

JUMP

Into Lake Management

*The New Hampshire
Guidelines for Coordinated
Lake Management
and Shoreland Protection Plans*

and

*The New Hampshire
Comprehensive Lake Inventory*

February 2009



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The New Hampshire Guidelines for Coordinated Lake Management and Shoreland Protection Plans

Prepared By:

NH Lakes Management and Protection Program
and the
NH Lakes Management Advisory Committee

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The New Hampshire Department of Environmental Services has prepared this document in accordance with RSA 483-A:7 wherein it is stated, "The lakes coordinator, in consultation with the advisory committee and with the cooperation and assistance of the Office of Energy and Planning, shall develop detailed guidelines for coordinated lake management and shoreland protection plans together with recommendations for implementation."

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A Letter from the NH Lakes Management Advisory Committee February 2009

Dear Reader,

It goes without saying that New Hampshire's lakes are one of its greatest assets along with spectacular mountains and our shared pride in our state and its heritage. Part of that heritage is the exercise of stewardship with respect to these great natural assets. We have the good fortune to have literally hundreds of people, many of whom are volunteers, and organizations across the state who prize our lakes and who understand that maintaining lake quality is critically important to not only continuing our enjoyment, but also in attracting visitors from far and wide to come and enjoy them with us.

It is important to realize that there is widespread interest in the lakes by folks across the economic spectrum, who come to our parks and lakes for a day or more of family swimming and picnicking; those who own shoreline property and in some cases have done so for generations; fishermen for whom the thrill of the catch never abates; motorized and non-motorized boaters; and the many service industry businesses who provide for our needs. These activities and others are a vital part of the state's economic engine. In 2006, total sales generated by travelers and tourists who fish, boat or swim in New Hampshire freshwaters contributed an estimated \$400 million dollars or 26 percent of the total amount spent during the summer months. This amount does not include property taxes paid by shorefront owners.

The *Guidelines for Coordinated Lake Management and Shoreland Protection Plans* document, which this letter introduces, assists lake associations, dedicated citizen volunteer groups, regional planners, town officials and others in achieving sustainable use and enjoyment of New Hampshire's lakes well into the future. It is the blueprint for developing and implementing recommendations to assure the long-term health and well-being of the lakes. The *New Hampshire Comprehensive Lake Inventory*, which was published in October 2008, provides the factual data upon which a management plan can be developed.

Make no mistake; the pressures on New Hampshire's lakes are substantial as more development occurs in the state. However, this does not have to mean continuing degradation of our lakes. To the contrary, there is no reason to predict such a trend unless we fail in our stewardship duties. Individual volunteers, associations, town and city governments and the state collectively play significant roles in lake preservation and they are performing admirably with many challenges yet to be met.

Our generational goal, like those who came before and those who will come after, is to make sure that the lake experience is all that we have come to expect and is in no way diminished. To meet that objective means devotion, dedication and above all participation in the process. Watch for the lake inventory and the lake protective planning process in your communities and if you don't find them, ask why!

Sincerely,



Philip J. O'Brien, PhD, Chair
NH Lakes Management Advisory Committee

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Preface

With nearly 1,000 surface waters ten acres or more in size, New Hampshire lakes and ponds are one of the state's greatest natural resources (DES, 2000). These surface waters not only provide abundant recreational opportunities, but historic, social, and economic values, as well. In conjunction with human-related benefits, recognizing the environmental qualities demonstrated by lakes and ponds, including the physical, chemical, and biological characteristics is also important.

In order to maintain these beneficial values, local involvement is essential. Residents can raise concerns, become educated about problems and work towards solutions when developing a lake management plan. Just like any organized group that shares a common goal you will be able to work out difficult problems by sharing objectives, knowledge and resources. You will also be able to collect information and data on a broad range of lake concerns (water quality, community surveys, watershed development and recreational use conflicts), gain a historical perspective from long-term residents, and create a long-range lake management plan with recommendations that address the lake issues specific to your community. Together you will have greater influence on local and state governments through lobbying and working with state agencies to help influence ordinances and regulations.

Lake management describes the art of balancing the multiple uses of lakes and ponds, and their associated tributaries, while attempting to restore or protect the natural, physical, chemical, and biological characteristics within a hydrographically defined geographic area. Unique and complicated demands are placed on lakes and ponds requiring a balance of human activities to protect, preserve and if necessary restore environmental quality. In response, complex and creative solutions are often required to meet societal desires, while simultaneously ensuring that the ecosystem's natural structure and function is capable of sustaining the biological community. The process of developing a lake management plan leads to the creation of cooperative partnerships among those with an interest in how surface waters are managed. It offers federal, state, and local communities, as well as the general public, the opportunity to promote environmentally responsible use of a watershed's land and water resources.

This document, developed in accordance with RSA 483-A:7, provides a comprehensive overview of the process for management plan development and implementation and addresses the issues that the NH General Court identified as important to lake management

Jump into Lake Management

This document contains the *New Hampshire Guidelines for Coordinated Lake Management and Shoreland Protection Plans* (Section 1) and the *New Hampshire Comprehensive Lake Inventory (Inventory)* (Section 2). While the *Inventory* is a tool to assist with the gathering of basic technical information regarding surface waters and their watersheds, the *Guidelines* document provides instructions on how to use the information to generate and implement a lake management plan tailored to address issues specific to a particular lake or great pond. Together, the *Guidelines* and the *Inventory* are intended to provide ideas, assistance, and direction to organizations and individuals who may not have extensive knowledge of lake management, but would like to participate in the preparation and implementation of a lake management plan. For

more information, please contact Jacquie Colburn via phone at (603) 271-2959 or via email at jacquie.colburn@des.nh.gov.

The development of a lake or watershed management plan often requires professional and financial assistance. The DES Watershed Management Bureau has pass-through federal money available for lake management; however, these funding sources have specific criteria that *must* be incorporated into the plan to address existing and future issues and needs in the watershed. To qualify for funding, it is important to identify and analyze potential funding sources prior to or early in the plan development process. Below is a list of approaches and potential funding sources. Please refer to Appendix F for more information.

Watershed Restoration Grants

The DES Watershed Assistance Section provides funds for Watershed Restoration Grants for *Impaired Waters*. These grants support local initiatives to control nonpoint source pollution and address pollution problems in impaired waters. Impaired waters are those that do not meet water quality standards. A subset of impaired waters are eligible for Watershed Restoration Grants based on the availability of watershed planning documents and an assessment of local capacity to restore impaired waters. *Management Plans for Watershed Restoration Grants need to include specific components that meet U.S. Environmental Protection Agency (EPA) criteria not outlined in this document.* In addition, other projects where impairments can be documented, and where local institutions have demonstrated their ability to manage projects, may also apply for these grants. Only projects that benefit waters that qualify for 303(d) listing as “impaired” under existing criteria are considered for funding. For more information please contact Eric Williams at (603) 271-2358 or via email at eric.williams@des.nh.gov or Jeff Marcoux at (603) 271-8862 or jeffrey.marcoux@des.nh.gov.

Watershed Assistance Grants

The DES Watershed Assistance Section also provides funds for Watershed Assistance Grants for *High Quality Waters*. These grants support local initiatives to control nonpoint source pollution and address pollution problems through local watershed management. High Quality Waters are those which have sufficient water quality data to show that they exceed water quality standards, but that action is needed to prevent significant water quality degradation. Projects must use a watershed-based approach and link specific practices to a quantifiable water quality goal. *Management Plans for Watershed Assistance Grants need to include specific components that meet EPA criteria not outlined in this document.* Funds for DES Watershed Restoration Grants and Watershed Assistance Grants are appropriated through the EPA under Section 319 of the Clean Water Act. For more information please contact Eric Williams at (603) 271-2358 or via email at eric.williams@des.nh.gov or Jeff Marcoux at (603) 271-8862 or via email at jeffrey.marcoux@des.nh.gov.

Regional Environmental Planning Program

The Regional Environmental Planning Program (REPP) was created within DES in recognition of the value of regional planning agencies (RPAs), in addressing environmental issues in New

Hampshire. Each RPA is provided \$25,000 annually for environmental planning work. The grant money supports projects such as nonpoint source pollution education and outreach, natural and cultural resource inventories, land protection, and open space planning. DES staff meets quarterly with the nine RPA directors to develop program priorities and assess progress. For more information please contact Eric Williams at (603) 271-2358 or eric.williams@des.nh.gov.

Water Quality Planning 604(b) Grants

Section 604(b) of the Clean Water Act requires DES to distribute funds to RPAs and the Connecticut River Joint Commissions for water quality management planning purposes. Funding is given to projects established under the NH Lakes Management and Protection Program in developing and implementing *Coordinated Lake Management and Shoreland Protection Plans* or *Comprehensive Lake Inventories* or assisting local river advisory committees under the NH Rivers Management and Protection Program in developing and implementing river and watershed plans or designated river nominations. A total award amount of \$80,000 is available every two years. Individual contracts range from a minimum of \$2,000 to a maximum of \$20,000 per year. Administrative costs must not exceed 20 percent of the total project budget. For more information please contact Laura Weit at (603) 271-8811 or laura.weit@des.nh.gov.

The New Hampshire Lakes Management and Protection Program

In 1990, the New Hampshire State Legislature recognized that human activities were affecting the state's surface waters and that these impacts may ultimately have environmental, social, and economic consequences. By enacting RSA 483-A, the Legislature established the Lakes Management and Protection Program (LMPP) as part of DES in order to ensure equitable management of New Hampshire's lakes and ponds. The statute also called for the creation of the Lakes Management Advisory Committee (LMAC) to advise the DES Commissioner and the DES Lakes Coordinator in carrying out the purposes of the statute. The committee is made up of 18 members, representing state agencies, municipalities, the conservation community, marine, tourism, real estate, business and industry interests and academia.

The statute outlines two specific goals for the Lakes Coordinator and the LMAC. First, according to RSA 483-A:5, the law requires that the Lakes Coordinator, in consultation with the LMAC and with the recommendations of the relevant bureaus within DES, prepare and submit to the Legislature proposed state level management criteria for the state's lakes. A document titled, *Lakes Management Criteria for New Hampshire State Agencies* was produced in 1996.

The second goal of the RSA imparts the LMPP with the responsibility to encourage and assist in the development of lake and shoreland management plans for the state's surface waters to address water-related issues and/or concerns.

***RSA 483-A:1 Statement of Policy.** New Hampshire's lakes are one of its most important natural resources; vital to wildlife, fisheries, recreation, tourism, and the quality of life of its citizens. It is the policy of the state to insure the continued vitality of New Hampshire lakes as key environmental, social, and economic assets for the benefit of present and future generations.*

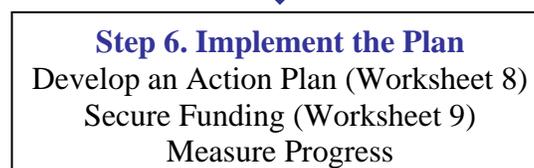
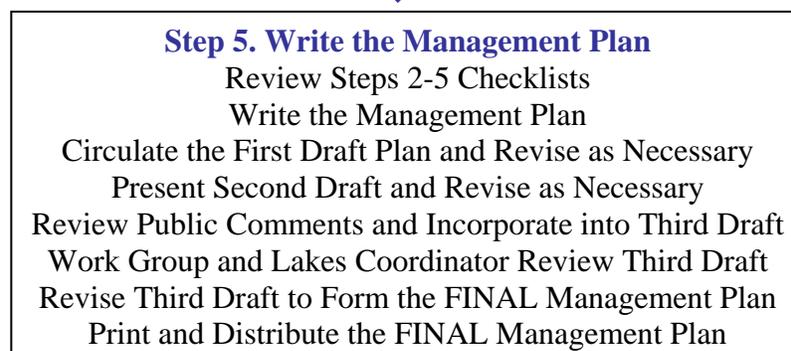
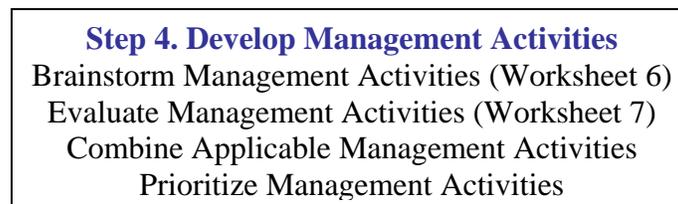
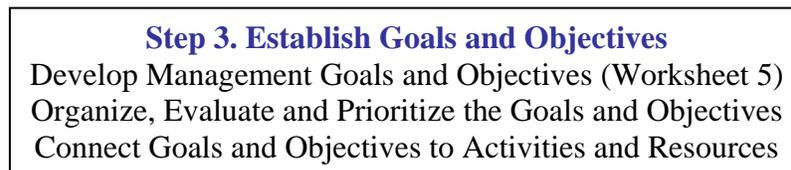
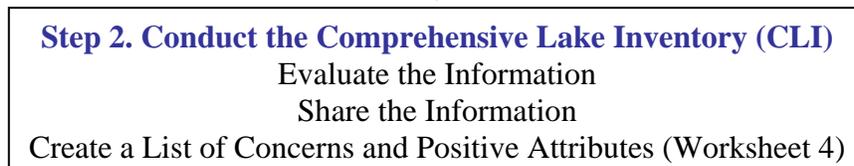
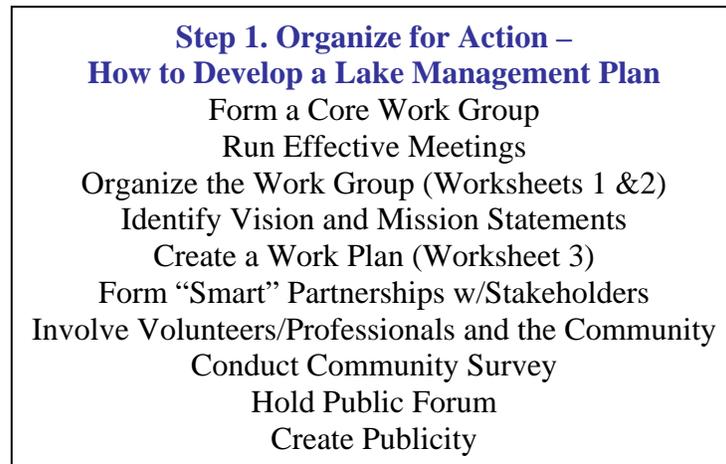
The state shall encourage and assist in the development of management plans for the waters as well as the shoreland to conserve and protect outstanding characteristics, including recreational, aesthetic, and community significance, so that these valued characteristics shall endure as part of lake uses to be enjoyed by the citizens of New Hampshire.

RSA 483-A:7, V Lakes Management and Protection Plans. *Lake and shoreland management plans shall address, but not be limited to, the following:*

- (a) Permitted recreational uses and activities.*
- (b) Permitted non-recreational uses and activities.*
- (c) Existing and future land uses.*
- (d) Protection of wetlands, wildlife, fish habitats, and other significant natural areas.*
- (e) Dams, bridges, and other water structures.*
- (f) Public access by foot and vehicle.*
- (g) Setbacks and other location requirements.*
- (h) Dredging, filling, mining and earth moving.*
- (i) Prohibited uses.*
- (j) Factors controlling water levels and flowage rights.*
- (k) Facilities appropriate to support approved lake uses.*
- (l) Water safety.*
- (m) Other factors affecting water quality.*

The development of a lake management plan is a collaborative effort between many municipalities, individuals and groups with the assistance from New Hampshire state agencies. The DES Watershed Management Bureau, the New Hampshire Office of Energy and Planning, and other state agencies are available to provide technical assistance with the development of a lake management plan.

Flow Chart for Developing a Coordinated Lake Management and Shoreland Protection Plan



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Acknowledgements

The New Hampshire Lakes Management Advisory Committee and the New Hampshire Department of Environmental Services would like to thank all of those individuals and organizations that work to maintain and improve lakes throughout the state. It is hoped that the information that is not only provided in this document, but derived from a lake inventory and a lake management plan, will allow lake and watershed stewards as well as policymakers and regulators to make balanced decisions regarding our lakes and ponds that will further the state's efforts to preserve these magnificent resources for present and future generations. As the state of New Hampshire continues to grow and more and more demands are placed on our natural resources, sound management decisions based on scientific and justifiable data and information are essential if the state is to provide an equitable lake experience for all, one which will not degrade the resource.

“A lake is the landscape’s most beautiful and expressive feature.

It is earth’s eye; looking into which the beholder measures the depth of his own nature.”

-Henry David Thoreau

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The State of New Hampshire's Lakes

The greatest threat to the water quality of New Hampshire's lakes is land conversion. For the past 40 years, New Hampshire's population has grown twice as fast as the rest of New England and this rapid growth is projected to continue. In areas of the state where the most development and land conversion is occurring, land conservation has lagged behind land development. Land development has outpaced land conservation in 130 communities, or 56 percent of all cities and towns. New Hampshire is losing about 17,500 acres of forestland every year (SPNHF, 2005). Research performed throughout the country has determined that impervious cover is a good general indicator of landscape change impacts on stream hydrology and biological health. The findings from over 225 research studies predict that most water quality indicators decline when watershed impervious cover exceeds 10 percent, with severe degradation expected beyond 25 percent impervious cover (Center for Watershed Protection, 2003).

Existing management efforts, by themselves, cannot halt water quality degradation. Continued declines in water quality will adversely affect quality of life of New Hampshire residents and will produce increasingly adverse economic impacts. A study conducted in 2002 determined that just four uses of the state's surface waters - boating, fishing, swimming, and drinking water supply services - contribute up to \$1.5 billion annually in total sales to the state's economy and merely the presence of surface waters boosts tax revenue by an estimated \$247 million per year in property taxes (Shapiro & Kroll, 2003). More recently, a survey of boaters, anglers, and swimmers determined that if these user groups *perceived* degradation in water clarity and purity their use of these surface waters would decline, resulting in an economic loss of \$51 million in total sales, \$18 million in personal income and more than 800 jobs statewide (Nordstrom, 2007).

Water quality assessments for New Hampshire's rivers and lakes are conducted on a biennial basis to describe the quality of its surface waters and analyze the extent to which they support fishing, swimming, and aquatic life. This information is then reported to Congress. Like other states, New Hampshire has a statewide freshwater fish consumption advisory in effect due to mercury levels found in fish tissue; the primary source of which is atmospheric deposition from both in-state and out-of-state sources. When this advisory is included in the assessment, all surface waters, are by definition, less than fully supporting of all uses. Because DES cannot unilaterally resolve the mercury issue as much of the mercury is not generated in-state, and to provide a more balanced or fair assessment of the state's surface waters, two assessments are provided; one which takes into account the mercury advisory and one which does not. The assessment that *does not account for mercury* conveys information that would otherwise be masked by the mercury advisory and more importantly, it represents information on impairments for which corrective action can be taken at the state level (Comstock and Edwardson, 2008). The following information was taken from the 2008 assessment.

There are a total of approximately 164,615 surface acres of lakes and ponds that need to be tested. For the "swimming" designated use, 22 percent of the state's surface water acres have not yet been assessed. Of the 78 percent of the surface water acres that have been assessed, 90 percent support swimming while 10 percent do not. For the "aquatic life support" designated use 38 percent of the states surface waters have not been assessed. Of the 62 percent that have been assessed, 0 percent fully supports aquatic life while 100 percent do not. The majority of lakes that do not fully support aquatic life (70 percent) are due to pH values that fall below the minimum pH water quality standard of 6.5. In many cases the pH readings were just below the standard (i.e., between 6.0 and 6.5) and are not expected to result in any significant adverse impacts to aquatic life (81 percent of pH impaired lakes). The source of low pH is primarily

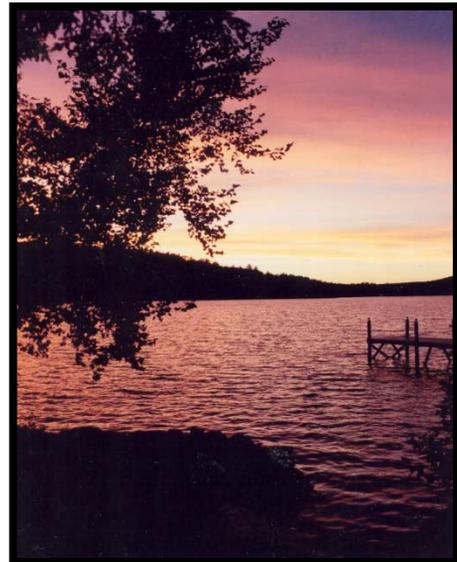
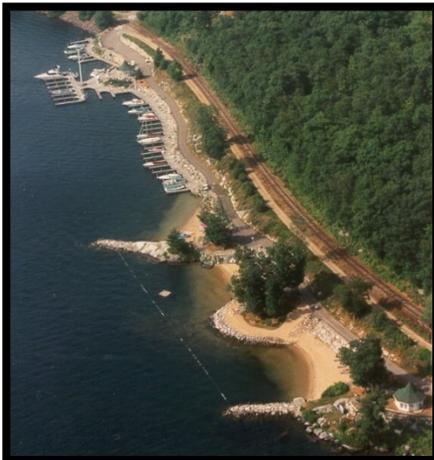
attributable to deposition of acids in the atmosphere when it rains (i.e., acid rain). The source of acidifying pollutants in the atmosphere is air emissions, primarily from fossil fuel burning power plants and motor vehicles. Since 1991, New Hampshire has taken active steps to reduce emissions from within the state. While some emissions still occur from within New Hampshire, the majority of emissions are from sources outside of the state.

Cyanobacteria are a growing concern in New Hampshire. Cyanobacteria are microorganisms that photosynthesize. Many species of cyanobacteria can accumulate to form surface water blooms. They are blue-green in color and may consist of thousands of individual cells. An increase of phosphorus in combination with increased sunlight and warmer water temperatures often accelerates the production of cyanobacteria growth in a lake. Several cyanobacterial species produce toxins (cyanotoxins) that can cause both acute and chronic problems in humans. The possible effects of cyanobacteria on New Hampshire lakes and their natural inhabitants, such as fish and other aquatic life, are under study at this time. The Center for Freshwater Biology (CFB) at the University of New Hampshire is currently examining the potential impacts of these toxins upon the lake food web. The potential human health hazards via exposure through drinking water and/or during recreational water activities are also a concern to the CFB and DES (DES, 2002).

Other issues include invasive species, aquatic habitat and climate change. As of 2007, there were 72 documented infestations of exotic species, including Didymo, in the state's lakes and rivers (DES, 2008). Local meteorological records indicate that spring is arriving earlier, summers are growing hotter and winters are becoming warmer and less snowy (Frumhoff et.al., 2007). These weather changes will impact our aquatic resources; some species may not be able to tolerate the warmer water temperatures. Warmer weather will extend the water recreation season and more and more people will use our waters seeking relief from increasing temperatures. Droughts may occur with greater frequency and duration, stressing those surface waters that supply drinking water. Storm events are expected to be more severe and frequent, contributing greater volumes of nutrient laden waters into our lakes and rivers (Frumhoff et.al., 2007).

As noted above, accelerated development and increased impervious surfaces in our watersheds are deteriorating our surface waters. The volume and frequency of stormwater runoff is increasingly more damaging to aquatic systems. Climate change as well is altering our weather and our environment. Even though these factors can be challenging to address, they should be taken into consideration when developing a *Coordinated Lake Management and Shoreland Protection Plan*, since a *Coordinated Lake Management and Shoreland Protection Plan* is the single most effective tool a community can develop to protect its lake or pond.

The New Hampshire Guidelines for Coordinated Lake Management and Shoreland Protection Plans



**New Hampshire Department of
Environmental Services
February 2009**



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Introduction

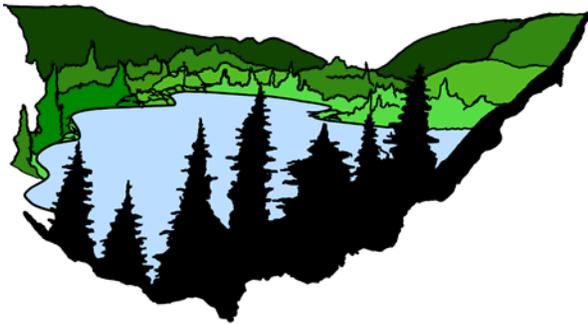
New Hampshire's Lakes

New Hampshire's lakes and great ponds are a source of pride for locals and an attraction for travelers from around the world. While the surface waters of New Hampshire provide excellent recreational opportunities and increase the quality of life in the state, their appeal is ultimately leading to their degradation. Unfortunately, many of New Hampshire's lakes and ponds suffer from **cultural eutrophication**, an increase in nutrient and sediment loading caused by human influence. Cultural eutrophication is caused by **landscape change**, the conversion of forested land to a more developed or built environment. Replacing the natural landscape with **impervious surfaces**, such as driveways, sidewalks, rooftops, parking lots, and roads, prevents **stormwater runoff** from naturally soaking into the ground. Stormwater runoff occurs when rainfall or snowmelt flows over the ground picking up pollutants, and additional nutrients such as phosphorus and nitrogen, carrying them to a stormwater system or to the nearest river or lake. *Anything that enters a stormwater system is discharged untreated into the nearest surface water.* The surface waters in the state have aged as much in the past 30 years as they have in the past 10,000 years, hastening the transformation of lakes into bogs, swamps, or marshes (Gibbs, 1999). As New Hampshire maintains its position as the fastest growing state in New England, an increase in the level of human impact on the state's lakes and ponds has the potential to spoil those natural resources which drew us here to begin with (Markham, 2003).

**A Clean Lake is
a Reflection of Us All!**

Clean Water Pays

New Hampshire's natural resources provide a plethora of benefits to the state, its residents, and visitors. Findings from a recent study confirm that freshwater fishing, boating and swimming bring significant revenue to the New Hampshire economy. About \$379 million in total sales is generated by fishing, boating or swimming in New Hampshire freshwaters, or about 26 percent of all summer spending in New Hampshire. In fact, 79 percent to 94 percent of recreationalists report high levels of satisfaction with the water quality, clarity and purity, natural views and scenery, crowding levels and water levels and flows. However, half to two-thirds of visitors would decrease or cease their visiting days to a particular site if they *perceived* a decline in water



clarity and purity, natural views and scenery, crowding levels and water levels and flows, resulting in about \$51 million of lost sales, \$18 million in lost income and more than 800 lost jobs statewide (Nordstrom, 2007). While many of us consider lakes and ponds to be "priceless" due to their intrinsic benefits and irreplaceable nature, the actual monetary value of these resources is crucial to the state's economy.

One key to maintaining the economic benefits that are derived from New Hampshire's lakes and ponds is water clarity, a direct measure of water quality. Water clarity is linked to two substantial sources of the state's revenue, recreation and lakefront property values. An increase in water clarity has been shown to increase recreational use on a waterbody, thereby increasing the number of jobs and the revenue produced in relation to these activities. A study in Maine found that simply by increasing the water clarity of the state's lakes by 4.5 feet (36 percent increase), the state will increase recreational use by 1.6 million user days (13 percent increase) (Boyle & Schuetz, 1997). An increase in water clarity has also been statistically confirmed to increase property values and lakefront sales. A study conducted in 2000 on New Hampshire's lakes revealed that 76 percent of waterfront property buyers inquired about lake water clarity prior to making a purchase. Water clarity affected the purchasing decision of 45.5 percent of all survey respondents (Gibbs, 2000). New Hampshire's lakes and ponds are essential contributors to the state's economy. To continue to derive economic benefits from these sources, it is imperative that their quality be maintained.

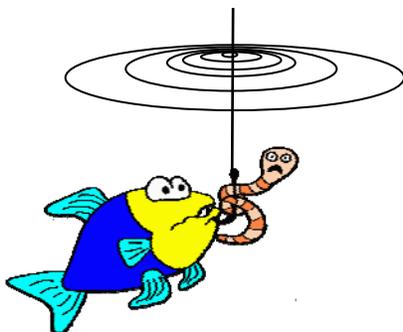
Public Surface Waters

The State of New Hampshire has declared lakes and ponds, ten acres and greater in size, to be public surface waters. In short, the lakes and ponds in the state belong to everyone. A person who lives 50 miles or even 1,000 miles away has the same rights to surface waters as a shorefront landowner. These rights are outlined in RSA 271:20 I, which states: "All

natural bodies of fresh water situated entirely in the state having an area of ten acres or more are state-owned public waters, and are held in trust by the state for public use; and no corporation or individual shall have or exercise in any such body of water any rights or privileges not common to all citizens of this state; provided, however, the state retains its existing jurisdiction over those bodies of water located on the borders of the state over which it has exercised such jurisdiction." Please refer to Appendix D for more information on the responsibilities of federal and state agencies in regards to lakes. With the designation of public waters also comes a responsibility on everyone's part to ensure the continued stewardship of these resources into the future.



*Don't get caught
without a
management plan!*



Shoreland Protection

The New Hampshire Comprehensive Shoreland Protection Act (CSPA), RSA 483-B, originally enacted in 1991 established standards for the subdivision, use and development of the shorelands of the state's public waters. The standards of the CSPA are designed to ensure that development within the **protected shoreland** occurs in a manner that protects water quality. The protected shoreland is all the land located within 250 feet of the **reference line** of public waters. The reference line is

the delineation between the water and the land for the purposes of the CSPA. Among other things, the standards establish:

- Setbacks for septic systems.
- A 50 foot primary building setback.
- A 150 foot natural woodland buffer.
- Stormwater and erosion control requirements.
- Density requirements for new lots.
- Restrictions on the use of fertilizer.
- Restrictions on salt storage yards, junk yards and solid waste facilities.
- Urbanized shoreland exemption.
- Impervious surfaces allowances of up to 20 percent of the area within the protected shoreland and up to 30 percent with additional stormwater protections.
- A waterfront buffer, within 50 feet of the reference line, where at least a minimum level of tree and sapling cover must be maintained.
- A state shoreland permit for many excavation, construction and filling activities within the protected shoreland.

All activities that are regulated by DES must also comply with applicable local, state and federal regulations. If local land use regulations or zoning ordinances are more stringent than state or federal regulations, the stricter provisions must be met.

Getting Started

Since there is no “one size fits all” pre-made management plan that can be applied to all lakes, this guide breaks down the management planning process into six simple steps. These steps will tailor each management plan to the specific characteristics of each lake or pond and its watershed. Developing a lake management plan will take time and effort and can be a complicated process due to the complexity of lake systems and the diversity of stakeholder interests. To simplify the management planning process, this guide provides step-by-step instructions (see list below), while offering ideas, additional resources, and encouraging innovative thinking.

STEP-BY-STEP

General Info on Lakes, Shorelands and Watersheds

Step 1. Organizing for Action - How to Develop a Lake Management Plan

Step 2. Conducting the *New Hampshire Comprehensive Lake Inventory*

Step 3. Establishing Goals and Objectives

Step 4. Developing Management Activities

Step 5. Writing the Management Plan

Step 6. Implementing the Management Plan

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General Information on Lakes, Shorelands and Watersheds

- Lake Ecology
- Lake Morphology
- Lake Productivity
- Shoreland Ecology
- Watersheds and Development



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Lake Ecology

To effectively manage New Hampshire's lakes and ponds, it is important to first understand both *limnology* and, more specifically *lake ecology*. While it is not necessary for those involved in the management process to be scientists, lake management does require a general awareness of basic scientific principles.

Limnology: The study of waters contained within continental boundaries including lakes, ponds, reservoirs, streams, rivers, wetlands, and estuaries.

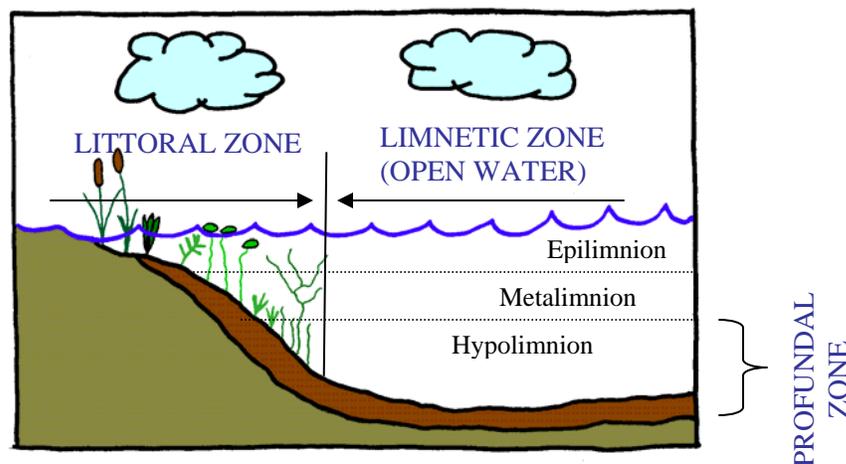
Lake ecology: The study of the physical, biological, and chemical characteristics of a lake and how these characteristics relate to living organisms.

One key to understanding lake ecology is knowledge of lake variability. While lakes and ponds may seem like large bathtubs with uniform conditions throughout, these surface waters are in fact heterogeneous. Upon close inspection, one will discover that the physical, biological, and chemical characteristics of each lake are exceptionally variable. It is possible for a single lake to have many distinct areas in terms of light levels, temperature, currents, nutrients, growth rates, etc. When developing a management plan for a particular lake or pond, it is important to consider lake variability.

Lake Morphology

Biological Zones

A typical lake or pond consists of distinct zones where different biological processes occur. The *littoral zone* is the near-shore area where sunlight penetrates to the sediment, allowing aquatic plants (*macrophytes*) to grow. Contrasting to the littoral zone is the *limnetic (pelagic) zone* of a lake, which is simply the open water area. This is the deeper portion of the lake where light usually cannot penetrate completely. Algae, fish, and microscopic animals dominate this zone. Below the limnetic zone is the *profundal zone*. This is the deepest portion of the lake where light does not penetrate. This zone is dominated by decomposers (bacteria and fungi) that consume the oxygen produced in the other zones. It is important to note that some lakes or ponds are so shallow that they may not have a pelagic and/or profundal zone.



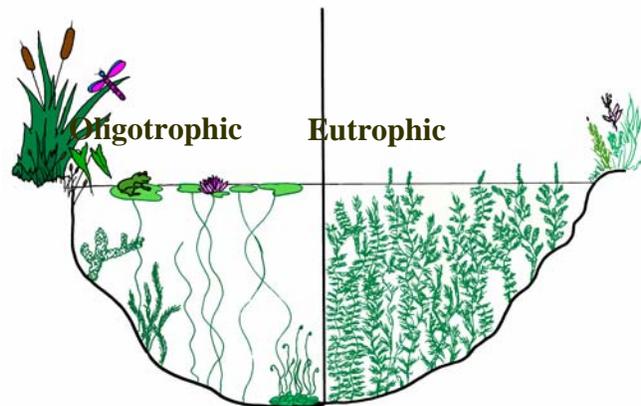
Physical Layers

In addition to these three zones, deeper lakes can be composed of distinct layers that are separated by abrupt water temperature changes called *thermoclines*. The warmer, top layer of water, where *photosynthesis* occurs, is called the *epilimnion*. At the bottom of the lake is the colder, denser water of the *hypolimnion*. The middle layer, the *metalimnion*, acts as a transition zone between the epilimnion and the hypolimnion. When a lake is stratified, the epilimnion and the hypolimnion nearly function as separate waterbodies in terms of temperature, oxygen content, and mixing. As seasons change, the epilimnion cools and becomes denser and eventually sinks to the bottom, mixing with the hypolimnion. This process, called *lake turnover*, occurs twice a year (spring and fall) in temperate zones, and once a year in other climates. Lake turnover allows the hypolimnion to contact the atmosphere, raising that layer's oxygen content and temperature. In the winter and summer, when the lake is stratified, it is possible for the hypolimnion to become oxygen depleted. This depletion may result in fish kills.

Lake Productivity

When studying lakes and ponds, *limnologists* collect information to classify them in terms of their *trophic status*. The trophic status of a lake is the extent to which nutrient enrichment affects the overall productivity of the system. There are three main factors that influence the trophic state of a lake, 1) rate of nutrient supply, 2) climate, and 3)

shape of the lake basin. These factors interact to age lakes from *oligotrophic* to *eutrophic*. This natural process whereby lakes form, evolve, and disappear, called eutrophication, normally takes thousands of years to progress. Unfortunately, in many lakes and ponds including some in New Hampshire, anthropogenic (cultural) eutrophication causes lakes to age much more quickly than they would naturally. The excessive addition of nutrients (primarily phosphorus) by humans has resulted in an accelerated rate of aging for many lakes. Cultural eutrophication has made surface waters worldwide more susceptible to algal blooms, oxygen depletion, loss of water depth, and aquatic weeds.



Oligotrophic: Low nutrient concentrations and plant growth; clear water; and dissolved oxygen at all depths.

Mesotrophic: Moderate nutrient concentrations and plant growth; moderately clear water; and a hypolimnion that may lack oxygen in summer.

Eutrophic: High nutrient concentrations and plant growth; algae dominate during summer; cloudy water; and a hypolimnion that lacks oxygen in summer.

Shoreland Ecology

Vegetative shoreland buffers, located along lakes, rivers, streams, wetlands, and ponds are the single most effective protection for water quality and wildlife habitat protection. These strips of grass, shrubs, and/or trees serve as transitional areas, where land and water meet to create unique and highly productive ecosystems. The canopy created by trees, shrubs and herbaceous vegetation moderates the impact of heavy rains, shades the shoreline to reduce water temperature, and produces organic matter and woody debris essential to shoreland ecology. Root systems give soil structure, hold soil in place, direct rainfall down into the soil instead of over the soil, and can extract nutrients and contaminants from the soil.

The abundance of water and the diversity of plant communities help support a variety of aquatic and terrestrial life. They also provide valuable social, economic and environmental benefits. Some of these benefits include:

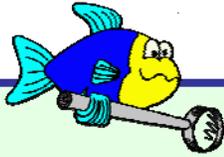
- Filtering sediment and trapping pollutants including fertilizer and pesticide residues to purify drinking water.
- Protecting water quality by absorbing excess nutrients from natural and human sources.
- Maintaining base stream flows, recharging groundwater and limiting flooding by absorbing stormwater runoff.
- Stabilizing and protecting banks from erosion by the presence of natural vegetation.
- Fish and wildlife habitat and wildlife corridors.
- Specialized habitat for rare, threatened, and endangered plants and other species.
- Providing economic values, including private and commercial uses.
- Providing aesthetic, recreational, educational, and research opportunities.

Natural shoreland buffers have been lost in many places. Restoring them can improve water quality, bank stability, wildlife and aesthetics around the state's lakes and ponds.

Watersheds and Development

Prior to developing a lake management plan, it is important to consider the interaction between humans and the environment. Foremost, lakes and ponds are not independent entities; they are influenced by the watershed that surrounds them. A *watershed*, also called a drainage basin, is composed of all of the land and water areas (runoff, groundwater, tributaries, etc.) that drain directly or indirectly into a waterbody. Not only does a watershed capture precipitation, but filters and stores water, and determines its release. A watershed divides the landscape into hydrologically defined areas.

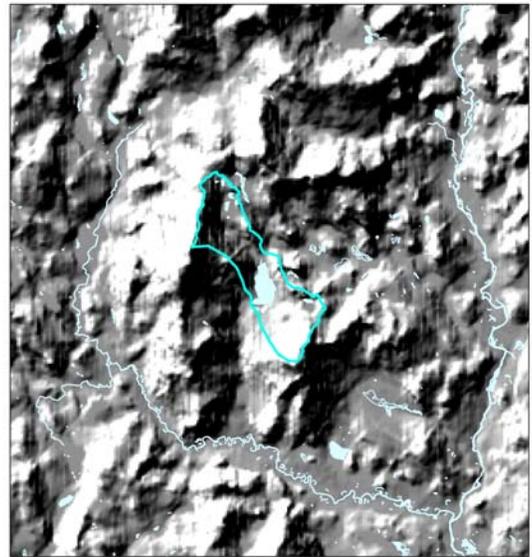
Remember, everyone including you, lives in a watershed!



A Closer Look

In order to understand a watershed, it is important to first outline the watershed boundary. Identifying the boundary will allow for better characterization of the surface topography, geology, soils, land-use patterns, and the drainage network of the watershed. **Watershed delineation** is accomplished by locating the waterbody on a topographic map and outlining the boundaries of the watershed by joining the highest land points that surround the lake or pond.

Lakes are highly influenced by the natural, physical and sociological characteristics of their surrounding watershed. Features such as size, soil type, slope, geology, and vegetation all affect the conditions of a lake. For example, a watershed containing steep slopes covered with little vegetation may result in runoff entering the lake because there is little time for sediment-rich water to infiltrate into the ground. Additionally, the type and extent of human activity in the watershed can also have an enormous impact on the waterbody. For example, if the watershed is dominated by residential and/or commercial land uses, where pavement and other impervious surfaces create or add to stormwater runoff, the waterbody may be at risk of receiving oil, gasoline and related hydrocarbons. These pollutants can be detrimental to water quality and aquatic life. Unfortunately, lakes often become receptacles for urban and agricultural runoff, including sewage, stormwater, and fertilizers. These pollutants can all lead to cultural eutrophication of the waterbody. Since both natural features and human activity of a watershed can influence local waterbodies, it is essential that both be considered when writing a management plan.



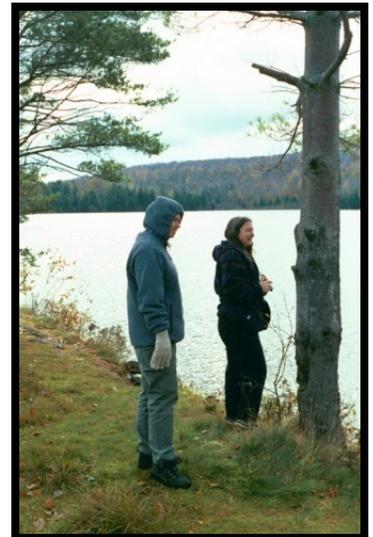
0 1.5 3 6 9 12 Miles

Stinson Lake Watershed in Rumney
(DES, 2008)

Step 1.

Organizing for Action – How to Develop a Lake Management Plan

- Forming a Core Work Group
- Running Effective Meetings
- Organizing a Work Group
- Identifying Vision and Mission Statements
- Creating a Work Plan
- Forming “Smart” Partnerships w/Stakeholders
- Involving Volunteers/ Professionals and the Community
- Conducting a Community Survey
- Holding a Public Forum
- Creating Publicity



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Forming a Core Work Group

Since the development of a management plan can be complex, planning efforts should be lead by a *core work group* of citizens who are willing to devote their time and energy to the process. In most cases, a local lake association, planning board, conservation commission or regional planning agency will initiate the project and act as the core work group. If none of these organizations express interest;

find at least five individuals from existing groups or organizations that represent multiple interests or viewpoints that would be willing to participate (i.e. municipal groups, area businesses, educators, etc.) Try to keep the number of core work group members to a maximum of 12, preferably fewer. If your group is larger than 12, break into smaller groups for targeted discussions or establish subcommittees.

WANTED
Dangerously committed volunteers who are known to risk it all for the protection of NH's lakes and watersheds.



Establish an organizational structure for the core work group (i.e. identify a chairperson; determine how decisions will be made; and where, when and how often to meet).

The core work group works in concert with state and federal agencies to forge partnerships among government, business, civic and environmental interests to achieve *sustainability*. While definitions of sustainability differ, it generally means viewing economic, environmental, and social values as complementary and interdependent and working to preserve all three for the benefit of future generations. This approach allows individuals, organizations and communities to make informed decisions for ecosystem protection and management and results in more successful outcomes. The core work group leads the process of developing a lake management plan and keeps everyone actively engaged and involved. The core work group also provides a local voice for the management of the watershed through consensus-based decision-making and priority setting.



Local-state integration is the key to the future success of watershed management. By working in concert with local communities and state and federal agencies, partnerships are created to promote ecological integrity and community development.



Successful watershed leaders tend to reflect the values of the community and know what works there. They are good communicators, have the ability to bring about change and set things in motion, and are committed to making the group's vision a reality. They also know how to engage, respect and empower others and are able to find new or leverage existing resources.



A Closer Look

Consensus is a decision-making process where the input of everyone is carefully considered and an outcome is crafted that best meets the needs of the group. It is a process of synthesizing the wisdom of all participants to arrive at the best decision possible at the time. Consensus gathers the experiences from the entire group, builds relationships with people, moves toward doing what is best for the common interest, and needs less enforcement.

1.2 Running Effective Meetings

Meetings are great ways to generate ideas, expand on thoughts and manage group activity. But, adequate preparation and leadership are needed to make the most of them. To ensure everyone has the opportunity to provide input, set aside a date, time and location approximately one month ahead, at a place that is convenient. Once a meeting time and place have been chosen, make yourself

Every time you have a meeting, decide beforehand what you want to accomplish.

available to answer any questions participants might have as they prepare. If you are the meeting facilitator, make a meeting agenda, complete with detailed notes. In these notes, outline the goal and proposed structure of the meeting and share this with the participants a week or two beforehand. This will remind everyone about the meeting and give participants enough time to prepare and come ready to work together to meet the identified goal. The success of the meeting depends largely on the skills displayed by the meeting facilitator. To ensure the meeting is successful, the facilitator should:

- Issue an agenda.
- Start the discussion and encourage active and meaningful participation.
- Work to keep the meeting at a comfortable pace – not moving too fast or too slow.
- Summarize the discussion and recommendations at the end of each logical section.
- Ensure all participants receive minutes promptly.

Choosing the right participants is the key to the success of any meeting. Make sure all participants can contribute and choose good decision-makers and problem-solvers. Make sure the people with the necessary information for the items listed in the agenda are the ones that are invited.



Everyone's time is valuable! It's important to make sure that every person and every minute of the meeting adds value. If information would be communicated more effectively by email or memo – send it, instead of holding a meeting.

If you are the facilitator, encourage the free exchange of information and debate, so that everyone's thoughts and ideas are heard, with no one individual dominating the conversation. Also, be sure to limit extensive conversations or discussions just between two people. As time runs out on each agenda item, it may be helpful to stop the discussion, quickly summarize the issue(s) and move on to the next agenda item.



When an agenda item is resolved or an action is agreed upon, reiterate who is responsible for what, by when. In an effort to reduce confusion and misunderstandings, summarize the action to be taken and include it in the meeting minutes.

Ineffective meetings are notorious for wasting people's time. Here are some ways to make sure everyone's time is well spent:

- Start on time.
- Do not recap what has already been covered if someone comes in late: doing so sends the message that it is okay to be late for meetings and it wastes everyone else's valuable time.
- State a finish time for the meeting (e.g., no more than two hours) and stick to it!
- To help end on-time, arrange the agenda in order of importance, so if you have to omit or rush items at the end, important items are not missed.
- If you have achieved everything you need to before the stated finish time, end early!

Minutes provide a record of the meeting and, importantly, they provide documentation to measure progress – this makes them a useful technique to determine if agreed upon actions have been accomplished. The style of the minutes depends on the circumstances – in situations of critical importance and where the record is important, detailed minutes are needed. Where this is not the case, minutes can be a simple list of decisions made and actions to be taken, with the responsible person identified. Generally, they should be as short as possible, as long as all key information is shown – this makes them quick and easy to prepare and digest. Minutes should be issued within 10-14 days after the meeting.

1.3 Organizing a Work Group

The single most important way to sustain a group is to be active!

Due to the collaborative nature of management plan development, the core work group should recruit local, regional, state, and federal representatives, as well as members of both the public and private sectors for the Work Group. To recruit “regional” members, it may be helpful to seek out volunteers at community events, especially events where those who have a vested interest in the lake and watershed will attend. Placing ads in local newspapers, newsletters, and magazines, as well as on radio stations and websites, are other great ways to find volunteers. You may even wish to advertise for specific positions in order to recruit for the Work Group. Try to develop a group that possesses a variety of skills and qualities. Be creative!



A good watershed leader is the key to a successful work group. A coordinator's role varies, but generally includes maintaining contact with members; meeting with interested parties; celebrating success; scheduling, facilitating and summarizing meetings; securing funding; and ensuring that watershed plans are developed, implemented and achieve the desired outcomes.



The basics characteristics of leadership are reliability, dependability and coming to meetings well prepared and on-time. Good leaders clearly understand the type of discipline required to follow-through on commitments and hold others accountable.



Organizing an event in the early stages is always a good idea for group focus. Even if you only have a few people, chances are you will be able to get many more people to attend a public forum, paddle trip, or trail maintenance day.

Step 1:

Make a list of all Work Group members and their skills, along with a list of the resources that each member brings to the group. This list will give the Work Group a better sense of their fellow members’ abilities and interests, which will be helpful when it comes time to define roles and distribute work. In addition, knowledge of the resources available to the Work Group will make the group more efficient.



Work Group members can range from conservation groups, locally elected officials, chambers of commerce, educational institutions, farm groups, students, senior citizens, religious organizations, consultants, credit unions, local businesses, landscapers, developers, among others.



The important thing is to include all key interest groups so you can tap into their strengths, reduce duplication of effort and make optimal use of limited funds.



When asking a particular person to help, use the list – explain what skills or personality traits make him/her a good candidate for a specific task. After all, you are implying this person has the talent to do the job, and that’s quite flattering!

For Example:

Name	Resources	Skills/Knowledge/Job Title
Flow Waters	Boat, digital camera	Knowledge of lake biology, DES employee
Suzy Secchi	Photocopy machine	Journalism
Bo Stroke	Large waterfront property	Marina owner
Lucy Goose	Display board, truck	Birder, knowledge of town ordinances
Russell Mussel	Tools, farm	Knowledge of conservation management plans for farms
Joe Fish	Laptop computer, printer	Knowledge of local land use regulations, Regional Planner

Step 2:

Educate the Work Group about the purpose and content of a management plan and resolve any unanswered questions that they may have.



Invite a guest speaker who has been involved in the development and implementation of a management plan to discuss the process, expected results, and provide advice.



Invite the DES Lakes Coordinator to speak about the importance of lake management plans, introduce *The New Hampshire Guidelines for Coordinated Lake Management and Shoreland Protection Plans*, and the *New Hampshire Comprehensive Lake Inventory*.

Step 3:

Establish the roles and duties of the individuals in the Work Group. It may be easiest to treat every position as you would a professional position and write a few sentences or a job description about what each position entails. Use the list in Step 1 to determine the best person for each role.

For Example:

- Chair: directs the committee, tracks progress of the committee, attends and coordinates meetings with stakeholders.
- Media Team: writes articles in local papers, sets up appearances on local television channels.
- Development Crew: writes the management plan.
- Education and Outreach Group: creates and organizes watershed events, organizes speakers and presentations, creates educational materials.
- Volunteer Coordinator: recruits and organizes volunteers.

Step 4:

Once the Work Group members understand their roles, the next step is to establish regular meeting day(s), time(s), and location(s). These meetings will be used to share correspondence, information, and reports, identify and assign tasks, and review progress. Holding regular meetings will keep everyone involved and informed of recent activities as well as allow time for opportunities or concerns to be voiced.



At this time, the Work Group may wish to adopt bylaws that will establish operating procedures, leadership positions, and other ground rules.

Step 5:

As a Work Group, make a list of all contacts and *stakeholders* who may be helpful, or should be involved in the development and implementation of the management plan.



Stakeholders come in all shapes and sizes, with each member having a different interest.



Potential stakeholders may include co-workers; their families and relatives; alumni from your high school, college or graduate school; friends of current volunteers; neighbors involved in other community groups, and visitors who swim, fish, or boat on the lake.



It is crucial that new people are made to feel welcome. When a new person comes to a meeting, introduce him or her and involve the person in regular meeting discussions and post meeting activities. Also, give the new person a real task to perform, such as making posters, handing out brochures, helping to organize a cleanup, or writing a press release. Be sure to gauge what a person can handle, so that he/she does not feel overwhelmed or undervalued.



The key is to be creative and continue to reach out. No group, no matter how stable, will remain that way for long without continually trying to gain new members.

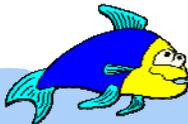


Different people are active at different times, but the community-driven vision and mission statements will continue to motivate and maintain the overall effort.



A Closer Look

Stakeholders are those individuals, organizations, and agencies that are affected by the actions or decisions derived from the development and implementation of a lake management plan (see Step 1.6 Forming “Smart” Partnerships with Stakeholders for more information). Typically, stakeholders represent a particular interest or may have influence over limited aspects of the process. It is especially important to get involvement early on in the planning process, to establish a sense of trust and cohesion among the group.



Jump In!

Complete Worksheet 1

Work Group Resources and Skills

Complete Worksheet 2

Contact/Stakeholder List

1.4 Identifying Vision and Mission Statements

Visions can rally individuals to take action and to focus their efforts on specific goals. The best visions are graphic in their descriptions and relate to human experience (U.S. EPA, 1997). A *vision statement* should be a clear, motivating message about what your group wants the future to look like. It should resonate with all members and help them feel proud, excited and part of something much bigger than themselves. A vision gives shape and direction to the group’s efforts. A *mission statement* describes the overall purpose of the organization. By crafting clear vision and mission statements, you can powerfully communicate your intentions and motivate community members and volunteers to realize an attractive and inspiring vision of the future. Vision and mission statements help to establish a common understanding of the conditions that warrant a watershed protection effort.



Clear visions help watershed groups understand, relate to, and support protection and restoration efforts. And, when framed well, they can also help the general public, elected officials, businesses, the media, and community leaders understand the purpose of developing a lake management plan.



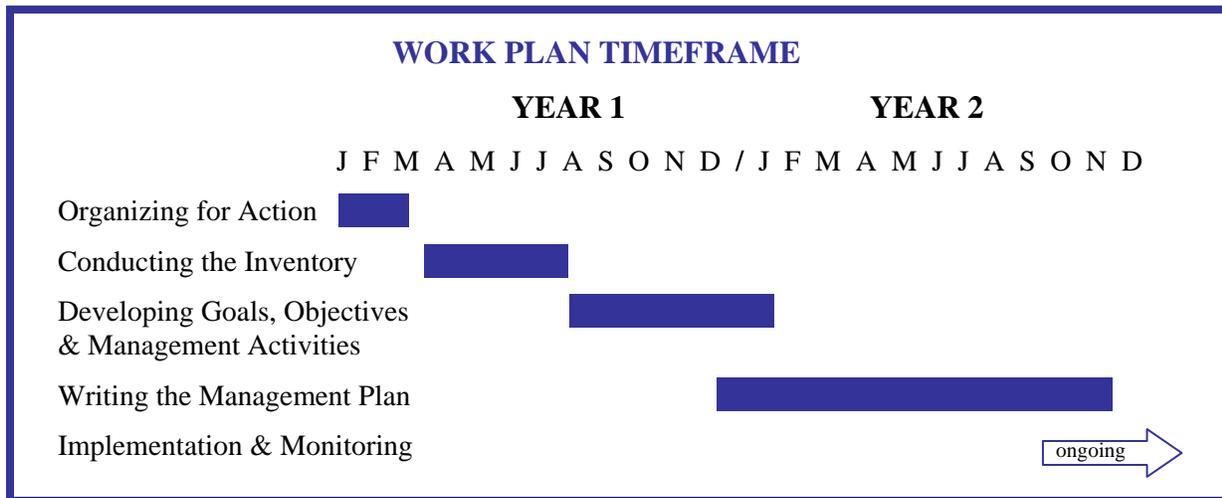
Involving people with different values in developing a common vision and mission statement reinforces the benefits of considering different perspectives and value systems from the beginning. It promotes working towards a common purpose without demanding common values.



Visions that are embraced by the local community have the best chance at success. Ask landowners and business owners what their interests and concerns are by distributing a community survey and/or holding a public forum.

1.5 Creating a Work Plan

The development of a lake management plan is an involved process. In order to stay focused and on course, it is best if the Work Group develops a Work Plan right away. The Work Plan should outline the actions that need to be taken in order to develop and implement the management plan, as well as the time that it should take to complete each action. It is up to the Work Group to decide how detailed the Work Plan should be. The Work Plan will likely start as a rough outline, and eventually become more detailed as the planning process progresses. While a Work Plan does not necessarily need to be strictly adhered to, it is a valuable tool to guide the development process.



Sample Work Plan

1. Organizing for Action (3 months)

See Step 1 for more details.

- a. Form a Core Work Group
- b. Contact the DES Lakes Coordinator
- c. Recruit and organize stakeholders
- d. Identify vision and mission statements
- e. Create Work Plan and time frame
- f. Initiate and maintain partnerships
- g. Solicit public input; conduct community survey
 - i. Design and distribute community survey

- ii. Collect and evaluate community survey
- h. Hold an open forum with stakeholders
- i. Introduce and publicize project

2. Conducting the NH Comprehensive Lake Inventory (6-8 months: summer)

See Step 2 for more details.

- a. Recruit volunteers
- b. Conduct field work and research
- c. Meet with information sources
- d. Work with DES and others to compile the *Inventory*
- e. Evaluate information
- f. Identify concerns and positive attributes
- g. Contact DES for assistance when assessing the status of the lake
- h. Identify areas that need attention from the *Inventory*

3. Establishing Goals and Objectives (2 - 4 months)

See Step 3 for more details. (Be sure to use the *Inventory*!)

- a. Define management goals and objectives
- b. Involve the public with identifying concerns and positive attributes
- c. Set goals, objectives and action items

4. Developing Management Activities (2 - 4 months)

See Step 4 for more details.

- a. Brainstorm management activities based on goals and objectives
 - i. Research activities
 - ii. Meet with appropriate organizations and town and state officials
 - iii. Review existing plans and land use regulations
 - iv. Create a draft of options
 - v. Evaluate, revise, and choose options
- b. Organize goals, objectives, and management activities

5. Writing the Management Plan (6 months - 1 year)

See Step 5 for more details. (Be sure to use the *Inventory*!)

- a. Write first draft
- b. Circulate draft to key individuals, including the Lakes Coordinator, for comment
- c. Discuss draft at Work Group meeting
- d. Write second draft based on comments from the meeting
- e. Distribute second draft to key individuals, including state and town officials
- f. Hold a public meeting(s) to gather comments and suggestions
- g. Write third draft based on comments from public meeting and state and town officials
- h. Review draft for the final time (Work Group and Lakes Coordinator)
- i. Print and distribute the management plan
- j. Present final plan at public meeting

6. Implementing and Monitoring the Plan (ongoing)

See Step 6 for more details.

- a. Coordinate implementation of the plan using identified management activities

- b. Monitor plan, celebrate successes and learn from mistakes
- c. Revise and reevaluate the plan as needed



Jump In!

Complete Worksheet 3 *Work Plan*

1.6 Forming “Smart” Partnerships with Stakeholders

Involving all stakeholders and forming partnerships at the beginning of the planning process will result in a more successful comprehensive lake management plan. Addressing public involvement early on will facilitate better and more effective communication for everyone. Even if particular stakeholders are not interested in assisting with the development of the lake management plan, their opinions are still valuable and should be solicited. While these stakeholders may not be willing or able to devote large amounts of time to meetings, they can still offer fresh and often worthwhile ideas, and may raise issues that have not yet been considered. Participation from all parties in the watershed will help guide goal identification and strategic planning for the management plan.

Residents within the lake community and watershed not only affect the lake, but are affected by the lake.



Effective partnerships include: focusing on common interests, respecting each participant’s view point, thanking each other, being willing to learn about others’ needs and positions, and building trust.



The important thing is to pull together a partnership that is of manageable size, creates synergy, and represents the key interests in the watershed.



Building partnerships takes time and commitment, and once built they need to be nurtured. Their benefits are clear as they lead to wider acceptance and quicker implementation of projects.

To maximize the benefit from the formation of partnerships, “smart” partnerships should be developed. “Smart” partnerships will provide assistance in a variety of ways.

“Smart” partnerships include four main ingredients:

1. Partners who not only have a willingness and interest to become involved, but also have the time to become involved. Some stakeholders may have limited free time, but may be interested in assisting financially or by offering other resources such as office space.

2. Partners with a purpose. Partners need to feel involved and heard in order to remain motivated, so make sure all partners know their purpose and understand that their opinions will be taken seriously.
3. Partners who offer applicable skills or resources. Do not base your decision to form a partnership solely on charisma. Personality does count, but it should not be the basis of a partnership.
4. Partners who work collaboratively for the greater good. They can put aside personal agendas to achieve consensus.

Understanding the roles of each group involved in lake management remains vitally important to the successful management of lakes. For example, state agencies play a very different role in lake management than do local municipalities, non-profit organizations, or local citizens. The table below is an outline of some, but not all, potential stakeholders and the assistance that they may be able to provide during the planning process.

Stakeholder	Examples	Assistance/Capabilities
Shorefront Property Owners	Local Landowners	These groups/individuals are typically well suited to study the lake, provide input on regular lake activities, assess water quality, document land use changes, and identify the unique features and opportunities that the waterbody offers.
Associations	Homeowner Associations Lake Associations Watershed Associations	
Recreational Users	Boaters Anglers Snowmobilers	
Municipal Representatives	Town Planner Conservation Commission	
Academia	Students Teachers / Professors	
Local Business Owners	Real Estate Tourism Agriculture Marine Financial Institutions	These groups/individuals have a vested interest in the continued quality of New Hampshire's lakes. These partners may serve as volunteers, offer technical assistance, or may contribute financially to assist in the development or implementation of the plan.
Regional, State, and Federal Officials	Lakes Coordinator State Limnologist Conservation Officer	These individuals are familiar with the state and local regulations, rules, and programs that apply to the state's lakes.

1.7 Involving Volunteers

In order to recruit and retain volunteers, it is important that they feel valued. Volunteers need a reason to become (and remain) engaged and interested in the project. How do you ensure this? Be a **STARR**.

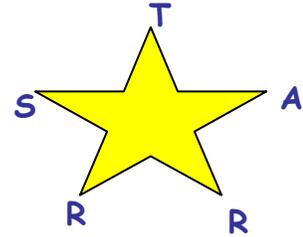
Stay attentive to volunteer concerns regarding lake and watershed issues.

Talk to volunteers about the benefits of a lake management plan and keep them updated.

Ask volunteers for their opinions.

Relate to volunteers. We all live in a watershed.

Reward volunteers for their hard work.



While volunteers are needed in the Work Group, volunteers are also essential in assisting with other facets of management plan development and implementation. The Work Group will find that there will be some stakeholders with little interest in volunteering. On the other hand, you will also find many concerned citizens who will want to assist in any way. Do not limit your volunteer search to the obvious stakeholders. Think outside of the box! No matter the level, any involvement is helpful and should be encouraged. Remember that no action is too small!

Volunteers will be needed to:

- Conduct research and collect information for the *New Hampshire Comprehensive Lake Inventory* (explained in Step 2).
- Lend ideas and suggestions regarding lake management priorities.
- Assist with outreach and education efforts designed to spread awareness of watershed issues and management plan efforts.
- Write the management plan.
- Implement the management plan.



Invite all volunteers to participate in Work Group meetings, even if they are not directly involved in the group.



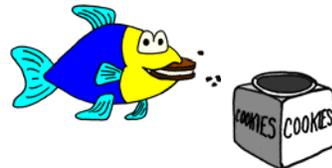
Invite speakers to talk with volunteers about the importance of lake management and tips on managing the lake. Speakers may also address a particular issue of concern.



Acknowledge volunteer contributions at meetings, town events, or in the newspaper.



Provide free goodies at volunteer events.



1.8 Involving Professionals

There will be times in the planning process when professional assistance will be necessary, especially when it comes time to evaluate the objectives and devise management activities. It would be ideal to find a professional who is willing to volunteer as an active Work Group member. If this is not possible, be sure to seek out professional assistance in other ways. Regional Planning Commissions, DES and the New Hampshire Fish and Game Department are excellent sources of information, support and advice.



Technical expertise is critical to watershed protection efforts, since a sound, scientific-based understanding of the resource is needed to make good decisions.



Good tools are available to make informed decisions. Tools are broadly defined to include geographic information systems (GIS), “how-to” guides, funding sources, regulations, and monitoring and modeling programs.



GIS maps have been very helpful to watershed efforts and have served to educate city councilors, town managers, boards of selectmen and landowners. Regional Planning Commissions have the capability to produce GIS maps.

1.9 Involving the Community

Developing successful community participation strategies – strategies that have a positive effect on project outcomes – takes careful planning and analysis. Meaningful public participation strategies give local residents the opportunity to contribute to the success of environmental goals. It gives local residents the opportunity to identify the vision and mission statements, develop and prioritize goals and objectives, and implement management techniques that they perceive as being beneficial that will contribute to equitable and sustainable environmental practices.



It is extremely important to know the communities and the history of issues in the watershed. Allow time to become familiar with the communities, their history, make-up, demographics, geography and political leadership. Find out “what’s worked” and “what hasn’t worked” prior to starting a watershed protection effort.



Start small and demonstrate success before working on a larger scale. Demonstration projects, such as planting trees, storm drain stenciling, and shoreland clean-ups, are often popular choices in watershed work.



For the watershed approach to become a reality there must be widespread recognition in the community that people and nature can coexist within the watershed. This can pave the way for partnerships of diverse interests to form around a shared vision.

Community-based environmental protection is action that local individuals and groups take to address their own environmental concerns. A watershed approach carries such activities beyond localized environmental issues, such as illegal sewer hookups or harmful algae blooms, to consider the ecological health of the entire watershed. Watersheds often extend beyond municipal

borders. Therefore, actions taken in one municipality often affect residents living in another community.

RSA 483-A:7, IV Lakes Management and Protection Plans. Whenever more than one municipality borders a lake, all such municipalities shall be encouraged to cooperate in the development of a coordinated lake management and shoreland protection plan.

A major goal of many community-based environmental protection efforts is to ensure local ecosystems are healthy enough to provide a range of valuable benefits, both now and in the future. To accomplish this, it is essential for the community to understand the purpose of a management plan and its benefits to the community.

Environmental values reflect the varied ways people experience, understand, and care for the world around them. If community members feel that watershed protection efforts reflect their values and address their concerns, they are more likely to get involved with and provide much needed support for these activities.



Well designed community participation strategies lead to tangible results, especially when they get participants out in the field, are delivered in an effective way and encourage action and reflection.



Developing appropriate public outreach messages is an important means of letting community members know they have been heard. Trying to engage the public with images that do not ring true or emphasizing priorities that are not shared by local communities can alienate or even antagonize much needed collaborators.



Effective watershed communication involves understanding your audience, being cognizant of terms, and knowing how your audience prefers to receive its information. Be sure not to blame the audience, but be ready to explain how they can help remedy problems and what specific actions they can take.

1.10 Conducting a Community Survey

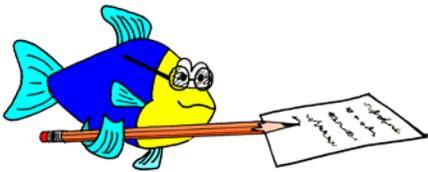
Surveys help define issues, identify audiences and focus time, energy and money where it is needed most.

Surveys are an excellent way to collect baseline information from residents and visitors who visit or live in the watershed. Surveys can help determine the scope of the lake management plan and focus efforts on specific issues. Surveys can also help develop outreach messages to *target* audiences. The target audience is the group of people you want to reach to achieve your goals and objectives, so it is important to ask them to identify and share their concerns as well as gauge their understanding of the waterbody and its watershed. For example, an outreach effort to reduce shoreland erosion caused by heavy boat wake at a lake should be targeted at two different audiences – homeowners with shoreland property and docks as well as summer and weekend lake visitors. Each audience uses the lake differ-

ently and might place a different value on its resources. Both, however, will benefit from the collective reduction in boat wake action along shorelands.

Surveys can reach large numbers of people and can gather data from people who may not be accessible in person. Ideally, survey results are quantifiable and applicable to an entire population when a **representative sample** is used. A representative sample should be a random sample that reflects the larger target audience. Just remember, that the larger the sample the more precise your survey results will be. Surveys can be conducted via mail, phone or the internet.

Mail surveys allow participants to think about their answers before they respond. Before conducting a mail survey, make sure you can obtain current addresses. Keep in mind what information you want to collect, how the information will be used, and how the data will be tabulated. This planning can prevent a lot of headaches when the results start coming in. Make the survey as short as possible, no more than four pages, and make the format easy to read and complete. You may want to consider including a self-addressed stamped envelope to increase the return rate and/or offer giveaways to survey respondents as incentives to participate. An example of a community survey can be found in Appendix G.



The disadvantages of mail surveys include printing and mailing costs, time for tabulating results, and the potential for low response rates. Typical survey response rates range from 20 percent to 40 percent. In addition, the people who complete the survey are likely to be those interested in your topic, which can introduce bias to your results.



Include an introduction or welcome message at the top to give your respondents as much information as possible.



Questions can be multiple choice, ratings or agreement scales, or open-ended fill-in-the-blanks. The visual format also makes a difference. Maintain a logical left-to-right flow for minimal distraction. Try to keep the answer spaces in a straight line, horizontally or vertically. Be sure to leave space at the end for “other comments.”



Avoid asking loaded or leading questions. Slight word changes can produce great differences in results. “Could,” “should,” “might” all sound almost the same, but can produce up to a 20 percent difference in agreement to a question.

Phone surveys elicit immediate responses and can accommodate many participants. In addition, the anonymity might allow people to be more honest. The success of phone surveys tends to vary geographically – rural audiences can sometimes be more willing to take the time to answer questions, than urban dwellers. The disadvantages include the increased cost, access to correct phone numbers, the lack of time for participants to think about their responses, the level of resources involved, and the exclusion of those who only have cell phones, have unlisted numbers or who will not respond to unsolicited calls.



Standardize the greeting used by all volunteers, and practice proper phone skills. If a person called does not want to participate, thank the person and move on to the next one.



Hold practice sessions to be sure that all surveyors ask the same questions the same way. Schedule calls at mixed times – some during weekends, some during the day, but most in the early evening.



When talking with respondents, speak in their language; this draws them out and helps you understand where they are coming from. Avoid questions that can be answered with a simple yes or no. Open-ended questions encourage respondents to talk and provide helpful details.

Email and online surveys offer an anonymous way to communicate with your target audience and find out how they really feel about your group and your efforts. Email surveys can be sent through an existing email account or placed on a website. To send an email survey, you will need a bank of email addresses for members of your target audience. You could use a Listserve, if you have one, but it might bias the survey results, since these participants are already aware of and active in your efforts. The survey can either be sent as an attachment or in the body of an email. After recipients fill out the survey, they can send it back by simply replying to the email.

A web survey will gather responses from internet savvy recipients. Respondents visiting the website can complete the survey using online forms. Email and online surveys take a short amount of time, are self-paced and provide the sender with quick results. Computer issues can cause problems, if a server goes down or if the user has trouble downloading attachments. Email and web surveys assume that your target audience goes online regularly.



A popular online resource, www.surveymonkey.com, creates professional surveys quickly and easily through a three-step process of survey design, response collection, and result analysis.



Email survey results can be viewed in real-time. Graphs and charts, as well as individual responses, can be viewed online. However, you can filter the results to only display the responses you are interested in.

1.11 Holding a Public Forum

Public forums are a great way to get ideas into the public domain, find allies, and secure support for your efforts. It is also a great way to raise awareness about issues. Organizing one can be a big commitment, but as long as you plan ahead there is no reason to feel overwhelmed.



Public forums work best when the issue is both timely and local. Keep in mind that you could create just as much or more impact by attending other people's meetings

as a speaker, organizing more informal visits to specific audiences, or hosting a small group discussion.



Be clear as to what you want your audience and speakers to do as a result of the meeting. Before the end of the meeting, try to engage all participants in a positive way, so you can build a base of contacts and support.



Follow-up is an important way to make sure participants stay involved. Hosting an event within two weeks of the forum is a great way to tap into the energy generated. If a follow-up event is not feasible, make sure to contact the attendees to thank them and extend an invitation to attend an upcoming meeting.

Public forums are less costly than surveys in terms of both money and time, and they tend to encourage clarification of issues and cross-fertilization of ideas through open discussion. Public forums tend to encourage participation from the most vocal, the most organized, and those who wield the most obvious influence in promoting or blocking environmental protection efforts. Strategic efforts should be made to include under represented groups, such as minorities and low-income populations, since they are often overlooked.

1.12 Creating Publicity

Be sure to publicize and offer opportunities for the public to become involved throughout the management planning process. The more people who are involved in the project, the more excitement there is, and that is when the fun begins!



A Closer Look

Involving the media and publicizing the group's efforts will accomplish a three-fold goal:

1. More people will become aware and educated about the group's efforts.
2. The group's contributions will be acknowledged.
3. New volunteers may become excited and want to become involved!

Methods to publicize the Work Group's efforts and encourage community involvement:

- Issue press releases throughout the planning process. The first press release should announce the formation of the Work Group and its purpose.
- Design an informational flyer describing the group's activities and goals; post it prominently in the community.
- Create a display board with information depicting the group's activities and goals, as well as the benefits of implementing a management plan. Circulate the display in public places such as the library, schools, and town halls.
- Use existing resources such as electronic community calendars or bulletin boards to post meeting dates, agendas, minutes and upcoming events.

- Develop a website to describe the vision and mission of the Work Group. Be sure to showcase the efforts of the Work Group and provide contact information for those who would like to learn more or become involved!
- Videotape meetings and cleanups to have them aired on community-access television.
- Arrange to meet with local boards and organizations to introduce them to the planning efforts. Bring along a map of the watershed, a pamphlet outlining the activities and goals of the group, possibly a slide show of the watershed and the lake, and other important information.
- Set up a partnership with a local high school science class or reach out to a local gardening club or conservation group.
- Hold events such as fishing derbies, watershed festivals, canoe trips, interpretive nature tours, and shoreline cleanup days. Ask the local media to attend these events. Do not forget to distribute a sign-in sheet at each event. The Work Group can save the names, numbers, and addresses and use them to form a mailing list that can be used in the future to recruit volunteers.

Checklist for Step 1

- 1. Form a Core Work Group**
- 2. Run Effective Meetings**
- 3. Organize the Work Group**
- 4. Develop List of Work Group Resources and Skills (Worksheet 1)**
- 5. Develop a List of Contacts and Stakeholders (Worksheet 2)**
- 6. Identify Vision and Mission Statements**
- 7. Create a Work Plan (Worksheet 3)**
- 8. Form “Smart” Partnerships with Stakeholders**
- 9. Involve Volunteers/Professionals and the Community**
- 10. Conduct a Community Survey**
- 11. Hold a Public Forum**
- 12. Create Publicity**

This page intentionally left blank.

Lake: _____
Town: _____
Date: _____
Prepared by: _____

Worksheet 1

Work Group Resources and Skills

Name: _____ Address: _____
Phone: _____ Email: _____
Resources: _____
Skills/Knowledge/Interest: _____

Name: _____ Address: _____
Phone: _____ Email: _____
Resources: _____
Skills/Knowledge/Interest: _____

Name: _____ Address: _____
Phone: _____ Email: _____
Resources: _____
Skills/Knowledge/Interest: _____

Lake: _____
Town: _____
Date: _____
Prepared by: _____

Name: _____ Address: _____
Phone: _____ Email: _____
Resources: _____
Skills/Knowledge/Interest: _____

Name: _____ Address: _____
Phone: _____ Email: _____
Resources: _____
Skills/Knowledge/Interest: _____

Name: _____ Address: _____
Phone: _____ Email: _____
Resources: _____
Skills/Knowledge/Interest: _____

Name: _____ Address: _____
Phone: _____ Email: _____
Resources: _____
Skills/Knowledge/Interest: _____

Lake: _____
Town: _____
Date: _____
Prepared by: _____

Worksheet 2

Contact / Stakeholder List

Name: _____ Organization: _____

Address: _____

Phone: _____ Email: _____

Name: _____ Organization: _____

Address: _____

Phone: _____ Email: _____

Name: _____ Organization: _____

Address: _____

Phone: _____ Email: _____

Name: _____ Organization: _____

Address: _____

Phone: _____ Email: _____

Name: _____ Organization: _____

Address: _____

Phone: _____ Email: _____

Lake: _____
Town: _____
Date: _____
Prepared by: _____

Name: _____ Organization: _____

Address: _____

Phone: _____ Email: _____

Name: _____ Organization: _____

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Name: _____ Organization: _____

Address: _____

Phone: _____ Email: _____

Name: _____ Organization: _____

Address: _____

Phone: _____ Email: _____

Name: _____ Organization: _____

Address: _____

Phone: _____ Email: _____

Lake: _____
Town: _____
Date: _____
Prepared by: _____

Worksheet 3

Work Plan

Action: _____

Responsible Party/Lead: _____

Due Date: _____

Lake: _____
Town: _____
Date: _____
Prepared by: _____

Action: _____

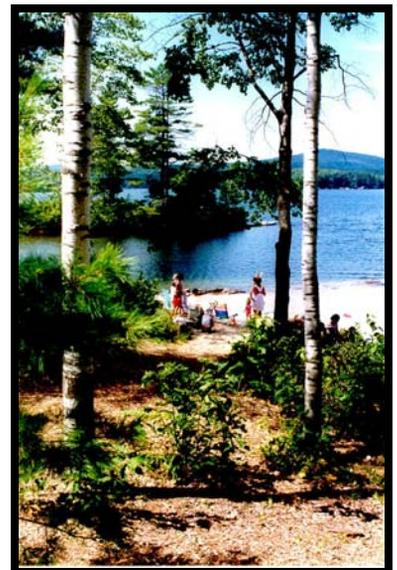
Responsible Party/Lead: _____

Due Date: _____

Step 2.

Conducting the New Hampshire Comprehensive Lake Inventory (CLI)

- The Purpose of the Inventory
- Organization of the Inventory
- Conducting the Inventory
- Evaluating the Information
- Sharing the Information
- Detective Work



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2.1 The Purpose of the Inventory

A major step in developing a lake management plan is the collection of an extensive amount of information regarding a lake or pond and its watershed. The tool to collect this information is the DES *New Hampshire Comprehensive Lake Inventory (Inventory)* provided in Section 2 of this document. The *Inventory* has been designed to assist municipalities, organizations, and individuals who do not have an extensive background in aquatic biology or lake management, with gathering information regarding a lake or pond and its watershed. The information collected in the *Inventory* will provide the insight needed to address the mandatory thirteen topics outlined for lake management plans by the New Hampshire State Legislature in RSA 483-A:7, as well as other areas of choice.

The New Hampshire State Legislature, in RSA 483-A:7 (Appendix A), has decreed that lake management plans “shall include but not be limited to:”

- a. Permitted recreational uses and activities.
- b. Permitted non-recreational uses and activities.
- c. Existing and future land uses.
- d. Protection of wetlands, wildlife, fish habitats, and other significant natural areas.
- e. Dams, bridges, and other water structures.
- f. Public access by foot and vehicle.
- g. Setbacks and other location requirements.
- h. Dredging, filling, mining and earth moving.
- i. Prohibited uses.
- j. Factors controlling water levels and flowage rights.
- k. Facilities appropriate to support approved lake uses.
- l. Water safety.
- m. Other factors affecting water quality.

2.2 Organization of the Inventory

The information derived from the *Inventory* will be utilized to:

1. Identify potential problems as well as important features of a lake or pond and its watershed.
2. Aid in outlining the major goals and objectives of a management plan.
3. Facilitate the development of partnerships necessary for the implementation of a management plan.

The *Inventory* consists of ten attributes or characteristics; each focusing on a particular aspect of a lake and its watershed. Every attribute is then further divided into a series of questions intended to uncover information that is vital for the development of a successful management plan. There are 95 questions to be answered by a committee with assistance from DES. If a group or organization has limited time and/or resources and is only interested in one or more of the following values – *recreational*, *uniqueness*, or *susceptibility to impairment* – just answer the color-coded questions pertaining to those values. A score has been assigned to each of these questions to identify areas of immediate concern pertaining to the lake or pond.

A description of each attribute, its relation to watershed management, and the items addressed from RSA 483-A:7 are listed below.

Attribute 1 - Geographic, Spatial, and Demographic Information

The geographic, spatial, and demographic characteristics of a lake provide information regarding a lake's uniqueness by considering its location within the state, accessibility of major roadways, and proximity to population bases.

Attribute 1 addresses the following items included in RSA 483-A:7:

- m. Other factors affecting water quality.

Attribute 2 - Physical Waterbody Characteristics

Knowledge of the physical characteristics of a waterbody will help determine, in part, what makes it unique among New Hampshire lakes. The data collected for this attribute will provide a look at the waterbody's recreational values, outstanding characteristics, and its susceptibility to impairment.

Attribute 2 addresses the following items included in RSA 483-A:7:

- e. Dams, bridges, and other water structures.
- j. Factors controlling water levels and flowage rights.
- m. Other factors affecting water quality.



Attribute 3 - Water Quality Characteristics

The water quality of a lake or pond is critical in determining the waterbody's ability to support aquatic life. This, in turn, will affect the types and abundance of wildlife attracted to the waterbody. Water quality also impacts the type of human activities that the lake or pond can support. The collection of long-term water quality data can indicate overall productivity of a lake and assist in assessing potential point sources and nonpoint sources of pollution.

Attribute 3 addresses the following items included in RSA 483-A:7:

- m. Other factors affecting water quality.

Attribute 4 - Biological/Ecological Characteristics



Ecosystem diversity and function is a direct reflection of lake health. The variety of plants, fish, mammals, and other wildlife dependent on a particular waterbody often have specific habitat requirements. Some habitats may easily be disrupted by human impact or by the introduction of non-native species. This attribute will generate a more complete understanding of the types of plants and animals that reside in and around a waterbody and, ultimately, be a very useful tool in the development of a management plan.

Attribute 4 addresses the following items included in RSA 483-A:7:

- d. Protection of wetlands, wildlife, fish habitats, and other significant natural areas.
- m. Other factors affecting water quality.

Attribute 5 - Recreational Characteristics

The recreational opportunities that a waterbody supports, such as kayaking, motor boating, and swimming, allow users to gain an appreciation for a lake and its unique features. This section will assist in identifying the type and intensity of recreational activities that occur on and around a waterbody. The identified key recreational issues will be useful in the development of a management plan.



Attribute 5 addresses the following items included in RSA 483-A:7:

- a. Permitted recreational uses and activities.
- b. Permitted non-recreational uses and activities.
- c. Existing and future land uses.
- f. Public access by foot and vehicle.
- k. Facilities appropriate to support approved lake uses.
- l. Water safety.
- m. Other factors affecting water quality.

Attribute 6 - Restrictions or Prohibited Uses on the Lake

The number and type of restrictions or prohibited uses on a lake may be reflective of water quality concerns, potential harmful effects of fish consumption, drinking water source protection strategies, or a desire to provide recreational safety. Restrictions can be designed to protect a lake's natural aquatic community or to benefit specific user groups by enhancing their recreational experience.

Attribute 6 addresses the following items included in RSA 483-A:7:

- a. Permitted recreational uses and activities.
- b. Permitted non-recreational uses and activities.
- d. Protection of wetlands, wildlife, fish habitats, and other significant natural areas.
- i. Prohibited uses.
- l. Water safety.
- m. Other factors affecting water quality.

Attribute 7 - Unique Characteristics

Unique social, cultural, and educational characteristics add value to a waterbody as a natural and community resource. The protection or restoration of unique features will most likely garner widespread community support due to community pride in these features and should be closely evaluated when developing a management plan.

Attribute 7 addresses the following items included in RSA 483-A:7:

- a. Permitted recreational uses and activities.
- b. Permitted non-recreational uses and activities.
- c. Existing and future land uses.
- k. Facilities appropriate to support approved lake uses.
- m. Other factors affecting water quality.

Attribute 8 - Shoreland Characteristics

The type and intensity of land use within the immediate shoreland area (250 feet from the high water mark) is a critical influence on lake water quality. In particular, nonpoint source pollutants

(those that originate from unspecified and unregulated sites or locations) are the most problematic. Examples of nonpoint source pollution include shoreline erosion, seepage from faulty septic systems, and stormwater runoff. In many instances, the quantity of pollutants would be of little concern on a case-by-case situation; however, *cumulative impacts*, when all sources are combined, critically degrade water quality over time.

Attribute 8 addresses the following items included in RSA 483-A:7:

- c. Existing and future land uses.
- d. Protection of wetlands, wildlife, fish habitats, and other significant natural areas.
- f. Public access by foot and vehicle.
- g. Setbacks and other location requirements.
- h. Dredging, filling, mining and earth moving.
- i. Prohibited uses.
- k. Facilities appropriate to support approved lake uses.
- m. Other factors affecting water quality.



A Closer Look

Best Management Practices (BMPs) are those practices that provide the most advanced, effective, and practicable means of preventing or reducing pollution entering waterbodies. Although BMPs serve as the cornerstone for most state water quality protection programs, they are not always required by law.

Attribute 9 - Watershed Characteristics

The importance of evaluating land use activities extends well beyond both the waterbody and the immediate shoreland area. For most lakes, the watershed is the basic unit used to complete a comprehensive assessment of factors affecting water quality; therefore, the land use activities that are conducted within the entire watershed are vitally important in determining the water quality of the lake. In order to simplify the watershed analysis, the *Inventory* focuses on the *immediate* watershed draining into the waterbody. Since, large watersheds are made up of many smaller watersheds, it is necessary to define subwatersheds in terms of a point. The immediate watershed consists of all of the land area that “sheds” water to a single outlet of a lake or pond. For example, the Newfound Lake Watershed only includes land area in the nine communities upstream of the Newfound River.

Attribute 9 addresses the following items included in RSA 483-A:7:

- c. Existing and future land uses.
- d. Protection of wetlands, wildlife, fish habitats, and other significant natural areas.
- f. Public access by foot and vehicle.
- g. Setbacks and other location requirements.
- h. Dredging, filling, mining and earth moving.
- i. Prohibited uses.
- k. Facilities appropriate to support approved lake uses.
- m. Other factors affecting water quality.

Attribute 10 - Visual/Aesthetic Characteristics

The visual/aesthetic characteristics on and around a waterbody can either add or detract from its desirability. Factors that affect a lake's aesthetic qualities include on-water activities, land use, landscape viewing, type and level of noise, and type and strength of odors. Collectively, these factors can either create a sense of natural beauty or create a severely altered waterbody that is not attractive for visitation or residence. The quality of a waterbody's visual/aesthetic characteristics should be evaluated.

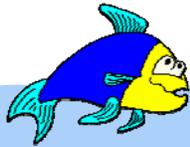


Attribute 10 addresses the following items included in RSA 483-A:7:

- c. Existing and future land uses.
- m. Other factors affecting water quality.

2.3 Conducting the Inventory

The *Inventory* has been included as Section 2 of this document. The *Inventory* outlines the steps for conducting an assessment of ten attributes of a lake or pond for management plan development. A lake inventory is an in-depth process that will take many months to complete and should be conducted with assistance from the DES Lakes Management and Protection Program. Assign teams to answer specific questions and set deadlines to complete the questions.



Jump In!

Complete the
New Hampshire Comprehensive Lake Inventory
Section 2 of this document

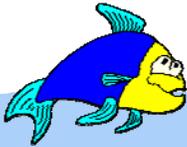
2.4 Evaluating the Information

Congratulations! You have completed the *Inventory*. Now, it is time to use the “Summary of Inventory Results” found in Appendix A of the *Inventory* to evaluate the information. By viewing the recorded values, you will notice potential areas of concerns. Further examination may be needed for questions that scored below the maximum total. Since not every question in the *Inventory* receives a score, it may also be valuable to review the entire *Inventory*, question by question, to determine if an answer indicates that action is, in fact required. While the scoring system in the *Inventory* may help to identify immediate areas of concern, the information should be examined closely to identify future and long-term issues, which will need to be addressed in the management plan.

Looking at the “Summary of Inventory Results” – Appendix A of Section 2, think about the following: are the chemical, biological and ecological measurements within acceptable levels? When viewing the lake do any aesthetic features jump out as unnatural? What about watershed concerns; is the

lake next to a highway which would suggest road salt is running off into the lake each winter, or do agricultural activities surround it? Or is the lake very clean and extremely ecologically diverse?

After evaluating the information, make a list of both concerns and positive attributes for the lake or pond on Worksheet 4. The concerns will contribute to the development of goals for the management plan. While concerns should be based on science, make note of all concerns, even those that are based on perception. *The perceived concerns can be investigated later to determine if they require action.* The list of positive attributes will identify areas of the lake and watershed that citizens should take pride in. It is important that the community works together to maintain these positive characteristics. Positive attributes should also be considered when developing the goals for the management plan.



Jump In!

Complete Worksheet 4
Concerns and Positive Attributes

At this point, it may be necessary to seek out further technical assistance in order to evaluate the information that has been collected. The DES Lakes Management and Protection Program can assist with assessing the status of the waterbody.

2.5 Sharing the Information

It is important to keep the community and stakeholders aware and involved with each step of the management planning process. Once concerns have been identified by both the Work Group and the *Inventory*, it is time to share the information and seek out the concerns of the stakeholders. Let the planning begin!

- Hold an open forum with the Work Group, DES, and stakeholders who helped to assess the status of the lake.
- Let the participants know what concerns have been identified.
- Solicit the participants' opinions on what issues they deem to be the most important.
- Make note of any additional issues or concerns that stakeholders voice and be sure to re-search their credibility.



Do not forget to publicize every step of the planning process. Setting a goal, such as writing one press release per week, is an excellent way to get the community involved. Even if there is little to write about regarding the management plan, broad topics such as wildlife and conservation tips can always be discussed.

2.6 Detective Work

Some issues and concerns voiced by stakeholders in the community may be insightful; however others may be invalid or incorrect. Other issues may be legitimate, but the cause of the issue may be unknown. For example, water quality monitoring data on Lake Falling Leaf has indicated that phosphorus levels have increased since a local wastewater treatment plant was built. Upon seeing the data, residents complained that the wastewater treatment plant was polluting their water. But, upon investigation it was revealed that a new waterfront restaurant was built at the same time and had discharged its wastewater into the lake. Despite public perception, it was the restaurant that had been degrading the water quality, not the wastewater treatment plant.



Never settle on a solution until the identified cause(s) has been confirmed. Verify the accuracy of data collection methods and double check the precision of the data. Make sure key information has not been overlooked.



A Closer Look

Pollution prevention reduces or eliminates waste created at the source, avoiding the generation of waste. Pollution prevention also emphasizes a multi-media perspective, which considers the impacts of pollution on air, land and water simultaneously. Pollution prevention protects the environment by reducing the risk of toxic releases and, at the same time, saves New Hampshire companies and organizations money by avoiding waste handling, disposal and treatment costs.

Once apparent problems have been recognized, additional investigations to determine potential causes may be necessary. Point and nonpoint sources of pollution will need to be assessed. Point source or “end-of-the-pipe” pollution, are direct discharges that are easier to target and alleviate than nonpoint source pollution. Nonpoint pollution sources cannot be determined as easily because they are diffuse discharges carried in stormwater runoff, including discharge from construction, forestry, agriculture, automobiles or faulty septic systems. More than one source of pollution will most likely influence the lake. Do not assume that once one source of pollution is identified the problem is solved; continue investigating until the complete range of sources is known.

Checklist for Step 2

- 1. Conduct the *New Hampshire Comprehensive Lake Inventory***
- 2. Evaluate the Information**
- 3. Create a List of Concerns and Positive Attributes (Worksheet 4)**
- 4. Share the Information**

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Lake: _____
Town: _____
Date: _____
Prepared by: _____

Worksheet 4

Concerns and Positive Lake Attributes

Develop this list using information collected from the *New Hampshire Comprehensive Lake Inventory*, community members, and stakeholders. Using these concerns/issues develop goals and objectives on Worksheet #5.

Concerns/Issues

1) Geographic, Spatial, and Demographic Information: _____

2) Physical Waterbody Characteristics: _____

3) Water Quality Characteristics: _____

4) Biological/Ecological Characteristics: _____

5) Recreational Characteristics: _____

6) Restrictions or Prohibited Uses: _____

7) Unique Characteristics: _____

8) Shoreland Characteristics: _____

9) Watershed Characteristics: _____

10) Visual/Aesthetic Characteristics: _____

Lake: _____

Town: _____

Date: _____

Prepared by: _____

Positive Attributes

1) Geographic, Spatial, and Demographic Information: _____

2) Physical Waterbody Characteristics: _____

3) Water Quality Characteristics: _____

4) Biological/Ecological Characteristics: _____

5) Recreational Characteristics: _____

6) Restrictions or Prohibited Uses: _____

7) Unique Characteristics: _____

8) Shoreland Characteristics: _____

9) Watershed Characteristics: _____

10) Visual/Aesthetic Characteristics: _____

Step 3. Establishing Goals and Objectives

- Management Goals
- Management Objectives
- Organizing, Evaluating and Prioritizing Goals and Objectives
- Connecting Goals and Objectives with Activities and Resources; Getting Desired Outcomes and Results



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3.1 Management Goals

Once a lake and watershed have been inventoried and assessed, lake management goals should be developed. Management goals are broad, general statements that establish the basis for managing and protecting a lake and its resources into the future. Once developed, these goals, combined with the information derived from the *New Hampshire Comprehensive Lake Inventory*, will guide the lake management planning process. The information upon which the goals are based should be derived from various sources, including: the Work Group, Community Survey, and the *Inventory*.



Clear goals are based on scientific data; easily communicated to and understood by the general public, elected officials and others; specific and quantifiable; perceived as fair, yet flexible; and politically supported.



It is easy to get hung up on the terminology when setting goals. The important thing to remember is to move from the broad (goals or mission statements) to the specific (objectives and tasks). Each subsequent level should answer the question “How?” from the previous level.



Placing focus on improving environmental conditions and developing inclusive common goals, rather than implementing policies and regulations is vital to the implementation of management activities and the success of community-based efforts.

Items to Consider When Developing Lake Management Goals:

Values of the Lake and/or Pond:

- What existing values does the lake provide? *Source: Inventory and knowledge of the Work Group.*
- What lake characteristics are prized by lake users? *Source: Community Survey*
- What values are currently lacking which are desired for the future? *Source: Knowledge of Work Group and Community Survey*
- How does the quality of the waterbody and watershed impact the local/regional economy and social resources? *Source: Economic Value Study and Knowledge of Work Group*

Problems and Concerns Regarding the Lake and/or Pond

- What are the known problems/concerns? *Source: Inventory and knowledge of the Work Group and Worksheet 4.*
 - ⇒ What historic issues have occurred on and around the lake? *Source: Inventory and knowledge of the Work Group.*
 - ⇒ What type and level of use occurs on the lake? *Source: Inventory and knowledge of the Work Group*
 - ⇒ What specific land uses impact the lake? *Source: Inventory*
 - ⇒ What user conflicts exist on the lake? *Source: Inventory*
- What potential problems/concerns may appear in the future? *Source: Inventory*
 - ⇒ What is the anticipated growth and development around the lake within the next five years? Within the next 50 years? *Source: Inventory*

The Bigger Picture

- Do the goals reflect the collective vision of all lake users?
- Will there be community support for these goals?
- Do the goals reflect the public's best interest?
- Do the goals address those items listed in RSA 483-A:7?
 - a. Permitted recreational uses and activities.
 - b. Permitted non-recreational uses and activities.
 - c. Existing and future land uses.
 - d. Protection of wetlands, wildlife, fish habitats, and other significant natural areas.
 - e. Dams, bridges, and other water structures.
 - f. Public access by foot and vehicle.
 - g. Setbacks and other location requirements.
 - h. Dredging, filling, mining and earth moving.
 - i. Prohibited uses.
 - j. Factors controlling water levels and flowage rights.
 - k. Facilities appropriate to support approved lake uses.
 - l. Water safety.
 - m. Other factors affecting water quality.

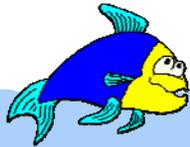
Use the information outlined in Worksheet 4 to help set the goals for the lake management plan. Think long term! Stretch the goals beyond five to ten years. If you could visit the lake in 50 or 100 years, what would you want to see? While defining a vision for the future of the lake, keep in mind that federal (Appendix B) and state (Appendix C) programs and regulatory requirements exist as foundations and sources of assistance for short and long-term management planning.

Sample Goals

- ✓ **Develop, adopt and begin implementation of a watershed-wide strategy to achieve a 40 percent reduction of nitrogen and phosphorus entering the lake by 2012.**
- ✓ **Identify areas for improving and enhancing functional buffers in prioritized locations by 2010.**

Remember:

- Bring all stakeholders to the table!
- Develop collective goals and objectives!
- Prioritize the list of goals.
- Be flexible and revise the goals when new information becomes available!
- Keep goals posted to stay on track! (*Worksheet 5*)
- Be idealistic, but realistic at the same time!



Jump In!

Outline Goals on Worksheet 5 *Management Goals and Objectives*

3.2 Management Objectives

Once management goals have been identified, the next step is to develop management objectives. Objectives are accomplishment-oriented tasks that will help fulfill the goal in some way. The objectives developed should be specific, measurable, action-oriented, relevant, and time-focused (SMART). Be sure to review the goals outlined on Worksheet 5, since many objectives will need to be developed for each goal you are trying to achieve. Also, keep the desired outcome in mind when forming your objectives. Do you want to create awareness, provide information, or encourage action among the target audience? It is very important to make your objectives as specific as possible and to include a time element as well as a result. This approach will make it easier to identify specific tasks and will enable you to evaluate whether you have achieved the objective.



Objectives elaborate goals by describing *how* the goal will be accomplished by describing the types of management or activities needed to implement the action.



Objectives should measure progress and outcomes. Measurable objectives are used to determine whether or not the goal has been reached.

Questions to Ask When Developing Objectives:

- What is the most effective way to accomplish the goals that have been identified?
- What category do the objectives fall in, e.g., water quality, historical, recreation, etc.?
- Who will be affected and who should participate in the objectives?
- Who will benefit from the objectives?
- Are there short-term and long-term objectives?
- What resources are available to carry out the objectives?

Remember:

- Do not overlook a problem or goal by getting wrapped up in one-track thinking!
- Do not judge ideas at this point!
- Let all opinions be heard!

- The more specific the objective the easier it is to recruit volunteers and measure progress!
- The greatest results have often begun with the most outrageous ideas!

Sample Objectives

- ✓ A watershed-based plan will be developed by 2010 to reduce nutrient pollution through wastewater treatment plants, agricultural best management practices, and resource protection and growth management activities. The sum of these options will result in a 40 percent reduction for each community.
- ✓ A co-occurrence GIS map will be developed using the Wildlife Action Plan that shows current setbacks and buffer requirements throughout the watershed based on local and state regulations by mid-2009.



Jump In!

Develop Objectives on Worksheet 5
Management Goals and Objectives

3.3 Organizing, Evaluating and Prioritizing Goals and Objectives

In order to simplify the management plan and its implementation, the goals outlined on Worksheet 5 should be grouped according to categories. Examples of categories include: water quality/quantity, invasive species, social/historical, wildlife habitat, aquatic species, and recreation. The categories will vary depending on the goals that have been outlined. How the categories are organized will depend on how the Work Group would like to manage them. It is okay if some of the categories overlap.



In general, expect to focus on a few goals in more than one category at a time, as opposed to ten goals in one category or one goal in each of the ten categories. It is okay to have lots of goals in multiple categories – especially long-term goals that you may not begin working on right away. Just be realistic about how many you can effectively pursue at a time.

Once your objectives are identified it is time to evaluate them. You should evaluate which objectives are the most important to help meet your vision statement. It is also important to build evaluation into each step, since it will keep you on track to meet your objectives. Ideally, feedback generated after each step will help you complete the tasks for the next step more effectively. Keep in mind, however, that what is successful in one watershed might not work in your watershed. By the same token, failure of a particular method or outreach activity for one issue or in one area does not necessarily mean that it will not work in another watershed (EPA, 2003). If the Work Group is in need of ideas or needs help evaluating management goals or objectives, call in the professionals listed in Appendix D. Other helpful resources can be found in Appendix E.

Items to Consider When Evaluating Objectives:

- Are the objectives consistent with the Work Group's goals?
- Are the objectives specific, with time limits and measurable components?
- Will the objectives be accepted and understood by the people that will be affected by them?
- Will I be able to evaluate the objectives were accomplished?
- Do I have the resources to accomplish the identified objectives?

Once your objectives are defined, it is time to prioritize them. The priority goals and objectives you focus on might change from year to year due to political, economic, or climatic changes.



Prioritizing goals can be confusing, if you think in terms of “which is more important?” The reason is that, over the long-term, all of your goals are important or they would not be goals. Instead think in terms of “which will we focus on right now?” Even when one goal is clearly more important than another, timing will sometimes dictate that the less important goal take precedence *at this time.*



Jump In!

**Categorize and Prioritize Goals and Objectives on Worksheet 5
*Management Goals and Objectives***

3.4 Connecting Goals and Objectives with Activities and Resources; Getting Desired Outcomes and Results

Once you have developed the goals and objectives for your lake management plan it is important to decide what lake management activities (Step 4) your group will pursue to achieve those goals and objectives. Deciding what activities your group would like to pursue can also help you define the resources you have or may need to achieve the desired outcomes from the activity. When deciding on a lake management activity or technique, your group should always consider how the activity helps you achieve all or part of your lake management goals and objectives. The main question that should be asked when deciding on an activity is: *Does this activity help achieve the outcome we have in our objective(s)?*



During a 2001 focus group study, EPA found that although some people had heard the term *watershed*, few people understand it well enough to be able to define it and, more importantly, few people see the importance of understanding what a watershed is in addressing the problem of nonpoint source pollution. Linking the problem to the causes is often the most important stage of education.

It is particularly important to evaluate long-term activities, such as water quality monitoring or invasive species removal, on a regular basis to ensure that the activity is helping your group reach its goals and objectives. If new resources, such as funding or data, become available it is important to see if that resource can be used to pursue or enhance an activity that helps meet your goals and objectives. However, your group should not just pursue an activity because of available resources. Putting energy towards an activity that does not help you meet your lake management goals or objectives can distract your group or your community. Goals and objectives, activities, and resources should compliment one another; if they do not then they need to be re-evaluated and changed to help your group achieve the best lake management possible.

As you progress through the phases of developing and implementing a lake management plan, it is important to note that your outreach objectives and activities may change. As the target audience becomes aware of the issues, you will focus your efforts towards action. For example, during the early stages of the planning process, it might be necessary to generate basic awareness of watershed issues and define polluted runoff; but as problems are identified, your objectives will focus on educating the target audience on the causes of the problems and the potential solutions. Finally, your objectives will change to motivating action by the target audience to reduce adverse water quality impacts.

Example

- ✓ **Goal:** Develop a minimum-impact guidance manual that includes model ordinances to implement incentives for low-impact development and impervious technologies by 2011.
- ✓ **Objective:** To update each watershed community Planning Board on regional trends, effects of possible build-out scenarios and the use of innovative practices and principals to encourage the use of low-impact development (LID) techniques by 2009.
- ✓ **Activity:** Meet with at least one watershed community Planning Board a month in 2008 to present information on regional trends, effects of possible build-out scenarios and the use of innovative practices.
- ✓ **Resources:** Information on land development trends and local development regulations from the *Comprehensive Lake Inventory* (Step 2).

Remember:

- Look at your goals and objectives on a regular basis to make sure your activities are helping you reach the goals of your lake management plan.
- Goals and objectives should not be written in stone! If circumstances change it is okay to re-evaluate or re-prioritize them.
- Just because there is funding for an activity does not mean your group should do it! Make sure it helps you reach your lake management goals or objectives.

Checklist for Step 3

- 1) **Establish Management Goals (Worksheet 5).**
- 2) **Establish Management Objectives (Worksheet 5).**
- 3) **Categorize, Evaluate and Prioritize the Goals and Objectives (Worksheet 5).**
- 4) **Connect the Goals and Objectives with Activities and Resources to Achieve Desired Outcomes and Results.**

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Worksheet 5

Management Goals and Objectives

If you could visit the lake in 50 or 100 years, what would you want to see? Develop a list of goals to ensure that that vision becomes a reality. Goals should be long term, as well as short term in scope. Don't be afraid to dream; nothing is impossible. After completing the list, group the goals by category and then prioritize them.

Category: _____ Priority: _____

Goal: _____

Objective: _____

Lake: _____

Town: _____

Date: _____

Prepared by: _____

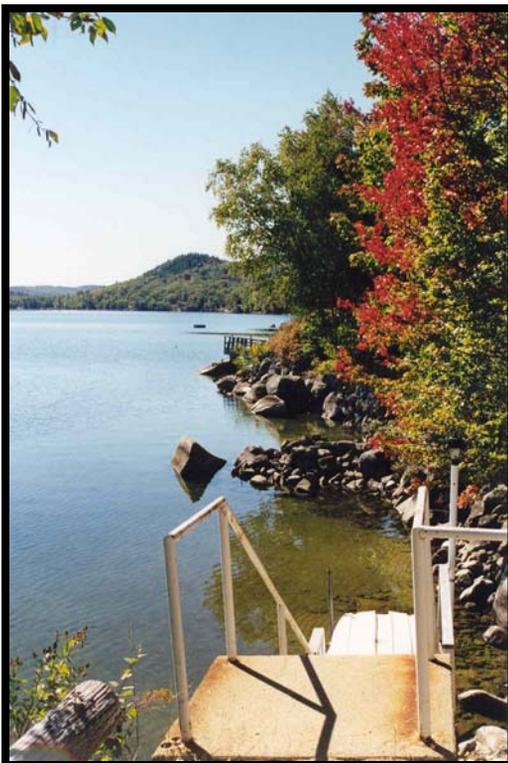
Category: _____ Priority: _____

Goal: _____

Objective: _____

Step 4. Developing Management Activities

- Management Activities
- Brainstorming Management Activities
- Evaluating Management Activities
- Combining Management Activities
- Prioritizing Management Activities



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4.1 Management Activities

There are a variety of ways to manage lakes and their shorelands for different uses. However, some lake uses conflict with others. For example, recreational uses such as swimming are incompatible in public drinking water reservoirs. The desire for public access to a lake may conflict with private land ownership. The use of motorized watercraft may be incompatible with swimming or other passive activities. Management directed at improving active recreational uses can impact fish and wildlife species and their habitats. It is important to note that not all lakes have the physical characteristics needed to support all desired uses. Because not all lake uses are compatible, lake management activities must be designed to sustain the desired uses the lake and shoreland can support.

Management activities are technical, educational, regulatory or voluntary methods that are used to implement the objectives outlined in the management plan. Traditionally, management activities are divided into: in-lake, on-lake, watershed-based activities or simply leaving the lake alone. The absence of active management does not mean the lake will remain “natural” or free from human impact. It is important to note that active management is not always desirable or feasible. Decisions on lake and shoreland management must consider long-term, as well as immediate costs, benefits and impacts of available management options.



Watershed management activities must address problems such as failing and sub-standard on-site sewage disposal systems, agricultural and residential runoff, stormwater runoff and erosion.



Careful land-use planning, zoning, erosion control and other practices used to prevent lake problems from continually occurring are examples of watershed management activities.

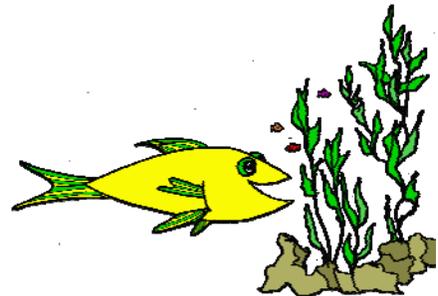


The most effective watershed management activities use a holistic approach to promote ecosystem health and the quality of lake uses.



The most successful lake management and shoreland protection plans identify and address the source of problems, the majority of which are land-based.

In-lake management activities are often implemented to enhance particular uses and/or areas of a lake. In particular, they focus on remediating water quality concerns through physical, chemical, and biological methods. These activities are used to manage eutrophication, restore lake depth, enhance sport fisheries habitat, or increase the amount of pond area available for recreation. In-lake management activities can also be used to control the spread of non-native, exotic and/or invasive animal and plant species. In-lake management activities can often effectively address one or more specific symptoms, such as poor water quality, algal blooms, oxygen depletion or excessive plant growth. For example, if a lake receives an excess amount of sediment from runoff, one in-lake activity may be to dredge the bottom to remove sedi-



ment accumulations. In-lake activities that manage symptoms such as sediment accumulation may succeed for the short term, but long-term sustainability comes from managing the source of the problem in the first place by using watershed management activities.

<u>Examples of In-Lake Management Activities</u>	
Harvesting of Invasive Weeds	Sediment Removal
Fish Stocking	Aeration
Bottom Barriers	Lake Drawdown

On-lake management activities typically involve the use of ordinances and regulations to manage lakes or ponds. Regulations can pertain to a variety of topics including boating, fishing and public access. These ordinances can serve to protect the natural resource, as well as reduce user conflicts on the lake or pond. In New Hampshire, all waterbodies ten acres or greater are state-owned public water, therefore only the federal (Appendix B) and state (Appendix C) government have the authority to impose on-lake regulations. Although local governments cannot regulate on-lake activities, this does not mean that local groups cannot become involved with and even influence, state and federal regulations. It is possible for local groups to form cooperative partnerships with state agencies in regards to on-lake management. Local groups can petition state government for changes to regulations for the lake in their town.

<u>Examples of On-Lake Management Activities</u>	
Dock/Mooring Regulations	Fisheries Regulations
Boating and Navigation Regulations	Time and Space Zoning

Watershed management activities focus on managing the source of the problem. There are eight watershed protection tools that can be used to protect and restore lakes and their shorelands. These include: land use planning, land conservation, shoreland buffers, better site design, erosion and sediment control, stormwater management, septic and sewer system management, and watershed stewardship. These eight tools roughly correspond to the different planning stages from initial land use planning, site design and construction through home ownership. As a result, some form of each of these tools is needed to provide comprehensive watershed protection. It is important to note that the goal of each tool is to provide local communities with a realistic approach for maintaining a quality environment for future generations.

One example of a watershed-based management activity used to resolve sediment accumulation is to plant vegetative buffers along the shoreland and/or tributary streams. To determine sources of sediment, a visual survey of the watershed should be conducted. By installing or augmenting vegetative buffers, the landowner is reducing the transport of sediment from the surrounding watershed into the lake, river, stream or pond. This technique, when paired with dredging the bottom sediments of the lake, will treat both the source and the symptoms of the sediment problem. When selecting a management activity, keep in mind that a combination of in-lake, on-lake and watershed-based management activities will often be the most effective long-term strategy.

Examples of Watershed Management Activities

Stormwater Management

Multi-Density Zoning

Steep Slopes and Ridgeline Protection

Wetlands Protection

Shoreland and Riparian Buffers

Flood Hazard Area Zoning

Low Impact Development (LID)

Erosion and Sediment Control

Transfer of Development Rights (TDR)

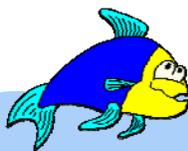
Tax-Sharing

Land Conservation Plans

Land Use Regulations

4.2 Brainstorming Management Activities

Now, it is time to brainstorm management activities that will be used to address each objective outlined in Worksheet 5. Deciding on the preferred management activities can be a complicated process. “Method choices depend on site-specific characteristics of each lake as well as its cost, availability, aesthetics, and personal preferences” (Horsley & Witten, Inc., 1996). When brainstorming management activities, it is important to identify a diverse array of activities for each objective so the pros and cons can be weighed to determine the most appropriate actions. Do not rule any activities out at this point; all ideas are important. Some activities may incorporate multiple methods, such as combining education, regulatory measures, and/or technical activities, while others may utilize only one method. Remember to address the root of the problem, not just the symptoms. Contact the DES Lakes Management and Protection Program for assistance and additional resources for selecting management activities (see Appendix E).



Jump In!

Complete Worksheet 6
Management Activities

4.3 Evaluating Management Activities

Once the Work Group has developed a long list of management activities, it is time to narrow down the options. Review Worksheet 6 to evaluate the management options and outline the pros and cons of each. Remember to consider the potential economic, social, and environmental ramifications of each option. Be sure to invite all stakeholders to take part in this process. The management activities that are selected should be agreed upon by a majority of the stakeholders involved in the planning process.

Things to Consider When Evaluating Management Activities:

- o Will the activity be effective in accomplishing the objective?
- o What are the potential side effects of the activity?
- o What is the approximate cost of the activity?
- o Is the activity a long-term solution?
- o What will be the length of delay between actions and results?
- o What is the ability of this activity to influence change?
- o Does the group feel comfortable with the activity?
- o Will the community and government authorities be receptive to this activity?
- o Will a combination of activities be required?
- o Do any of the proposed activities conflict with one other?
- o How will the effectiveness of each management activity be evaluated?
- o Have all concerns been addressed?



Invite targeted individuals to a meeting where the Work Group will present their ideas for the management plan. After that, hold an open forum where individuals may share their ideas and concerns.

4.4 Combining Management Activities

An effective lake management plan will focus on remediating concerns in a comprehensive manner. To accomplish this task, it may be necessary to combine management activities in order to achieve optimum lake health and user safety. For example, if a lake is inundated with exotic milfoil, the simplest activity would be to treat the symptoms by a method such as harvesting. However, in order to be effective, a long-term strategy for the management of the problem must be implemented as well. Such a plan may include education (a comprehensive boater program), regulatory measures (restricted use areas), and technical activities (the installation of bottom barriers, combined with lake drawdowns). Comprehensive, long-term solutions are the key to managing each issue that a lake faces.

Remember:

- o Keep additional ideas on the back burner.
- o Ensure that the group is comfortable with progress.
- o Think long term and about the “big picture”!

4.5 Prioritizing Management Activities

Once the responsible parties have been identified, the next step is to develop a time frame for the implementation of each activity. While it would be ideal to begin the implementation of each management activity right away, the reality is that resources are often limited. Due to this factor, it is important that management objectives and activities be prioritized. Some concerns may need to be addressed before a problem arises. Additionally, there may be more community support for a particular issue or cause, at a specific point in time. When this occurs, this issue should be placed toward the top of the list. At other times, prioritization can be a difficult task. If possible, efforts should be focused on “low hanging fruit.” Concentrate on those areas where implementation will result in the most benefit for the least amount of effort.

Things to Consider When Prioritizing:

Does the activity address an immediate concern or provide benefit in the long term?

- o Is the activity a preventative action or a restorative action?
- o Are resources (funding, time, volunteers) available to implement the activity?
- o Will the activity address multiple objectives at once?
- o Does the activity rely on other activities for success?

Timing may also be a key factor when prioritizing management activities. For example, a lake-front community may be planning to perform construction on a lake-side road in a few years. This would be a great time to address the “erosion reduction” objective by planting buffer strips to stabilize the roadside banks. During construction, the town will have workers and earth-moving equipment on site. These resources can be utilized during implementation of the management activity. In this case, waiting to install the buffer strips will result in a savings in money, time and energy.

More than likely, each activity will require numerous tasks with varying degrees of time and effort. Some tasks, such as obtaining permits and approval, may only require work at the beginning stages of a project. Other options may take months or even years before results are measurable. Identifying these time frames will prevent discouragement and will keep the committee on track. While it may be difficult, to determine the time frame and cost of implementation, the committee should at least come up with a ball-park figure to help put the project into perspective.

Checklist for Step 4

- 1. Brainstorm Management Activities (Worksheet 6)**
- 2. Evaluate Each Management Activity (Worksheet 6)**
- 3. Combine Applicable Management Activities**
- 4. Prioritize Management Activities**

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Lake: _____
Town: _____
Date: _____
Prepared by: _____

Worksheet 6

Management Activities

Review the list of management goals and objectives (Worksheet 5), and the list of concerns and attributes (Worksheet 4). From the items recorded on worksheets 4 & 5, develop a management activity to address these items. Each activity should fulfill a management goal in some way. When completing the list, be sure to list who will be responsible for each activity.

Goal: _____ Priority: _____

Objective: _____

Activity: _____

Responsible Party/Lead: _____ Due Date: _____

Concern/Issue Addressed: _____

Goal: _____ Priority: _____

Objective: _____

Activity: _____

Responsible Party/Lead: _____ Due Date: _____

Concern/Issue Addressed: _____

Goal: _____ Priority: _____

Objective: _____

Activity: _____

Responsible Party/Lead: _____ Due Date: _____

Concern/Issue Addressed: _____

Lake: _____
Town: _____
Date: _____
Prepared by: _____

Goal: _____ Priority: _____

Objective: _____

Activity: _____

Responsible Party/Lead: _____ Due Date: _____

Concern/Issue Addressed: _____

Goal: _____ Priority: _____

Objective: _____

Activity: _____

Responsible Party/Lead: _____ Due Date: _____

Concern/Issue Addressed: _____

Goal: _____ Priority: _____

Objective: _____

Activity: _____

Responsible Party/Lead: _____ Due Date: _____

Concern/Issue Addressed: _____

Goal: _____ Priority: _____

Objective: _____

Activity: _____

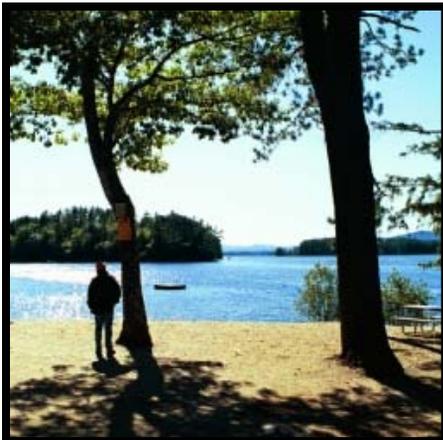
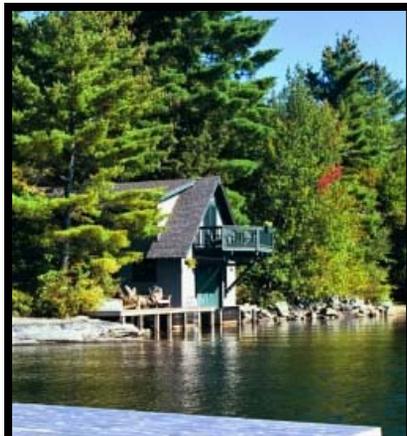
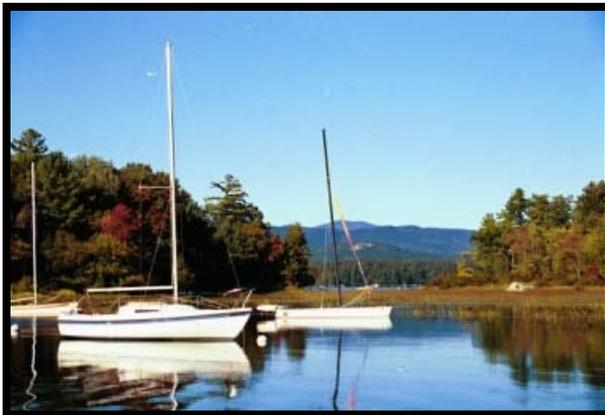
Responsible Party/Lead: _____ Due Date: _____

Concern/Issue Addressed: _____

Step 5.

Writing the Management Plan

- Writing the Management Plan
- Circulating, Discussing and Revising the Plan
- Presenting the Management Plan



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5.1 Writing the Management Plan

Once the Work Group has completed the *New Hampshire Comprehensive Lake Inventory*, firmly established goals and objectives, and identified management activities, it is time to write the management plan. Before proceeding, review the checklists at the end of each chapter to ensure that all steps have been completed. If the chapter checklists and the worksheets are complete, then writing the management plan should be a snap! All of the efforts of the Work Group will now be pieced together to create the management plan. The foundation of a management plan is already in place, and now a thorough plan can be written.



Management plans are essential in that they represent the consensus achieved among watershed stakeholders. The best plans allow for the incorporation of new information, reflect the needs of the watershed and have the commitment of the community behind them.

The following outline, (adopted from the DES Rivers Management and Protection Program) is a sample of what can be included in a management plan.

I. Introduction

- A. Description of the stakeholders, the Work Group, and their roles
 - B. Description of lake or pond
 - Include maps of the lake or pond and watershed
 - C. Necessity of the Lake Management Plan
 - Highlight unique features of lake
- Note major current and potential issues threatening the lake

Each lake and watershed in the state is unique, so each management plan should be unique as well.

II. Resource identification and assessment (refer to the *Inventory*)

- A. Identification and description of lake values
 - Describe and assess all lake resources
 - Outline key lake values
 - Describe and evaluate present and potential watershed land use
- B. Assessment of threats and values

III. Management of the lake

- A. Introduction of goals and objectives (refer to Worksheet 5)
- B. Introduction of management activities (refer to Worksheet 6)
 - Introduce and describe each management activity
 - Explain how each option will protect the lake's resources

IV. Recommendations

- A. Description of recommendations that are being proposed to manage and protect the lake
- B. Identification of how each measure will be implemented and which persons, groups, agencies, or organizations are responsible for each action
- C. Presentation of a timetable for implementation
- D. Time frame for updating the plan

V. Summary

- A. Review of the major findings, the goals, and visions of the plan.
- B. Summary of the main points of the plan.

VI. Appendices

- A. Supporting documentation – completed *Inventory*, *Guidelines* worksheets, etc.
- B. Additional sources of information about the lake.



Jump In!

Write a Management Plan

5.2 Circulating, Discussing & Revising the Plan

After a draft management plan has been developed, it is time to get feedback. Since the management of the lake ultimately involves all lake users and stakeholders, it is imperative that the plan is widely circulated so that all voices can be heard.

WRITE a first *DRAFT* of the plan.

CIRCULATE the *DRAFT* to key individuals, including the DES Lakes Coordinator, for comment and discuss the comments at a Work Group meeting.

WRITE a second *DRAFT* based on the comments.

PRESENT the second *DRAFT* of the management plan at public meetings held throughout the watershed, and be sure to involve all stakeholders, including lake users, local businesses, local government, state government, and the scientific community. Make certain that everyone understands that their comments, both positive and negative, are vital to the success of the plan and will be taken into consideration. Comments should be documented at these meetings, and written comments should be accepted after the meetings. If possible, prepare written minutes for the meeting.

REVIEW the public comments and incorporate them into a third *DRAFT* of the management plan. The Work Groups should then review the document one last time, and the Lakes Coordinator should also be consulted again.

REVISE the draft to form the *FINAL* management plan document.

PRINT and **DISTRIBUTE** the *FINAL* management plan document.

5.3 Presenting the Management Plan

After the management plan has been finalized, it should be presented and distributed throughout the watershed. Provide copies of the plan to local officials and departments (planning boards, conservation commissions, public works departments), regional planning commissions, area businesses, schools, libraries, lake associations, etc. As discussed in Step 5.2, *Circulating, Discussing and Revising the Plan*, public meetings should be held for local community groups to discuss the plan and solicit public comments. The Work Group can even create a display board describing the plan. Management plan implementation is a cooperative task and the Work Group will not be able to accomplish all of its goals alone. By creating awareness about the plan within the watershed, local community members will be more willing to support and to assist with implementation efforts. Along with presenting the management plan to the community, the Work Group must also present the plan to state and town officials for review and comment.

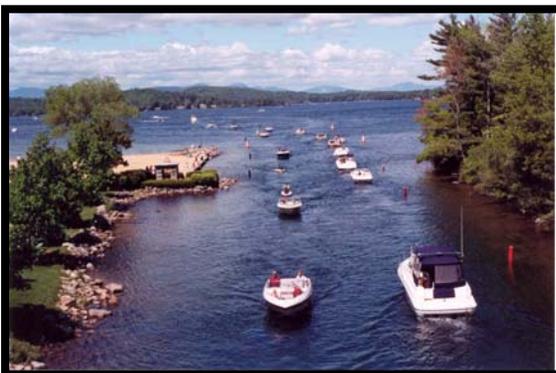
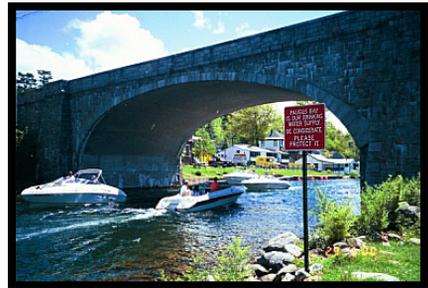
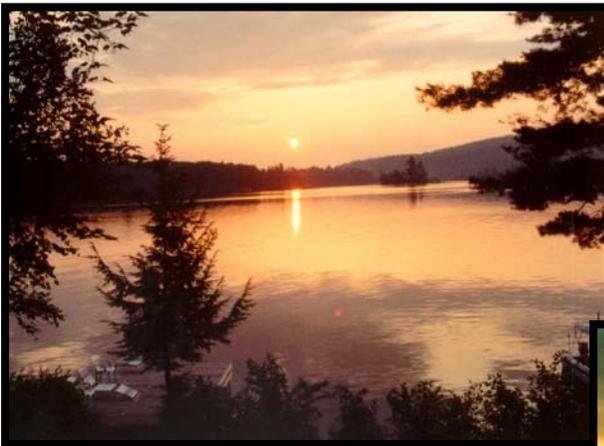
Checklist for Step 5

- 1. Review Steps 1 - 4 Checklists.**
- 2. Write the Management Plan.**
- 3. Circulate the Draft Plan and Revise as Necessary.**
- 4. Present the Second Draft and Revise as Necessary.**
- 5. Review Public Comments and Incorporate into the Third Draft.**
- 6. Work Group and Lakes Coordinator Review Third Draft.**
- 7. Revise the Draft to Form the FINAL Management Plan.**
- 8. Print and Distribute the Management Plan.**

Step 6.

Implementing the Management Plan

- Developing an Action Plan
- Project Funding
- Measuring Progress



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6.1 Developing an Action Plan

Now that the management plan has been written, it is time to implement the management plan. At this point in the planning process, it may be necessary for the members of the Work Group to reorganize by reassigning tasks according to management plan needs.

Examples of Implementation Tasks

- * Establishing timelines for the implementation of management activities
- * Researching and securing funding sources as needed
- * Contacting all necessary participants to carry out the action
- * Tracking the progress of the management activities
- * Attending workshops, conferences, and meetings

The implementation process begins with the development of an Action Plan. A management plan is a valuable resource, but if no steps are taken to implement the plan, it becomes a worthless document, that just sits on a shelf. For each technique, the Action Plan will outline the goals, the objectives they address, the management activities, the responsible parties, the estimated costs, and the timeframe. At this point, the goals, objectives, and management activities should already be established.



The greatest challenge associated with watershed planning is to ensure that the recommendations called for within the plan are implemented.



A key element to implementing a lake management plan is charging an individual or organization with the responsibility to follow through and work with key stakeholders to take the actions laid out in the plan.



The Work Group may find that implementation will require social change. For example, a management technique may involve educating watershed residents about the benefits of low-phosphorus fertilizers. It may be difficult to sway your neighbors from their regular habits, but do not get discouraged. Exercise the 20 – 30 – 50 rule. Twenty percent of your neighbors will be happy and willing to make the change, 30 percent will reject the entire idea, and 50 percent will be undecided. Use this to your advantage. Focus on the 50 percent undecided and give them a reason to make the change. Give recognition to the 20 percent who have already made the change and the 50 percent will eventually follow. When around 70 percent of individuals have made the change, the remaining 30 percent will be the “outsiders” and will eventually follow suit (Smith).

The next step in developing an Action Plan is to determine the party who should be responsible for carrying out each management activity. For each activity, there may be one specific person

who is responsible, or there may be numerous people or groups of people. When determining the responsible party for each management activity, it is important to take into consideration any factors that may affect the success of implementation. For example, if the potential responsible party has no interest in the management plan or its implementation, then it is unlikely that the party will carry through with their task. Other parties should be considered instead. The development of an Action Plan should be a shared process between the Work Group and the responsible party designated for each management activity.

Things to Consider When Designating Responsible Parties:

- o Relevant expertise and resources
- o Level of interest in the implementation process
- o Time available to put into the implementation process
- o Track record of carrying out other individual/group efforts
- o Contacts
- o Community connections

While one person may be designated as the responsible party for one particular management activity, it may be beneficial to recruit others to assist with the implementation process. This is especially important if the responsible party has the expertise and resources but lacks available time. Coordinating subcommittees for the implementation of individual management activities may also be useful. This is one of the best times to involve local municipalities, businesses, schools, and lake associations. The Work Group may also want to recruit individual community members who have relevant expertise and time. Organizing committees is similar to organizing a Work Group; for advice on how to organize a committee, please refer to Step 1.4.

Be sure to continue to publicize management efforts and post information on town websites.



Breaking into smaller groups will allow members to focus on specific tasks and ultimately, be more effective in the implementation of the management activities. It is important to make everyone aware of the bigger picture.



Make sure that each subcommittee knows its purpose and how each person in the subcommittee fits into the management plan as a whole. Hold regular meetings for the subcommittees and use e-mail to inform one another of progress regarding implementation.



Jump In!

Complete Worksheet 7
Action Plan

Sample Action Plan

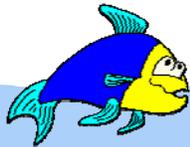
Category	Goal	Objective	Activity	Who Will Be Affected? Who Should Participate?	Who Will Benefit?	Lead Party	Time Frame	Est. Cost	Priority
Water Quality	Restore, protect, & enhance water quality	Identify pollution sources in the watershed	Work with the lake association to develop a volunteer tributary monitoring program	*Residents *Private Property Owners *Lake Assn. *State	*Residents *Visitors *Wildlife *Aquatic species	J. Macafee & lake association	18 months	\$6,000	High
Wildlife Habitat	Preserve & maintain the natural resources of the watershed	Educate citizens about the impacts of their actions in the watershed	Sponsor 3 workshops to educate the public on federal, state, and local regulations	*Residents *Business Owners *Developers	*Wildlife *Residents *Visitors	Conservation Commission	12 months	\$900	Medium
Recreation	Expand recreation opportunities on the lake	Encourage maintenance & enhancement of viewsheds	Identify & protect viewsheds through easements	*Private Property Owners *Municipality *Developers	*Residents *Visitors	L. Manley & Conservation Commission	24 months	\$12,000	Low
		Prevent overuse & decline of public access areas	Develop an “adopt-an-access-point” program for local groups	*Lake Assn. *Municipality *State	*Boaters *Anglers *State	R. Jenkins & NH Fish and Game	15 months	\$500	High
			Post rules & regulations at each access point	*Lake Assn. *Municipality *State	*Boaters *Anglers	Public Works	18 months	\$2,000	Medium

6.2 Project Funding

Project funding is vitally important when implementing any management plan. Each party that is responsible for a particular management activity may be responsible for seeking out the required funding. Alternately, the Work Group may designate a fundraising subcommittee who is responsible for organizing funds for every implementation effort. Members of this committee may have existing fundraising experience, or simply possess an interest in learning the art of fundraising. Writing and submitting grant



proposals to government agencies, corporations, trusts, and other organizations that underwrite and support environmental projects can raise funds. In addition, fundraising events provide another opportunity to gain financial support. At times, the process of securing funding may seem overwhelming, but once you have learned where to find financial assistance, you have already crossed one major hurdle. Appendix F offers some examples of funding sources that may be applicable to lake management and shoreland protection projects. This is by no means an exhaustive list and is subject to change, so be sure to research options outside of the list. Be creative with your sources!



Jump In!

Complete Worksheet 8
Project Funding



When applying for grants, it is beneficial to make your Work Group known to the grantee. Call the grantees. Ask questions. Try to find out what the most important factors are that influence the distribution of money by the grantees. Invite someone from the granting organization to come tour the lake. Show enthusiasm about the unique qualities of the lake and its watershed. The lake may not receive a grant this round, but it can lead to other potential funding sources. The feedback provided by the grantees may also be beneficial. If you have applied for a variety of grants and have not received any positive responses, you may need to select an alternative management technique.

Do not allow a lack of money to deter the Work Group from implementing management activities. It is important to continue with the process and keep the committee moving forward. This is a great time to carry out less expensive activities, such as sponsoring a volunteer lake cleanup day.

Evaluating the cost, time, work, benefits, and feasibility of the project may require the assistance of professional consultants. It may be necessary to hire professionals to design and carry out the

more technical management activities. Be sure to take advantage of the wide range of technical assistance provided at the state level. There are agencies willing and able to assist with the design, funding, and even the implementation of management activities. Additionally, be sure to contact other lake associations and conservation organizations around the state that have implemented similar types of projects. The implementation process can be costly, especially when outside consultants are hired. This is why it is extremely important to weigh the costs against the long-term benefits of each management technique.

6.3 Measuring Progress

Having systems in place to measure and communicate progress is a critical part of developing a lake management plan. Appropriate measures not only keep watershed issues at the forefront, but as they are met, allow stakeholders to share successes and to highlight new challenges ahead.

Progress can be measured in many ways and communicated through meetings, brochures, internet sites, annual reports, news releases, and other ways. The important thing is to make sure that the appropriate measures of progress (often referred to as *indicators* or benchmarks) are selected and that information on these indicators is shared with relevant stakeholders. Measurements of progress should be associated with achieving goals set for the watershed effort. Depending on the goal, groups may choose water quality measurements (e.g., dissolved oxygen, bacteria levels, fecal coliform) or less directly water quality based results (e.g., number of trees planted, pounds of trash collected, number of canoe rentals, number of miles protected from erosion) (U.S. EPA, 1997).

Things to Consider When Measuring Progress:

- Have the goals and objectives been met?
- Do major problems still exist or have new issues arisen?
- Have the goals changed?
- What can be improved?
- What else can be accomplished?
- What modifications need to be made?
- Do other people and organizations with different capabilities need to become involved?

**Continually recruit, review,
and revise to keep things
fresh, interesting, and alive!**

New information may arise in the future that will stimulate changes in the lake management plan. Perhaps lake conditions have changed or new management techniques have been developed. Annual or biannual reviews will strengthen the management plan and improve the success of its implementation. Eventually, the entire management plan will need to be revised and updated (every five to ten years). Reviewing will ultimately make the revision process much simpler.

As always, be conscious of the group's actions and proud of the group's accomplishments. Celebrate the group's successes, both big and small. Whether it is a successful shoreline cleanup or the mitigation of an impacted wetland, it is important to acknowledge the efforts of the volunteers. Throughout the process of preparing a lake management plan, a significant amount of time

and energy has been invested. Feel proud in knowing that you and others are contributing not only to the future health of the lake, but also to the environmental health of New Hampshire.

Checklist for Step 6

- 1. Develop an Action Plan (Worksheet 7)**
- 2. Secure Funding (Worksheet 8)**
- 3. Measure Progress**

Lake: _____
Town: _____
Date: _____
Prepared by: _____

Worksheet 7

Action Plan

Complete the following using the lists of management categories, goals and objectives and management activities (Worksheets 4, 5 and 6), along with information regarding the lead parties, time frame, and estimated cost. Once complete, enter the information into a table or spreadsheet as shown on page 81, so all efforts/activities can be viewed simultaneously.

Category: _____ Priority: _____

Goal: _____

Objective: _____

Activity: _____

Desired Outcome/Result: _____

Lead Party/Person: _____

Other Participants: _____

Affected Stakeholders: _____

Estimated Time Frame: _____

Estimated Completion Date: _____

Estimated Cost: _____

Lake: _____
Town: _____
Date: _____
Prepared by: _____

Category: _____ Priority: _____

Goal: _____

Objective: _____

Activity: _____

Desired Outcome/Result: _____

Lead Party/Person: _____

Other Participants: _____

Affected Stakeholders: _____

Estimated Time Frame: _____

Estimated Completion Date: _____

Estimated Cost: _____

NOTES: _____

Lake: _____
Town: _____
Date: _____
Prepared by: _____

Worksheet 8

Project Funding

On this page list possible grant sources and other fundraising ideas.

Grant Name: _____ Type: _____

Funds Available: _____

Contact Person/Organization: _____

Grant Name: _____ Type: _____

Funds Available: _____

Contact Person/Organization: _____

Grant Name: _____ Type: _____

Funds Available: _____

Contact Person/Organization: _____

Grant Name: _____ Type: _____

Funds Available: _____

Contact Person/Organization: _____

Grant Name: _____ Type: _____

Funds Available: _____

Contact Person/Organization: _____

Grant Name: _____ Type: _____

Funds Available: _____

Contact Person/Organization: _____

Lake: _____
Town: _____
Date: _____
Prepared by: _____

Grant Name: _____ Type: _____
Funds Available: _____
Contact Person/Organization: _____

Grant Name: _____ Type: _____
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Funds Available: _____
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Grant Name: _____ Type: _____
Funds Available: _____
Contact Person/Organization: _____

Grant Name: _____ Type: _____
Funds Available: _____
Contact Person/Organization: _____

Appendices

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Appendix A

RSA 483-A

**The information provided below is current as of November 2008. It does not contain any changes or updates made after November 2008.*

The New Hampshire Lakes Management and Protection Program

483-A:1 Statement of Policy. – New Hampshire's lakes are one of its most important natural resources; vital to wildlife, fisheries, recreation, tourism, and the quality of life of its citizens. It is the policy of the state to insure the continued vitality of New Hampshire lakes as key environmental, social, and economic assets for the benefit of present and future generations. The state shall encourage and assist in the development of management plans for the waters as well as the shoreland to conserve and protect outstanding characteristics, including recreational, aesthetic, and those of community significance, so that these valued characteristics shall endure as part of lake uses to be enjoyed by the citizens of New Hampshire.

Source. 1990, 118:2, eff. June 18, 1990.

483-A:2 Definitions. – In this chapter:

- I. "Commissioner" means the commissioner, department of environmental services.
- II. "Advisory committee" means the lakes management advisory committee established in RSA 483-A:6.
- III. "Lake" means the bodies of fresh water as defined in RSA 271:20.

Source. 1990, 118:2, eff. June 18, 1990.

483-A:3 Program Established; Intent. – There is established the New Hampshire lakes management and protection program within the department of environmental services. It is the intent of the legislature that the New Hampshire lakes management and protection program shall complement and reinforce existing state and federal water quality laws. It is also the intent of the legislature that, through said program, the scenic beauty and recreational potential of lakes shall be maintained or enhanced, that wildlife habitat shall be protected, that opportunity for public enjoyment of lake uses be ensured, and that littoral interests shall be respected.

Source. 1990, 118:2, eff. June 18, 1990.

483-A:4 Lakes Coordinator. – There is established in the office of the commissioner, department of environmental services, a state lakes coordinator, who shall be a classified employee qualified by reason of education and experience, and who shall administer the New Hampshire lakes management and protection program.

Source. 1990, 118:2, eff. June 18, 1990.

483-A:5 Management. –

I. The lakes coordinator, in consultation with the advisory committee, and upon consideration of recommendations from each of the relevant divisions and bureaus within the department of environmental services, shall prepare and submit to the legislature for consideration proposed state level management criteria to be provided for the state's lakes. The management criteria upon adoption shall provide the basis for state agency decisions regarding lakes management and protection. The purpose of such criteria shall be to ensure that:

- (a) Water quality shall not be degraded from existing water quality standards established in RSA 485-A.
- (b) Potential sources of pollution, whether point or non-point sources on the land or deriving from activity on the lake, shall be managed in such a way as to minimize their adverse impact on water quality. No significant adverse impact or cumulative adverse impact on water quality shall be permitted.
- (c) The environment for wildlife, particularly waterfowl and aquatic life, shall be maintained or improved.
- (d) The use of lakes and their drainage areas for flood protection and water supply shall be recognized and protected.
- (e) Public access shall be provided and maintained appropriate to suitable uses of the lakes.
- (f) Recreational uses of lakes shall be consistent with the carrying capacity and character of each lake and shall include, but not be limited to, the use of appropriate watercraft, swimming, and fishing. Permitted uses shall provide opportunity for the safe enjoyment of a variety of lake experiences within the state as a whole.

II. No state-owned property adjacent to or providing access to a lake shall be disposed of by the state except upon the review and recommendations of the advisory committee.

Source. 1990, 118:2, eff. June 18, 1990.

483-A:6 Lakes Management Committee; Establishment. –

I. There is established a lakes management advisory committee.

II. The advisory committee shall include the following members to be appointed by the governor and council:

- (a) A member representing a New Hampshire lake association nominated by the New Hampshire Lakes Federation.
- (b) A member representing the state conservation committee established in RSA 432:10.
- (c) A member of the fish and game commission.
- (d) A municipal officer of a lakefront community nominated by the New Hampshire Municipal Association.
- (e) A member of a conservation commission from a lakefront community nominated by the New Hampshire Association of Conservation Commissions.
- (f) A member representing the scientific community from the University of New Hampshire.
- (g) A member representing the tourism industry nominated by the New Hampshire Travel Council.

(h) A representative of the conservation community chosen from a list of 3 nominees submitted by the Society for Protection of New Hampshire Forests, the Audubon Society, and the New Hampshire Wildlife Federation.

(i) A member representing the Marine Dealers Association.

(j) A member of the New Hampshire Association of Realtors.

(k) A member of a planning board appointed by the New Hampshire Municipal Association.

(l) A member representing the Business and Industry Association of New Hampshire.

III. The director of the office of state planning, the executive director of the fish and game department, the commissioner of resources and economic development, the commissioner of the department of safety, the commissioner of the department of agriculture, markets, and food, and the commissioner of the department of transportation, or their designees, shall serve as nonvoting members of the committee.

IV. The terms of state agency members shall be the same as their terms in office. Voting members shall serve 3-year terms, provided, however, that for the initial appointment, persons appointed under subparagraphs:

(a) (a) through (d) shall be appointed for one year;

(b) (e) through (h) shall be appointed for 2 years; and

(c) (i) through (l) shall be appointed for 3 years.

V. The commissioner shall convene the first meeting no later than September 1, 1990. The committee shall elect a chairperson and vice-chairperson, who shall serve for 3-year terms. Subsequent meetings shall be at the call of the chair, or at the request of 3 or more committee members. The lakes coordinator referred to in RSA 483-A:4 shall serve as secretary and staff to the committee.

VI. The advisory committee shall advise the commissioner and lakes coordinator in carrying out the purposes of this chapter.

Source. 1990, 118:2. 1995, 130:4, eff. July 23, 1995. 2003, 319:9, eff. July 1, 2003. 2004, 257:44, eff. July 1, 2004. 2007, 285:9, eff. Sept. 1, 2007.

483-A:7 Lakes Management and Protection Plans. –

I. The lakes coordinator, in consultation with the advisory committee and with the cooperation and assistance of the office of energy and planning, shall develop detailed guidelines for coordinated lake management and shoreland protection plans together with recommendations for implementation. Upon acceptance of the guidelines by the advisory committee, the lakes coordinator and members of the advisory committee shall hold public hearings regarding the guidelines. At least one hearing shall be held in each counselor district.

II. The lakes coordinator and the office of energy and planning, with the help of appropriate council on resources and development agencies, shall provide technical assistance and, within the limits of legislative appropriations, award financial grants to regional planning commissions established under RSA 36:45-53 in support of lake management and shoreland protection planning. The commissioner, with the advice of the lakes coordinator and the advisory committee, shall adopt rules, pursuant to RSA 541-A, relative to awarding financial grants under this paragraph.

III. The lakes coordinator and the office of energy and planning, in cooperation with regional planning agencies, and appropriate council on resources and development agencies, shall provide technical assistance and information in support of lake management and local shoreland planning efforts consistent with the guidelines established under RSA 483-A:7, I and compatible with the criteria established under RSA 483-A:5.

IV. Whenever more than one municipality borders a lake, all such municipalities shall be encouraged to cooperate in the development of a coordinated lake management and shoreland protection plan.

V. Lake and shoreland management plans developed pursuant to paragraphs I, II and III shall address, but not be limited to, the following:

- (a) Permitted recreational uses and activities.
- (b) Permitted non-recreational uses and activities.
- (c) Existing and future land uses.
- (d) Protection of wetlands, wildlife, fish habitats, and other significant natural areas.
- (e) Dams, bridges, and other water structures.
- (f) Public access by foot and vehicle.
- (g) Setbacks and other location requirements.
- (h) Dredging, filling, mining and earth moving.
- (i) Prohibited uses.
- (j) Factors controlling water levels and flowage rights.
- (k) Facilities appropriate to support approved lake uses.
- (l) Water safety.
- (m) Other factors affecting water quality.

Source. 1990, 118:2, eff. June 18, 1990. 2003, 319:9, eff. July 1, 2003. 2004, 257:44, eff. July 1, 2004.

483-A:8 Acceptance and Expenditures of Funds. –

I. The commissioner may apply for and accept, from any source, gifts; donations of money; grants; federal, local, private, and other funds and incentives; and interests in land for the purposes of this chapter.

II. The lakes coordinator, with the approval of the commissioner, may expend any funds received under paragraph I for the purposes of this chapter, and such funds are hereby continually appropriated.

Source. 1990, 118:2, eff. June 18, 1990.

483-A:9 State Agency Cooperation. – Affected state agencies shall cooperate with and assist the lakes coordinator and the advisory committee in the development and implementation of lakes management plans established under RSA 483-A:7.

Source. 1990, 118:2, eff. June 18, 1990.

Appendix B

Lake-Related Federal Legislation

**The information provided below is current as of November 2008. It does not contain any changes or updates made after November 2008.*

Clean Water Act (CWA)

The Clean Water Act (CWA) is administered in a collaborative effort between the U.S. Environmental Protection Agency (EPA) and the States. The CWA controls point source discharges through a regulatory permitting process. It sets standards for municipal, industrial, and other point sources of pollution. It also seeks to control nonpoint source pollution through a variety of initiatives, including requiring development of state/local nonpoint source pollutant control programs. Section 404 of the Act governs dredge and fill in rivers, lakes and wetlands, and is the statute by which federal wetlands regulation is administered. Projects are evaluated based upon effects on aquatic resources and ability to serve the public interest. Section 319 of the CWA provides funds to states that have prepared Nonpoint Source Management Plans to implement solutions to nonpoint source problems. Section 314 of the CWA outlines the Clean Lakes Program which involves the diagnostic evaluation of water quality within a given watershed. These studies are beneficial in establishing a baseline for reference in future sampling events, as well as indicating problems within the watershed which may be detrimental to the integrity of the waterbody, such as inducing or accelerating the process of eutrophication.

Endangered Species Act (ESA)

The Endangered Species Act (ESA) requires the protection of federally listed endangered plants and animals and their critical habitats. It directs the U.S. Fish and Wildlife Service to monitor and develop a recovery plan for endangered species.

Federal Power Act (FPA)

The Federal Power Act (FPA) directs the Federal Energy Regulatory Commission to license hydropower projects.

Fish and Wildlife Conservation Act (FWCA)

The Fish and Wildlife Conservation Act (FWCA) requires inter-agency consultation regarding the impacts on fish and wildlife of proposed federal action.

National Environmental Policy Act (NEPA)

The National Environmental Policy Act (NEPA) requires all federal agencies to assess the environmental impact of proposed projects. An Environmental Impact Statement (EIS), including interdisciplinary environmental review, is required for all major federal actions significantly affecting the quality of the environment. An environmental assessment is completed first to determine if an EIS is necessary. Simply a procedural act, it does not require any particular course of action once the EIS is completed.

National Flood Insurance Program (NFIP)

The National Flood Insurance Program (NFIP) is a program which makes flood insurance available in communities which adopt floodplain building guidelines meeting or exceeding federal standards as established by the Federal Emergency Management Agency. These guidelines direct that all buildings in the floodplain must be flood-proofed through one of a variety of means. Focus is upon preventing flood damage to homes, rather than protection of floodplain function.

Safe Water Drinking Act (SWDA)

The Safe Water Drinking Act (SWDA) requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and ground water wells. SDWA authorizes EPA to set national health-based standards for drinking water to protect against both naturally-occurring and man-made contaminants that may be found in drinking water.

Appendix C

Lake-Related State Legislation

**This list represents a condensed version of each RSA as of October 8, 2008. It includes all changes and updates made during the 2008 legislative session. Visit <http://www.gencourt.state.nh.us/rsa/html/indexes/default.html> to obtain the most-up-to date full text version.*

Waterbody Definitions

- **Chapter 271: Pilots, Harbor Masters, and Public Waters**
RSA 271:20 State Water Jurisdiction; Published List of Public Waters; Rulemaking. I. All natural bodies of fresh water situated entirely in the state having an area of 10 acres or more are state-owned public waters, and are held in trust by the state for public use; and no corporation or individual shall have or exercise in any such body of water any rights or privileges not common to all citizens of this state; provided, however, the state retains its existing jurisdiction over those bodies of water located on the borders of the state over which it has exercised such jurisdiction. II. The department of environmental services shall prepare, maintain, and publish an official list of all public waters in the state. The commissioner of the department of environmental services shall adopt rules, pursuant to RSA 541-A, relative to this publication.

Boating and Recreational Uses

- **Chapter 162-C: Council on Resources and Development**
162-C:2 Responsibilities. VIII. The council shall: Provide oversight relative to the statewide public boat access program, work with the public access advisory board and provide recommendations to the governor and the executive council regarding public access.
- **Chapter 206: Fish and Game Commission**
206:15-a Areas Closed Temporarily to Hunting and Fishing. The executive director of the fish and game department has the authority to close any area to hunting and fishing when there is danger to people or property. The executive director also has the authority to close any season for the taking of fish in any area for not over 60 days for stocking or conservation purposes and 90 days to reclaim ponds.
206:16 Closing Waters to Taking of Crayfish. The executive director of the fish and game department has the authority to close any body of water to the taking of crayfish, for any length of time for their protection.
- **Chapter 207: General Provisions as to Fish and Game**
207:40 By Executive Director. Upon receiving an application and holding a public hearing, the executive director of the fish and game department may close any public waters to ice fishing, for the benefit of ice harvesting.

207:60 Lead Education Program. The fish and game department, in consultation with the department of health and human services and in partnership with the department of environmental services, the Loon Preservation Committee, the Audubon Society of New Hampshire, and the New Hampshire Wildlife Federation, shall institute an educational program to inform the public about adverse, though unintentional, effects of lead on wildlife, and how to reduce the introduction of lead into the environment through personal action.

- **Chapter 210: Fur-Bearing Animals**

210:9 Protection of Beaver. I. No person shall destroy or disturb or interfere in any manner with the dams or houses of beaver, without first obtaining a special permit from the executive director of the fish and game department.

210:11 Setting Traps. I. No person shall set traps from any land or the shores of any waters of which he is not the owner or occupant, except such traps as may be placed under water from a boat or canoe or through the ice on any great pond or some named rivers, until he has secured a permit from the owner or occupant, and until he shall have filed with the conservation officer of that district.

- **Chapter 211: Fish, Shellfish, Lobsters and Crabs – Method and Manner of Taking Fish**

211:4 Lake or Pond Partly in Another State. In lakes or ponds divided by state borders, where agreed upon by both states, persons licensed in either state will be allowed to fish on the entire body of water, under rules agreed upon by the two rule making authorities.

211:13-b Lead Fishing Sinkers and Jigs; Use Prohibited. No person shall use any lead sinker or lead jig for the taking of fish in any fresh water, except in interstate waters pursuant to RSA 211:4 and 211:5.

211:17-a Ice Fishing. III. No person owning or placing a smelt shanty or bob-house on the ice for the purpose of ice fishing shall conspire with another to burn said bob-house or smelt shanty thereon. Whoever violates the provisions of this paragraph shall be guilty of a violation.

- **Chapter 212-A: Endangered Species Conservation Act**

212-A:5 Wildlife Species. IV. The executive director of the fish and game department and the director of safety services may independently or in concert adopt and enforce rules temporarily restricting boat traffic on any waters of this state as either director deems necessary to protect any threatened or endangered species of wildlife in the earliest stages of life.

- **Chapter: 214 Licenses**

214:18-a Penalty for Throwing Refuse Into Public Waters or on Neighboring Lands. Any person who shall violate those provisions of RSA 265:102, I, which relates to the placing of refuse into or on the ice over any public water, stream or watercourse, or the approaches thereto or land bordering the same may, in addition to the penalty provided in RSA 265:102, IV, lose his fishing or hunting license for the current year.

- **Chapter 215-A: Off Highway Recreational Vehicles and Trails**
215-A:4 Frozen Surface of a Public Body of Water. The use of any frozen surface of any public body of water by the owner or operator of any OHRV, shall be done at their own risk; and any accident resulting shall not be the legal responsibility of any town, city, or the state. The executive director of the fish and game department may, in the interest of public safety, close temporarily to any motorized vehicle all or any part of any frozen surface of a public body of water, for use by the public, except for fishing on foot.

215-A:5 Limitation on Use of Lake or Pond Used by Ice Fishermen. No person shall operate an OHRV upon any lake or pond being used by ice fishermen closer than 150 feet to any occupied bob-house, fish shanty or fishing hole unless done at a speed in conformity with RSA 215-A:6, III.
- **Chapter 233-A: Access to Public Waters – Public Boat Access Program**
233-A:3 New Hampshire Statewide Public Boat Access Program. A program for the development of public water access areas for boating on public bodies of water is established. The goal of the program is the acquisition, construction, refurbishment, maintenance, and operation of new and existing public boat access areas.
- **Chapter 270: Supervision of Navigation; Registration of Boats and Motors; Common Carriers by Waters**
270:1 Declaration of Policy. I. In the interest of public safety and the protection of property, the commissioner of safety shall inspect all commercial and private boats and machinery, appliances, and equipment thereof on any public waters of the state; supervise the safety of navigation and the establishment of aids to navigation; remove obstructions tending to impede navigation; and maintain all lights and buoys under its jurisdiction. II. The public waters of New Hampshire shall be maintained and regulated in such way as to provide for the safe and mutual enjoyment of a variety of uses, both from the shore and from water-borne conveyances. Such provisions shall take into consideration the following: the variety of special uses appropriate to our lakes, public safety, protection of environment and water quality, and the continued nurture of New Hampshire's threatened and endangered species. III. Rafting requires specific appropriate regulation.

270:11 Rulemaking and Enforcement. The commissioner of safety shall adopt rules relative to the required equipment of all boats, the operation of boats, the classification, examination, and certification of captains, masters, engineers, and pilots, and a recommended uniform fine schedule for any boating violation.

270:12 Operating Restrictions. The commissioner of safety shall, after receiving a petition signed by 25 or more residents or property owners of each affected town or towns in which a lake, pond or river is located and after notice and hearing, adopt rules regulating maximum horsepower of boat engines or prescribe maximum speed limits on public waters. The commissioner of safety shall, in like manner and after notice and hearing, prohibit the use of motorboats and outboard motors on bodies of public water having an area of 35 acres or less; provided that said prohibition shall not be construed as affecting the bodies of water covered by RSA 270:75-109.

270:12-a Enforcement Powers Conferred. The director of the division of safety services and his or her representatives shall have all the powers of a peace officer in the enforcement of: (a) The provisions of this chapter and the rules adopted hereunder; (b) The provisions of RSA 265-A, relative to the operation or attempted operation of boats by a person under the influence of intoxicating liquor or a controlled drug or other unlawful operation of boats thereunder; (c) The provisions of RSA 637:9, relative to unauthorized use of any boat or vessel propelled by sail or paddle; (d) All other crimes and offenses, excluding violations of title XVIII, occurring on the public bodies of inland or coastal waters of the state; (e) Any crime or offense, excluding a violation of title XVIII or a violation of title XXI not involving a boat or watercraft, that occurs on an island or on the mainland contiguous to inland or coastal bodies of water in the absence of any law enforcement agency with jurisdiction immediately available when immediate action is required; and (f) Any crime or offense when requested to render assistance to another peace officer having jurisdiction in the area.

270:16-d Operation After Suspension or Revocation. Any person who knowingly operates any boat after his privilege or registration to operate has been suspended or revoked shall be guilty of a misdemeanor.

270:25 Muffling Devices. No person shall own, operate, sell or offer to sell any boat which is capable of discharging exhaust above the water unless the boat is equipped with muffling devices. These provisions shall not apply to antique boats or classic boats which have met the decibel levels established in RSA 270:37 and have been issued a permit exempting them from this section.

270:25-a Airboats. Airboats in NH shall be equipped with an enclosure to prevent contact with the propeller; shall not be operated within 150 feet from shore; shall be throttled up only to the minimum extent necessary to raise it onto the air cushion and move at headway speed within 150 feet from shore. The director of safety services shall prohibit the use of an airboat wherever such use adversely affects the fish and wildlife habitat, interferes with the operation of other watercraft, threatens the public safety, or adversely affects the natural environment.

270:26 Injuring Buoys, Placing Obstructions. Any person tampering with navigational aids or obstructing navigation placed in, on, or adjacent to any of the public waters of the state shall be guilty of a misdemeanor. Any person mooring a boat to a navigational aid placed in, on, or adjacent to the public waters of the state shall be guilty of a violation.

270:26-a Interference with a Vessel. Persons who, without the consent of the owner of the vessel, cut away or let loose any vessel which is fastened to any mooring place or lying at anchor shall be guilty of a violation.

270:27 Boat Racing. No boats shall race unless the race is held under a permit issued by the director of safety services to a recognized sponsoring organization stating the date and place of the race.

270:29 Operation Prohibited. It shall be unlawful to operate a boat or canoe propelled by mechanical power on any stream or body of water within the White Mountain National Forest. The following bodies of water are exempt: Stinson Lake in Rumney, the

North and South Percy Ponds in Stark and Kimball Pond in Chatham, and in Long Pond in the town of Benton.

270:30 Minimum Age for Operation. No person under 16 years of age shall operate a motorized vessel with over 25 horsepower unless accompanied by a person 18 years of age or older with a valid safe boater education certificate.

270:33 Heating, Agitating or Other Devices in Public Waters, Safety Hazard. No person shall put, place, or operate in the waters of this state any so-called heating, agitating or other device which inhibits or prevents the natural freezing of water, or forming of ice, and impedes either the ingress or egress to or from ice by means of any public access. If the heating, agitating or other device is placed anywhere else, nearby signs shall likewise be placed to warn of possible danger. Said signs shall read DANGER, THIN ICE and shall be of sufficient size to be readable at a distance of not less than 150 feet, and shall be visible from all directions and shall be equipped with reflectors and color-coded in a pattern unique for this purpose only.

270:37 Decibel Limits on Noise. Decibel limits on noise are as follows: For engines manufactured in or before 1990, a noise level of 84 decibels on the "A" scale; and after December 31, 1990, a noise level of 82 decibels on the "A" scale.

270:40-41 Alteration of Marine Engines. No person may remove or alter the propulsion unit, the enclosure or any part of a marine engine or modify the mounting of a marine engine in or upon a boat in such a manner as to exceed the noise levels prescribed in RSA 270:37. These rules shall not apply to boats preparing for or competing in a permitted boat race.

270:43 Rules; Enforcement. The commissioner of safety shall adopt rules regulating rafting.

270:61 Mooring Permit Required; Limitations. Any person erecting, installing, maintaining, or exercising control over a mooring on Lake Winnepesaukee; Lake Winnisquam; Squam Lakes; Newfound Lake; Ossipee Lake; and Lake Sunapee shall obtain a mooring permit.

270:63 Transfer of Mooring Permits Prohibited. A mooring permit shall not be construed as ownership of any real or personal property and shall not be transferred to any other person or location by gift, sale, lease, or rent except as provided in RSA 270:67. No person shall charge or be charged for the use of a mooring by any other person except as provided in RSA 270:67.

270:64 Moorings Prohibited. No mooring shall be located: (a) in such a manner that it constitutes a public safety hazard because it interferes with or impedes navigation; or (b) in such proximity to other moorings as to constitute a public safety hazard; or (c) in such a manner that it presents an unreasonable adverse effect on the environment; or (d) in such a manner that it unreasonably interferes with other recreational uses of the water and adjacent land.

270:66 Removal of Moorings; Powers of Director. The director or his agents shall remove or cause the removal of any mooring which: (a) is in violation of RSA 270:63; or (b) is in violation of RSA 270:64; or (c) does not bear the decal required under RSA 270:62; or (d) constitutes a public safety hazard because of the manner in which it is constructed or maintained; or (e) bears a permit which was obtained by falsification in the permit application process; or (f) is ordered removed pursuant to RSA 270:69; or (g) is in violation of RSA 270:61, IV or V.

270:67 Public and Congregate Mooring Fields; Permit Required. The division of safety services shall identify suitable locations for public mooring fields and prioritize the need for the development of such sites. The division of safety services may identify suitable locations for congregate mooring fields.

270:68 Mooring Areas; Designation. The division of safety services shall determine the need and suitable locations, size, and configuration for mooring areas.

270:71 Rulemaking. The director of the division shall adopt rules under RSA 541-A relative to mooring of boats on public waters.

270:72 Penalties. Any person violating the provisions of this subdivision shall be guilty of a violation for the first offense and guilty of a misdemeanor for any additional offenses, except as provided in paragraph II.

270:74 Operation of Ski Craft. V. No person shall operate a ski craft on a lake, pond, or river, or area thereof, on which the operation of ski craft is prohibited as a result of a hearing pursuant to RSA 270:74-a.

270:74-a Hearings. The commissioner shall adopt rules pursuant to RSA 541-A establishing procedures for the public hearing process for granting a petition to prohibit or restrict the use of ski craft on the lake, pond, or river, or a portion thereof.

270:76-130 Restrictions on Boating. The use of power boats shall be restricted in certain waters of the state.

- **Chapter 270-A Use of Houseboats**

270-A:2-3 Where Overnight Mooring Permitted. Overnight berthing of houseboats must be at, or reasonably adjacent to, a location owned, leased or controlled by the owner or operator of the houseboat, or by permission of the owner, lessee, or person in control. Exceptions to this may be allowed in emergencies.

- **Chapter 270-B: Abandoned Boats**

270-B:2 Abandonment. Any boat found unattended in a sunken, beached, or drifting condition shall be deemed abandoned by the owner. In the interest of the public safety such boat may be removed and impounded for safekeeping and disposal.

270-B:3 Jurisdiction. The director of safety services may impound any abandoned boat or may order the removal and storage of any abandoned boat. All reasonable charges of such impoundment, removal, and storage shall be a lien against the boat.

- **Chapter 270-D: Boating and Water Safety on New Hampshire Public Waters**
270-D:10 Certificate Required. No person born on or after January 1, 1957 shall operate a motorized vessel with any type of power motor in excess of 25 horsepower on the public waters of this state without first obtaining a certificate of boating safety education.

Structures, Filling, and Dredging in Surface Waters

- **Chapter 4 Powers of the Governor and Council in Certain Cases**
4:40-a Grant of Right. The governor and council, upon petition and upon recommendation of the department of environmental services, and after consultation with the fish and game commission and such other state agencies, may, for such consideration as they deem just, convey sand and gravel which is on the bed of any navigable water or great pond, in accordance with the provisions of this subdivision.
- **Chapter 482: Dams, Mills, and Flowage**
482:6 Existing Dams on Great Ponds. Upon written notice from the department of environmental services, the owner of a non-permitted dam on the outlet of a great pond shall comply with the provisions of RSA 482:5. If, as a result of said hearing and further investigation, the department of environmental services shall be of the opinion that management and control of the outlet of the great pond would be of benefit to the public, it may order the management of said outlet under whatever conditions it finds necessary to protect the public rights and safety; provided, however, the owner shall be fully compensated for any loss sustained by action of the department of environmental services with respect to a dam which was previously registered or legalized.
482:7 New Dams on Great Ponds. No dam shall be constructed on the outlet of a great pond after September 3, 1977, without specific authorization from the legislature and without a permit to construct a dam from the department of environmental services according to such terms and conditions, as it deems necessary for the public safety.
482:17 Right Granted. Any person or corporation authorized by its charter or articles of agreement to do so may erect and maintain on his or its land, or on land of another, with the owner's consent, a dam upon or across any stream or may increase by flashboards or permanently the height of any dam already so maintained by him or it for the purpose of raising the water to work any mill or mills on such stream or on another stream to which the same is tributary or for the purpose of creating a reservoir of water or raising the level of a public or other lake or pond to control, conserve or equalize the flow of such stream or streams for the benefit of any such mill or mills, upon obtaining authority to do so as provided in this subdivision.
482:42 License to Flow Public Lands. The governor and council may grant to the owner of a dam located at the outlet of an inland public water the right to flow public lands contiguous to such public water and its tributaries when, in the opinion of the department of environmental services, it is in the public interest to do so, and under such terms and conditions with respect to water levels and otherwise as the department of environmental services may specify.

482:79-a Administrative Fine. I. The commissioner of environmental services, after notice and hearing pursuant to RSA 541-A, may impose an administrative fine not to exceed \$2,000 upon any dam owner who violates the directives of the department of environmental services in management of the dam and water level.

482:81 Procedure When Use Unlawful. If, upon complaint of not less than 10 owners of property on any inland public water in the state, the department of environmental services determines that a hearing is required, notice shall be provided to the owner of the outlet of such water. If personal service is impractical in the opinion of the department of environmental services, notice may be by publication, and such other notice, by publication or otherwise, as the department of environmental services may order. If after notice and a hearing, the department of environmental services determines that the management and control of any such outlet or the connected instrumentalities is unlawful and contrary to the public interest, it shall report its findings to the attorney general. Upon receipt of such findings, the attorney general in the name of the state may institute appropriate proceedings in equity in the superior court, and the court shall make such orders as may be necessary to protect the rights of the parties.

482:82 Gifts or Grants to the State. When in the opinion of the department of environmental services it is in the public interest for the state to accept gifts or grants of real estate, or any interest in real estate, contiguous to inland public waters, rivers or streams, the department of environmental services shall recommend such acceptance to the governor and council who may, by resolution, accept the same in the name of the state.

- **Chapter 482-A Fill and Dredge in Wetlands**

482-A:3 Excavating and Dredging Permit; Certain Exemptions. I. (a) No person shall excavate, remove, fill, dredge or construct any structures in or on any bank, flat, marsh, or swamp in and adjacent to any waters of the state without a permit from the department. II. (a) The department shall submit to the governor and council all requests for permits approved by the department of environmental services which meet the definition of major projects located in great ponds or public-owned water bodies under the rules of the department which have been approved by the department.

482-A:6 Powers of Department. The department of environmental services may deny the petition or may require the installation of bulkheads, barriers, proper retention or containment structures, or both, to prevent subsequent fill runoff back into waters or other protective measures. Whenever it is found that a wetlands is at immediate risk from dredging, filling, or other activity in violation of this chapter, the department of environmental services may issue an emergency order in writing requiring the immediate cessation of such activity.

482-A:16 Artificial Fill; Exemptions. No person shall place or cause to be placed any fill in any area below the mean high water level of any public waters or below the artificially-created high water level of publicly-owned bodies of water in this state with the intent or with the effect of creating or forming filled land adjacent to such bodies of water, except as provided in this subdivision. For the purposes of this subdivision, "public waters" means all natural ponds of more than 10 acres, and "publicly-owned bodies of water" or "public-owned water bodies" means those bodies of water whose artificial high

water level is maintained by the state's exercise of its flowage rights on these ponds. The provisions of this subdivision shall not apply to such minor improvements of shorelines as the department of environmental services, by rules adopted by the commissioner of environmental services under RSA 541-A, may allow.

482-A:17 Grant of Right. The governor and council, upon petition and only upon the recommendation of the department of environmental services, may, for just consideration, grant to an owner of shoreline on public waters the right to place fill in the bed of such pond before the owner's shoreline. The owner of a shoreline on a public-owned water body may petition the department of environmental services for the right to place fill below the artificially-created high water level of a public-owned water body to the extent that the flowage rights owned by the state allow.

482-A:18 Procedure for Removal of Fill. If any person places fill in the bed of public waters or below the artificially-created high water level of public-owned water bodies except as provided in this subdivision, such person shall be guilty of a misdemeanor if a natural person, or guilty of a felony if any other person. Any person may be compelled to remove the same by the superior court upon a petition brought by the attorney general.

482-A:21 Excavating and Dredging. No person shall excavate, remove, or dredge any bank, flat, marsh, swamp, or lake bed that lies below the natural mean high water level of any public waters of this state, except as provided in this subdivision. The provisions of this subdivision shall not apply to: (a) any land above the natural mean high water level of public waters, (b) any land below any artificially created high water level of any body of water, (c) projects classified as minor or minimum impact under rules adopted by the commissioner of environmental services under RSA 482-A:11 which exclusively involve excavation or dredging within a great pond, and no other associated major project activities requiring a permit pursuant to RSA 482-A.

482-A:26 Dwellings on Water. No person shall construct any structure suitable for use as a dwelling if the structure or any part of the structure extends beyond the shoreline of any public water or publicly-owned water body. No person shall convert or modify any existing structure in order to make the structure suitable as a dwelling if the structure or any part of the structure extends beyond the shoreline of any public water or publicly-owned water body.

482-A:27 Penalty. Any person who violates any provision of RSA 482-A:26 shall be required to remove the structure or portion of the structure constructed, reconstructed, repaired, converted, or modified in violation of said section and shall be subject to the civil, criminal, and other penalties set forth in RSA 482-A:13, 14, and 14-b. Any criminal fine collected for a violation of RSA 482-A:26 shall accrue to the use of the municipality in which the structure is located.

Water Quality/Water Management

- **Chapter 4-C Office of Energy and Planning**

4-C:19-23 Establishment and Purpose. There is established within the office of energy and planning, the water protection assistance program. The purpose of the program is to

encourage and assist municipalities individually and, where appropriate, collectively to evaluate their water resources and to develop local and regional measures for the protection of both ground and surface water. The program shall recognize the interdependency of municipalities which lie within a common watershed and shall facilitate cooperative planning for the management and protection of common water resources. By providing a range of technical assistance, the program shall help municipalities to exercise powers within their jurisdictions, including, but not limited to, land use regulation, to enhance water protection measures, and to ensure the continued availability of this resource.

4-C:20 Program Administration. I. The office shall prepare guidance materials for use by municipalities in the development of local water resources management and protection plans as provided in RSA 674:2, III(d), and other appropriate protection measures. If the written guidance materials discuss any requirements which exist under state or federal law and which the office of energy and planning believes may be applicable to the municipalities' plans, the materials shall identify the source of such requirements. II. The program shall be implemented by the office of energy and planning primarily through the established regional planning agencies. Other technical services and advice may also be utilized. The program shall be coordinated with plans and programs of other state agencies, especially those of the department of environmental services, and regional planning agencies, and with activities of the county conservation districts. The office of energy and planning may authorize regional planning agencies to perform specific phases of the administration of this subdivision, especially the collaboration with municipalities.

4-C:22 Local Water Resources Management and Protection Plans. I. A municipality may include in its master plan a local water resource management and protection plan. Once the local water plan has been adopted, it shall be placed on file with the office of energy and planning in accordance with RSA 675:9. The plan shall be made available to the public upon reasonable request and payment for any costs incurred in the duplication of the report. II. Implementation of local water plans shall be through the adoption and enforcement of municipal ordinances consistent with the plan and through such other measures as are appropriate and legally available to municipal government as tools to further the water protection objectives set forth in the plan. Assistance shall be available through the water protection assistance program established in RSA 4-C:19 and programs of the department of environmental services as provided in RSA 21-O:3, IX, to advise municipalities on appropriate implementation measures. III. If a municipality determines there is an immediate need to develop or amend subdivision or site plan review regulations in the manner provided by RSA 675:6 or to prevent deterioration of a critical water resource through a zoning ordinance or amendment in the manner provided by RSA 674:23, II, it may adopt such temporary measures for protection of water resources. Such measures shall be valid as provided in RSA 674:23, III.

4-C:23 Regional Water Resources Management and Protection Plans. Municipalities are hereby authorized and encouraged to enter into agreements with other municipalities for the purpose of developing and implementing regional water plans and ordinances to enhance the effectiveness of their local water plans where water protection needs to extend beyond municipal boundaries. Appropriate action of the municipalities by ordinance, resolution or other action shall be necessary before any such agreement may enter into

force, and the agreement shall be adopted pursuant to RSA 53-A. Municipalities are encouraged to seek the assistance of their regional planning commission in the development and implementation of their regional water plan, and shall coordinate these plans with the regional water resource planning efforts of their commission.

- **Chapter 21-O: Department of Environmental Services**

The department of environmental services shall be responsible for the following functions: water pollution control; water supply protection; regulation of waste disposal generally and as it affects water quality; maintenance of state-owned dams; inspection of dams; flood control; and air pollution control.

- **Chapter 146-A:3 Oil Discharge or Spillage in Surface Water or Groundwater**

The discharge or spillage of oil into the surface water or groundwater of this state, or in a land area where the oil will ultimately seep into surface water or groundwater is prohibited.

- **Chapter 146-C: Underground Storage Facilities**

The registration and permitting of underground storage tanks is required, the maintenance of tank records is required, the reuse of tanks is prohibited, and penalties for violations will be established. There is established the New Hampshire leaking underground storage tank cost recovery fund

- **Chapter 155-E: Local Regulation Excavations**

155-E:4-a Minimum and Express Operational Standards. II-a. No excavation shall be permitted within 75 feet of any great pond, navigable river, or any other standing body of water 10 acres or more in area or within 25 feet of any other stream, river or brook which normally flows throughout the year, or any naturally occurring standing body of water less than 10 acres, prime wetland as designated in accordance with RSA 482-A:15, I or any other wetland greater than 5 acres in area as defined by the department of environmental services.

- **Chapter 211: Fish, Shellfish, Lobsters and Crabs**

211:71 Contamination of Waters; Liability. Whoever unlawfully discharges contaminants into the inland or coastal waters of the state shall be liable to the state for any damage to the fish, other aquatic life and wildlife or their habitat caused by such contamination.

211:72 Damages; Determination by Department of Fish and Game. Upon learning of damage to fish and other aquatic life or wildlife and/or their habitat occasioned by contamination, the executive director of the department of fish and game shall investigate and determine the responsible party, extent of damage, and the value of fish, wildlife, aquatic life or habitat destroyed.

211:73 Continuing Contamination. The executive director of the department of fish and game shall notify the department of environmental services or any other department of the state authorized by law to seek injunctive relief against water pollution if the contamination is a continuing offense.

211:74 Damage Actions. When in the opinion of the executive director of the department of fish and game, the damage to fish and other aquatic life, or wildlife, or their habitat, so warrants, he shall request the attorney general to institute an action at law for damage to fish and other aquatic life, or wildlife, or their habitat, caused by contamination. Any damage monies received to this section shall be credited to the fish and game fund.

- **Chapter 217-A: New Hampshire Native Plant Protection**

217-A:9 Prohibited Acts. It shall be a violation for any person, other than the owner of the land on which a plant listed under RSA 215-A:5 is located, to export, import, transport, take, possess, sell, offer for sale, deliver, carry, transport or ship any protected species without required permits. The natural heritage bureau, except as provided in RSA 217-A:9, I shall act as an information resource program to assist and advise state and local agencies, and private sector development projects upon request.

- **Chapter 270-A: Use of Houseboats**

270-A:4 Notification of Mooring of Houseboats Required. The owner, lessee, or person otherwise in control of a location at or adjacent to which one or more houseboats are anchored, beached, grounded or tied to the shore for an overnight period, or for any part of an overnight period, shall promptly thereafter give notice of this fact, in writing, to the New Hampshire department of environmental services, stating the number of houseboats moored at such location and the dates of such mooring.

- **Chapter 430: Insects Pests and Plant Diseases**

430:30 Pesticide Control Board. A pesticides control board is established to consist of 13 members appointed by the governor with consent of the council.

- **Chapter 431: Soil Conditioners**

The commissioner of the department of agriculture, markets, and food shall administer the New Hampshire Fertilizer Law and the New Hampshire Agricultural Liming Materials Act.

431:34 Best Management Practices. In consultation with the agricultural advisory board, the commissioner of environmental services, the United States Natural Resources Conservation Service, the New Hampshire agricultural experiment station, the university of New Hampshire cooperative extension, and other appropriate agencies, the commissioner of agriculture, markets, and food shall identify and publish the best management practices for handling manure, agricultural compost, and commercial fertilizer. Such practices shall be based upon the best available research and scientific data so as to permit the maximum use of nutrient and soil conditioning values, while achieving the least possible adverse impact upon the environment or human, animal and plant health.

- **Chapter 482: Dams, Mills, and Flowage**

482:13 Public Informational Meeting Required. No owner shall breach any dam, lower any water body for the repair of any dam, or cause any significant lowering of the water level in a pond or lake without first notifying the local governing body in the cities or towns where said dam or water body is located at least 30 days prior to any action specified above. The provisions of this section shall not apply to dams impounding bodies of water less than 10 acres or to the normal scheduled lowering of water levels each

fall, the normal lowering of a water body by the exercise of water rights, or the lowering of water levels in any emergency situation.

482:75 Jointly Sponsored Projects. In order for the state of New Hampshire to cooperate fully with federal agencies in watershed management as provided for under Public Law 566, as amended, all jointly sponsored soil conservation districts projects for watershed protection, flood prevention and water management are declared to be projects under the provisions of this chapter except that compliance with the provisions of RSA 481:7 and 481:8 shall not be required.

482:77 Small-Watershed Projects. The department of environmental services is authorized to cooperate with cities and towns in the development of small-watershed projects as planned by the Natural Resources Conservation Service of the United States Department of Agriculture and local sponsoring organizations, under the provisions of Public Law 566, as amended, and under RSA 482:75.

- **Chapter 483-A: Lakes Management and Protection Program**

483-A:5 Management. The lakes coordinator, in consultation with the lakes management advisory committee, and upon consideration of recommendations from each of the relevant divisions and bureaus within the department of environmental services, shall prepare and submit to the legislature for consideration proposed state level management criteria to be provided for the state's lakes. The management criteria upon adoption shall provide the basis for state agency decisions regarding lakes management and protection. The purpose of such criteria shall be to ensure that: (a) water quality shall not be degraded from existing water quality standards established in RSA 485-A. (b) potential sources of pollution, whether point or non-point sources on the land or deriving from activity on the lake, shall be managed in such a way as to minimize their adverse impact on water quality. No significant adverse impact or cumulative adverse impact on water quality shall be permitted, (c) the environment for wildlife, particularly waterfowl and aquatic life, shall be maintained or improved, (d) the use of lakes and their drainage areas for flood protection and water supply shall be recognized and protected, (e) public access shall be provided and maintained appropriate to suitable uses of the lakes, (f) recreational uses of lakes shall be consistent with the carrying capacity and character of each lake and shall include, but not be limited to, the use of appropriate watercraft, swimming, and fishing. Permitted uses shall provide opportunity for the safe enjoyment of a variety of lake experiences within the state as a whole.

483-A:7 Lake Management and Protection Plans. The lakes coordinator, in consultation with the lakes management advisory committee and with the cooperation and assistance of the office of energy and planning, shall develop detailed guidelines for coordinated lake management and shoreland protection plans together with recommendations for implementation.

- **Chapter 483-B: Comprehensive Shoreland Protection Act**

483-B:9 Minimum Shoreland Protection Standards. V. The minimum standards outlined shall apply to areas and activities within the protected shoreland with the exception of forest management not associated with shoreland development or land conversion, and conducted in compliance with RSA 227-J:9; forestry involving water supply for the pur-

pose of managing a water supply watershed; or agriculture conducted in accordance with best management practices as required by RSA 483-B:3, III.

- **Chapter 483-D Winnepesaukee River Watershed Advisory Committee**

483-D:1 Model Required. The department of environmental services shall develop and implement a model for managing the flow of water in the Winnepesaukee River watershed. The department of environmental services shall develop the model with input from the Winnepesaukee River watershed advisory committee.

483-D:2 Winnepesaukee River Watershed Advisory Committee Established. The Winnepesaukee River watershed advisory committee shall be established.

- **Chapter 484: Water Management and Protection Compact**

484:17 Ratification. The state department of environmental services is authorized to enter into a New England Interstate Water Pollution Control Compact with any one or more of the states of Maine, Vermont, Rhode Island, Connecticut and New York and the Commonwealth of Massachusetts. Article VI. Each of the signatory states pledges to provide for the abatement of existing pollution and for the control of future pollution of interstate inland and tidal waters as described in Article I, and to put and maintain the waters thereof in a satisfactory condition consistent with the highest classified use of each body of water.

- **Chapter 485: New Hampshire Safe Drinking Water Act**

485:16-a Drinking Water Standards and Notification. The commissioner of the department of environmental services, in consultation with the commissioner of the department of health and human services, shall adopt primary and secondary drinking water standards and ambient groundwater quality standards applicable to MTBE.

485:19 Willful Pollution. It shall be a misdemeanor or a felony to knowingly and willfully pollute a domestic water supply.

485:21 Fishing; Ice Racing; Penalty. Said local legislative bodies and officers may also adopt all reasonable rules regarding fishing and the use of boats in and upon any such lake, pond or reservoir, and regarding racing or speeding horses upon the ice of such water body, which they may deem expedient. Any person who shall violate any of said rules after notice of such rules shall be guilty of a misdemeanor.

485:22 Bathing. If any person shall bathe in such lake, pond or reservoir, within the limits prescribed for the protection of said water supply by the local board of health or health officer or the department of environmental services, he shall be guilty of a misdemeanor.

485:23 Petition to Protect Water Supplies. Any municipal water commission, local board of health, local health officer or group of ten or more citizens have reason to believe that a public water supply is contaminated or is in danger of contamination, and that the local regulations are not sufficient or effective to prevent such pollution, they may petition the department of environmental services to investigate the case and to adopt rules under RSA 541-A as the department of environmental services may deem necessary to protect public health.

485:27 Power to Require Improvements in Sewage Treatment. The department of environmental services is empowered to investigate the conditions and methods pertaining to existing systems of sewerage and sewage treatment works and to require the application of any treatment, improvement or enlargement of such facilities as will insure their proper operation and provide adequate protection of the public health.

485:28 Power to Require the Installation of Sewage Facilities. The department of environmental services is empowered to investigate the conditions and methods relating to the disposal of sewage in any municipality, as set forth in RSA 486:1, and to require the installation of public sewers, as defined in RSA 147:8, whenever such investigation demonstrates that individual sewage disposal systems are inadequate or incapable of protecting the health and welfare of the citizens of the affected municipalities or preventing pollution of the surface waters of the state, as defined in RSA 485-A.

485:54-57 Ice Cutting, Penalty, Ice Inspection, Notice of Pollution. Ice may be protected as a source of the domestic water supply.

- **Chapter 485-A: Water Pollution and Waste Disposal**

485-A:8 Standards for Classification of Surface Waters of the State. All surface waters shall attain and maintain specified standards of water quality. There shall be two classes of surface waters Class A and Class B. Class A shall be of the highest quality in which there shall be no discharge of any sewage or wastes and shall be considered as being potentially acceptable for water supply uses after adequate treatment. Class B waters shall be of the second highest quality and shall have no objectionable physical characteristics. There shall be no disposal of sewage or waste into Class B waters except those which have received adequate treatment. Class B waters shall be considered as being acceptable for fishing, swimming and other recreational purposes, and after adequate treatment, for use as water supplies.

485-A:11 Public Waters Classified. All lakes and ponds defined as public waters of the state by RSA 271:20 shall be classified by the passage of this section as not less than Class B.

485-A:12-15 Enforcement of Classification, Water Discharge Permits, Prohibited Acts, Penalties. Once a waterbody has been classified it shall be unlawful for any person to dispose of any sewage, industrial, or other wastes which lower water quality below minimum requirements for classification. The owners of any petroleum powered vehicle that becomes submerged in surface waters of the state shall remove the vehicle within 48 hours or as soon as safety and weather permit.

485-A:17 Terrain Alteration. Any person proposing to dredge, excavate, place fill, mine, transport forest products or undertake construction in or on the border of the surface waters of the state, and any person proposing to significantly alter the characteristics of the terrain, in such a manner as to impede the natural runoff or create an unnatural runoff, shall submit detailed plans to the department of environmental services to obtain a permit at least 30 days prior to undertaking any such activity.

485-A:35 Permit Eligibility. All applications, plans, and specifications submitted in accordance with this chapter for subsurface sewage or waste disposal systems shall be prepared and signed by the person who is directly responsible for them and who has a permit issued by the department of environmental services to perform the work.

485-A:36 System Installer Permit. No person shall engage in the business of installing subsurface sewage or waste disposal systems under this subdivision without first obtaining an installer's permit from the department. The permit holder shall be responsible for installing the subsurface sewage or waste disposal system in accordance with the intent of the approved plan.

485-A:37 Maintenance and Operation of Subsurface Septic Systems. Any person who has installed or otherwise acquired a subsurface sewage or waste disposal system installed in accordance with the provisions of this subdivision is required to operate and maintain the system to prevent a nuisance or potential health hazard due to failure of the system. Failure to so operate and maintain shall be considered a violation of this chapter and shall be subject to the penalty as provided in RSA 485-A:43, IV.

485-A:38 Approval to Increase Load on a Sewage Disposal System. Prior to expanding any structure or occupying any existing structure on a full-time basis, which would increase the load on a sewage disposal system, the owner shall submit an application for approval of the sewage disposal system to the department of environmental services.

485-A:39 Waterfront Property Sale; Site Assessment Study. Prior to the execution of a purchase and sale agreement for any developed waterfront property using a septic disposal system, the owner of the property shall, at his expense, engage a permitted subsurface sewer or waste disposal system designer to perform a site assessment study to determine if the site meets the current standards for septic disposal systems established by the department of environmental services.

485-A:45 Authority to Acquire, Construct, and Operate. The department of environmental services is authorized and directed to acquire, plan, construct, and operate, to serve certain municipalities within the Winnepesaukee river basin any and all sewage and waste disposal facilities in accordance with basin and regional treatment needs consistent with federal and state requirements.

- **Chapter 485-C: Groundwater Protection Act**

The purpose of this chapter is to protect the natural quality of the groundwater resource of the state by assisting local groundwater protection efforts and by establishing procedures and standards for the classification and remediation of groundwater.

- **Chapter 486: Aid to Municipalities for Water Pollution Control**

486:1 State Contributions. The state of New Hampshire shall, in addition to any federal grant made available under the provisions of the Clean Water Act, pay annually 20 percent of the annual amortization charges, meaning principal and interest, on the original costs resulting from the acquisition and construction of sewage disposal facilities by municipalities, in accordance with RSA 485:8, RSA 485-A:4, IX, and RSA 485-A:4, XII, for the control of water pollution.

- **Chapter: 487 Control of Marine Pollution and Aquatic Growth**

487:2 Restrictions on Marine Toilets. No marine toilet on any boat operated upon waters of the state shall be so constructed and operated as to discharge any sewage into waters of the state.

487:3 Restrictions on Sinks and Showers. No sink or shower on any boat operated upon the fresh waters of the state shall be so constructed or operated as to discharge any graywater into waters of the state.

487:9 Required Registrations. No boat shall operate upon waters of this state having on it a marine toilet without a certificate of registration from the department of safety, division of motor vehicles, as required by RSA 270 and RSA 270-E.

487:16-a Exotic Aquatic Weed Prohibition. No exotic aquatic weeds shall be offered for sale, distributed, sold, imported, purchased, propagated, transported, or introduced in the state. The commissioner of environmental services may exempt any exotic aquatic weed from any of the prohibitions of this section consistent with the purpose of this subdivision.

487:16-b Exotic Aquatic Weed Penalties. It shall be unlawful to knowingly, recklessly, or purposely offer for sale, distribute, sell, import, purchase, propagate, or introduce exotic aquatic weeds into New Hampshire waterbodies. Any person engaging in such an activity shall be guilty of a violation.

487:17 New Hampshire Clean Lakes Program. Program Established. I. A program for the preservation and restoration of New Hampshire lakes and ponds eligible under RSA 487:20 shall be established and administered within the department of environmental services. The department is directed to prevent the introduction and further dispersal of exotic aquatic weeds and to manage, control, or eradicate exotic aquatic weed infestations in the surface waters of the state.

Shoreland Development and Protection

- **Chapter 483-A: Lakes Management and Protection Program**

483-A:7 Lakes Management and Protection Plans. I. The lakes coordinator in consultation with the lakes management advisory committee and with the cooperation and assistance of the office of energy and planning, shall develop detailed guidelines for coordinated lake management and shoreland protection plans together with recommendations for implementation. III. The lakes coordinator and the office of energy and planning, in cooperation with the regional planning agencies, and appropriate council on resources and development agencies, shall provide technical assistance and information in support of lake management and local shoreland planning efforts consistent with the guidelines established under RSA 483-A:7, I and compatible with the criteria established under RSA 483-A:5.

- **Chapter 483-B: Comprehensive Shoreland Protection Act**

483-B:9 Minimum Shoreland Protection Standards. The standards in this section are designed to minimize shoreland disturbance so as to protect the public waters, while still

accommodating reasonable levels of development in the protected shoreland. Development outside the protected shoreland shall conform to local zoning and local ordinances and shall not be subject to standards established in this chapter.

Appendix D

Agencies with Lake-Related Responsibilities

Federal Agencies

A. Department of Agriculture

Natural Resources Conservation Service (NRCS)

- National Resources Inventory
- Conservation Planning Assistance
- Emergency Watershed Protection Program
- Environmental Quality Incentives Program
- Farm and Ranch Lands Protection Program
- Soil Survey Program
- Conservation Technical Assistance
- Wetlands Reserve Program
- Wildlife Habitat Incentives Program
- Land Evaluation and Site Assessment
- Watershed Protection and Flood Prevention

B. Department of Defense

Army Corps of Engineers (ACE)

- Clean Water Act, Section 404 dredge and fill permits
- Federal flood control dam operation
- Water withdrawal regulation
- Technical/financial assistance for hydrologic modifications

C. Department of Interior

Fish and Wildlife Service

- Reviews and comments on Environmental Impact Statements, Section 404 dredge and fill permits, hydropower licensing and federal agency projects for development in and around waterbodies.
- National Wetlands Inventory
- Federal fish and wildlife law enforcement
- Technical assistance for hydrologic modifications

Geological Survey (USGS)

- Aquifer mapping
- Soils mapping and information
- Technical assistance on excavation and urban runoff

D. Environmental Protection Agency (EPA)

- Clean Water Act Section 314 Clean Lakes Program
- Clean Water Act Section 319 Nonpoint Source Program
- Wetlands mapping
- Veto power over Section 404 dredge and fill permits
- Advanced identification of priority wetlands
- Technical assistance for urban runoff, underground storage tanks and water withdrawals
- Regulatory role for land disposal, hydrologic modifications, water withdrawals and snow dumps

E. Federal Emergency Management Agency (FEMA)

- National Flood Insurance Program administration

F. Federal Energy Regulatory Commission (FERC)

- Licenses and regulates hydropower facilities

State Agencies

A. Council on Resources and Development (CORD)

- Fosters interagency cooperation and investigates natural resources development issues
- Statewide public access program guidance

B. Department of Agriculture, Markets & Food

Division of Pesticide Control

- Pesticide and herbicide applications to control exotic species in lakes and ponds

C. NH State Conservation Committee

- Oversight of ten Conservation Districts
- Soils information and access to NRCS assistance
- Facilitates coordination of the activities of federal, state, county and local governments in natural resource conservation.

D. Department of Environmental Services (Water Division)

- Office of the Commissioner
 - Analyzes water samples
 - Mercury Fish Consumption Advisories
 - Provides technical assistance on smart growth and minimum impact development practices.
- Dam Bureau
 - Dam regulation
 - Water level regulation
- Wetlands Bureau
 - Wetland and shoreline structure regulation
 - Reviews permits for culvert placement and bank stabilization

- Shoreland Protection Program
- Drinking Water and Groundwater Bureau
 - Oversees the operation of all public water systems to ensure compliance with the federal Safe Drinking Water Act (SDWA) and New Hampshire SDWA.
 - Reviews proposals to create and/or expand public water systems.
 - Provides technical assistance to identify and solve problems with public water systems
 - Maintains database of drinking water samples collected by public water systems for water quality.
 - Performs field inspections of public water systems.
 - Drinking Water Source Protection Program
 - Hydrology and Conservation Section
- Watershed Management Bureau
 - Lakes Management and Protection Program
 - Volunteer Lake Assessment Program
 - Volunteer River Assessment Program
 - Lake Water Quality Reports
 - Clean Lakes Program
 - Beach and Pool Inspection Program
 - Exotic Species Program
 - Boat Pumpouts (Clean Vessel Act)
 - Biomonitoring Program
 - Surface Water Quality Assessments
 - Diagnostic Studies
 - Total Maximum Daily Load (TMDL)
 - Watershed Assistance Section
 - 401 Water Quality Certificate Program

E. Department of Health and Human Services

Division of Public Health

- Water quality issues (works with DES)
- Issues fish consumption advisories

F. Department of Resources and Economic Development

Division of Parks and Recreation

- Administers Federal Land and Water Conservation Fund for acquisition of conservation lands and the development of recreational facilities.
- Manages state park lands (many located on lakes.)

Division of Forest and Lands

- Regulates forestry practices, including cutting along lake and river shorelines.
- Manages state forest lands.

G. Department of Safety

Division of Safety Services

- Boating law enforcement on all public waters
- Regulates watercraft.
- Provides boater education.
- Mooring regulations
- Maintains aids to navigation.
- Homeland Security/Port security responsibilities

H. Fish and Game Department

- Statewide Boat Public Access Program
- Fish Hatchery Program
- Threatened and Endangered Animal Program
- Aquatic Habitat Acquisition Program
- Inland and marine fisheries research and management
- On-water fishing activity regulation
- On-ice activity program

I. Office of Energy and Planning

- Conservation Land Stewardship Program
- Council on Resources and Development (CORD)
- National Flood Insurance Program (NFIP)
- Municipal and Regional Planning Assistance
- Statewide Comprehensive Outdoor Recreation Program (SCORP)
- Scenic and Cultural Byways Program
- Smart Growth Planning and Assistance
- State Development Plan

J. Department of Transportation

- Bureau of Rails and Trails
- Access to public waters.
- Oversees seaplane landing zones on surface waters and on-ice runways.

Universities

University of New Hampshire

UNH Cooperative Extension

- Lakes Lay Monitoring Program (LLMP)
- Technical assistance on the use/purchasing of fertilizers, pesticides, and herbicides as well as agricultural BMPs and sustainable landscaping
- Conservation and stewardship education and assistance
- Assists landowners with the development of stewardship plans.
- Works with communities on voluntary and regulatory water resources protection plans.

New Hampshire Water Resource Research Center

- Funds and conducts water related research projects.
- Educates the public on water issues (radon, groundwater, biosolids, septic systems, landfills etc.)
- Trains future water professionals.

UNH Center for Freshwater Biology

- Researches and monitors lake biotoxins.
- Develops reports on lake water quality.
- Provides training in aquaculture.

Plymouth State University

Center for the Environment

- Engages local communities and organizations in environmental demonstration projects.
- Regional lake water quality laboratory
- Co-organizer of annual New Hampshire Water Conference

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Appendix E

Contact Information and Useful Websites

Federal Agencies

- United States Department of Agriculture
1400 Independence Avenue, SW
Washington, DC 20250
(202) 720-8732
www.usda.gov/wps/portal/usdahome

Natural Resources Conservation Service
NH State Office
Federal Building, 2 Madbury Road
Durham, NH 03824-2043
(603) 868-7581
(603) 868-5301 (fax)
www.nh.nrcs.usda.gov/
- United States Department of the Interior
1849 C Street, NW
Washington, DC 20240
webteam@ios.doi.gov
www.doi.gov/

U.S. Fish and Wildlife Service
Northeast Regional Office
300 Westgate Center Drive
Hadley, MA 01035-9589
(413) 253-8200
(413) 253-8308 (fax)
northeast@fws.gov
www.fws.gov/northeast/

U.S. Fish and Wildlife Service
New England Field Office
70 Commercial Street, Suite 300,
Concord, NH 03301-5087
(603) 223-2541
(603) 223-0104 (fax)
NewEnglandFieldOffice@fws.gov
www.fws.gov/northeast/newenglandfieldoffice/

National Wetlands Inventory
Division of Habitat and Resources Conservation
4401 N. Fairfax Drive, Room 400
Arlington, VA 22203
(703) 358-2161
(703) 358-1869 (fax)
wetlands@fws.gov
www.fws.gov/nwi/aboutus.htm

National Wetlands Inventory
Regional Wetlands Coordinator – Region 5 (Northeast)
300 Westgate Center Drive
Hadley, MA 01035
(413) 253-8620
(413) 253-8482 (fax)
Ralph_Tiner@fws.gov
www.fws.gov/northeast/Wetlands/

- United States Environmental Protection Agency - Region 1: New England
1 Congress Street, Suite 1100
Boston, MA 02114-2023
1-888-372-7341 (toll free within New England)
(617) 918-0101 (fax)
(617) 918-1111 (outside New England)
www.epa.gov/region1/

National List of Beaches
www.epa.gov/waterscience/beaches/list/list-of-beaches.pdf

State Agencies

- New Hampshire Department of Agriculture, Markets & Food
25 Capitol Street, Second Floor
PO Box 2042
Concord, NH 03302-2042
(603) 271-3551
(603) 271-1109 (fax)
bgosselon@agr.state.nh.us
www.agriculture.nh.gov/index.htm
- New Hampshire State Conservation Committee
PO Box 3907
Concord, NH 03302-3907
(603) 271-1092
(603) 796-2600 (fax)
mlt@naturesource.net
www.nh.gov/scc/index.htm

- New Hampshire Department of Cultural Resources
20 Park Street
Concord, NH 03301
(603) 271-2392
(603) 271-6826 (fax)
Van.Mcleod@dcr.nh.gov
www.state.nh.us/nhculture

New Hampshire Division of Historical Resources
19 Pillsbury Street
Concord, NH 03301-3570
(603) 271-3483 or (603) 271-3558
(603) 271-3433 (fax)
preservation@dcr.nh.gov
www.nh.gov/nhdhr/

- New Hampshire Department of Environmental Services
29 Hazen Drive
PO Box 95
Concord, NH 03302-0095
(603) 271-3503
(603) 271-2867 (fax)
www.des.nh.gov

Administrative Rules -
www.des.nh.gov/organization/commissioner/legal/rules/index.htm

One Stop Data Retrieval - www.des.nh.gov/onestop/index.htm

Water Division
(603) 271-3503
(603) 271-2982 (fax)
www.des.nh.gov/organization/divisions/water/index.htm

Watershed Management Bureau
(603) 271-2304
(603) 271-7894 (fax)
watershed@des.nh.gov
www.des.nh.gov/organization/divisions/water/wmb/index.htm

Lakes Management and Protection Program
(603) 271-2959
jacquie.colburn@des.nh.gov
www.des.nh.gov/organization/divisions/water/wmb/lakes/index.htm

Watershed Assistance Section
(603) 271-7889
barbara.mcmillan@des.nh.gov

www.des.nh.gov/organization/divisions/water/wmb/was/index.htm

Volunteer Lakes Assessment Program (VLAP)

(603) 271-2658

sara.steiner@des.nh.gov

www.des.nh.gov/organization/divisions/water/wmb/vlap/index.htm

Limnology

(603) 271-3414

jody.connor@des.nh.gov

Exotic Species Program

(603) 271-2248

amy.smagula@des.nh.gov

www.des.nh.gov/organization/divisions/water/wmb/exoticspecies/index.htm

Wetlands Bureau

(603) 271-2147

wetmail@des.nh.gov

www.des.nh.gov/organization/divisions/water/wetlands/index.htm

Shoreland Protection Program

(603) 271-7109

shoreland@des.nh.gov

www.des.nh.gov/organization/divisions/water/wetlands/cspa/index.htm

Drinking Water and Groundwater Bureau

(603) 271-2513

dwgbinfo@des.nh.gov

www.des.nh.gov/organization/divisions/water/dwgb/index.htm

Dam Bureau

(603) 271-3406

(603) 271-7894 (fax)

damsafety@des.nh.gov

www.des.nh.gov/organization/divisions/water/dam/index.htm

Waste Management Division

(603) 271-2900

(603) 271-2456 (fax)

www.des.nh.gov/organization/divisions/waste/index.htm

Hazardous Waste Compliance

(603) 271-2942

(603) 271-0869 (fax)

hwcomp@des.nh.gov

www.des.nh.gov/organization/divisions/waste/hwcb/hwcs/index.htm

- New Hampshire Department of Health and Human Services
105 Pleasant Street
Concord, NH 03301
(603) 271-8140
(800) 852-3345 (toll free)
www.dhhs.state.nh.us/DHHS/DHHS_SITE/default.htm

Statewide Mercury Fish Consumption Advisory Update

www.des.nh.gov/organization/commissioner/pip/factsheets/ard/documents/ard-ehp-25.pdf

- New Hampshire Department of Resources and Economic Development
172 Pembroke Road
P.O. Box 1856
Concord, NH 03302-1856
(603) 271-2411
(603) 271-2629 (fax)
sboucher@dred.state.nh.us
www.dred.state.nh.us

NH Division of Forests and Lands

PO Box 1856

172 Pembroke Road

Concord, NH 03302

(603) 271-2214

ccolby@dred.state.nh.us

www.dred.state.nh.us/divisions/forestandlands/index.htm

NH Natural Heritage Bureau

(603) 271-2214

Donald.m.kent@dred.state.nh.us

www.dred.state.nh.us/divisions/forestandlands/bureaus/naturalheritage/index.htm

NH Division of Parks and Recreation

(603) 271-3556

nhparks@dred.state.nh.us

www.nhparks.state.nh.us

NH Division of Travel and Tourism Development

(603) 271-2665

travel@dred.state.nh.us

www.visitnh.gov/

- New Hampshire Department of Safety
33 Hazen Drive
Concord, NH 03305
1-800-735-2964
epierce@safety.state.nh.us
www.nh.gov/safety/

Homeland Security and Emergency Management
(603) 271-2231 or (800) 852-3792
(603) 223-3609 (fax)
info@hsem.nh.us
www.nh.gov/safety/divisions/bem/index.html

Division of Safety Services
Bureau of Marine Patrol
31 Dock Road
Gilford, NH 03249
1-877-642-9700 (toll free) or (603) 293-2037
(603) 293-0096 (fax)
marinepatrol@safety.state.nh.us
www.nh.gov/safety/ss/nhmarine.html

- New Hampshire Fish and Game Department
11 Hazen Drive
Concord, NH 03301
(603) 271-3211
(603) 271-1438 (fax)
director@wildlife.state.nh.us
www.wildlife.state.nh.us/
- New Hampshire Office of Energy and Planning
4 Chenell Drive
Concord, NH 03301-8501
(603) 271-2155
(603) 271-2615 (fax)
OEPinfo@nh.gov
www.nh.gov/oep/index.htm

NH Floodplain Management Program
(603) 271-2155
Jennifer.gilbert@nh.gov
www.nh.gov/oep/programs/floodplainmanagement/index.htm

New Hampshire Outdoor Recreation Program
(603) 271-2155
OEPinfo@nh.gov
www.nh.gov/oep/programs/recreation/index.htm

State Data Center
(603) 271-2155
joanne.cassulo@nh.gov
www.nh.gov/oep/programs/DataCenter/index.htm

Regional Planning Commissions

- Central New Hampshire Regional Planning Commission
28 Commercial Street
Concord, NH 03301
(603) 226-6020
(603) 226-6023 (fax)
cnhrpc@cnhrpc.org
www.cnhrpc.org
- Lakes Region Planning Commission
103 Main Street, Suite #3
Meredith, NH 03253
(603) 279-8171
(603) 279-0200 (fax)
lrpc@lakesrpc.org
www.lakesrpc.org/
- Nashua Regional Planning Commission
9 Executive Park Drive, Suite 201
Merrimack, NH 03054
(603) 424-2240
(603) 424-2230 (fax)
karenb@nashuarpc.org
www.nashuarpc.org
- North Country Council
107 Glessner Road
Bethlehem, NH 03574
(603) 444-6303
(603) 444-7588 (fax)
nccinc@ncia.net
www.nccouncil.org
- Rockingham Planning Commission
156 Water Street
Exeter, NH 03833
(603) 778-0885
(603) 778-9183 (fax)
email@rpc-nh.org
www.rpc-nh.org/
- Southern New Hampshire Planning Commission
438 Dubuque Street
Manchester, NH 03102
(603) 669-4664
(603) 669-4350 (fax)
email@snhpc.org
www.snhpc.org

- Southwest Region Planning Commission
20 Central Square, 2nd Floor
Keene, NH 03431
(603) 357-0557
(603) 357-7440 (fax)
admin@swrpc.org
www.swrpc.org
- Strafford Regional Planning Commission
2 Ridge Street, Suite 4
Dover, NH 03820-2505
(603) 742-2523
(603) 742-7986 (fax)
srpc@strafford.org
www.strafford.org/
- Upper Valley Lake Sunapee Regional Planning Commission
30 Bank Street
Lebanon, NH 03966-1456
(603) 448-1680
(603) 448-0170 (fax)
info@uvlsrc.org
www.uvlsrc.org

County Conservation Districts

- New Hampshire Association of Conservation Districts
PO Box 2311
Concord, NH 03302-2311
(603) 796-2615
director@nhacd.org
www.nhacd.org
 - Coos County Conservation District
4 Maryberry Lane
Lancaster, NH 03584
(603) 788-4651
(603) 788-2538 (fax)
Diane.Bennett@nh.nacdnet.net
www.nhacd.org/coos.htm
 - Grafton County Conservation District
USDA Service Center, 250 Swiftwater Road, Room 6
Woodsville, NH 03785
(603) 747-2001 ext. 5
(603) 747-3477 (fax)
Pamela.gilbert@nh.nacdnet.net
www.graftonccd.org

Carroll County Conservation District
73 Main Street, PO Box 533
Conway, NH 03818-0533
(603) 447-2771
(603) 447-8945 (fax)
joan.richardson@nh.nacdnet.net
www.nhacd.org/carroll.htm

Sullivan County Conservation District
24 Main Street
Newport, NH 03820-1500
(603) 863-4297
(603) 863-4730 (fax)
Janice.heighes@nh.nacdnet.net
www.nhacd.org/sullivan.htm

Merrimack County Conservation District
The Concord Center, 10 Ferry Street, PO Box 211
Concord, NH 03301
(603) 223-6023
(603) 223-6030 (fax)
stacyluke@hotmail.com
www.merrimackccd.org/

Belknap County Conservation District
719 North Main Street, Room 203
Laconia, NH 03246-2772
(603) 527-5880
(603) 528-8783 (fax)
lisa-morin@nh.nacdnet.net
www.belknapccd.org/

Strafford County Conservation District
259 County Farm Road, Unit #3
Dover, NH 03820-6015
(603) 749-3037
(603) 743-3667 (fax)
bambi.miller@nh.nacdnet.net
www.nhacd.org/strafford.htm

Rockingham County Conservation District
110 North Road
Brentwood, NH 03833-6614
(603) 679-2790
(603) 679-2860 (fax)
rccd@ttlc.net
www.rockinghamccd.org

Hillsborough County Conservation District
Chappell Professional Center
468 Route 13 South
Milford, NH 03055
(603) 673-2409 ext. 4
(603) 673-0597 (fax)
kerry.rickrode@nh.nacdnet.net
www.nhacd.org/hillsborough.htm

Cheshire County Conservation District
11 Industrial Park Drive
Walpole, NH 03608
(603) 756-2988 ext. 116
(603) 756-2978 (fax)
amanda-costello@nh.nacdnet.net
www.nhacd.org/cheshire.htm

Universities

- University of New Hampshire
Durham, NH 03824
(603) 862-1234
www.unh.edu/

Lakes Lay Monitoring Program
38 College Road
Spaulding Hall
Durham, NH 03824-3544
(603) 862-3848
(603) 862-2717 (fax)
Jeff.Schloss@unh.edu
www.wrrc.unh.edu/current_research/lakeslay.htm

Center for Freshwater Biology
102 Rudman Hall
Durham, NH 03824
jfhaney@unh.edu
cfb.unh.edu/

- Plymouth State University
17 High Street
Plymouth, NH 03264-1595
(800) 842-6900
plymouthadmit@plymouth.edu
www.plymouth.edu/

The Center for the Environment
211 Boyd Science Center
Plymouth, NH 03264-1595
(603) 535-3154
(603) 535-3180 (fax)
psu-cfe@plymouth.edu
<http://www.plymouth.edu/cfe/>

Conservation Organizations

- Loon Preservation Committee
Lee's Mills Road
PO Box 604
Moultonborough, NH 03254
(603) 476-5666
ahodges@loon.org
www.loon.org
- New Hampshire Audubon
3 Silk Farm Road
Concord, New Hampshire 03301
(603) 224-9909
(603) 226-0902 (fax)
asnh@nhaudubon.org
www.nhaudubon.org
- New Hampshire Lakes Association
3 Silk Farm Road
Concord, NH 03301
(603) 226-0299
(603) 224-9442 (fax)
info@nhlakes.org
www.nhlakes.org
- Society for the Protection of New Hampshire Forests
54 Portsmouth Street
Concord, New Hampshire 03301
(603) 224-9945
(603) 228-0423 (fax)
info@forestsociety.org
www.spnhf.org

Other

- NH GRANIT
Complex Systems Research Center
Morse Hall

University of New Hampshire
Durham, NH 03824
(603) 862-1792
granit@unh.edu
www.granit.sr.unh.edu/

- Lake Sunapee Protective Association
68 Main Street
PO Box 683
Sunapee, NH 03782
(603) 763-2210
lspace@lakesunapee.org
www.lakesunapee.org
- Squam Lakes Association
534 US Route 3
PO Box 204
Holderness, NH 03245
(603) 968-7336
(603) 968-7444 (fax)
info@squamlakes.org
www.squamlakes.org
- North American Lake Management Society (NALMS)
PO Box 5443
Madison, WI 53705-0443
(608) 233-2836
(608) 233-3186 (fax)
info@nalms.org
www.nalms.org
- New England Chapter of the North American Lake Management Society (NEC-NALMS)
Coastal Institute, Room 105
Kingston, RI 02881
lgreen@uri.edu
www.nalms.org/necnalms/

Appendix F

Funding Sources

**Further research will be needed, since funding sources are constantly changing and this is not an exhaustive list.*

Nonpoint Source Grants (319)

Grant Name: Watershed Restoration Grants for *Impaired Waters*

Funding Organization: NH Department of Environmental Services

Eligibility: Municipalities, nonprofits, regional planning commissions, county conservation districts, state agencies, water suppliers, designated river local advisory committees and watershed associations.

Projects Funded: Projects in the watersheds on the targeted impaired watersheds list that support local initiatives to control nonpoint source pollution and address pollution problems in impaired waters.

Total Funds Available: Approximately \$310,000 expected to be available in 2008.

Contact: Eric Williams DES Watershed Assistance Section, PO Box 95, Concord, NH 03302-0095 at (603) 271-2358 or eric.williams@des.nh.gov or Jeff Marcoux DES Watershed Assistance Section, PO Box 95, Concord, NH 03302-0095 at (603) 271-8862 or jeffrey.marcoux@des.nh.gov.

See also <http://des.nh.gov/organization/divisions/water/wmb/was/categories/grants.htm#warg>.

Grant Name: Watershed Assistance Grants for *High Quality Waters*

Funding Organization: NH Department of Environmental Services

Eligibility: Municipalities, nonprofits, regional planning commissions, county conservation districts, state agencies, water suppliers, designated river local advisory committees and watershed associations.

Projects Funded: Projects must use a watershed-based approach that link specific practices to a quantifiable water quality goal to prevent significant water quality degradation of high quality waters.

Total Funds Available: Approximately \$150,000 expected to be available in 2008.

Contact: Eric Williams, DES Watershed Assistance Section, PO Box 95, Concord, NH 03302-0095 at (603) 271-2358 or eric.williams@des.nh.gov or Jeff Marcoux, DES Watershed Assistance Section, PO Box 95, Concord, NH 03302-0095 at (603) 271-8862 or jeffrey.marcoux@des.nh.gov.

See also www.des.nh.gov/organization/divisions/water/wmb/was/categories/grants.htm#warg.

Drinking Water Source Protection Grants

Grant Name: Local Source Water Protection Grants

Funding Organization: NH Department of Environmental Services

Eligibility: Water suppliers, municipalities, and other local organizations.

Projects Funded: A broad range of assessment, planning and implementation projects involving protection of sources used by public water systems. This includes monitoring, inventory and assessment of potential contamination sources, identification and evaluation of management options, development of management plans, working with stakeholders and implementation. Implementation includes such items as public education, regulatory and non-regulatory measures and structural solutions to manage contamination or control access.

Funds Available: Approximately \$200,000 is expected to be available in 2008.

Contact: Johnna McKenna, DES Drinking Water Source Protection Program, PO Box 95, Concord, NH 03302-0095 at (603) 271-7017 or johnna.mckenna@des.nh.gov.

See also www.des.nh.gov/organization/divisions/water/dwgb/dwspp/lswp_grants.htm.

Grant Name: Water Supply Land Grant Program

Funding Organization: NH Department of Environmental Services

Eligibility: Any municipality or non-profit organization having water supply as a principal mission.

Projects Funded: The purchase of land or conservation easements critical to the protection of drinking water source protection.

Total Funds Available: Approximately \$1 million is available annually.

Contact: Holly Green, DES Drinking Source Water Protection Program, PO Box 95, Concord, NH 03302-0095 at (603) 271-3114 or holly.green@des.nh.gov.

See also www.des.nh.gov/organization/divisions/water/dwgb/dwspp/land_acqui/index.htm.

Regional Planning Grants

Grant Name: Water Quality Planning (604b) Grants

Funding Organization: NH Department of Environmental Services

Eligibility: Regional planning commissions and the Connecticut River Joint Commissions.

Projects Funded: Water quality planning projects that support local watershed planning efforts, in particular the development or implementation of river corridor/watershed management plans or designated river nominations, or lake management/shoreland protection plans or comprehensive lake inventories.

Funds Available: \$80,000 is available every two years, with a maximum of \$20,000 per organization per year.

Contact: Laura Weit, DES Lakes and Rivers Management Programs, PO Box 95, Concord, NH 03302-0095 at (603) 271-8811 or laura.weit@des.nh.gov.

See also www.des.nh.gov/organization/divisions/water/wmb/was/categories/grants.htm#wqp.

Grant Name: Regional Environmental Planning Program

Funding Organization: NH Department of Environmental Services

Eligibility: Regional planning commissions

Projects Funded: Environmental planning projects, such as nonpoint source pollution education and outreach, natural and cultural resource inventories, open space planning, and land protection.

Funds Available: \$25,000 is available per year to each planning commission.

Contact: Eric Williams, NHDES Watershed Assistance Section, PO Box 95, Concord, NH 03302-0095 at (603) 271-2358 or eric.williams@des.nh.gov.

See also www.des.nh.gov/organization/divisions/water/wmb/was/categories/grants.htm#wqp.

Exotic Aquatic Plant Grants

Grant Name: Control Grants for Exotic Aquatic Plants

Funding Organization: NH Department of Environmental Services

Eligibility: Local lake associations and municipalities.

Projects Funded: Control and treatment of exotic aquatic weeds, like milfoil.

Funds Available: Approximately \$90,000 annually.

Contact: Amy Smagula, DES Exotic Species Program, PO Box 95, Concord, NH 03302-0095 at (603) 271-2248 or amy.smagula@des.nh.gov.

See also www.des.nh.gov/organization/divisions/water/wmb/exoticspecies/categories/grants.htm.

Grant Name: Milfoil and Other Exotic Plant Prevention Grants

Funding Organization: NH Department of Environmental Services

Eligibility: Lake associations and municipalities.

Projects Funded: Innovative strategies that seek to prevent new infestations of exotic plants.

These could include activities such as outreach, education, monitoring and other activities.

Funds Available: Approximately \$130,000 annually.

Contact: Amy Smagula, DES Exotic Species Program, PO Box 95, Concord, NH 03302-0095 at (603) 271-2248 or amy.smagula@des.nh.gov.

See also www.des.nh.gov/organization/divisions/water/wmb/exoticspecies/categories/grants.htm.

Grant Name: Research Grants for Exotic Aquatic Plants

Funding Organization: NH Department of Environmental Services

Eligibility: Institutions of higher learning.

Projects Funded: Research should focus on some issues associated with exotic aquatic plant management, control, biology, ecology or prevention, or other relevant projects.

Funds Available: Approximately \$80,000 annually.

Contact: Amy Smagula, DES Exotic Species Program, PO Box 95, Concord, NH 03302-0095 at (603) 271-2248 or amy.smagula@des.nh.gov.

See also www.des.nh.gov/organization/divisions/water/wmb/exoticspecies/categories/grants.htm.

Other Grants

Grant Name: Small Outreach and Education Grants

Funding Organization: NH Department of Environmental Services

Eligibility: Municipalities, nonprofit organizations, regional planning commissions, county conservation districts, state agencies, community groups, nonprofit educators and schools, water suppliers and watershed associations.

Projects Funded: Outreach and education projects that target appropriate audiences with diverse nonpoint source pollution water quality related messages.

Funds Available: Approximately \$20,000 is available year round on an ongoing basis.

Contact: Barbara McMillan, DES Watershed Assistance Section, PO Box 95, Concord, NH 03302-0095 at barbara.mcmillan@des.nh.gov or (603) 271-7889.

See also www.des.nh.gov/organization/divisions/water/wmb/was/categories/grants.htm#soeg.

Grant Name: Conservation License Plate Program

Funding Organization: NH State Conservation Committee

Eligibility: County conservation districts, conservation commissions, educational institutions, and other organizations involved in natural resource conservation.

Projects Funded: Planning and carrying out projects that enhance New Hampshire's environment by promoting the sustainability of the state's public and private land, air and water resources to prevent their pollution or degradation.

Funds Available: \$187,856 for 2007.

Contact: Michele L. Tremblay, New Hampshire State Conservation Committee, PO Box 3907, Concord, NH 03302-3907 at (603) 271-1092 or mlt@naturesource.net.

See also www.mooseplate.com/.

Grant Name: Land and Community Heritage Investment Program (LCHIP)

Funding Organization: New Hampshire Land and Community Heritage Investment Program

Eligibility: NH communities and non-profits.

Projects Funded: Acquisition of lands, and cultural and historical resources of local, regional, and statewide significance, in partnership with the state's municipalities and the private sector for the primary purpose of protecting and ensuring the perpetual contribution of these resources to the state's economy, environment, and overall quality of life.

Funding Available: \$6 million for 2007-2008 funding round.

Contact: Land and Community Heritage Investment Program, 10 Dixon Avenue, Concord, NH 03301 at (603) 224-4113.

See also www.lchip.org/.

Other Sources

U.S. Environmental Protection Agency – Watershed Funding: www.epa.gov/owow/funding.html

National Park Service – Land and Water Conservation Fund: www.nps.gov/lwcf/

Appendix G

Community Survey Example

SUNAPEE AREA WATERSHED COALITION SURVEY

Dear Sunapee Area Watershed Neighbors:

As you may have read in the local newspapers, the Sunapee Area Watershed Coalition (SAWC) is in the process of working on a long-term Watershed Management Plan to address growth and development and the resulting water quality problems. The Plan will include input from residents, organizations, businesses, local officials and visitors in the Lake Sunapee Watershed and its environs. Long-term management and education recommendations will set a plan for implementation to protect and care for our regional watersheds and water bodies (*See map*). The input and opinions of the Watershed area's residents, property and business owners are critical ingredients in preparing a meaningful Plan. Please complete this survey and return it to us so that we can take your thoughts and opinions into account as we move forward in our planning efforts. Your input is extremely valuable and much appreciated.

Thank you.
Sunapee Area Watershed Coalition

Watershed Assets

1) Why do you feel the Sunapee Watershed area and its environs is a desirable place to live? (Check the letters for your top **three** choices)

- a. Small-town atmosphere with rural character
- b. Scenic and unspoiled natural environment
- c. Employment opportunities
- d. Availability of housing
- e. Level of community involvement and spirit
- f. Quality of school system
- g. Convenient access to interstate highway system
- h. Access to Lake Sunapee and its recreational opportunities
- i. Availability of shops and services in the area
- j. Commuting distance
- k. Other(s) (Please Specify: _____)

2) Please circle that which best represents your opinion of the importance of each of the following characteristics associated with the Sunapee Watershed area.

<input type="checkbox"/> a. Scenic quality	Low	Medium	High	Uncertain
<input type="checkbox"/> b. Boating access	Low	Medium	High	Uncertain
<input type="checkbox"/> c. Swimming access	Low	Medium	High	Uncertain
<input type="checkbox"/> d. Good water quality	Low	Medium	High	Uncertain
<input type="checkbox"/> e. Wildlife habitat	Low	Medium	High	Uncertain
<input type="checkbox"/> f. Development opportunities	Low	Medium	High	Uncertain
<input type="checkbox"/> g. Good water quantity	Low	Medium	High	Uncertain
<input type="checkbox"/> h. Historic resources	Low	Medium	High	Uncertain
<input type="checkbox"/> i. Other _____	Low	Medium	High	Uncertain

Watershed Threats

3a) Have you noticed any of the following threats/trends in the Watershed? Please check as many as apply.

- _____ a. Loss of forestland to development
- _____ b. Building too close to the lake or other water bodies
- _____ c. Loss of wetlands
- _____ d. Excessive erosion/sedimentation
- _____ e. Water pollution
- _____ f. Inadequate public access for recreation
- _____ g. Recreational abuses, like litter
- _____ h. Loss of wildlife habitat
- _____ i. Low water levels
- _____ j. Flooding
- _____ k. Invasive species
- _____ l. Other _____

3b) In the list above, please now go back and circle the **three** you are most concerned about.

4) Below is a list of possible threats to water quality and the health of the Sunapee area watersheds. Please indicate (by circling) if each has a great impact, some impact, very little impact, or no impact in the area watersheds.

a. Poorly planned development	Great impact	Some impact	Little impact	No impact
b. Residential septic systems	Great impact	Some impact	Little impact	No impact
c. Stormwater runoff from impervious surfaces (roads, parking lots, etc.)	Great impact	Some impact	Little impact	No impact
e. Removal of vegetation on shorelands	Great impact	Some impact	Little impact	No impact
f. Loss of wetlands	Great impact	Some impact	Little impact	No impact
g. Recreational abuses	Great impact	Some impact	Little impact	No impact
g. Other (Please specify: _____)				
h. None of the above				

Watershed Solutions

4) Which of the following do you feel are appropriate actions for protecting the Sunapee area watersheds and the resources within them?

- _____ a. Increased landowner education
- _____ b. Increased education of local officials
- _____ c. Increased coordination of planning among watershed towns
- _____ d. Stronger local regulations
- _____ e. Stricter enforcement of *existing* local regulations
- _____ f. Stronger state regulations
- _____ g. Stricter enforcement of *existing* state regulations
- _____ h. Increased land protection
- _____ i. Other (Please specify: _____)
- _____ j. None of the above

6) Please tell us how likely each of the things mentioned below would influence you to become more involved with protecting water quality and natural resources in the Sunapee area watersheds (Circle appropriate response for each).

Would you become more involved if...

- a. You had more information about conditions and threats in the watershed?
- Very likely Somewhat likely Somewhat unlikely Not at all likely
- b. You had more information about what you could do to help?
- Very likely Somewhat likely Somewhat unlikely Not at all likely

c. Community events were scheduled more often in the watershed?

Very likely Somewhat likely Somewhat unlikely Not at all likely

d. You knew that the time commitments would be minimal?

Very likely Somewhat likely Somewhat unlikely Not at all likely

7) Are you a (check all that apply):

- a. Year-round resident
- b. Part-time or seasonal resident
- c. Property owner
- d. Non-property owner
- e. Registered voter

8) How many years have you owned property or resided in the Sunapee area? (Check one)

- a. Less than 1 year
- b. 1-5 years
- c. 6-10 years
- d. 11-20 years
- e. 21-30 years
- f. Over 30 years

9) In what age bracket are you? (Check one)

- a. Under 25 years old
- b. 25-39 years old
- c. 40-54 years old
- d. 55-64 years old
- e. Over 65 years old

10) Of the following, which best fits your definition of what a watershed is:

- a. Area that retains water, like a swamp or marsh
- b. Area that drains into a specific water body
- c. Water intake area that feeds a water treatment plant
- d. Small building where water is stored
- e. Other (Please specify: _____)

Thank you very much for your input! – Please feel free to use the space below and/or on the reverse side of this page to provide any additional comments you may have regarding the Sunapee area watersheds and their protection. If you're interested in being on our email or mail list, please include your contact information, below.

Name: _____

Address: _____

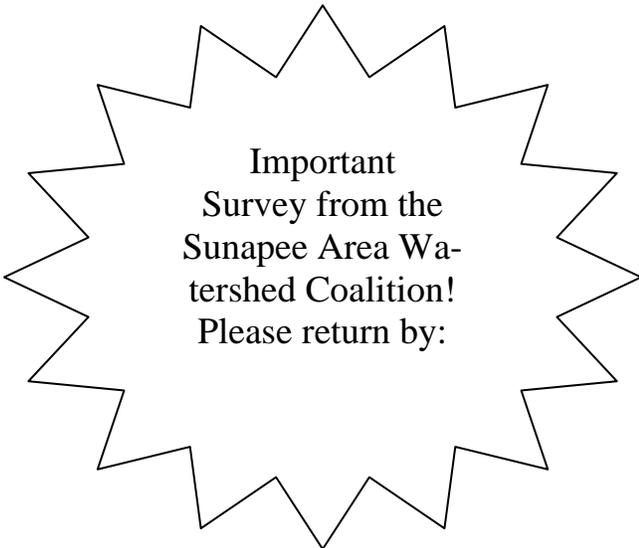
Email: _____

Please return to: PO BOX 683, Sunapee, NH 03782 -or- Leave in Drop Box at: LSPA Office, 68 Main St., Sunapee, NH

Please return by: **Dec 1, 2005**

PLACE
POSTAGE
HERE

Mail to: SAWC Survey
PO Box 683
Sunapee, NH 03782



Appendix H

Limno-Lingo: A Guide to Limnological Terminology

Algae: Microscopic, free-floating aquatic plants which occur as single cells, colonies, or filaments; base of a lake's food chain.

Alkalinity: Also known as Acid Neutralizing Capacity. Refers to the quantity and type of compounds present, which shift the pH to the alkaline or basic side of neutrality.

Anthropogenic eutrophication: The over nourishment of aquatic ecosystems with plant nutrients due to human activity.

Baseline data: Preliminary information gathered before a program begins that is used later to provide a comparison for assessing program impact.

Benthic: Referring to the bottom layer in a waterbody.

Best Management Practices (BMPs): Those practices that are currently believed to be the most advanced, effective, and practicable means of preventing or reducing pollution entering waterbodies.

Chlorophyll: A green, light-absorbing pigment found in plants and other photosynthetic organisms.

Chlorophyll-a: A type of chlorophyll present in algae; a measure of the phytoplankton or floating algal biomass in lakes and ponds.

Clarity: Transparency, routinely estimated using a Secchi Disk.

Conductivity: A measure of the ability of water to conduct electricity; elevated by the presence of salts resulting from soil composition, faulty septic systems, or road salts.

Cultural eutrophication: The over nourishment of aquatic ecosystems with plant nutrients due to human activity.

Dissolved Oxygen (D.O.): The concentration of oxygen dissolved in water, usually expressed in milligrams per liter, parts per million, or percent of saturation.

Ecology: The environment as it relates to living organisms in a defined space in association with their interrelated physical and chemical environment.

Ecosystem: All of the interacting organisms in a defined space in association with their interrelated physical and chemical environment.

Epilimnion: The upper, well-circulated layer of a thermally stratified lake.

Eutrophic: Nutrient-rich waters, generally characterized by a high level of biological production.

Eutrophication: The natural process by which aquatic ecosystems are enriched by plant nutrients, leading to excessive plant growth. The extent to which this process has occurred is reflected in the lake's trophic classification.

Exotic species: Invasive or non-native species that can negatively affect ecosystems.

Flushing rate: Also known as Hydraulic Residence Time. The number of times per year a volume of water equal to the lake volume passes through the lake.

Great pond: According to the New Hampshire state legislature, any natural water body (lake or pond) that is 10 acres or greater.

Hypolimnion: The deep, relatively undisturbed bottom waters of a thermally stratified lake.

Lake ecology: The study of the physical, biological, and chemical characteristics of a lake and how these characteristics relate to living organisms.

Lake management: A carefully planned effort to protect and/or enhance the lakes and great ponds of New Hampshire on a small watershed scale.

Lake Management Plan: Written document that outlines the steps that should be taken to properly manage a waterbody, according to the desired outcome.

Lake steward: A person who is educated about the ways in which humans can impact lakes and takes actions to lessen these impacts.

Loading: The amount of a substance (typically suspended sediment, nutrients [Nitrogen and Phosphorus], or contaminants) that is added to a lake during a specified time period.

Limnetic zone: The open water zone of a waterbody.

Limnologist: A scientist who studies aquatic life in freshwater, especially in lakes and ponds.

Limnology: The scientific study of bodies of freshwater for their biological, physical and geological properties.

Littoral zone: The depth of water extending from the shoreline into the lake to the point where aquatic rooted plants can no longer grow.

Macroinvertebrates: Aquatic invertebrates, such as insects and crustaceans, visible within a waterbody.

Macrophytes: Rooted and floating aquatic plants.

Mesotrophic: A trophic state indicating the waterbody contains moderate nutrient concentrations and plant growth, moderately clear water, and a hypolimnion that may lack oxygen in the summer.

Metalimnion: The middle or transitional zone between the well mixed epilimnion and the deeper hypolimnion layers in a thermally stratified lake.

Morphometry: Measurement of form usually related to the shape of a waterbody.

New Hampshire Comprehensive Lake Inventory: A methodology developed by the New Hampshire Department of Environmental Services whereby a lake is assessed by volunteers to collect information regarding its status.

Nonpoint source pollution: Pollution from sources that cannot be defined as discrete points (not discharged from a pipe); including, but not limited to, runoff from impervious surfaces, contaminated groundwater flow, or failing on-site septic systems.

Oligotrophic: Water with low nutrient concentrations and plant growth, clear water, and oxygen at all depths.

pH: A measure of the hydrogen ions in the water, or in general terms, the acidity. As pH drops to between 5 and 6 many fish and other aquatic organisms become stressed and some species disappear. Little or no fish life remains when the pH falls below 5.

Pelagic zone: The open area of a lake from the edge of the littoral zone to the center of the lake.

Profundal zone: Deepest portion of a lake where light does not penetrate; below the limnetic zone.

Photosynthesis: The process by which green plants convert carbon dioxide (CO₂) dissolved in water to sugars and oxygen, using sunlight for energy.

Point source pollution: Pollution resulting from a direct source such as a sewage pipe or industrial waste pumped directly into a waterbody.

Photic zone: The depth of lake water that receives sufficient sunlight to permit photosynthesis.

Phytoplankton: Microscopic plant life that float within, or on top of, lake water.

Productivity: The time rate of production of biomass for a given group of organisms; in general, the net rate of growth of organisms.

Riparian buffer: Land next to streams, lakes, and wetlands that is managed for perennial vegetation (grass, shrubs, and/or trees) to enhance and protect aquatic resources from adverse impacts of development.

Secchi disk: Tool used to measure the clarity or transparency of a waterbody. A disk with an 8-inch radius painted in alternate black and white quadrants.

Sedimentation: The removal, transport, and deposition of soil particles and contaminants by flowing water or wind.

Stakeholder: Individuals or groups who have an interest in a particular decision. This includes people who influence a decision, or can influence it, as well as those affected by it.

Thermal stratification: The horizontal layering of water, arranged from top to bottom in order of increasing density due to differences in temperature.

Thermocline: The point of maximum temperature decline with depth in a thermally stratified lake.

Transparency: Clarity, routinely estimated using a Secchi Disk.

Trophic status: The nutritive state of a lake or, more specifically, the levels of the plant nutrients, phosphorus, chlorophyll-a, macrophytes, dissolved oxygen, and transparency. It is often described in terms of the biological production in the lake.

Turnover: Process of lake mixing aided by winds and seasonal temperature changes; New Hampshire lakes turnover in the spring and in the fall.

Productivity: The time rate of production of biomass for a given group of organisms.

Watershed: A drainage area in which all land and water areas drain or flow toward a central basin such as a lake, river, or stream. Not only does a watershed drain, it also captures precipitation, filters and stores water, and determines its release. A watershed divides the landscape into hydrologically defined areas.

Watershed delineation: Locating the waterbody on a topographic map and outlining the boundaries of the watershed by joining the highest land points that surround the waterbody.

Watershed management: The process of guiding and organizing land use and other resource uses within a watershed to provide goods and services without adversely affecting soil and water resources. Imbedded in the concept of watershed management is the recognition of the interrelationships among land use, soil and water, and the linkages between uplands and downstream areas.

Zooplankton: Microscopic animal life that floats within, or on top of, lake water.

Appendix I

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