes land with a likelihood of flooding once in every 100 years. Minimum flood regulation standards under the National Flood Insurance Program (NFIP) do not prohibit new buildings, wells, or septic systems within the floodplain, but require that they be developed to certain standards to reduce flood damage.

All of the communities except for Stoddard have a floodplain development ordinance in effect. The Federal Emergency Management Agency (FEMA) oversees the NFIP program, to which local ordinances must conform. These requirements were designed primarily to protect property, rather than to protect the environment.

However, floodplain development ordinances can help to encourage conservation in flood storage areas. Local floodplain ordinances can require development to be set back further from the 100-year flood line and can require additional flood protection measures. For example, a local floodplain ordinance may require that new buildings are constructed at a certain elevation above the 100-year flood line. This ordinance may also require setting buildings on stilts or, for manufactured houses, anchoring buildings to the ground.

3.5 Historical and Cultural Resources

3.5.1 Historical Resources

The Contoocook River historically has been an important travel corridor and communications channel. As a result, settlements, road and railway networks, and industrial development have been sited along the river corridor. Many historic villages and structures remain today, a reminder of the rivers' significance over the centuries. Covered bridges, white church steeples, stone walls, Indian trails, mill ruins, and scenic roads are dotted along the rivers' paths. These historic sites represent valuable learning opportunities and in some cases, living examples of commerce and industry from times past.

One indicator of historical significance may be a site's listing in a historic register. Contrary to popular belief, listing in the National or State Register of Historic Places confers no direct protections to a site or structure. Listing provides an honorific recognition of the historic value of the property, special consideration and advocacy during the planning process for state and federally funded projects, and certain tax benefits associated with upgrades. A listing in the State or National Register also makes properties eligible for various historic preservation grants from both public and private sources. Properties in the State Register are also offered special consideration for compliance with state building and safety codes and can work with regulatory agencies that meet these standards as well as meet preservation needs.

The following properties are on the State Register and within one mile of the Contoocook River: Penacook Academy in Boscawen; Daloz/Johnson/Bradford Mill Complex in Hancock; New England College Covered Bridge in Henniker over the Contoocook; and Peterborough Town Library in Peterborough (within an eighth-of-a-mile from the river). The Town of Bennington has several properties on the State Register within a mile of the Contoocook. Other state registered properties near the rivers' corridor are Union Chapel in Hillsborough within an eighth-of-a-mile north of the North Branch River, Greenfield Elementary School in Greenfield within a mile east of Powder Mill Pond, and Thomas Farm in Rindge within a mile south of Pool Pond. Additional historic sites include the Henniker Paper Mill and Hillsborough Woolen Mills. These sites may be suitable for conversion to museums or parks. The Franklin Pierce Homestead in Hillsborough is also historically significant, and is operated by the Hillsborough Historical Society with daily open hours during most of the summer. Hillsborough is also in the process of acquiring and restoring the historic Pierce Oven site and truck museum along the Contoocook, to be known as Kemp Park. The oven was used for a barbecue celebration for President Franklin Pierce that drew 25,000 people. The neighboring truck museum was owned by Dick Kemp, who collected Mack trucks. Two of his trucks have been donated to the town and will be featured in the new park.

Bennington village was recently listed in the National Historic Register as an historic district. The town also designates its village as a local historic district, as allowed under RSA 675:6. To establish a local historic district, a Town must adopt a local preservation ordinance and have a local historical commission to administer the district (Towns can also establish historical or heritage commissions without a historic district). Towns can create design guidelines for local historic districts to encourage more uniform and authentic standards for building design within the district.

In 2008, CNBRLAC members developed a digital presentation on the History of the Contoocook River that is available for use by town groups, civic clubs, libraries, schools, or other interested parties. The presentation tells the story of the river and provides information about key historic sites.

3.5.2 Cultural Resources

The Contoocook and North Branch rivers are an outstanding community and cultural resource, offering beautiful scenery, wildlife viewing opportunities, and recreational activities throughout the corridor. Recreation areas in particular constitute important community resources. The river corridor communities contain many state parks which offer opportunities for hiking, canoeing and wildlife viewing, including:

- Annett Wayside Park, Rindge
- Franklin Pierce Homestead, Hillsborough
- Greenfield State Park, Greenfield
- Hannah Dustin Memorial, Boscawen
- Miller State Park, Peterborough
- Monadnock State Park, Jaffrey

Residents and visitors also enjoy access to town owned parks and recreation areas along the riverfront, such as Contoocook Lake Park in Jaffrey, the Contoocook Riverwalk and Grimes Field in Hillsborough, Azalea Park in Henniker, the Contoocook River Forest in Hopkinton, and Contoocook Park in Concord.

Many cultural and historic resources have been documented by local historical societies, parks committees, and recreation departments. Local groups can provide interpretive pamphlets or brochures for certain sites. For example, the Town of Hopkinton has published a recreation guide that lists all community facilities, locations, directions, hours, and permitted uses.[11] The City of Concord has individual trail maps posted on its website as well.[12] Many town websites contain a host of resources on community and recreational opportunities as well.

[11] Available online at http://www.hopkinton-nh.gov/Pages/HopkintonNH_Recreation/guide.pdf.
[12] Available online at http://www.ci.concord.nh.us/trails/default.asp?footer=nolink.

3.6 River Corridor and Watershed Planning

The Contoocook and North Branch rivers run through fourteen communities, but the Contoocook watershed extends even wider, encompassing all or part of 38 municipalities. What happens in one area of the watershed can affect the rest of the river system, especially in the headwaters and on major tributaries. Concerns about water quality, open space conservation, habitat preservation, and recreational access ideally should be addressed at the watershed level. While this is practical for certain efforts, other management strategies may need to start in riverfront communities and work outward as momentum builds. CNBRLAC members, who act as liaisons between the local advisory committee and their local boards, are invaluable actors in management planning efforts. Informed about statewide and regional river management issues, they report back to conservation commissions, planning boards, and boards of selectmen or municipal councils. It should be remembered that CNBRLAC representatives are all volunteers. While they may spark local interest and spur action, dedicated community engagement will be the key to implementing the outreach and education recommendations made in this plan.

3.6.1 Outreach and Education

CNBRLAC has identified the need for greater public outreach and education about a range of issues relating to river management. It is the accumulated effects of many individual actions that impact the condition of the rivers, and therefore, responsible individual behavior must be encouraged. Additionally, individual communities can greatly enhance protection for river resources through local regulatory, educational, and volunteer actions. Outreach efforts should focus on topics such as invasive species, habitat protection, stormwater runoff, responsible septic system management, litter, local and state regulations, and impacts of various land uses on water quality.

Several proposals for community engagement and public outreach have been suggested. Elementary and secondary school students could help identify and map some of the invasive species. Another

possible partner is the Harris Center for Conservation in Hancock. Education can also be tied into public events like river clean-ups, as well as targeted at those using the rivers for forms of recreation that pose the greatest potential danger to the rivers' health, such as anglers and boaters. Information could be included with purchase of fishing licenses and motor boat registrations. Educational materials such as brochures and signs for boaters, including motorboat users, can also be available at boat launches.

3.6.2 Expanded Planning Efforts Throughout the Watershed

A watershed-scale approach to planning can help to protect the rivers' tributary streams and ponds which replenish the river. This approach requires coordination within each watershed community with Planning Boards, Boards of Selectmen, and especially Conservation Commissions. It also requires intermunicipal communication and cooperation to achieve goals set for the entire watershed. Because they provide regional services, CNBRLAC and the two regional planning commissions are the logical entities to launch such efforts.

Planned and potential activities include:

- CNHRPC and SWRPC assist CNBRLAC in initiating coordination with local boards and committees by giving presentations of the Plan and its goals to each community, and by providing print copies of the plan and a general summary of the plan.

- CNHRPC distributes maps to each municipality showing hydrological features, recreational access points, zoning, and important wildlife habitat. CNBRLAC may also develop maps with delineated watersheds, aquifers, wellhead protection areas, and historic and cultural sites. With such maps, communities can use an integrated approach to planning for water-related resources, which may include management of public access points and cultural resources, as well as protecting water quality and quantity.

- CNBRLAC distributes current VRAP and other river data in a timely and consistent manner to all riverfront and/or watershed communities.

- CNBRLAC representatives coordinate educational events and develop informative material (flyers, brochures, posters) to be distributed at community festivals, fairs, and other gatherings. Cooperation with local committees and groups should be maximized to reach the widest possible audience and share resources.

- CNBRLAC members coordinate intermunicipal efforts such as an organized river clean-up day, a river-wide paddling day, bike race, bird count, or historical site tour, where river protection efforts can be highlighted.

- CNBRLAC coordinates with NHDES and NHFGD to hold educational public workshops on low-impact development (LID) techniques, responsible septic system management, CSPA regulations, and invasive species.

- CNBRLAC consults with NHFGD and NHDES about the possibility of distributing educational information pertaining to habitat preservation, litter, and invasive species mitigation with all fishing and hunting licenses.

- CNBRLAC consults with riverfront community conservation commissions to identify and prioritize parcels for conservation, based on importance to river protection, overall natural resource value, and threat of development.

- CNBRLAC establishes an archive or data clearinghouse to hold all of the data and information that has been collected over the years and makes it available to the public at a single site.

- CNBRLAC coordinates with NHDES to post recent and historical river data on the state's website, to continue reporting current data, and to make it available to the public.

These efforts are to be undertaken as time and resources permit. When conducting outreach efforts, the focus should be on riverfront communities first, and then on additional watershed municipalities when and where possible. The implementation of these efforts is described in more detail in Section 6 below.

4 Community Input

4.1 Stakeholder Survey

CNBRLAC mailed a survey to riverfront landowners and posted a stakeholder survey on the website Survey Monkey from October 2009 through December 2009. Public officials in the fourteen communities were also asked to complete the survey. The total number of respondents was 106. Most of the respondents came from the towns of Peterborough (22 respondents), Henniker (22 respondents), Antrim (14 respondents), Hillsborough (14 respondents), and Hopkinton (14 respondents). Other towns with significant numbers of people completing the survey were Bennington (11 respondents), Hancock (8 respondents), and Greenfield (7 respondents). Only one response was received from Concord. Most of the survey respondents (76%) own land that abuts the Contoocook or North Branch Rivers. Complete survey results can be found in **Appendix J**.

Recreational Activities and Other Enjoyed Values

The values most cited by survey respondents as things they enjoy about the river are:

- Aesthetic qualities such as views and sounds (69%);
- Wildlife/fishing (49%); and,
- Canoeing/kayaking/boating (29%).

Other important values are listed were quietness/privacy (19%); other recreation such as hunting/hiking/biking (18%); cleanliness (16%); and, undeveloped space/greenspace (12%).

When asked about recreational activities performed by households on or along the river, walking was the most cited (79%), followed by

canoeing/kayaking (70%), birding/wildlife watching (63%), fishing (60%), nature photography (39%), swimming (37%), and cross-country skiing (26%).

Public Access

Close to half of survey respondents allow some public access to their land for recreational purposes. Of those allowing some access, the most popular responses for what activities they allow for were:

- Fishing (15%);
- All activities listed in the survey (11%);
- Walking (10%); and,
- Canoeing/kayaking (9%).

A majority of respondents said that they had experienced no problems related to public use of the river on or near their property. Some respondents reported problems with litter (7%), noise (7%), trespassing (4%), and problems with motorized boats such as noise, wake, invasive species, and oil/gas residues (3%).

Concerns and Protection Strategies

Those surveyed noted the following trends along the river:

- Excessive erosion and/or bank destabilization (43%);
- Recreational abuses such as excessive noise and litter (43%);
- Stormwater runoff /non-point source pollution (31%);
- Exotic species (29%);
- Illegal dumping (23%);
- Lack of enforcement (22%); and,
- Sedimentation (21%).

The top-ranked strategies identified in the survey for protecting the rivers include:

- More incentives for landowners to voluntarily manage land appropriately (16%);
- Wetland conservation and protection (15%);
- Water quality monitoring with local volunteers (15%);
- No additional protection needed (15%);
- Limit shoreline development through land use zoning (14%);
- Conservation easements to protect sensitive areas (13%);

- Landowner education (13%); and,
- Community education (11%).

4.2 Public Meetings

CNHRPC and CNBRLAC held a public meeting on January 25th, 2010 to invite public comment on the Contoocook and North Branch Rivers existing resources and how best to manage and protect these resources. At the meeting the participants were divided into three breakout groups, and asked to discuss recreational activities and other valued resources of the river, concerns relating to the river, and visions for the future of the river and ideas for how it should be protected. Each breakout group had a chance to answer all three sets of questions. To garner the widest array of participation possible, facilitators in each group documented all ideas and thoughts produced by group members.

For recreational activities, participants named activities they enjoyed, those which they have seen others enjoying, and which non-recreational resources they associated with the rivers. Recreational activities cited were water sports (canoeing, kayaking, boating, and tubing), winter sports (skiing, snowmobiling, and car racing, sailing, and mountain biking on ice), hunting and fishing, wildlife watching and photography, and walking. For non-recreational resources, participants mentioned personal enjoyment - such as the rivers' quiet and other aesthetic values, wildlife and plant community habitat, economic development – such as tourism from trails and other recreational attractions and increased property values, and historic or cultural resources such as former mill sites.

On the subject of concerns, participants talked about the most pressing threats to the rivers, any recent land use trends noticed along the river, and recommendations for protecting the river through better coordination among the State, the Local Advisory Committee, the regional planning commissions, and the communities. The concerns mentioned were related to the number or quality of access points, trespassing or unauthorized use of property, invasive aquatic species such as milfoil and purple loosestrife, contamination such as road salt and gravel pit sediment, regulation being either excessive or not enforced enough, land development, litter, and erosion. Participants were also asked to place the location of any sites along the rivers that were seriously degraded in one of various ways on provided maps.

Regarding the vision for and future management of the river, participants were asked about their ideas for making the river healthy, vibrant, and inviting and ensuring that natural and recreational resources flourish over the next fifteen years. Participants were also asked about specific project ideas or opportunities for improving the rivers. Many participants talked about the need for more comprehensive education on invasive species and other threats to water quality, and habitat needs, including outreach in schools, signs, and brochures for the public. Participants also mentioned the need for more town involvement, to educate the public, conduct clean-ups, and move landfills further from the rivers. Other ideas discussed were removal of inactive dams and refurbishment of former mill and industrial buildings. Specific project ideas included converting either the Henniker Paper Mill or Hillsborough Woolen Mills to parks/museums, upgrading the rail trail in Henniker for recreational use, and establishing local historic districts like the one in Bennington.

CNHRPC and SWRPC have incorporated public input in this plan and publicized it throughout the riverfront communities by posting the stakeholder survey online, advertising and organizing the public visioning session, collecting public comments on the draft, and assisting CNBRLAC in publicizing and presenting the final plan to each community.

5 Goals and Objectives

Based on survey results, comments from the public meeting, and local knowledge, CNBRLAC members generated the following goals and objectives for the management and protection of the Contoocook and North Branch Rivers. An implementation schedule for each objective follows this section, suggesting responsible parties and an expected timeframe for completion.

Water Resources: Quality, Quantity, and Stream Channel Integrity

Goal 1: Protect water quality and quantity for current and future uses.

Objectives:

1. **VRAP data collection:** Continue to gather water quality data as part of the Volunteer River Assessment Program (VRAP). Additionally:
   - Increase the number of VRAP monitoring sites
   - Increase the measurement period
   - Recruit more volunteers
   - Expand VRAP efforts to study macroinvertebrates

2. **Communication:** Improve education and information sharing with local organizations. For example:
   - Distribute VRAP and other data consistently to each municipality

3. **Water quality protection efforts:** Develop and distribute to municipalities and private landowners material on responsible practices to protect water quality, including:
   - Prevention of non-point source pollution
   - Responsible septic system management

4. **Stormwater prevention education:** Conduct educational and outreach efforts on low impact development (LID) practices to increase permeability and prevent excessive Stormwater runoff.

Goal 2: Maintain proper stream channel integrity to ensure high water quality, stable flow patterns, and intact riparian habitat.

Objectives:

5. **Vegetation maintenance:** Work with property owners and the New Hampshire Department of Environmental Services (NHDES) to clear major tree and brush obstructions to allow passage of anglers and small watercraft.

6. **Assess Fluvial Erosion Hazards:** Advocate for the Contoocook and North Branch Rivers to be part of NHDES's Fluvial Erosion Hazard study program.

7. **Permit Review:** Continue efforts to support NHDES through review of dredge and fill permits and erosion restoration efforts.

Plant and Wildlife Resources

Goal 3: Identify, remove, minimize, and prevent the spread of invasive plant species along the rivers.

Objectives:

8. **Control and mitigation:** Work with NHDES and others to better control and mitigate invasive species and nuisance plants in and along the rivers.

9. **Invasive species education:** Invite NHDES staff to attend CNBRLAC meetings and/or other events to provide education on invasive species and control methods.

10. **Data storage and dissemination:** Create a database for plant data collection. Additionally:
    - Place database online for public use
    - Contact NHDES about storing data on the state website
    - Identify a physical site for a data archive that could hold both electronic and hard copy data

Goal 4: Preserve and enhance wildlife habitat dependent upon the river so as to support present and future wildlife populations.

Objectives:

11. **Public events:** Organize public forums and clean-ups involving participation of municipal officials, riparian landowners, and river users to raise awareness about habitat protection.

12. **Litter prevention:** Work with New Hampshire Fish and Game and licensing outlets to include with all fishing licenses educational materials on the need to remove litter from the river

13. **Landowner guide:** Provide information on threatened and endangered species, and their habitat requirements, in a guide for landowners.

14. **Target preservation efforts:** Identify areas along the rivers that contain particularly valuable and/or fragile habitat to target for preservation.

15. **Data storage and dissemination:** Create a database for wildlife data collection. Additionally:
    - Place database online for public use
    - Contact NHDES about storing data on the state website
    - Identify a physical site for a data archive that could hold both electronic and hard copy data

Recreational Resources

Goal 5: Maintain and encourage safe and responsible public access and use of the rivers' resources.

Objectives:

16. **Access points:** Distribute information on recreational access points to the public.

17. **Signage:** Post signs relating to litter, invasive species, and boat speed.

18. **Events:** Develop and distribute information at related recreational events.

19. **Coordinate with local recreational groups:** Work with town recreational departments or committees to coordinate events and identify information-sharing opportunities.

Land Use and Development

Goal 6: Minimize impacts of development within the river corridor.

Objectives:

20. **Project Review:** Work with local Planning Boards, Conservation Commissions, and regulatory agencies in the continued review of projects relating to development within the river corridor.

21. **Identify conservation opportunities:** Identify parcels in current use and encourage municipalities to target key parcels for conservation.

22. **Advocate for conservation:** Encourage municipalities to devote more resources to conservation acquisitions and easements, maximizing both public and private resources.

23. **Maximize resources:** Work with municipalities to take advantage of state and other funding opportunities to protect and preserve ecologically significant land and habitat.

24. **Education on land use impacts:** Educate municipal officials and landowners on impacts of land use on the river corridor.

Historical and Cultural Resources

Goal 7: Protect and preserve important historical and cultural resources.

Objectives:

25. **Inventory resources:** Identify existing historical and cultural resources within the river corridor.

26. **Target preservation efforts:** Work with historical societies in each municipality to identify opportunities for inclusion of sites in local, state, and federal preservation programs.

27. **Coordination of preservation efforts:** Visit individual historical societies to share information and seek collaboration on historical and cultural preservation efforts.

River Corridor and Watershed Planning

Goal 8: Implement a workable River Corridor Management Plan.

Objectives:

28. **Maps:** Create maps to be distributed to each municipality showing delineated watersheds, aquifers, wellhead protection areas, recreational access points, and historic sites.

29. **Expand planning efforts:** Widen planning efforts throughout the Contoocoook River Watershed to include tributary areas.

30. **Communicate the Plan:** Present the Management Plan in each municipality to ensure that Planning Boards, Conservation Commissions, and Boards of Selectmen are aware of the Plan and its goals.

31. **Plan Dissemination:** Provide a general informational summary of the Plan to each town.

6 Implementation Plan and Schedule

The following Implementation Plan and Schedule starts with objectives listed in Section 5 above, assigns a responsible party or parties, and suggests a timeframe to undertake the action. Timeframes listed are either short term (immediately to within one year), medium term (1-3 years), or long term (4+ years). CNBRLAC will review this plan and schedule on a regular basis (quarterly or annually) to prioritize its work plan and will revise or update the schedule as required.

	Objective	Responsible Parties/Estimated Costs	Timeline
Water Resources: Quality, Quantity, and Stream Channel Integrity Goals			
Goal 1: Protect water quality and quantity for current and future uses.			
	VRAP data collection: Continue to gather water quality data as part of the Volunteer River Assessment Program (VRAP). Additionally: increase the number of VRAP monitoring sites; increase the measurement period; recruit more volunteers; and expand VRAP efforts to study macroinvertebrates.	CNBRLAC/ $2000 To purchase VRAP Testing Kit	Ongoing
	Communication: Improve education and information sharing with local organizations. For example: distribute VRAP and other data consistently to each municipality.	CNBRLAC/ $500 to Generate and Distribute Summaries	Start Summer 2011 – then annual summaries
	Water quality protection efforts: Develop and distribute to municipalities and private landowners material on responsible practices to protect water quality, including: prevention of non-point source pollution; and responsible septic system management.	CNBRLAC with NHDES & NHFGD $2000 to generate and distribute materials	May 2011 to Sept 2011

Goal 2: Maintain proper stream channel integrity to ensure high water quality, stable flow patterns, and intact riparian habitat.		Responsible Parties/Estimated Costs	Timeline
	Permit Review: Continue efforts to support NHDES through review of dredge and fill permits and erosion restoration efforts.	CNBRLAC and NHDES Cost 40+ in-kind hours to review permits per year	Ongoing

Plant and Wildlife Resources Goals

Goal 3: Identify, remove, minimize, and prevent the spread of invasive plant species along the rivers.		Responsible Parties/Estimated Costs	Timeline
	Control and mitigation: Work with NHDES and others to better control and mitigate invasive species and nuisance plants in and along the rivers.	CNBRLAC, NHDES, local groups/ 30 in-kind hours	Summer 2011
	Invasive species education: Invite NHDES staff to attend CNBRLAC meetings and/or other events to provide education on invasive species and control methods. Distribute pamphlets to municipalities	CNBRLAC and NHDES/ $750 to generate and distribute education pamphlets	Summer 2011
	Data storage and dissemination: Create inventory and a database for plant data collection. Additionally: place database online for public use; contact NHDES about storing data on the state website; and identify a physical site for a data archive that could hold both electronic and hard copy data.	CNBRLAC, NHDES, and municipalities/ $1500 for boat/equipment rental to conduct inventory. 40+ in-kind hours to set up and maintain database	Fall 2011
Goal 4: Preserve and enhance wildlife habitat dependent upon the river so as to support present and future wildlife populations.		**Responsible Parties/Estimated Costs**	**Timeline**
	Public events: Organize public forums and clean-ups involving participation of municipal officials, riparian landowners, and river users to raise awareness about habitat protection.	CNBRLAC, municipalities, and local groups $2000 to market and organize public events, including cleanups	fall 2011 and spring 2012
	Litter prevention: Work with New Hampshire Fish and Game and licensing outlets to include with all fishing licenses educational materials on the need to prevent/remove litter from the river.	CNBRLAC and NHFGD 25 in-kind hours to collect information, $500 to distribute information	Spring 2012

	Landowner guide: Provide information on threatened and endangered species, and their habitat requirements, in a guide for landowners.	CNBRLAC, NHFGD, and municipalities/ $250 to distribute information to abutters	
	Target preservation efforts: Identify areas along the rivers that contain particularly valuable and/or fragile habitat to target for preservation.	CNBRLAC and conservation commissions $500 to conduct inventories/maps	
	Data storage and dissemination: Create a database for wildlife data collection. Additionally: place database online for public use; contact NHDES about storing data on the state website; and identify a physical site for a data archive that could hold both electronic and hard copy data.	CNBRLAC and NHDES Tie into other database	

Recreational Resources Goals			
Goal 5: Maintain and encourage safe and responsible public access and use of the rivers' resources.		**Responsible Parties/Estimated Costs**	**Timeline**
	Access points: Distribute information on recreational access points to the public.	CNHRPC, SWRPC, CNBRLAC, and municipalities $250 to distribute current maps	Fall/winter 2011
	Signage: Post signs relating to protection designation, litter, invasive species, and boat speed.	Municipalities, landowners, and CNBRLAC/ $2500 to purchase signs	Spring 2012
	Events: Develop and distribute information at related recreational events.	CNBRLAC and local groups/ In-kind hours	Ongoing
	Coordinate with local recreational groups: Work with town recreational departments or committees to coordinate events and identify information-sharing opportunities.	CNBRLAC and local groups/ in-kind Hours	Ongoing

Land Use and Development Goals			
Goal 6: Minimize impacts of development within the river corridor.		**Responsible Parties/Estimated Costs**	**Timeline**
	Project Review: Work with local Planning Boards, Conservation Commissions, and regulatory agencies in the continued review of projects relating to development within the river corridor.	CNBRLAC, local boards and commissions, and NHDES/ In-kind Hours	ongoing
	Identify conservation opportunities: Identify parcels in current use and encourage municipalities to target key parcels for conservation.	CNBRLAC, conservation commissions, and municipalities/ In-kind hours	ongoing
	Advocate for conservation: Encourage municipalities to devote more resources to conservation acquisitions and easements, maximizing both public and private resources.	CNBRLAC, CNHRPC, and SWRPC	Ongoing
	Education on land use impacts: Educate municipal officials and landowners on impacts of land use on the river corridor.	CNBRLAC and municipalities/ In-kind hours	Ongoing

Historical and Cultural Resources Goals			
Goal 7: Protect and preserve important historical and cultural resources.		**Responsible Parties/Estimated Costs**	**Timeline**
	Inventory resources: Identify existing historical and cultural resources within the river corridor.	CNBRLAC and local groups/ In-kind hours +$250 research materials from NH Heritage Bureau	Fall/winter 2011
	Coordination of preservation efforts: Visit individual historical societies to share information and seek collaboration on historical and cultural preservation efforts.	CNBRLAC and historical societies/ In-kind hours	Start spring 2012

River Corridor and Watershed Planning Goals			
Goal 8: Implement a workable River Corridor Management Plan.		**Responsible Parties/Estimated Costs**	**Timeline**
	Maps: Create maps to be distributed to each municipality showing delineated watersheds, aquifers, wellhead protection areas, recreational access points, and historic sites.	CNBRLAC, CNHRPC, and SWRPC $2500 for map generation and distribution	Fall 2010- to fall 2011
	Communicate the Plan: Present the Management Plan in each municipality to ensure that Planning Boards, Conservation Commissions, and Boards of Selectmen are aware of the Plan and its goals.	CNBRLAC, CNHRPC, and SWRPC/ $1500 to make copies and distribute copies of the new river corridor management plan	Ongoing beginning 2010
	Plan Dissemination: Provide a general informational summary of the Plan to each town.	CNBRLAC, CNHRPC, and SWRPC	