Nash Stream Forest

Management Plan

State of New Hampshire

Department of Natural and Cultural Resources

FOREWORD

This document marks the first full revision of the Management Plan since the original was created and adopted in 1995, and updated in 2002. The new plan is the result of a four-year planning process involving numerous department staff, multiple partners and organizations, the Nash Stream Forest Citizen's Committee, the Council on Resources and Development, and active engagement by the public via hearings and written comments. As the original plan was a seminal document with a Vision meant to be timeless, this new version used that plan as the foundation, and built upon the great work of our predecessors.

Nash Stream Forest continues to be a jewel of our North Country. By focusing on the original three mandates of ensuring the property contributes to the forest economy by sale of wood products; providing continued public access for recreation; and protecting the area's natural beauty and ecological values, the Forest has served as a model of public land stewardship for almost three decades. Finding the right balance between uses has not always been easy or obvious, but we owe it to this special property to be thoughtful, considerate and deliberate in determining how our decisions stay true to the Vision, Principles and Goals.

While this plan continues to maintain a focus on ecological-based management using uneven-aged silviculture, it also contains several notable changes of contemporary interest. For instance, this version now has a new chapter dedicated solely to climate change. It also adds discussion regarding the feasibility of third-party certification and to exploring carbon markets. It better defines allowable timber harvest levels using both area control and volume regulation. It contains newly-created maps using the latest in Geographic Information System technology. It clearly establishes and outlines the review process for the limited expansion of ATV use on the property. Lastly, this plan calls for an updated inventory of both the timber resource and natural communities, and prioritizes the establishment of the control areas called for in the original plan.

The department and division would like to thank each and every person who contributed in some way, whether large or small, to the creation of this new plan. The decisions we make today will have lasting impacts upon this wonderful resource far beyond the life of any plan, so a collaborative and cooperative planning process is imperative to ensure we make the best decisions on behalf of the land and the people of our state. It is our hope and belief that this plan accomplishes that lofty goal and that Nash Stream Forest will continue to be the flagship of the state reservation system.

Brad W. Simpkins
Director/State Forester
Division of Forests and Lands

I approve the Nash Stream Forest Management Plan.

Brad Simpkins, Director/State Forester
Division of Forests and Lands
Department of Natural and Cultural Resources
Concord, NH

12/19/17
Date

Jeffrey Rose, Commissioner
Department of Natural and Cultural Resources
Concord, NH

12/19/17
Date

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1. NASH STREAM FOREST

1.1 INTRODUCTION

Nash Stream Forest is a parcel of 39,980 acres located within the towns of Columbia, Stark, Stratford, and the unincorporated place of Odell in Coos County in northern New Hampshire (**Map 1**). Its remote location and many natural features, such as ponds, streams, mountain peaks, and forest land, contribute to its natural beauty and ecological value.

The area encompasses a variety of wildlife habitats, from ponds, streams and wetlands, to hardwood, softwood, and mixed forests of various ages. It is home to an estimated 180 different species of mammals, birds, fish, reptiles and amphibians.

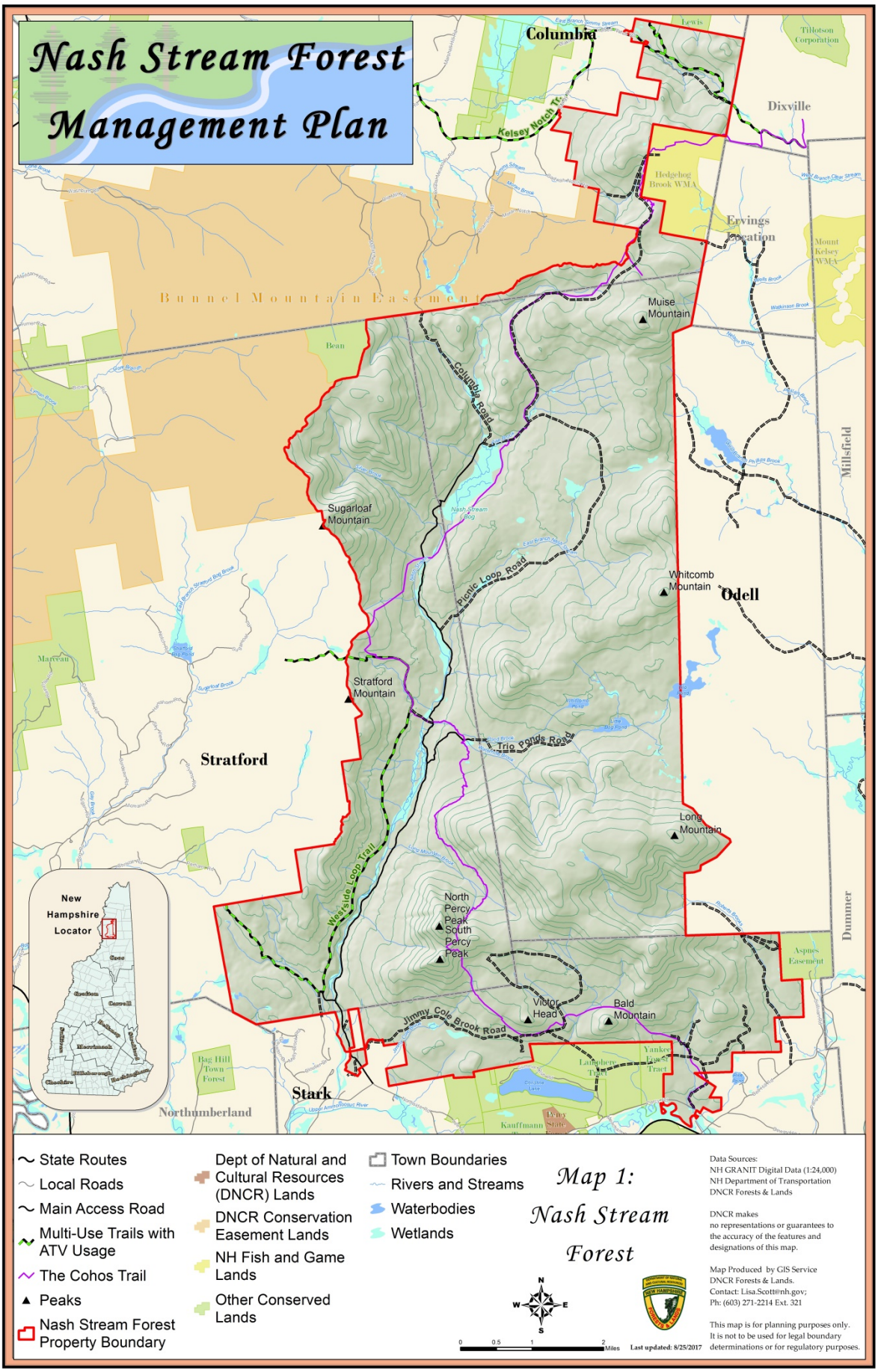
Nash Stream Forest is also used for recreational activities, including fishing, hunting, hiking and limited ATV riding in the summer and fall, and snowmobiling, cross country skiing, dog sledding, and snowshoeing in the winter. It is served by a 66.5 mile network of roads, allowing access to forty miles of rivers and streams and over 150 acres of ponds. Hiking trails to several mountain peaks have been maintained by local hikers and volunteer groups. Ninety-one private camp lot licenses held by individuals, families, or associations remain at the time of this revision. Nash Stream Forest is also important for its timber resources, since forest covers almost 98% of the property. When the property was acquired, it had been cut heavily resulting in a significant amount of young regrowth. Now, 25 years later, the property is largely comprised of nice pole sized and small sawtimber sized forests. Based on a timber cruise of 29,348 acres surveyed in the fall of 1988, the majority of forest land surveyed was found to be hardwoods (56%); softwoods accounted for a much smaller area (7%); with mixed hardwoods/softwoods (28%) and mixed softwoods/hardwoods (9%).

Nash Stream Forest is also an important watershed area. The property has five separate drainages which are all part of the Connecticut River watershed.

Through a unique collaborative effort between the State of New Hampshire, the U.S. Forest Service, the Nature Conservancy, the Trust for New Hampshire Lands, and the Society for the Protection of New Hampshire Forests, the state was able to purchase the Nash Stream Forest tract in October, 1988. On July 1, 2017, a state law went into effect that separated the Department of Resources and Economic Development (DRED) into two agencies, the Department of Natural and Cultural Resources (DNCR) and the Department of Business and Economic and Affairs (DBEA). DNCR is responsible for managing Nash Stream forest for natural resource purposes, in partnership with other state agencies and the U.S. Forest Service, which holds a Conservation Easement. This easement provides for multiple use management that includes education and research, watershed, fish and wildlife, recreation, scenic qualities, and timber.

In December, 1989, an Advisory Committee was appointed by Governor Judd Gregg to serve as a focused source of public comment and technical expertise.

Nash Stream Forest is important to the quality of life in New Hampshire and vicinity. As part of the northern forest region that extends from the Adirondacks of New York across northern portions of Vermont, New Hampshire, and Maine, Nash Stream Forest has long contributed to the local forest-based economy, public recreation, fish and wildlife habitat, and scenic forest landscapes. Nash Stream Forest has provided statewide, regional and local conservation and recreational value.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Dixville
Kelsey Notch Trail
Hedgehog Brook WMA
Ervings Location
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Tillotson Corporation
Bunnel Mountain Easement
Muise Mountain
Columbia Road
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1
2
Miles
Last updated: 8/25/2017
Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
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1.2 ACQUISITION

A series of events that began in 1988 alarmed conservationists, state officials, the public and Congress to the potential for large-scale subdivision of New England forests. The natural beauty, landscape, rural character, natural resources, and quality of life long associated with large blocks of undeveloped northern forest land was threatened when Diamond International Corporation, a subsidiary of the French timber company General Occidentale, placed its landholdings in New Hampshire, Vermont, New York and Maine on the market in the winter of 1988. A price of $19 million was set for 90,000 acres in Vermont and New Hampshire. Timberland investment analysts estimated a value of $100 per acre was justified and agreed that Diamond's asking price was more in line with the land's development potential.

In April, The Nature Conservancy (TNC) made an offer, planning to hold the land until a state or federal agency could buy them out. TNC's offer, based more on the timber values than development values, was rejected. In May, an offer by the New Hampshire Retirement System was also rejected. TNC and the Retirement System were working out details of a joint offer when on May 27, 1988, Rancourt Associates announced they had signed an agreement to pay the asking price of $19 million.

Almost immediately, negotiations began between TNC, The Society for the Protection of New Hampshire Forests (SPNHF), the Land Conservation Investment Program (LCIP) and Rancourt Associates to purchase 46,500 acres of the 67,000 acres in New Hampshire. This included approximately 40,000 acres in Nash Stream, 2,000 acres in four smaller pieces and 4,500 acres of inholdings within the White Mountain National Forest (WMNF). On July 5, TNC and SPNHF signed an agreement to buy the land from Rancourt as an addition to the WMNF. However, on July 13, the U.S. Senate passed an appropriation for the Department of the Interior, which included only $5.3 million for this land purchase and a scramble was underway in New Hampshire to raise the difference between this and a negotiated sale price of $12.75 million.

On August 23, 1988, the LCIP Board of Directors voted to approve the expenditure of $7.65 million of LCIP funds for the purchase of these lands. A purchase and sale agreement was executed the following day with TNC and SPNHF to provide a loan of $5.1 million to cover the balance of the purchase price until the federal funds were released.

The principal remaining problem was to allocate interests in the Nash Stream land between the state and federal governments. The state offered to sell a proportionate share in fee, at the price per acre it had agreed to pay to acquire the land from Rancourt. The Forest Service refused because the state's purchase price was higher than the Forest Service's appraised value. The state then offered to sell a proportionate common and undivided interest. The U.S. Justice Department said "No". Finally, in October, 1988, the Forest Service agreed in principle to share the costs of the Nash Stream acquisition through purchase of a Conservation Easement on the property.

When a closing finally took place on October 27, 1988, the State of New Hampshire purchased 46,679 acres of Diamond (Rancourt) land for $12.75 million and reconveyed 4,496 to the Forest Service for $1.175 million. The state mortgaged the remaining property to TNC and SPNHF for $3.925 million to provide the balance of the purchase price pending negotiation of the terms and value of the Conservation Easement. The Nash Stream deal was finalized almost a year later, when on August 4, 1989, the Conservation Easement was sold to the United States of America for $3.95 million and the TNC/SPNHF loan (with interest) was paid. This protected the Forest from future residential and commercial development, and assuring public access to be managed by DNCR in perpetuity.

New Acquisitions Since 1988

There have been four additions to Nash Stream since the initial purchase of the property. These parcels were either in-holdings or abutting properties that benefited the state through acquisition.

1) 0.3 acres of undeveloped land conveyed on June 28, 1993, by Ellen K. F. Dorr, abutting Nash Stream Road, Stark, NH. (purchase price: $8,750)

2) 18.0 acres of forestland with a small cabin and a vehicular right-of-way conveyed on September 22, 2004, by Cindy and James Murphy, Columbia, NH (purchase price: $40,000)

3) 50 acres of undeveloped forestland conveyed on October 14, 2008, by the Society for the Protection of New Hampshire Forests, Columbia, NH (purchase price: $25,000)

4) 311 acres of undeveloped forestland conveyed on March 16, 2012, by Allen Bouthillier and Gregory Stone, Columbia, NH. (purchase price: $110,000)

The total acreage of Nash Stream currently is 39,980.03 acres, with only 39,601 acres held under the terms of the Conservation Easement.

1.3 WHY THE STATE PURCHASED NASH STREAM FOREST

Nash Stream Forest was purchased by the state through the Land Conservation Investment Program (LCIP) to preserve the property's natural beauty, landscape, rural character, natural resources, and the quality of life in New Hampshire, in cooperation with the United States Forest Service, The Nature Conservancy, Trust for New Hampshire Lands, and the Society for the Protection of New Hampshire Forests. It was purchased primarily to:

Ensure that the property continues to contribute to forest economy through the sale of wood products;

Provide continued public access for recreation; and

Protect the area's natural beauty and ecological values.

LCIP was established in the spring of 1987 to acquire lands and interest in lands of statewide, regional, and local conservation and recreation importance to preserve the natural beauty, rural character, natural resources, and quality of life.

Acquisition through LCIP brought certain requirements and restrictions under the provisions of RSA 221-A (now RSA 162-C), which include:

1) That the management of the Nash Stream property be assigned to a state agency to be managed in the public interest in accordance with the purposes of RSA 221-A (now RSA 162-C),;
2) That the property shall not be posted to prohibit hunting or fishing, unless deemed appropriate by the LCIP Board, New Hampshire Fish and Game Department (NHFGD) or Division of Forests and Lands; and
3) The sale, transfer, conveyance, or release of the Nash Stream Forest or interest in the land from public trust is prohibited.

Today the lands, and interests in lands, that were acquired through LCIP are administered by the Council on Resources and Development (CORD) under RSA 162-C:6 through RSA 162-C:11 to ensure that the property continues to be used for the purposes that it was originally acquired. DNCR, the assigned managing state agency, reports back to CORD at least annually with an update of management activities on the property.

A Federal Conservation Easement Deed also places permanent restrictions on certain uses of the Nash Stream property that ensures public interests in the property will be forever protected.

From an historical perspective, the purchase of the Nash Stream Forest is consistent with the early foresight of the State Legislature. The original State Forestry Commission authorized by the General Court on July 29, 1881 determined in its early years that the purchase and management of state forests in New Hampshire would be justified by four benefits:

1) State-owned forests would serve as demonstrations of sound forestry principles.
2) Public ownership of sensitive mountain tops, cut conservatively, would retain greater value for their effects on soil erosion and stream flow than for timber production.
3) A few small tracts of rare natural beauty could be preserved.
4) State would derive revenue from the management of forests which serve the other three purposes.

1.4 CONSERVATION EASEMENT

The State of New Hampshire sold a Conservation Easement on the Nash Stream Tract to the United States of America for $3.95 million on August 4, 1989. (see Appendix A) This followed over nine months of intensive negotiations between representatives of the LCIP, the Office of Attorney General and the United States Department of Agriculture (Forest Service) and its attorneys, relative to the terms of the easement. These negotiations also involved inputs from various state and federal agencies, state and national conservation organizations and numerous congressional leaders. A considerable education effort was required to convince Congress of the wisdom of the federal/state partnership in land protection that would result from purchase of the Nash Stream Conservation Easement. Will Abbott, Executive Director of LCIP at the time, summarized the entire negotiation process when he said, "I've never seen state and federal government, the private sector, and the enormous number of people representing each, pull together more cooperatively to seize such an important opportunity."

A Conservation Easement is a deed conveying a partial interest in property for the purpose of protecting the land from development. It allows certain uses of the land, places permanent restrictions on certain uses and establishes long-term enforcement for those restrictions. The Conservation Easement covers the original Nash Stream Forest (39,601 acres) located in Odell, Stark, Stratford and Columbia (**Map 2**). The easement does not pertain to new additions to the property since acquisition.

General Provisions

- Public access shall be assured subject to reasonable restrictions and regulation by the state and a charge of reasonable fees.
- Easement is subject to all valid existing rights of record at the time of conveyance.
- Easement is enforceable in law or equity by parties. State is responsible for and bears the cost of enforcement action and restoration caused by violation of any term of easement.

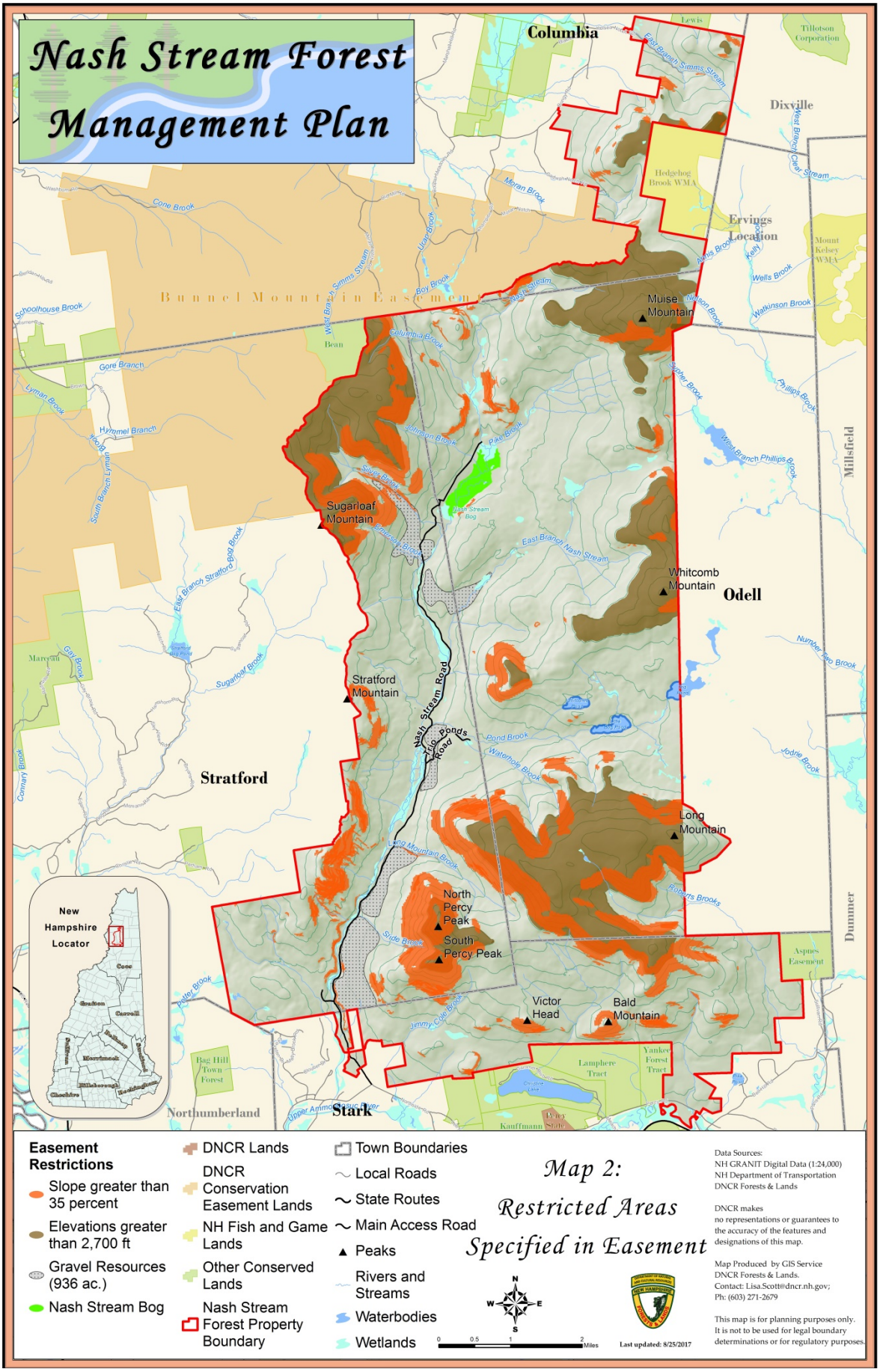
- Easement area shall be administered and managed by state at state cost and liability. State shall receive all revenue derived from management.
- Forest Service shall administer easement on behalf of United States. The United States has an affirmative right to manage any resource or land use acquired under the easement which is not reserved by the state.
- Easement shall be construed so as to affect the conservation purposes for which it was acquired.
- State shall hold United States harmless from all liabilities relating to the property.
- United States has right of first refusal should state decide to sell.

Uses Allowed by the Terms of the Conservation Easement

- Public Recreation - Campsites, trails (including cross country ski and snowmobile), picnic areas, boat launches, trailhead parking areas, visitors center and ranger station;
- Public roads and utilities (with prior written approval of Forest Service);
- Internal access roads;
- Existing recreational residences (camps);
- Natural Resources Multiple Use Management - Including watershed, fish and wildlife, recreation, scenic, education and research, timber, and sand and gravel;

Uses Not Allowed by the Terms of the Conservation Easement

- Subdivision or disposal as smaller tracts;
- Leases or contracts exceeding five years, except for public roads and utilities;
- Residential uses of all forms, temporary or permanent;
- Ski areas, ski lodges, ski lifts, resorts, outfitting establishments;
- Landfills, dumps, storage areas;
- Garages and warehouses, except as necessary for management of the property;
- Mineral, oil, gas or related development (except gravel rights reserved to the state).


Nash Stream Forest
Management Plan
Columbia
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Stratford
Northumberland
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Dummer
Bunnel Mountain Easement
Muise Mountain
Sugarloaf Mountain
Whitcomb Mountain
Stratford Mountain
Long Mountain
North Percy Peak
South Percy Peak
Victor Head
Bald Mountain
Nash Stream Road
Trip Ponds Road
Nash Stream Bog
Hedgehog Brook WMA
Mount Kelsey WMA
Tillotson Corporation
Bag Hill Town Forest
Lamphere Tract
Yankee Forest Tract
Aspnes Easement
Kauffmann State Park
Upper Ammonoosuc River
New Hampshire Locator
Coos
Grafton
Carroll
Belknap
Sullivan
Merrimack
Strafford
Hillsborough
Rockingham
Cheshire
Easement Restrictions
Slope greater than 35 percent
Elevations greater than 2,700 ft
Gravel Resources (936 ac.)
Nash Stream Bog
DNCR Lands
DNCR Conservation Easement Lands
NH Fish and Game Lands
Other Conserved Lands
Nash Stream Forest Property Boundary
Town Boundaries
Local Roads
State Routes
Main Access Road
Peaks
Rivers and Streams
Waterbodies
Wetlands
Map 2:
Restricted Areas
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Data Sources:
NH GRANIT Digital Data (1:24,000)
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Timber Management Constraints

- Timber resources shall be managed on a sustained yield basis (except in the event of a natural catastrophe, fire, disease or insect infestation).
- No logging shall occur on slopes greater than 35% or above 2,700 feet in elevation.
- Clearcuts shall not exceed 30 acres in size. Larger areas may be clearcut only with the approval of the Forest Service and only as needed to harvest timber damaged by natural catastrophe. No clearcut harvest may be made adjacent to a previous clearcut regeneration harvest area until the average height of the regeneration from the previous cut is at least 15 feet. Within any ten year period, no more than 15 percent of the total easement area may be clearcut.
- Logging on those areas near streams, ponds, or public highways is subject to the provisions of RSA 224:44-a (recodified to RSA 227-J:9), except as further defined or restricted as follows:

    1) Timber harvesting on areas near streams, ponds and public highways are subject to the provisions of RSA 224:44-a (recodified to RSA 227-J:9) and shall be no less restrictive than the terms of this statute as of January 1,1989. (Nash Stream from the breached dam downstream to the southern boundary of the easement area, and Pond Brook from Trio Pond to the confluence with Nash Stream, shall be considered "navigable rivers.")

    2) No timber harvesting shall occur within 150 feet of Whitcomb Pond, Trio Pond, and Little Bog Pond (except as necessary for recreation development and timber salvage purposes with approval of the Forest Service).

    3) Timber harvesting shall be conducted in conformance with current applicable federal and state laws and regulations, including the use of "Best Management Practices" (BMPs) prescribed for given activities.

1.5 ROLE OF STATE AND FEDERAL GOVERNMENTS

The unique and innovative relationship between the State of New Hampshire, as fee owner of the Nash Stream Forest, and the United States of America, as holder of a Conservation Easement Deed (CED) on the property, raises questions about how this partnership will work.

Federal Role

The Forest Supervisor, White Mountain National Forest (WMNF) is responsible for administering the CED on behalf of the United States. The role of the Forest Service is to ensure that the terms and conditions of the CED are satisfied and not to become actively involved with management. The WMNF staff serves as advisors to the state and provides technical assistance and management support when needed.

State Role

The state assumes full responsibility of ownership, operation (management), upkeep and maintenance of the property. Allowed uses of the property, however, are subject to the terms and conditions of the CED.

Since the State took title in 1988, The NH Division of Forests and Lands, a Division within DNCR, has administered the Forest in concert with assistance from the Division of Parks and Recreation – DNCR, the NH Department of Fish and Game (“F&G”), and other state agencies through the Cooperative Land Management Program and with guidance from the Nash Stream Forest Citizens Committee.

Cooperative Land Management Program

The Cooperative Land Management Program (the "CLMP") is a three (3) tiered, chartered program (see Appendix B) between certain state-owned land holding, resource managing and planning agencies. CLMP derives its authority from NH Law (RSA 227-H:2, RSA 227-G:3, RSA 215-A:9, and RSA 227-C:9), whereby its members cooperate in an effort to strive for conformity of policies across state lands and coordination of recreation and natural resource conservation management.

Presently, CLMP embraces the following agencies:

- Fish And Game Department
- Division of Forests and Lands, DNCR
- Division of Parks and Recreation, DNCR
- Water Division, DES
- Department of Transportation

Nash Stream Forest Citizens Committee

In 2004, the legislature established the Nash Stream Forest Citizen's Committee, which is comprised of 13 members and whose role is to advise DNCR on the overall management of the property.

The Nash Stream Forest Citizens Committee (the "Committee") derives its authority from RSA 12-A:9(c) (see Appendix C). At least once annually, the Committee meets to review the Management Plan and to provide advice to DNCR and F&G on all matters associated to the management and public recreational use of the Forest. All meetings are open to the public and any member of the public is allowed to speak before the committee or to submit statements. A list of the current members at the time of the Management Plan Revision is provided in Appendix D.

Council on Resources and Development

The Council on Resources and Development ("CORD") derives its authority from RSA 162-C (see Appendix E). CORD has the legal responsibility for management and administration of all lands acquired through the Land Conservation Investment Program, including the 39,601 acres of Nash Stream Forest acquired using this funding source. CORD is responsible for ensuring that lands acquired through the Land Conservation Investment Program continue to be used for the purposes that they were originally acquired and remain in the public trust. DNCR, the assigned managing state agency, reports back to CORD at least annually with an update of management activities on the property to ensure that activities are in keeping with the statute. CORD is comprised of representatives from twelve state agencies.

1.6 LAWS AFFECTING THE ACQUISTION OF NASH STREAM FOREST

The following laws govern acquisition, conveyance and management responsibility of the Nash Stream Forest:

RSA 162-C (formerly RSA 221-A)	**Land Conservation Investment Program**
RSA 477:45	**Conveyances and Interests**
RSA 482:48	**Acquisition of Dams and Water Rights**
PL 102 Stat. 1805	**NH Forest Management Initiatives Act**
RSA 12-A:9-c	**Nash Stream Forest Citizen's Committee**

RSA 162-C (formerly RSA 221-A) established the authority for the purchase of the Nash Stream Forest for the State of New Hampshire by the Land Conservation Investment Program as well as the authority to assign management responsibility to the Department of Natural and Cultural Resources. **RSA 482:48** established the authority for acquisition of the dams on Trio Ponds and Little Bog Pond by the Land Conservation Investment Program as well as the authority to assign management responsibility for the dams to the New Hampshire Fish and Game Department (NHFGD).

Certain lands, including the Nash Stream Tract, are the subject of the Federal "**New Hampshire Forest Management Initiatives Act of 1988", 102 Stat. 1805** which authorized and directed the United States Secretary of Agriculture to acquire certain lands and interests in land located in the state of New Hampshire. Under the laws of the State of New Hampshire, **RSA 477:45, et seq.**, a conservation easement constitutes an interest in land.

1.7 INITIAL PLANNING PROCESS

Once the purchase of the Nash Stream Forest was completed, the New Hampshire Division of Forests and Lands immediately formed a Technical Committee in **August, 1989**, to assist in the development of a Management Plan.

The Technical Committee was comprised of representatives from a broad range of resource areas: NH Fish and Game; NH Division of Forests and Lands; NH Division of Water Resources; NH Division of Parks and Recreation; USDA Forest Service; NH Historical Preservation Office; NH Natural Heritage Inventory; and the NH Audubon Society. This working group's main jobs were to assess and evaluate current information available about the Nash Stream Forest, and to assist in the development of the final Management Plan for the area. The Technical Committee was not a policy team.

In **November, 1989**, DNCR entered into an agreement with the Office of State Planning and University of New Hampshire (UNH) Complex Systems Research Center (CSRC) for assistance with the preparation of a Management Plan for the Nash Stream Forest using the GRANIT' computer system. GRANIT, a state-of-the-art geographic information system, was used throughout the planning process to map and analyze information about the Nash Stream Forest.

In **December, 1989**, Governor Judd Gregg appointed an Advisory Committee to serve as a focused source of public input and technical expertise. Members of this group represented Nash Stream Lease Holders Association; The Society for the Protection of New Hampshire Forests; The Nature Conservancy; Coos County Advisory Board; NH Timberland Owners Association; The Wilderness Society; USDA

Forest Service White Mountain National Forest; Appalachian Mountain Club; Audubon Society; White Mountain Lumber Company; Ammonoosuc Watershed Study Committee; Trout Unlimited; Groveton Trailblazers; and the White Mountain National Forest Advisory Committee. The Advisory Committee's main jobs were to gather public input and to work with the DNCR to achieve consensus on policy and management direction.

DNCR was charged with establishing policy and management direction, and implementing the Management Plan for Nash Stream, based on the input received from the Technical and Advisory Committees.

A work plan was developed to guide the Committees and DNCR in the development of the Management Plan for Nash Stream.

In **March, 1990**, a public information package about the Nash Stream Forest was developed to provide the public with basic information about the acquisition of the Nash Stream property, its history, and its resources.

This document served as the basis for discussion at two public listening sessions held on **April 11, 1990** in Groveton, and on **April 17, 1990** in Concord. These sessions gave the public the opportunity to present their ideas about how the Nash Stream property should be used. At these sessions, participants were broken down into small, informal groups to discuss and summarize their ideas and present them to the entire group. Over 120 people attended the sessions and provided valuable input.

The key points which emerged from these public sessions were:

- Maintaining local influence;
- Keeping the Nash Stream Forest undeveloped;
- Eliminating the gravel mining rights of Rancourt Associates;
- Providing for multiple recreation uses;
- Restoring tax yield to local towns; and
- Stressing sound forestry management practices.

In **July, 1990**, the Advisory Committee's sub-groups presented reports on timber, wildlife, natural areas, recreation, and management principles and vision. Meetings were held to discuss these areas and incorporate suggestions and changes into the draft Management Plan and Vision statement.

The Advisory Committee approved and adopted the Vision statement at a meeting in **January, 1991**.

In **July, 1991**, the first draft of the goals, objectives and strategies were presented to the Advisory Committee for review and comment.

The sub-groups continued their work, developing and reviewing additional information provided by the Technical Team.

In **December, 1991**, DNCR and the Advisory Committee agreed upon the goals, objectives and strategies and adopted them. In **January, 1992**, the draft Management Plan, incorporating the completed material,

was begun. Multiple agencies were involved in the preparation of the draft plan, which was begun even as additional data and information was still being compiled.

After approximately one year in the development stages, the first draft of the Management Plan was presented to the Advisory Committee for review in **January, 1993**. Throughout 1993 and 1994, modifications and additions to the Plan were made. In **February, 1995** an open house and public meeting was held in Lancaster, New Hampshire to hear public comments on the draft Plan. The final Management Plan was approved and adopted by the Advisory Committee and DNCR in **December, 1995**.

1.8 MANAGEMENT PLAN UPDATES AND REVISIONS

In 2002, DNCR published "Nash Stream Forest Management Plan Updates and Revisions" which addressed three primary issues:

1. Allowed for the limited use of all-terrain vehicles (ATV's) on designated trails for a pilot project.
2. Terminated the 50-year sunset clause in the camp license.
3. Established a specific Plan revision schedule, which changed the "as needed" status to a 10-year Plan revision schedule.

2. THE MANAGEMENT VISION

The original Nash Stream Advisory Committee appointed by Governor Judd Gregg to assist with preparation of the first Nash Stream Forest Plan developed the "Vision" to help guide management and planning efforts. Though minor changes were made to the vision in 2002, the spirit of the vision remains unchanged. The Vision reflects the many and varied interests of people involved in the planning process, including public sentiment. Presented in its entirety, the Vision includes Principles and Goals of Management that together provide a long-term management focus and a view of what will be achieved through implementation of the original Plan and the revisions that follow.

2.1 MANAGEMENT VISION

The management of Nash Stream Forest will be a model of environmentally sound public land stewardship. While realizing that achieving the Vision will take time, we will strive to:

- **Protect the natural qualities** and integrity of the land, natural communities, native species, and ecological processes. Use and build upon, rather than work in opposition to, ecological principles and natural tendencies. Manage the land with as little interference as possible with the natural ecological functions.
- **Manage Nash Stream Forest** as a model of ecologically-based forestry, emphasizing the growth of long-rotation, high quality, solid wood forest products that contribute to the economy of northern New Hampshire.
- **Continue to offer public access** for traditional, low impact, dispersed recreation including hunting, fishing, hiking and snowmobiling in designated areas; as well as offer other limited motorized access.
- **Maintain a process for ongoing public** involvement in the management process, and a periodic policy and technical review of the Vision and Management Plan.
- **Establish monitoring** of, scientific research on, and education about the management and ecological processes of the land and water, and continue to emphasize the cooperative approach to protecting and managing Nash Stream Forest.
- **Manage Nash Stream Forest** as an integral part of the ecology, landscape and culture of the northern forests of New Hampshire and New England.

2.2 MANAGEMENT PRINCIPLES

It is envisioned that Nash Stream Forest will be managed as a blend of a relatively undisturbed forest ecosystem, and a working forest producing high quality forest products. These will provide certain products, qualities and experiences.

A. All management activities including timber, road, recreation and habitat will be determined by land, soil, and ecological capabilities;

B. Management of vegetation, fish and wildlife will promote, maintain, and where appropriate, restore natural communities of native species. Planting of trees or other vegetation will not occur, except for ecologically beneficial ecosystem restoration using native species.

C. Management will provide for the continuity of natural areas. Natural areas will be surrounded by buffers and be linked by appropriate corridors of undisturbed or minimally disturbed lands.

D. Management area planning will minimize the fragmentation of the forest by management activities, including for example, roads, developed recreation and timber management.

E. Recreation management will feature the natural beauty of the Nash Stream Forest and provide a broad range of opportunities with emphasis on recreational uses that fit naturally, with minimal development, on the landscape.

F. Herbicides, insecticides or other pesticides will not be applied to, or within the Nash Stream Forest unless necessary to control invasive species or forest health crisis.

G. Water quality protection will be of the highest priority throughout. Buffers along all wetlands, ponds, streams, and other bodies of water will be established to protect water quality, natural runoff patterns, water temperatures, bank and channel stability, biotic communities, and other natural values. Management activities and uses will be consistent with the Vision and the purposes for which the buffer is established.

2.3 GOALS OF MANAGEMENT

Timber

Timber management decisions will be determined primarily by ecological and land capabilities, natural site and soil tendencies, natural disturbance patterns, and ecological processes. The timber management zones of Nash Stream Forest will be managed on a long-term sustained yield basis to produce high quality, long rotation, solid wood products.

A. Uneven-aged management will be the method of choice for managing and regenerating timber stands.

B. Limited, judiciously applied, and environmentally-sound even-aged management (including clearcutting) may be appropriate to provide certain ecological conditions, products, and experiences associated with early successional forests. It may be used when uneven-aged management will not achieve the Vision.

C. Timber harvesting and salvage will not occur in natural areas. Buffers and corridors may be managed cautiously for timber on an uneven-aged basis, and only when consistent with the Vision and the management goals of the natural areas.

D. Timber management roads, as well as other roads, will be laid out to minimize the fragmentation of the Forest; will be designed based on site and soil capabilities; and will be designed to the minimum standard needed for access.

E. Timber salvage may be permitted in timber management areas when consistent with the Vision.

F. Timber management may be carried out only after assessment of impact on historical, ecological, habitat, and recreational resources, and after appropriate modification to protect those resources.

Natural Areas

Nash Stream Forest will be managed to protect healthy representatives of all of the tract's known elements of natural diversity, identifying and working toward naturally functioning communities that are sustainable over the long term.

A. A system of natural areas, buffers and corridors will be established to protect Nash Stream Forest's natural features. Natural areas will be as large and contiguous as possible, within the constraints of the land and the Vision, to protect the habitat needs of rare, threatened, and endangered plant and animal species, natural communities, and unique or especially threatened features. Natural areas will be subject to the minimum management necessary to achieve the Vision and then only consistent with the purposes for which the natural area was designated. Timber harvesting will not occur in these areas.

B. Buffer areas adequate to protect the purposes for which the natural area was designated will surround each natural area. Low intensity management activity consistent with the purposes for which the buffer was established may occur in buffers.

C. Natural areas will be connected by corridors of undisturbed or minimally disturbed land, within the constraints of the land and the Vision, to meet the needs of the species and communities in the natural area. In some cases, waterways may serve as a corridor and in other cases as a natural area and a corridor simultaneously.

D. The system of natural areas will include representatives of the full range of ecological communities within the Nash Stream Forest, as well as contain rare, threatened and endangered species.

E. Ephemeral ponds and streams are rare in the tract and need research and adequate buffering and protection.

Recreation

Recreation management of the Nash Stream Forest will provide low impact, dispersed, and traditional opportunities. Management decisions will be consistent with the guiding philosophy of protecting the environmental integrity of the land.

A. Recreational opportunities will include hunting, trapping, fishing, hiking, camping, snowmobiling, and limited motorized access on designated and properly maintained roads and trails in areas that do not negatively impact traditional uses or conservation values.

B. Management will strive for levels of recreational use that upholds the Vision and that are sensitive to and respectful of the natural values of the Nash Stream Forest.

C. Protection of the natural resources and environmental quality will be of primary concern in recreation management.

D. Recreation management will emphasize low impact use, carry in/carry out, and dispersed use.

E. Only low impact, relatively primitive tent sites and other recreation facilities will be permitted.

F. Promotion of recreation to the public will be consistent with the Vision and natural values of the Forest and will be designed Nash Stream Forest to provide information about those values and appropriate recreation opportunities.

Fish and Wildlife

Fish and wildlife habitat management will strive to sustain viable populations of all species occurring naturally in the Nash Stream Forest.

A. Critical habitat of fish and wildlife species that are especially sensitive to intrusion will be identified, evaluated, and protected.

B. Throughout the tract, fish and wildlife habitat management will be integrated with other uses consistent with the Vision.

C. Traditional consumptive and non-consumptive wildlife uses on the tract will be allowed consistent with the Vision and goals of managing for native species and natural populations, and within the laws and regulations of the state.

D. Fisheries management will strive to develop self-sustaining natural populations of native species.

Public Participation

The public has a great interest and high stake in the management of Nash Stream Forest. It is important to encourage and foster continued public participation in the management of Nash Stream Forest. Several avenues for this, serving different levels of interest and concern, are needed.

A. A formal process will be used to adequately notify the public of significant proposed land management activities to provide an opportunity for public comment.

B. An ongoing Citizen Advisory Committee will advise and work in partnership with the state to uphold the Vision. The committee should be composed of a range of individuals representing a variety of constituencies.

C. This committee will work with the state to review particularly sensitive and controversial management proposals and attempt to resolve management controversies.

D. Formal (legal) public appeal mechanisms are provided through the Administrative Procedure Act (RSA 541-A).

Monitoring, Research, and Interpretation

Much is still unknown about the ecology of the Nash Stream Forest which presents a unique research opportunity to the ecology, forestry, recreation and wildlife research communities. Monitoring and research should be a high priority to gather information for wise long-term planning.

A. Research should encourage projects to more thoroughly inventory the Nash Stream Forest and to assess the impacts of past intensive forest cutting and recreation on ecological conditions, forest regrowth, and wildlife populations.

B. A monitoring system should be established to determine and evaluate the impacts of present management actions.

C. Education and interpretation shall be offered to the public to inform them of the natural and management processes at work in the Nash Stream Forest.

3. INFRASTRUCTURE

3.1 MISCELLANEOUS RESERVATIONS

The deed from Diamond International Corporation contained numerous reserved rights. Most of these reservations are relatively insignificant. However, several have long-term implications relative to the use and management of the Nash Stream Forest.

The Nash Stream deed contains two generic or boilerplate types of reservations typical of any large property conveyance that involved multiple smaller tracts that make up the whole. The first of these reserves "all easements, rights of way and other encumbrances as set forth in the various deeds." The second is "all rights of the public in and to use any hiking trails and bodies of water situated on said land." A review of the individual deeds reveals at least two private rights of way to private camp "in-holdings" in Columbia. There is a private camp, known as the Emery Camp, which has been recognized by the State as an out-lot of private title. This lot has been surveyed and a plan is being recorded. Reservations of existing timber harvesting and purchase wood agreements and gravel excavation rights have become ineffective as the rights granted thereunder have lapsed.

3.2 RECREATION CAMP LICENSED SITES

The State's predecessor in title, Diamond International Corporation had a longstanding recreational camp lot leasing program at Nash Stream. The camp lot lease was a legal right for individuals or a private association to occupy and maintain a camp for recreational purposes at a specified site for a period of time on the Nash Stream property. The program originated as a fringe benefit for company employees, but expanded to include the general public in recent years. With the purchase of Nash Stream on October 27, 1988, the State became the Lessor of existing leased camp sites on the Forest.

The Conservation Easement granted to the United States of America permitted the camp use to continue, subject to the rights of the state to regulate or terminate them. Because of the immediate need to address the camp lot situation, the Department of Natural and Cultural Resources developed a camp lot license policy and program. This policy may be found in Appendix F.

One hundred and four camp lots existed at the date of state acquisition of Nash Stream. Twelve of the original have since been cancelled (no camps, non-payment of fees, wishes of camp owner, etc.) Eighty-seven are individual, four are association camps, and one is state owned but privately licensed. Sixty seven of the individual or family camps are located in the unincorporated town of Odell; twenty are in the town of Stratford. The four association camps are located at Lower Trio Pond, Fourteen and a Half Pond, and two miscellaneous locations. The state-owned camp is located in the unincorporated town of Odell on

Nash Bog. **Table 1** lists the number of existing recreation camp lots by location.

Table 1
Camp lot Locations

GENERAL LOCATIONS	NUMBER OF CAMPS
Fourteen and a Half Pond	6
Nash Bog	60 (1 state camp)
Lower Trio Pond	9
Whitcomb Pond	1
Misc. Locations	16
Total Camps	92

The 91 existing recreation camp lot leases will be continued under a five (5) - year "Recreational Residence and Site License Agreement" (the "License") issued by the Department of Natural and Cultural Resources (see Appendix G). As the result of an appraisal of the "market rents" completed in March 2009, the following three (3) categories of License annual rents were established:

1) Basic Camp
2) Shorefront with vehicle access
3) Shorefront without vehicle access

Pursuant to RSA 227-H:9, license terms and renewals shall be in five-year increments granted at the option of licensees subject to approvals of the Attorney General and Governor and Council, at which time the annual rent is adjusted according to the past 5-year change in the Consumer Price Index. While initially, all camp leases are due to terminate 50 years from the time the State took title, DNCR came to recognize that the camps serve to achieve principles defined in the Vision of the Nash Stream Forest Management Plan as pointed out by the Camp Owners Association. Those principles include the following: 1) the camps have long been a part of the Nash Stream Forest landscape and culture of the North Country, and 2) the camps contribute to the local economy. In addition, the camp licenses provide revenue to the State of New Hampshire through their annual fees ($86,624 in FY2014) that help offset property management costs.

On February 13, 2002, the Nash Stream Forest Citizen Committee recommended to DNCR to eliminate the transfer restriction date of June 30, 2004 and license termination date of June 30, 2039. Therefore, the overall camp lot license termination date of June 30, 2039 and the transfer restriction date of June 30, 2004, were eliminated by the 2002 "Management Plan Updates and Revisions" (the "2002 Updates"). In addition, the 2002 Updates established a "first refusal option" to DNCR to purchase any camp not transferred to an immediate family member, and Association camps may not be transferred except by sale to the State of New Hampshire.

3.3 ROADS AND ACCESS

Nash Stream Forest is well served by a 66.5 mile network of roads. Maintained gravel roads total almost 42 miles (63%). Public highways and rights of way together with appurtenant slope and embankment easements were reserved as Class V town-maintained roads. These include North Side Road and Nash Stream Road up to the location of the gate. The road network begins at the intersection of Emerson Road and Nash Stream Road. Emerson Road is a paved town highway about 2 miles north and east of N.H.

Route 110, or about 4 miles from U.S. Route 3 at Groveton Village. Nash Stream road is a town maintained road to the gate where the property begins.

Amos Emery Road is the first side road encountered and departs to the right (east) about 0.4 miles from the pavement. This road is gated at about 0.2 miles, and runs generally easterly, passing north of Jimmy Cole ledge and north around Victor Head, then forks to various parts of Rowell's Brook headwaters, south of Long Mountain. This road has 4.2 miles of gravel surface.

At 1.3 miles from Emerson Road, the next side road (West Side Road,) departs to the left across a gated, wooden-planked, steel stringer bridge over Nash Stream. This is a well graveled road that turns north up the west side of the valley for 5.3 miles.

The next major road is Little Bog Pond Road (also called Fourteen and a Half Road,) which forks to the right at about 5.0 miles. This graveled road runs east and north to Little Bog Pond, a distance of 3.3 miles. A short distance below the pond, a gated fork (Tracy's Camp Road,) departs to the right. Trio Ponds Trail departs from the small parking lot at Little Bog Pond, and runs northeasterly for 1.4 miles. This trail provides access to the private camps on Whitcomb and Trio Ponds and is not graveled.

The East Branch Road is a gated road 5.6 miles long with good gravel base for most of its length. The road runs east, crosses the East Branch, then continues north where it connects back with the Main Road north of Nash Bog.

At about 8 miles from Emerson Road, the Main Road crosses to the west side of Nash Stream over a wooden-planked, steel stringer bridge. At about 9 miles, the site of the former Nash Bog dam is located just east of the road, but not visible. A cluster of private camps begins here and extends around the full length of the westerly and northerly sides of the former pond.

At about 10 miles, the road crosses Nash Stream, just above its entrance into the bog. Just beyond this bridge, the gated entrance to Columbia Brook Road forks to the left. This gravel road runs north into Columbia Brook valley for 1.7 miles to the Columbia town line.

The Main Road continues easterly around the north end of the former pond and then turns north along Pike Brook to a fork. The gated right fork (known as Nineteen Valley) continues up Pike Brook and connects with the north end of the East Branch Road. The Main road ends at a gate on the left fork.

The Nash Stream Headwaters Road begins beyond the gate. Steep in sections, this gravel road is water barred for erosion control. The road runs north about 1.0 mile where a left fork (Headwaters West, and Cranberry Bog Spur,) swings northerly through Cranberry Bog Notch to the Columbia town line and property boundary. The right fork continues easterly for another 1.3 miles to an old log yard in Moran Notch about a mile northwest of the 3,610 foot high peak of the Whitcomb Mountain range.

The lands in Columbia are served by Kelsey Notch Road (1.3 miles**),** Bungy Spur (0.3 miles), and Rocky Brook Road (0.8 miles). Kelsey Notch Road and Bungy Spur lead in from Bungy Road, a Class V town highway. Both are low-grade, gravel roads and, to date, have been privately maintained by several landowners. Rocky Brook Road is also graveled, accessed by way of Phillips Brook Valley through private property to the east.

The lands in Stark, southeasterly of Long Mountain, are served by several good gravel roads. The Stark Dump Road (1.6 miles) leaves Northside Road (0.5 miles), a public highway, across from the old Stark landfill. At about 0.5 miles, the Pike Pond Road (1.0 miles) forks right, runs northeasterly, then swings south to the property line and connects with Bell Hill Road, a public highway, off the property. Stark

Dump Road continues north, west, and eventually connects with Rowells Brook Road (0.6 miles) north of Bald Mountain. Rowells Brook Road runs southwest to the property line and a private road that connects with the entrance road to Christine Lake.

Roberts Brook Road (1.2 miles) is accessible from Bell Hill Road, but arrangements must be made to cross over private lands.

Road Construction and Maintenance

The Nash Stream Forest road system includes the following classifications:

- Class A: public highways (Class V town roads)
- Class B: three season, all-purpose gravel ways, open to public vehicular use
- Class C: three season gravel ways restricted to light duty vehicles, open to public vehicular use
- Class D: non-gravel restricted to winter use only, closed to public vehicular use
- Class U: gravel/non-gravel unclassified ways, closed to public vehicular use

Road construction and maintenance will be dictated by soil and site conditions and by access requirements consistent with type and amount of use and management objectives. The Main Road and Fourteen and a Half Road will be maintained to Class B, gravel, all-purpose roads. All roads and parking areas will be maintained to "best management practice (BMP)" standards (**See Glossary**) conducted in conformance with current applicable federal and state laws and regulations pertaining to the abatement of erosion and water pollution.

Since state acquisition, several roads have received significant maintenance. Main, West Side, Amos Emery and Fourteen and a Half Roads have been graded, ditched, resurfaced, and in some cases restructured in order to be properly graded on a regular basis. The East Branch Road gate was replaced at the Main Road intersection. Many undersized culverts have been replaced with bridges over the years to improve the overall road system

Annual maintenance operations will focus on the Main Road and Fourteen and a Half Road and will include grading, resurfacing, raking, mowing or brushing, and upkeep of drainage structures and parking areas. All other interior roads will be regularly inspected and maintained as needed, including upkeep of gates, erosion control devices, drainage structures, mowing and brushing, reshaping, and graveling. Mowing and brush operations will be avoided from May through July to avoid disturbing ground and shrub nesting birds. Emphasis will be placed on resolving beaver flooding problems on roads (and trails) with beaver pipes.

Class D Trio Ponds Road will not be maintained for general automobile use because of its location over rough terrain. However, it will be maintained as a snowmobile and walking recreation trail.

Public Use of Roads

Traditional vehicle access patterns will be continued. The main gate will be opened each spring when road conditions allow and closed in December. The Main Road and Fourteen and a Half Road will be

open to public vehicle access. All other interior gravel roads will be gated according to DNCR standards. In this manner, motor vehicle traffic disturbances to wildlife and wildlife habitat will be minimized, low impact and remote recreational activities will be available, and road maintenance costs will be reduced. Vehicle travel on gated roads will be limited to management and forest protection activities.

1. No new permanent roads are currently planned. No existing roads are planned for permanent closure; all roads will be maintained. New or upgraded roads or parking areas may be needed to meet future needs. Permanent disturbances will be minimal and avoided if possible.

2. The Main Road and Fourteen and a Half Road will be open to seasonal public vehicular access consistent with traditional use. Other interior roads may be gated for controlled access for public safety, cost reduction, and provide for non-motorized recreational opportunities.

3. Public access to roads and trails normally closed to conventional motor vehicular traffic may be granted on a case by case basis for authorized purposes including but not limited to handicapped access and utility purposes.

4. The gate on the Main Road at the south end of the property will be opened each spring, normally on the Friday morning of Memorial Day weekend when road conditions allow, and closed in early December at the discretion of the North Region Forester, unless weather and road conditions dictate otherwise.

3.4 GRAVEL EXCAVATION

State Use

Gravel excavation may be permitted on the Nash Stream Forest in accordance with DNCR gravel excavation, reclamation and operational standards under the following criteria: (1) when material excavated would be used for improvements within DNCR property boundaries; or (2) when material excavated would be used for state or municipal road improvements that would enhance public access specifically to a DNCR property or properties.

Reserved Gravel Rights

Rancourt Associates of New Hampshire reserved gravel rights on five different pit areas along Nash Stream Road in Stratford between the Stark/Stratford town line and Nash Bog. Rancourt had seven years from the date of state acquisition (October 27, 1988) to remove five million cubic yards of "earth and granular materials." If the excavation resulted in a State Business Profits Tax or other state tax liability, the quantity to be excavated could increase to six million cubic yards. Rancourt Associates gravel rights expired on October 27, 1995 and were never exercised.

In addition to the gravel, Rancourt Associates had the right to use, maintain, repair and replace existing and future roads and to construct, repair and replace a railroad line(s) to all pit sites. All maintenance and construction of roads and railroads shall be at Rancourt's expense. At the expiration of the gravel rights, any improvements became the property of the State.

3.5 DAMS

Historically, for the purpose of floating logs from the heart of Nash Stream Forest to the mill in Groveton, the following five (5) known impoundments existed:

- Nash Stream Bog (Odell) – dam in ruins since 1969 breach
- Nash Stream (Odell) – dam in ruins
- East Branch Nash Stream (Odell) – dam in ruins
- Little Bog Pond (Odell) – partial dam breach in 2006 (77.1 surface-acres)
- Lower Trio Pond (Odell) – (67.8 surface-acres)

Pursuant to NH RSA 482:48(II)(a), Governor and Council approval having been granted, legislative approval was given to the Land Conservation Investment program to accept the following dams and assign to the Department of Fish and Game for management purposes, including but not limited to operation and minor maintenance of said structures, as follows:

(1) Little Bog Pond dam, Odell, D185003

(2) Trio Ponds dam, Odell, D185002

Little Bog Pond Dam was breached during the Mother's Day Flood in 2006. A local contractor placed boulders and other earthen material in the dam site temporarily restoring the impoundment to a level approximately two (2) feet below the historic level. Due to other dam priorities, the reconstruction of Little Bog pond is being delayed indefinitely by NHDES.

After the Nash Bog dam breach in 1969, a new dam was proposed at a cost of just under $3.5 million in 1974 dollars. Lack of state and federal funding at the time shelved the proposal. The Conservation Easement allows the dam to be rebuilt for fish and wildlife and recreation purposes only. However, there are no current plans to rebuild the dam at Nash Bog.

3.6 UTILITY CORRIDORS

Eversource Power Line Easement

Eversource owns a power line easement across the southerly end of Nash Stream Forest in Stark. This is a permanent right to erect, maintain, rebuild and operate electric transmission and distribution lines and to cut, trim and remove all trees and underbrush on a strip of land 150 feet wide and 4,300 feet in length. The easement parallels Northside Road approximately 600 feet to the north.

Portland Natural Gas Power Line Easement

Portland Natural Gas owns an easement for a gas pipe line constructed in 1998 paralleling the 4,300 foot long Eversource power line in the town of Stark.

3.7 RAILROAD CORRIDOR

Canadian National Railroad

The Canadian National Railroad owns a strip of land 2,600 feet long and 88 feet wide across Nash Stream Forest in Stark. This railroad line runs just south of and parallel to North Side Road.

3.8 BOUNDARY LINE MAINTENANCE

Nash Stream Forest includes 58.7 miles of boundary line. As of July, 2014, 51.7 miles have been re-established, blazed and painted since state acquisition. The last 7 miles are in poor shape and require resurveys to properly delineate the boundaries. The Department has contracted over 40 miles of this boundary line maintenance work since state acquisition. Some areas still need further survey work and are dispersed throughout the property.

Re-establishing many of the boundary lines since acquisition has been a daunting task. Terrain, forest growth and pre-existing boundary line conditions have made it difficult in many areas. Fortunately, most of the boundary lines around private developed lots have been well established and are monitored. These areas have the highest potential where possible encroachments may occur. One area of encroachment was surveyed and re-established, while in another area there was an abutting owner who disputed the line location. This area on the west side of the forest was surveyed and corrected to match the abutting owner's historic deed description which superseded our records.

On a 10-year rotation, independent of boundary status, approximately 5.5 miles of line need to be inspected and maintained, as necessary, each year. About 14 to 15 person-days per year are required on the basis of accomplishing approximately 4,000 feet of boundary line per day for a two-person crew. Boundary maintenance cost savings will continue to be pursued by working with abutting landowners to alternate maintenance of in-common lines.

4. ECOLOGICAL RESOURCES

4.1 TOPOGRAPHY AND BEDROCK GEOLOGY

Nash Stream Forest (NSF) is approximately 40,000 acres of unbroken forest in New Hampshire's North Country. The property is centered around Nash Stream, a major tributary of the Ammonoosuc River, and includes almost the entirety of its watershed. One of the most striking aspects of the property is the sharp relief of the mountains surrounding Nash Stream. The peaks range in elevation from the tallest, Sugarloaf, at 3,701 feet, to Stratford Mountain, at 2,405 feet. Fitch, No. 3, Long, and Whitcomb Mountains and Percy Peaks are all greater than 3,200 feet. Although not as tall as the White Mountains just to the south, the stature of these peaks is impressive. Their great elevational rise above the Connecticut River valley and their jagged nature contribute to their rugged physiognomy. Percy Peaks are a pair of high isolated peaks with the only open rocky summit in the region, and at 3,418 feet, are the most prominent feature of NSF.

The geologic history of NSF is complex, but there are three major bedrock formations that form the basis for most of the property's landscape (Chapman 1949). The oldest rocks are those of the Perry Mountain Formation, formed over 350 million years ago. This formation is comprised mainly of metamorphosed sedimentary rocks, primarily quartzite and mica schist. The Perry Mountain Formation makes up most of the valley of Nash Stream south of Nash Stream Bog, and covers the southwest corner of NSF. Most of the northeast extension of NSF (north of Gadwah Notch) is also underlain by Perry Mountain rocks.

The second major bedrock unit consists of igneous granitic rocks that intruded into the Perry Mountain Formation between 290 and 350 million years ago. Formerly known as Long Mountain granite, this pluton occupies most of the eastern portion of NSF north of Long Mountain and east of the Nash Stream valley and at its northern end encompasses Nash Stream Bog and the lower eastern slopes of Fitch and No. 3 Mountains.

The third major bedrock group is a variety of rocks of the White Mountain Plutonic-Volcanic Suite, which consists of igneous rocks that intruded more recently, during the opening of the Atlantic Ocean basin. This suite can be divided into two notable subgroups that at NSF are distinct in composition and distribution. The first subgroup is an area of pink Conway granite that occupies most of the southeast corner of NSF, extending from Percy Peaks eastward. The second subgroup is found on the upper slopes and summits of Sugarloaf and No. 3 Mountains in the northwest corner of the property. Despite forming through similar processes and at the same time as the Conway granite, these rocks are mainly classified as hornblende syenite. These areas of syenite are noteworthy in that, through chemical weathering, they can enhance mineral nutrient availability for plants, which can influence the character of the vegetation (see section 4.3 below).

4.2 GLACIAL HISTORY AND SOIL DEVELOPMENT

Although the overall topography of the Nash Stream area represents much older geologic processes, the soil properties present on the property can be traced directly to glacial movement. The Late Wisconsinan Glacier began advancing about 50,000 years ago and continued to accumulate to an estimated two miles thick over the Nash Stream area. Much like a bulldozer, the advancing glacier scraped, ground, and eroded the previous soils and bedrock into a massive mix of ice, water, and soil and rock debris. More importantly, the glacier acted as a means to deposit material on the land. Glacial deposition took two general forms: glacial till and glacial outwash.

Glacial till occurs where debris was deposited at the base of the glacier (basal till) or where debris settled out as the glacier receded (ablation till). Due to the overlying pressure under which it was formed, basal till is typically dense and compact, forming a characteristic layer called a hardpan.

Ablation till, on the other hand, was deposited under the force of gravity and generally does not contain a hardpan. Ablation till was also somewhat reworked by water during glacial retreat. Thus, it represents a transition between true glacial till and outwash.

Glacial outwash is material deposited by the meltwaters of the glacier. Rivers and streams flowed on, through, under, and adjacent to the glacial ice as it melted. The water carried, sorted, and deposited vast quantities of gravel and sand in the valleys. These deposits are now composed of multiple layers of gravel and sand which accumulate in places to several hundreds of feet thick.

After the glaciers receded, leaving deposits which became the parent material for soil, environmental factors (e.g., climate, topography, plant and animal life) acted on these parent materials to form the soils that occur today. The climactic influence relates directly to elevation. Higher elevation soils (above approximately 2,300 feet) do not warm above 59° F during the summer and are located in the cryic temperature zone. Lower elevation soils are somewhat warmer and are in the frigid temperature zone.

4.3 VEGETATION PATTERNS AND NATURAL COMMUNITIES

The vegetation patterns of NSF are described using natural community descriptions following Sperduto and Nichols (2011). A **natural community** is a method for classifying the landscape used by the New Hampshire Natural Heritage Bureau (NHB), and is defined as recurring assemblages of plants found in particular physical environments. Each natural community type is distinguished by three characteristics: (1) a definite plant species composition; (2) a consistent physical structure (such as forest, shrubland, or grassland); and (3) a specific set of physical conditions (such as different combinations of nutrients, drainage, and climate conditions). Natural communities include both wetland types (e.g. sedge meadow marsh) and uplands such as forests (e.g. hemlock - spruce - northern hardwood forest) and cliffs (e.g. montane - subalpine acidic cliff).

Natural communities can be grouped into a unit called natural community system, which are also classified by NHB. A **natural community system** is an association of natural communities that repeatedly co-occur in the landscape and are linked by a common set of driving forces, such as landforms, flooding, soils, and nutrient regime. Natural community systems are often useful for describing and mapping areas where a number of different natural communities occur in a complex mosaic.

For each natural community or system type, NHB assigns a State Conservation Rank (S-Rank), indicating the rarity and vulnerability of the community within New Hampshire. S-Ranks are on a scale of 1 to 5, from S1, designating the most imperiled natural community types in the state, to S5 for the most secure.

The distribution of natural communities and plant species has been influenced primarily by the last glaciation. Once the glaciers began to recede, native vegetation slowly returned to the landscape through a process known as primary succession. Due to the arctic climate near the glacier's receding front, the first species to colonize the barren earth were hardy, boreal bryophytes (mosses), herbs, and shrubs. Many of these arctic/boreal species are currently rare in the state, remaining only in higher elevation habitats where harsh winds, cold temperatures, and shallow soils restrict competition from less hardy species.

Soon after this primary succession, cold-hardy spruce-fir forests returned to much of the New England landscape. These forests remain today in higher elevations and lower elevation pockets where frigid,

hard-pan soils exist. As the landscape continued to warm, pine and then hardwood species returned to occupy suitable lower elevation sites. Thus, the current mosaic of natural communities on the Nash Stream property represents both current soil characteristics and over 11,000 years of adaptations to a changing climate.

Most of the vegetation at NSF is typical of similar forest types on relatively acidic, nutrient-poor soils. However, there is an area that displays somewhat enriched soil conditions around Sugarloaf and No. 3 Mountains in the northwest corner of the property. This area is underlain by syenite bedrock, which is part of the White Mountain Magma Series. While syenite does not contain a particularly high concentration of calcium, it is typically characterized by a dense network of fractures that intersect in multiple directions. These fractures can store and transport groundwater over long time periods, allowing for extensive chemical weathering that releases calcium and other mineral nutrients, which then become available to plants (Bailey 2013). It is this portion of the property that supports broad-leaved twayblade (*Neottia convallarioides*) and male wood fern (*Dryopteris filix-mas* ssp. *brittonii*), rare species that are indicative of enriched soil conditions.

All of the following natural community and system descriptions are based on the original Natural Heritage inventory conducted in 1988. NHB will conduct an inventory of natural community systems to be completed within three years of finalizing the management plan. The surveys may identify additional community or system types or suggest revisions to existing community descriptions. Titles of natural communities are italicized and bolded.

High-elevation spruce - fir forest (S4)

This evergreen forest occupies upper slopes and summits, typically above 2700', although it can occur at lower elevations on shallow soils or in cold microsites. The community is characterized by the dominance of some combination of red spruce (*Picea rubens*) and balsam fir (*Abies balsamea*). Paper birch (*Betula papyrifera*) and heart-leaved paper birch (*Betula cordifolia*) are frequent, particularly in areas where disturbance has created openings in the canopy.

The forests on the upper slopes of Sugarloaf, Fitch, and No. 3 Mountains in the northwest corner of the property are part of a much larger expanse of ***high-elevation spruce - fir forest*** that has been identified as exemplary by NHB. This large natural community occurrence extends west and north onto the adjacent Vickie Bunnell Preserve, owned by The Nature Conservancy, and the Bunting Forest, both of which are under conservation easement held by DNCR.

The harsh environmental conditions that give rise to high elevation spruce – fir forests—long, cold winters; thin, nutrient-poor soils—result in a habitat that has a relatively low diversity of plant species. High elevation spruce – fir forest is the primary habitat for only one rare (endangered "E") plant species in the state, false toadflax (*Geocaulon lividum*). Outside of New Hampshire, this small herb is found in boreal forests across North America.

Scientific name	Common name	Status
Geocaulon lividum	false toadflax	E

***Northern hardwood - spruce - fir forest* (S4)**

As its name suggests, this mixed forest is transitional between ***high-elevation spruce - fir forest*** and ***sugar maple - beech - yellow birch forest***. It is generally found at the upper elevation limit of northern

hardwood forests, as red spruce and balsam fir become frequent associates. As elevation increases, the percentage of softwood species increases, eventually transitioning into pure spruce-fir forest.

In the original Nash Stream Forest Management Plan, a noteworthy occurrence of this community type was identified as a "Rich Mountain Streambottom Forest," and is considered exemplary. This occurrence occupies the slopes above the upper reaches of Emerson Brook on the east side of Sugarloaf, and includes numerous groundwater seeps that support a number of rich-site plant species, including two rare species: male wood fern (*Dryopteris filix-mas* ssp. *brittonii*) and broad-leaved twayblade (*Neottia convallarioides*). These groundwater seeps are likely two different natural communities embedded in the ***northern hardwood - spruce - fir forest: subacid forest seep*** (S3S4) and ***circumneutral hardwood forest seep*** (S3).

Sugar maple - beech - yellow birch forest **(S5)**

This is the classic "Northern Hardwood" forest, dominated by a mix of sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), and yellow birch (*Betula alleghaniensis*). Striped maple (*Acer pensylvanicum*) and hobblebush (*Viburnum lantanoides*) are frequent in the understory and tall shrub layers, respectively. Common herbs in these forests include evergreen wood fern (*Dryopteris intermedia*), northern wood sorrel (*Oxalis montana*), starflower (*Lysimachia borealis*), and sessile-leaved bellwort (*Uvularia sessilifolia*).

This is the most extensive forest type at NSF, occupying over 18,000 acres on slopes below 2,700 feet, however there are very few rare plant species associated with northern hardwood forests. The rare species listed here actually occur in ***rich mesic forests***, which typically occur as small inclusions within the larger matrix forest. The status of these species are indicated as "E" for endangered and "T" for threatened in the Status column. The following is a list of plant species that may occur in Nash Stream.

Scientific name	Common name	Status
Adlumia fungosa	Allegheny-vine	E
Cynoglossum virginianum ssp. *boreale*	wild hound's-tongue	E
Cypripedium parviflorum var. *pubescens*	large yellow lady's-slipper	T
Diplazium pycnocarpon	narrow-leaved glade fern	E
Galearis spectabilis	showy orchid	T
Osmorhiza berteroi	mountain sweet-cicely	E
Sanicula trifoliata	large-fruited sanicle	T

Lowland spruce - fir forest **(S3)**

This forest community occurs on cold valley bottoms, often on somewhat poorly drained soils. The plant species composition is similar to the ***high-elevation spruce - fir forest***, with red spruce and balsam fir as the dominant species. Some species that may occur in this community, but are typically absent from high-elevation forests, include striped maple (*Acer pensylvanicum*), wild sarsaparilla (*Aralia nudicaulis*), and red wakerobin (*Trillium erectum*).

The extent of this forest type is limited at NSF, primarily by the steep topography, but also possibly by past timber cutting practices. The original management plan identified only 260 acres of low elevation softwood forest on the property. However, by examining the soil survey data for soils that have a

tendency to support ***lowland spruce - fir forest*** (Important Forest Soils Group IIB, as described by NRCS), there appears to be roughly 1,400 acres that have the capability to support this forest type.

Like ***high elevation spruce – fir*** forests, ***lowland spruce – fir forests*** tend to support a low diversity of vascular plant species, and there are no rare plants that are primarily associated with this habitat in NH.

Natural communities and rare plants associated with rocky ridge, cliff and talus systems

As described by the Natural Heritage Bureau, the **temperate ridge - cliff - talus system** includes a variety of natural community types associated with such landscape features as rocky ridges, cliffs, and talus slopes occurring in close proximity to one another. Several of these communities at NSF are described below. There are also a variety of rare plant species that can occur in one or more of these natural communities, some of which are listed in a table after the descriptions of these ridge, cliff and talus communities.

Spruce - moss wooded talus **(S2S3)**

This community occurs on talus slopes with large boulders on sites influenced by late-melting ice and cold-air drainage. An open canopy of red spruce, balsam fir, paper birch, and yellow birch occurs among boulders that are often draped with lush carpets of various moss species.

There is an exemplary occurrence of this community on the steep slopes on the south side of Long Mountain, near the head of the Roberts Brook drainage.

Birch - mountain maple wooded talus **(S3)**

This is a talus woodland with an open canopy of yellow and paper birch. Mountain maple (*Acer spicatum*) is a common and characteristic shrub in this community. Large canopy gaps of lichen-covered boulders are often included within the woodland structure.

The 1988 NHB inventory identified an exemplary occurrence of this community at the southwest end of Whitcomb Mountain, below the exemplary ***montane - subalpine acidic cliff*** community.

Red spruce - heath - cinquefoil rocky ridge **(S3S4)**

This dry, conifer-dominated woodland community occurs on ridges above 1,700 feet. It is characterized by extensive areas of exposed bedrock, an open canopy of red spruce, and a prominent low shrub layer that can include lowbush blueberry (*Vaccinium angustifolium*), velvet-leaved blueberry (*Vaccinium myrtilloides*), sheep laurel (*Kalmia angustifolia*), and rhodora (*Rhododendron canadense*). The herb layer is sparse, but three-toothed-cinquefoil (*Sibbaldiopsis tridentata*) is always present. In the absence of fire, soils can accumulate and eventually lead to a forested structure.

There are two small occurrences of this community at NSF, on the rocky knobs of Victor Head and Bald Mountain near the southern end of the property.

Subalpine rocky bald **(S2)**

This is a sparsely-vegetated community that occurs on open summits dominated by exposed bedrock. Tree cover is patchy, among areas of open bedrock and a mix of lichens, bryophytes, and low shrubs, particularly lowbush blueberry (*Vaccinium angustifolium*). The community is characterized by subalpine species, including black crowberry (*Empetrum nigrum*), mountain cranberry (*Vaccinium vitis-idaea* ssp. *minus*), and highland rush (*Juncus trifidus*).

At NSF, this community is found on the upper slopes of the Percy Peaks. This exemplary occurrence is the only location at NSF that supports subalpine plant species.

***Montane - subalpine acidic cliff* (S4)**

This community occupies open rock on very steep or vertical faces. Vegetation is very sparse and limited to cracks or small ledges. Frequent species include wavy hair grass (*Deschampsia flexuosa*), rusty cliff fern (*Woodsia ilvensis*), three-leaved rattlesnake-root (*Nabalus trifoliolatus*), and montane Rand's goldenrod (*Solidago simplex* ssp. *randii* var. *monticola*).

An exemplary occurrence of this community at NSF occurs at the southwest end of Whitcomb Mountain, above an exemplary ***birch - mountain maple wooded talus*** community.

Rare plants associated with rocky ridge, cliff and talus communities

To refine the distinctions between the various component landscape features, each species will be indicated with an "R" for rocky ridge, "C" for cliff, and/or "T" for talus slope in the Notes column. The following is a list of plant species that may occur in Nash Stream.

Scientific name	Common name	Status	Notes
Adlumia fungosa	Allegheny-vine	E	T
Arabis pycnocarpa	hairy eared-rockcress	E	T
Calamagrostis stricta ssp. *inexpansa*	northern neglected reed grass	T	C, R
Carex backii	Back's sedge	E	R
Clematis occidentalis	purple virgin's bower	E	T
Cryptogramma stelleri	slender rock-brake	E	C
Diplazium pycnocarpon	narrow-leaved glade fern	E	T
Dryopteris filix-mas ssp. *brittonii*	male wood fern	E	R,T
Dryopteris fragrans	fragrant wood fern	T	C
Houstonia longifolia	long-leaved bluet	E	T
Osmorhiza berteroi	mountain sweet-cicely	E	T
Panax quinquefolius	American ginseng	T	T
Rosa acicularis ssp. *sayi*	bristly rose	E	T
Spiranthes casei	Case's ladies'-tresses	E	R
Symphyotrichum ciliolatum	Lindley's American-aster	T	R
Woodsia glabella	smooth cliff fern	E	C
Woodsia obtusa	blunt-lobed cliff fern	E	C,T

Natural communities associated with drainage marsh - shrub swamp systems (S5)

This natural community system consists of herbaceous and shrub wetland communities, and generally occurs on mineral soils along low-gradient streams. These systems are often under the influence of beaver activity, and variation in natural community structure frequently reflects stages in the cycle of flooding and draining associated with beaver dam construction and abandonment. Individual occurrences of this system can include a large number of communities in a complex mosaic of zones or patches. A large occurrence may include ***aquatic bed*** (S5), ***emergent marsh*** (S5), and ***short graminoid - forb meadow marsh/mudflat*** (S4) communities near areas of open water, seasonally flooded ***tall graminoid meadow marsh*** (S4) or ***sedge meadow marsh*** (S4) communities, and tall shrub communities such as the ***mixed tall graminoid - scrub-shrub marsh*** (S4S5), ***alder - dogwood - arrowwood alluvial thicket*** (S4), and ***alder alluvial shrubland*** (S3).

The largest occurrence of this system at NSF is in the drained area of the former Nash Bog Pond. Smaller occurrences can be found along low gradient sections of smaller waterways, particularly some of the source streams for Little Bog Pond. The following is a list of plant species that may occur in Nash Stream.

Scientific name	Common name	Status
Carex aurea	golden-fruited sedge	T
Carex baileyi	Bailey's sedge	T
Carex bullata	button sedge	E
Carex buxbaumii	brown bog sedge	E
Carex rostrata	beaked sedge	E
Eleocharis intermedia	mudflat spikesedge	E
Eleocharis ovata	ovoid spikesedge	E
Eleocharis quinqueflora ssp. *fernaldii*	few-flowered spikesedge	E
Equisetum palustre	marsh horsetail	E
Halenia deflexa	American spurred-gentian	T
Hippuris vulgaris	common mare's-tail	T
Huperzia selago	northern firmoss	E
Liparis loeselii	Loesel's wide-lipped orchid	T
Lobelia kalmii	brook lobelia	T
Lysimachia thyrsiflora	tufted yellow-loosestrife	T
Ophioglossum pusillum	northern adder's-tongue fern	E
Petasites frigidus var. *palmatus*	northern sweet-coltsfoot	E
Sagittaria cuneata	northern arrowhead	E
Spiranthes casei	Case's ladies'-tresses	E

Natural communities associated with medium level fen systems (S3S4)

This is a peatland system that typically occurs along quiet waters of impounded streams and pond shores. Diagnostic communities in this system have organic soils dominated by peat mosses (*Sphagnum* spp.), and characterized by a mix of sedge and shrub species. Typical communities in this system include ***sweet gale - meadowsweet - tussock sedge fen*** (S4), ***wire sedge - sweet gale fen*** (S3), ***large cranberry - short sedge moss lawn*** (S3) and ***highbush blueberry - sweet gale - meadowsweet shrub thicket*** (S4).

The most notable occurrence of this system at NSF occurs as a ring of vegetation around the perimeter of Long Mountain Pond. Medium level fen communities can often be found as components of **drainage marsh - shrub swamp systems** in areas with limited annual fluctuations in water level.

Most peatlands in New Hampshire have soil conditions that range from mildly to extremely acidic. The most acidic peatland types—kettle hole bogs and poor level fens—support a highly specialized flora that includes a number of rare plant species. However, many of the rare plants associated with peatlands are associated with two types of rich fens—the **calcareous sloping fen** and **patterned fen systems**—both of which are extremely rare and found almost entirely in the northern part of the state.

The following is a list of plant species that may occur in Nash Stream. Species associated with these rich peatlands are indicated by an "R" in the Notes column.

Scientific name	Common name	Status	Notes
Carex bullata	button sedge	E	
Carex chordorrhiza	rope-root sedge	E	
Carex diandra	lesser tussock sedge	T	
Carex exilis	meager sedge	E	R
Carex rostrata	beaked sedge	E	
Carex wiegandii	Wiegand's sedge	E	
Cypripedium reginae	showy lady's-slipper	E	R
Eleocharis intermedia	mudflat spikesedge	E	R
Eleocharis nitida	quill spikesedge	E	
Eleocharis quinqueflora ssp. *fernaldii*	few-flowered spikesedge	E	R
Equisetum palustre	marsh horsetail	E	R
Liparis loeselii	Loesel's wide-lipped orchid	T	
Lobelia kalmii	brook lobelia	T	R
Lysimachia thyrsiflora	tufted yellow-loosestrife	T	
Ophioglossum pusillum	northern adder's-tongue fern	E	
Petasites frigidus var. *palmatus*	northern sweet-coltsfoot	E	R
Valeriana uliginosa	marsh valerian	E	R

4.4 KNOWN RARE PLANT SPECIES

In the 1995 management plan, five rare plant species were identified as occurring on Nash Stream Forest: black crowberry (*Empetrum nigrum*), marsh horsetail (*Equisetum palustre*), highland rush (*Juncus trifidus*), broad-leaved twayblade (*Neottia convallarioides*), and millet grass (*Milium effusum* ssp. *cisatlanticum*). Since that time, there have been a number of changes to New Hampshire's rare plant list, as well as new discoveries at Nash Stream. Additional surveys are needed to track the distribution and viability of known populations of rare species and to look for new rare plant species occurrences.

The most recent information on the five known species includes:

- Black crowberry (*Empetrum nigrum*) (S3): This creeping shrub prefers alpine and subalpine habitats, and is found at NSF on North Percy Peak. It was listed as threatened (S2) at the time of the original management plan. Since that time, additional occurrences have been located in the state, lowering the species conservation rank from threatened to state watch (meaning the species is considered uncommon rather than rare in New Hampshire, and no longer tracked at the state level).

- Marsh horsetail (*Equisetum palustre*) (S1): Herbaceous plant found in open wet habitats, generally in areas with calcareous bedrock and high-pH groundwater seepage. It is considered endangered in New Hampshire, with 12 known occurrences, but only two that have been

observed in recent years. The population at NSF was found in a streamside setting at Nash Bog Pond, just below the former dam. It was found in 1982, but could not be relocated during a survey in 1988. There are no records of more recent surveys for this occurrence.

- Highland rush (*Juncus trifidus*) (S3): Like black crowberry, this is a species of alpine and subalpine habitats. At NSF, it is only known from North Percy Peak. Even at the time of the original management plan, this plant was considered uncommon, and is not tracked at the state level.

- Millet grass (*Milium effusum* ssp. *cisatlanticum*) (S3): This woodland grass prefers rich forests. This plant was originally found in the northwest portion of the property, in rich soils in the Sugarloaf/Fitch Mountain area. At the time of the original management plan, it was considered threatened (S2) in NH, but its rank has since been lowered to state watch, and is no longer tracked at the state level.

- Broad-leaved twayblade (*Neottia convallarioides*) (S2): This is a diminutive orchid (formerly known as *Listera convallarioides*) most often found in areas of rich groundwater seepage. At NSF, it is known from two locations in the northwest portion of the property, along the headwaters of Columbia Brook and Johnson Brook. In 2011, the population at Johnson Brook was surveyed, with over 1,000 plants documented. The Columbia Brook population was first documented in 1988, and was relocated in 2010. Field surveys are needed to assess the population.

- Male wood fern (*Dryopteris filix-mas* ssp. *brittonii*) (S1): This fern was first discovered during a search for *Neottia convallarioides* in 2008 growing in the same seep habitat. This discovery marked the first time this species had been recorded in NH. This fern is fairly widespread in western North America, but extremely rare in the northeast. It is possible that additional occurrences could be found with more extensive searches.

4.5 NATURAL AREAS

Nash Stream Forest shall be managed to protect natural diversity and to support natural community systems. A natural area is a designated area which is relatively unaffected by human activity and which contains plants, wildlife, natural communities, geological features, or scenic values of state, regional, national or global significance. Natural areas were selected to protect the habitat needs of rare, threatened, and endangered plant and animal species, natural communities, and unique or especially threatened features. Natural areas also protect the natural features of Nash Stream Forest and shall be as large and contiguous as possible within the constraints of the land. Natural areas are subject to the minimum management necessary to achieve the Vision and then only consistent with the purposes for which the natural area was designated. Timber harvesting shall be prohibited in natural areas.

The original plan designated areas that require special management strategies to protect unique ecological values such as rare plants, rare animals, and exemplary natural communities. These areas of ecological concern included core natural areas, natural preserves, buffers, corridors and control areas (**Table 2)**. To avoid confusion in terminology and to be consistent with the management of other DNCR reservations and state statute, the term “natural area” shall be utilized in this plan revision in place of core natural areas and preserve areas.

Buffers and corridors shall be used to enhance the protection and eliminate or reduce the impacts to the natural areas and control areas. Management will be limited to low intensity activities. Timber harvesting will be limited to uneven-aged management. Widths of buffers and corridors will be determined independently for each area, based on soils, topography and vegetation types.

The criteria used to designate natural areas on Nash Stream include:

1. Sites which provide habitat for rare or endangered species;
2. Sites that contain a rare natural community or high quality representative of a common natural community, or larger landscape units containing important combinations of communities and/or species;
3. Sites largely undisturbed by humans or largely recovered from human disturbance;
4. Sites which provide habitat for large numbers or uncommon associations of native plant and animal species;
5. Sites with special geological or paleontological significance.

Based on one or more of the above criteria, five general areas totaling 18,339 acres within the Nash Stream Forest were identified as natural areas and other protected areas:

1. Sugarloaf Mountain/Fitch Mountain/Number 3 Mountain
2. Percy Peaks
3. Long Mountain and Long Mountain Pond
4. Whitcomb Mountain
5. Victor Head and Bald Mountain

Designation of these five areas is consistent with the Conservation Easement Deed, which restricts management activities above 2,700 feet elevation and on excessively steep slopes. In addition, many of these areas contain Group II classified soils, which are physically not suitable for timber management. Determination of boundaries for these natural areas was based primarily on the protection needs of the rare species or natural communities they contain. The list above is a result of field surveys conducted during the 1988 inventory. There is a significant lack of data and NHB will conduct an inventory of all of the natural community systems in NSF, with the goal of completing the assessment within three years after the management plan is finalized.

Table 2
Areas of Ecological Concern

DESIGNATION	ACRES
Natural Areas	8,113
Buffers	5,116
Corridors	515
150 ft. Pond Buffers	55
Other High Elevation >2,700 ft.	49
Other Mountain Tops <2,700 ft.	516
Other Steep Slopes >35%	925
Other Group II Soils	3,050
TOTAL	**18,339**

Control Areas

Once the natural community system classification is complete, a control area will be established within each identified natural community system. A control area is a designated area that will remain largely unaltered by human activity, with the exception of minimal non-destructive vegetative sampling. The primary purpose of the control areas is to serve research and educational needs. For example, the areas can be used to contrast changes in vegetation composition and structure in control areas to areas in which active management is occurring. An additional purpose for establishing control areas is the preservation of plant and wildlife habitat, including examples of natural community types not represented in natural areas due to the level of past human impacts. In this manner, control areas will contribute toward the goal of preserving examples of all system types, regardless of current condition, and in anticipation of a future condition where natural processes prevail.

The size and location of control areas will be based on factors relating to the vegetation structure of the natural community system and the goals and design of the proposed monitoring. More specifically, Leak et al. (1993) proposed that at least five criteria should be considered in selecting natural (control) areas:

1. Sufficient size to maintain or provide for natural disturbance cycles, stable population genetics, territorial requirements for native wildlife species, hydrologic integrity, and, in general, some degree of isolation from exterior influence;

2. Adequate representation of typical and important community/site combinations;

3. Known disturbance histories, to the extent possible, including natural events as well as historical agricultural/logging interactions;

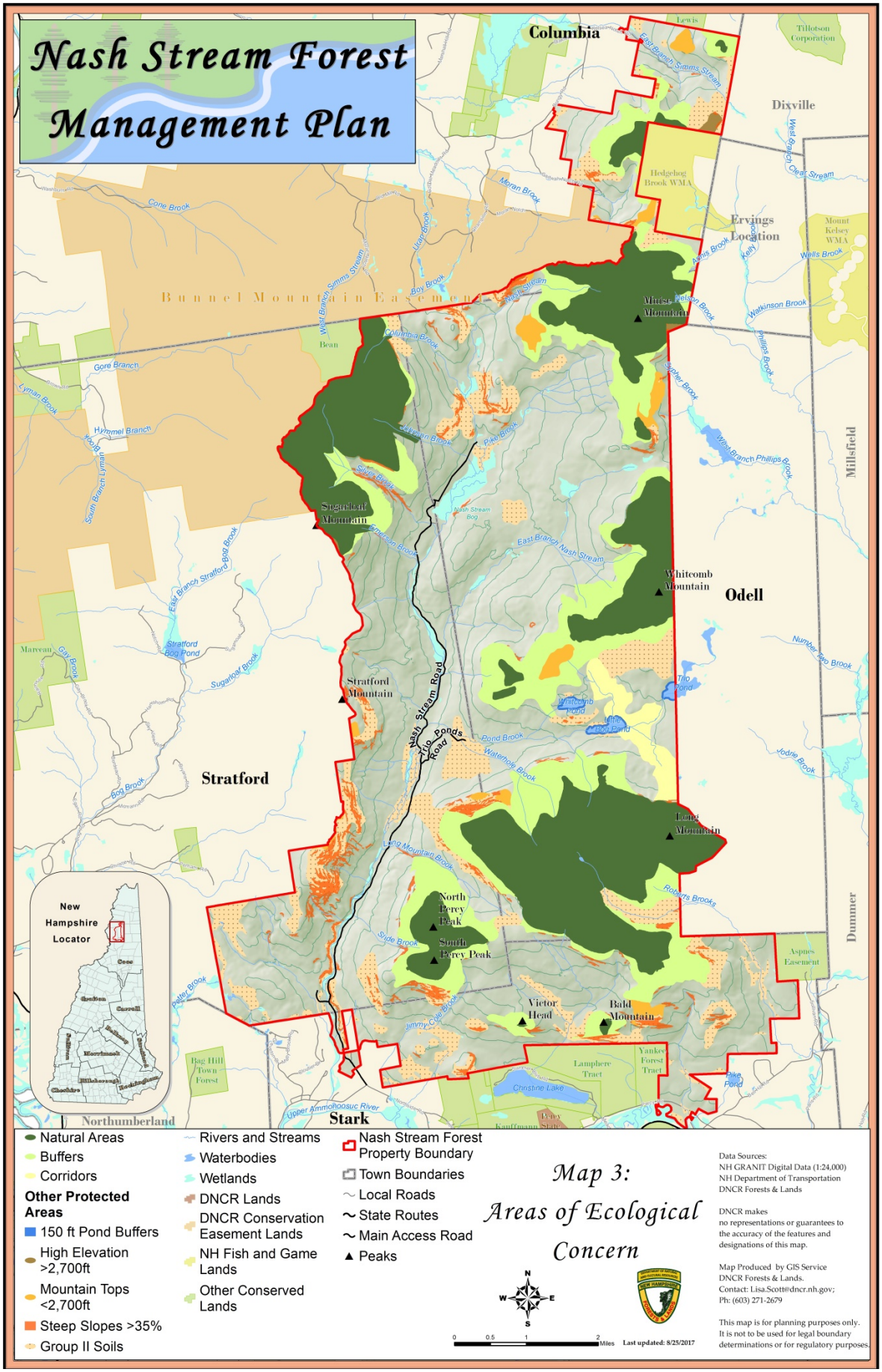
4. Acceptable current condition in terms of age/size/successional stage including not only pristine climax forest but forested tracts in early successional stages; and

5. Administrative feasibility in terms of natural boundaries (e.g., watersheds), location, and accessibility.

Not all of these criteria are appropriate for the Nash Stream Forest. For instance, because nearly all of Nash Stream Forest has been previously harvested, it will likely be impossible to select control areas containing "pristine climax forest." However, attempts will be made to designate controls that contain some measure of age/size/successional stage diversity within each area as well as between areas.

Based on the criteria above, Leak suggested that a control area comprised largely of hardwood should be 100 to 200 acres, and a control area consisting largely of softwood should be approximately 1,500 acres. The size requirements relate to the dynamics and interactions that operate at both the site and landscape scales and the scale and pattern at which disturbance patches are generated. While these acreages are simply recommendations based on regional research, they do provide a starting point from which to designate control areas in the Nash Stream Forest.

Designating a control area for hardwoods of the recommended size should be a relatively simple task and will be the first priority as these type comprises the majority of the area suitable for timber management. A review of the ecological land groups in Chapter 8 indicates that it will much more difficult to meet the control size recommended for softwoods in the area suitable for timber management. Low elevation softwood makes up less than 1% of this area due to past harvesting practices. However by identifying a core area of softwood surrounded by areas of mixed stands on soils that trend to softwoods over time, a control area of this type and size could be established and allowed to revert to softwood over time.


Nash Stream Forest
Management Plan
Columbia
Dixville
Ervings Location
Odell
Millsfield
Dummer
Stratford
Stark
Northumberland
Bunnel Mountain Easement
Mirror Mountain
Whitcomb Mountain
Sugarloaf Mountain
Stratford Mountain
Long Mountain
North Percy Peak
South Percy Peak
Victor Head
Bald Mountain
Nash Stream Road
Tiny Ponds Road
Hedgehog Brook WMA
Mount Kelsey WMA
Tillotson Corporation
Aspnes Easement
Bag Hill Town Forest
Lamphere Tract
Yankee Forest Tract
Christine Lake
Kauffmann State
Upper Ammonoosuc River
Moran Brook
Cone Brook
Gore Branch
Lyman Brook
Hummel Branch
South Branch Lyman Brook
West Branch Simms Stream
East Branch Simms Stream
Boy Brook
Nash Stream
Columbia Brook
Pike Brook
Slide Brook
Emerson Brook
East Branch Nash Stream
Nash Stream Bog
East Branch Stratford Bog Brook
Stratford Bog Pond
Sugarloaf Brook
Bog Brook
Gay Brook
Marvean
Pond Brook
Waterhole Brook
Long Mountain Brook
Slide Brook
Jimmy Cole Brook
Pater Brook
Nelson Brook
Watkinson Brook
Phillips Brook
West Branch Phillips Brook
Sylvia Brook
Kelly
Wells Brook
Mills Brook
West Branch Clear Stream
Number Two Brook
Tilo Pond
Jodrie Brook
Roberts Brooks
Pike Pond
New Hampshire Locator
Natural Areas
Buffers
Corridors
Other Protected Areas
150 ft Pond Buffers
High Elevation >2,700ft
Mountain Tops <2,700ft
Steep Slopes >35%
Group II Soils
Rivers and Streams
Waterbodies
Wetlands
DNCR Lands
DNCR Conservation Easement Lands
NH Fish and Game Lands
Other Conserved Lands
Nash Stream Forest Property Boundary
Town Boundaries
Local Roads
State Routes
Main Access Road
Peaks
Map 3:
Areas of Ecological Concern
N
W
E
S
0 0.5 1 2 Miles
Last updated: 8/25/2017
Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
DNCR Forests & Lands
DNCR makes no representations or guarantees to the accuracy of the features and designations of this map.
Map Produced by GIS Service
DNCR Forests & Lands.
Contact: Lisa.Scott@dncr.nh.gov;
Ph: (603) 271-2679
This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.

4.6 GOALS, OBJECTIVES AND IMPLEMENTATION

GOAL: MAINTAIN CURRENT LEVELS OF NATURAL COMMUNITY AND PLANT SPECIES DIVERSITY.

Objective 1: Improve information on natural communities at Nash Stream Forest.

The most recent broad-scale inventory of NSF occurred in 1988. NHB's primary goal is to improve DNCR's understanding of the natural community diversity and distribution of NSF.

An inventory of natural community systems and plant species will inform management activities and improve the NHB database of conservation elements. Prior to field inventory, a GIS landscape analysis will indicate areas of NSF that have a higher potential to support rare plant species and exemplary natural communities. Field inventory will identify these species and communities, while improving understanding of natural community diversity and distribution on the entire property.

Objective 2: Continue monitoring of rare plant populations and exemplary natural communities.

The NHB database currently contains records of five rare plant species, six exemplary natural communities, and one exemplary natural community system at NSF. NHB staff or partners shall conduct regular monitoring of these occurrences to assess their condition and trends.

NHB protocol states that rare species records that have not been updated in the past 20 years should be classified as "historic." With this in mind, rare plant populations should be revisited regularly in order to assess their status. A 10-year interval seems to be appropriate for most species. The exemplary natural communities at NSF were documented over 20 years ago, and original documentation for most of these occurrences is poor. All should be revisited to re-assess their classification and exemplary status.

Objective 3*: *Improve understanding of the role of management in forest structure and composition through establishing control areas.

Although most of NSF was heavily logged prior to state acquisition, a large portion of the property has been set aside as designated natural areas, which are excluded from timber management. These natural areas provide an interesting contrast from zones of active management. NHB will work with the Forest Management Bureau (FMB) to establish control areas to study long-term changes in forest structure and composition between managed and unmanaged forests with an emphasis on natural communities and natural community systems. The control areas will be added to the areas of ecological concern which includes natural areas, buffers and corridors.

Objective 4: Nash Stream Forest will provide opportunities for ecological research.

NSF is a large, unfragmented property the covers topography diverse in elevation, slope, and aspect. These qualities make NSF a valuable resource as an outdoor laboratory, particularly for the study of large scale ecological processes. NHB and the FMB will seek to build partnerships with research institutions to explore questions related to topics such as the effects of climate change and atmospheric chemistry on species and natural communities. This data could also identify potential impacts of climate change on forest composition and structure over long time periods.

NHB and FMB will seek to partner with research institutions (e.g., universities, NGOs) to establish a long-term research program on the effects of climate change on plant species and natural communities.

NHB will coordinate with these partners to ensure that research projects are well-designed, and so that any data collected will be stored, managed, and processed consistently over long time periods.

Objective 5: Evaluate the extent of natural areas to assess whether they are meeting the goal of protecting NSF's biodiversity.

The original management plan designated over 18,000 acres of NSF as areas of ecological concern, which included natural areas (preserves), buffers and corridors. These areas were chosen to preserve high-quality habitats and natural communities, maintain species diversity, and protect sensitive soils. However, in many cases, the information that was used to determine the boundaries of these areas has been lost, and the reason for certain decisions made in the past is now unclear. With the continual acquisition of new information, the extent of these natural areas should be reviewed to evaluate if the goals of natural areas are being achieved and if changes to boundaries are warranted.

Land managers, along with other natural resource experts, should conduct field visits to the areas of ecological concern where the justification for boundaries is uncertain. Natural area boundaries should also be re-assessed as NHB gathers more information on natural communities and rare plant species, to ensure that these elements are protected, and to determine whether the natural areas are protecting representative examples of all of NSF's natural community types.

4.7 MANAGEMENT GUIDELINES FOR ECOLOGICAL RESOURCES

1. Designation - Natural area designation will be based on established DNCR criteria. All lands above 2,700' elevation satisfy one or more natural area criteria or are restricted from timber cutting by the Conservation Easement and therefore will be designated as natural areas or otherwise restricted from timber harvesting.

2. Control areas will be established to complement natural areas for research and education purposes to ensure that representatives of the full range of identified ecological communities that meet control area criteria remain largely unaltered by human activity. The size and location of control areas will be based on factors which include but are not limited to community and hydrologic integrity, disturbance history, natural diversity, and isolation from outside influences.

3. Mountaintop ecological land groups below 2,700' and other land areas with limited (Group II) soils will be excluded from most management activities because of their fragile ecological characteristics. These areas will be subject to the same restrictions as buffers and corridors.

4. Management - Management practices and public uses will ensure preservation in accordance with the designation objective of natural areas (preserves). To ensure that the biotic integrity of natural areas and control areas is maintained, all management actions proposed within these areas will be coordinated with the Natural Heritage Bureau and other members of the State Land Management Team.

5. There will be no physical manipulation of natural areas that would alter natural processes or features.

6. Public use of natural areas will be allowed to the extent that it does not alter natural features. Hunting, trapping, and fishing will be permitted in accordance with existing laws.

7. No structures or motorized traffic will be permitted in natural areas. Trails, foot bridges and signs are permitted provided they are in compliance with #4 and #5 above.

8. Buffers and Corridors - Natural area buffers and corridors will be managed to reduce or eliminate impacts to the natural areas and control areas. The intensity of forest management will be reduced in buffer areas and corridors; management will be limited to low-intensity activities.

9. The widths of buffers and corridors will be determined independently for each area, depending on such factors as soils, topography, and vegetation.

5. CULTURAL RESOURCES

5.1 BACKGROUND AND CULTURAL SETTING

This chapter provides an overview of New Hampshire's past as background to the discussion of specific historical resources or archaeological sites that may exist within the boundaries of the Nash Stream Forest. The Nash Stream Forest is located in an area of the state which has not been a focus of study for archaeologists. No formal archaeological investigations have been conducted within the Nash Stream drainage. However, given the richness and diversity of natural resources, lithic resources (volcanic), and the existence of such dramatic landscapes, we can assume that a variety of archaeological resources, both Pre-Contact Native American sites and Post-Contact Euro-American logging/lumbering sites would be located within the Nash Stream Forest boundaries. In 1975, a biologist conducting field work in preparation for an environmental statement on the watershed collected 3 Native American artifacts in an area near the Nash Pond Bog Pond dam outlet after the dam failure. These 3 artifacts cannot be related to any specific time period, but it does provide evidence as to the potential for archaeological sites to exist within the Nash Stream Forest.

The record of human occupation in the North Country begins as the glaciers retreat between 13,000 to 14,000 years ago or before present (B.P.). The Native American chronology of New Hampshire is subdivided into four major time periods: Paleoindian, Archaic, Woodland and Contact. The first three periods constitute the time before European contact, while the period during which the European influence began to be felt directly is the Contact Period. Each Period is broken into sub-periods that are defined by the development of specific traditions associated with the particular resource base and lithic tool types. This general chronology is commonly accepted not only for New Hampshire but for the broader New England area. The following is a broad overview of each period.

5.2 PALEOINDIAN PERIOD (12,500-9,000 B.P.)

Human migration and settlement into New Hampshire followed glacial retreat some 12,000 years ago. As these populations adapted to their new environment, the natural landscape and resources slowly changed over time, as did the locations that were attractive for human occupation. Understanding the landscape occupied by Native American groups, evidence of which is still extant on the modern landscape (albeit in fragmented form) is an important first step in analyzing potential site locations. The Nash Stream Forest is a great example of a large tract of land that provides an excellent opportunity for future archaeological research.

The New Hampshire environment that Paleoindian groups initially encountered was much different from today. As glaciers retreated, a tundra-like environment was left across much of the state, while large areas were submerged beneath the water of lakes created by ice dams and moraines, most notably glacial Lakes Hitchcock and Merrimack, but also Lakes Colebrook, Coos, Israel, Ashuelot, Newbury and Winnipesaukee. Other large glacial lakes have drained and are now rivers. Isostatic depression of the land also permitted a marine incursion by as much as 70-75 m above present sea levels in Maine and New Hampshire following ice retreat, crustal rebound led to a fall in local relative sea level to -60 m between 12,000 and 12,500 B.P. By about 11,000 B.P. sea level rose rapidly following this lowstand period to about 20-25 m below present sea level before stabilizing and slowly rising over time to present-day levels.

Paleoindians hunted caribou as well as smaller animals found in the sparse, tundra-like environment. A recent discovery from Jefferson, NH identified bear protein on a recovered tool, whether it was used for

food or for the pelt we can only hypothesize. In other parts of the country, Paleoindian groups hunted larger Pleistocene mammals such as mastodon or mammoth. At this point in current research for New England there is no evidence that these mammals were utilized by humans as a food source, however mastodon remains have been encountered in New Hampshire.

Sites and artifacts from the Paleoindian period were thought to be exceedingly rare in New Hampshire however recent research in the north country have identified a number of well-known Paleoindian sites found in Jefferson, Berlin and Colebrook. Dr. R. Boisvert, the current State Archaeologist for New Hampshire has been conducting research in these areas for over a decade. The Paleoindian Period in New Hampshire, currently known, consist of "quarry" lithic extraction sites, lithic workshops, small-scale forager-hunter transient camps and aggregated base camps. Material from these quarry sites can be found as far away as southern Massachusetts, and to the north in Quebec.

Evidence of Paleoindian settlement can be expected on the former shores of now-drained glacial lakes, marked by terraces well above current river channels, though their presence may also be found in now-inundated offshore environments. Research indicates, however, that an additional parameter for Paleoindian site location is access to wetland complexes and kettle ponds. Several well-known Paleoindian sites have been discovered in the southwestern part of the state in association to large wetland complexes and bogs. These parameters would suggest that a preference for locations with access to such environments with a diverse resource base would be likely to hold Paleoindian sites. Nash Stream Forest has the potential to contain these site types from the Paleoindian Period.

5.3 ARCHAIC PERIOD (9,000-3,000 B.P.)

During the Archaic Period, humans adapted to an evolving temperate forest, which flourished after a warming trend in New England. These groups had access to a wide range of resources. This period is characterized by hunter-gatherer economies in varying levels of sociocultural complexity, with a focus on large mammals such as moose, and deer, as well as a greater reliance on fishing. The people fished in riverine, lacustrine (lake) and ocean environments. Coastal populations also collected shellfish.

The wide range of resources is reflected in the diversity of tools dating to the Archaic Period. Many variable shapes and sizes of projectile points are noted, likely the result of the variety of tool functions required. Evidence also suggests that birch bark containers as well as soapstone (steatite) bowls were manufactured. People lived in seasonal camps. They hunted animals and gathered plants as defined by the time of year. During this time period, the population began to increase. This is probably a result of the increased number of resources available and a trend toward more settled lifestyles. Ceremonialism, in the form of planned burial, became more common in the Archaic Period. The Archaic Period is broken into three phases, the Early Archaic (9,000-8,000 BP), the Middle Archaic (8,000-6,000 BP) and the Late Archaic (6,000-3,000 BP). Paleoindian and Early Archaic finds are among the earliest in New England.

In New Hampshire, during the Early Archaic, stone technologies are characterized by assemblages of cores, scrapers, and cobble tools, and are predominantly of quartz. During the Middle Archaic, locally available vein quartz was supplemented by higher quality lithic raw materials from particular regions. Mount Jasper rhyolite was an important resource of workable stone, while hornfels sources in Tamworth, New Hampshire were also exploited. Quarry sites are tied to locations where lithic resources are at or near the surface rather than to environmental features, such as wetlands, that would have been attractive to settlement on the basis of food resources.

The low incidence of Early Archaic sites in New Hampshire and across northern New England may reflect a relatively low population density similar to that of the Paleoindian period. The increasing size,

number, and setting of Middle Archaic sites suggest a greater population density in this period than in preceding periods. Large riverine sites functioned as seasonal base camps, while smaller sites specialized in extraction/procurement or were sited along tributaries and smaller perennial streams and on high terraces away from immediate water sources. The Late Archaic Period in New England is marked by three broad technological/tool traditions along with the introduction of steatite vessels and early ceramic production towards the end. Most sites in New Hampshire have been identified along major rivers.

Within the past decade an archaeological survey was conducted in the White Mountains, the first high elevation site survey conducted in the state. The results of testing around seven high elevation lakes identified multiple Archaic Period sites located around six of the seven lakes. This suggests the possibility that high elevation water bodies or wetland complexes within the Nash Stream Forest may contain Archaic Period sites.

5.4 WOODLAND PERIOD (3,000 B.P-1600 A.D.)

Across the Eastern Woodlands, a region that extends from the Great Lakes and Mid-Atlantic up through New England and into New Brunswick, Nova Scotia and Newfoundland (Canada), the Woodland period is traditionally marked by the adoption of ceramic technology, small-scale horticultural activities, and the establishment of sedentary life including palisaded and unpalisaded villages, as well as increased sociocultural complexity and ceremonialism. In New Hampshire, there is little evidence of horticulture during the Woodland period, this may be attributed to the effects or impacts of development through the centuries in areas most typically thought to hold Woodland period archaeological sites. Otherwise, the Woodland period in New Hampshire is most clearly marked by changing ceramic technologies and the appearance of exotic raw materials, particularly lithic types that could only be acquired through long-distance contact and trade.

There is a continual increase in site density and presumably population throughout the Late Woodland period. On the Merrimack River, Late Woodland people reoccupied landforms occupied in Paleoindian and Middle Archaic times, suggesting that similar settlement systems may have been in place. It is generally accepted that since approximately 1,000 BP, Woodland peoples practiced "slash and burn" farming. They cultivated many plant types including maize, beans, squash and other formerly wild species such as *Chenopodium album* (commonly called Lamb's Quarters, White Goosefoot, or Pigweed).

Archaeological and historical evidence suggests that Woodland era sites consisted of large villages and smaller peripheral sites surrounded by agricultural fields. Many of the small peripheral sites were occupied to take advantage of seasonally available food and to seek lithic and other raw materials for tool manufacture.

The Nash Stream Forest would provide ample resources for Native American populations subsistence strategies during this period.

5.5 CONTACT PERIOD (1600-1760 A.D.)

Prehistory ends with the coming of Europeans in the 17th century and the introduction to history in written documents. The first Europeans to enter New Hampshire encountered native groups who still practiced a Woodland economy. The seasonal round of the Western Abenaki at and after contact can be summarized as consisting of dispersal into upland hunting grounds associated with family bands, typically comprised of related nuclear families from late fall to late winter/early spring, with the remainder of the year spent predominantly at villages along river and streams navigable by canoe. Exploitation of anadromous fish runs was an important aspect of the economy, and this also influenced

village location, as did the availability of arable land. Although practiced, horticulture in northern New England was secondary to hunting, fishing, and gathering, unlike in the south, because of a shorter and less reliable agricultural season. Villages were characterized by longhouses of extended family bands scattered along sections of rivers or streams. More compact and even palisaded villages were known perhaps as responses to pressures arising from contact and conflict, direct or indirect, with Europeans.

Archaeologically, the Contact Period is identified by the presence of European style trade goods. Prior to war, the Indians traded with the Europeans. Copper projectile points and cooking vessels became desired items. Other raw materials, such as glass, were offered to the Indians by the Europeans. Huge networks were established to trade fur. By the mid-seventeenth century, population decline was already well under way in the wake of disease and warfare brought by Europeans. Researchers suggest that there may have been as many as 10,000 to 12,000 Western Abenaki at the time of contact, but that number dwindled to as few as 250 at the end of this period.

5.6 POST-CONTACT HISTORIC PERIOD (1760-Present)

European settlement north of the White Mountains did not occur until the late eighteenth century, with the earliest documented exploration of the Ammonoosuc and Israel rivers in the 1750s. Although the first town charters in Coos County were issued in the 1760s, northern towns such as Colebrook, Stewartstown, and Northumberland did not see any significant population growth and settlement at least until the 1770s. Stratford, Stark and Columbia were also similar in population and growth, while Odell experienced minimal settlement. Activity in this early period was limited primarily to fur trapping and hunting, and to a lesser extent logging.

By the early nineteenth century, logging and timber production became the primary industries of northern New Hampshire, logging camps and saw mills were scattered throughout the region. Logging did not become a major economic factor until the railroad came through in the 1850s. Pulp and paper production dominated the North Woods landscape through the nineteenth and twentieth centuries. The extensive and rapid logging that occurred throughout the region took a toll on the landscape, the cutting down of forests that resulted, led to massive fires that consumed thousands of acres of landscape while polluting the air and water, leading ultimately to public conservation efforts and the 1911 Weeks Act that established the White Mountain National Forest.

Historic accounts depict logging communities that had been established within the Nash Stream Forest boundaries, along with dams, roads and rail corridors. Therefore it is expected that historic archaeological sites (logging camps) would have the potential to be identified.

5.7 CULTURAL RESOURCES GOALS, OBJECTIVES AND STRATEGIES

As previously stated, to date there has been no coordinated effort to document the material remains of human activity in the Nash Stream Forest. An archaeological survey of the Forest is needed in order to achieve a more complete understanding of the area and to coordinate any development or management activities so that any important sites would be protected and not be adversely affected. Such a survey would need to be carried out as the responsibility of the Department of Natural and Cultural Resources, with the coordination of the State Archaeologist in the Division of Historical Resources, as stipulated under RSA 227-C.

GOAL: IDENTIFY AND PRESERVE SIGNIFICANT CULTURAL/HISTORICAL RESOURCES FOR FUTURE RESEARCH AND PUBLIC INTERPRETATION.

Objective 1: Identify and assess areas of probable archaeological sensitivity.

Strategies:

1. Conduct a short-range archaeological sensitivity assessment of areas threatened by immediate or potential impact.
2. Carry out an ecologically integrated long-range cultural resource survey of the entire Nash Stream Forest.

Objective 2: Evaluate location, nature, extent and significance of identified archaeological resources.

Strategies:

1. Interpret the Pre and Post-Contact Period sites, to the extent possible.
2. Develop an archaeological baseline of integrated ecological and cultural resource data
3. Establish and implement archaeological research and education programs.

Objective 3: Implement a monitoring and protection program for all identified cultural resource sites.

Strategies:

1. Provide and implement standards and guidelines for protection of known archaeological sites for later research and/or interpretation.
2. Develop and coordinate monitoring and protection protocols with other federal and state agencies.
3. Consider the location and preservation of cultural resources during the planning, layout and implementation of all management activities, including public use.

5.8 CULTURAL RESOURCE IMPLEMENTATION AND MANAGEMENT GUIDELINES

In order to manage the cultural resources in the Nash Stream Forest it will be necessary to establish a set of priorities in the absence of an existing inventory of identified archaeological sites.

1. **Identification/Protection**: Areas likely to contain archaeological sites will be identified; areas likely to undergo alteration of land will also be identified. Where these overlap, a cultural resources survey will be executed and appropriate steps taken in accordance with state and federal regulations.
2. **Testing**: Archaeological testing will be permitted by qualified archaeologists who have obtained special use permits (see Public Use Guidelines).

The next step should be the development of a cultural resources management plan or also known as a Historic Properties Management Plan (HPMP) which would serve as a planning tool and provide a basis for public education and scholarly research. In addition, these inventory efforts should be undertaken within an interdisciplinary methodology.

6. WILDLIFE

6.1 HISTORY

Information on the historical abundance and diversity of wildlife specific to the Nash Stream Forest (NSF) is scant. However, it is possible to generalize about the species that may have been present there prior to the occurrence of large-scale timber harvesting.

Early accounts of New England colonists attest to plentiful game in New Hampshire at the time of European settlement. Abundant wild pigeons, grouse, ducks, geese, turkeys, deer, and rabbits provided ample food for humans and native predators such as wolves, bobcats, lynx, and possibly eastern mountain lion. Grouse, snowshoe hares, deer, and moose probably were abundant species in the Nash Stream valley. Wild turkeys and rabbits are unlikely to have occurred that far north. No historical records exist of non-game species, but birds of prey, songbirds, small mammals, reptiles, and amphibians presumably were abundant as well.

From 1867 to around 1900 extensive logging occurred in northern New Hampshire. Logging and forest fires during this period undoubtedly affected wildlife populations, including those in the Nash Stream valley.

Old camp journals documented consumptive use of wildlife in the Nash Stream area in the early 1900s. It is interesting to note that two species mentioned as being shot or trapped were common loons and American marten. The journals clearly document the occurrence of these now protected species in the NSF in the early part of this century.

Long-time camp owner Phil Oakes asserts that hunting and trapping were considered to be "good" during the 1940s and 1950s on NSF. Snowshoe hare and ruffed grouse were abundant in the Nash Bog area. Deer yarded up in the softwood cover adjacent to the old Nash Bog Pond and sightings of deer commonly occurred along roads and trails. Currently there are no known deer wintering areas mapped on the NSF.

According to local residents, the first recent signs of the return of moose began in the 1940s, as much of the deer wintering areas were cut. The extensive patches of young forest that resulted provided ample moose food in the form of woody browse. Coyotes invaded the valley around 1950. The deer population and resulting harvest declined significantly following the winter of 1969-70 when record snowfalls decimated deer populations throughout the North Country.

Hunter surveys conducted by the New Hampshire Fish and Game Department (NHFGD), prior to state acquisition, indicated that harvests of large and small games species such as deer, bear, grouse, and snowshoe hare were fairly low in the NSF compared to the rest of Coos County.

Since the last plan there have been changes to the wildlife community in the NSF. Wild turkeys are now seen occasionally on the property. American marten (aka pine marten), a state threatened member of the weasel family, inhabits the spruce and fir and mixed wood forests on the NSF and are found most frequently at the higher elevations. Moose numbers have declined significantly statewide in recent years and a multi-year study is underway to better understand the cause.

6.2 WILDLIFE HABITATS

The NSF encompasses a considerable variety of wildlife habitats, from ponds, streams, and wetlands to hardwood, softwood, and mixed forests of various ages and at elevations ranging from 1,020 feet to 3,680 feet.

Aquatic and wetland habitats on the NSF include three great ponds (water bodies exceeding 10 acres in surface area) and numerous wetlands and streams (see Fisheries chapter). Below is a brief inventory of these resources and the wildlife that benefit from them. Refer to the Chapter 7 for more information on these resources and how they relate to the fisheries of NSF.

Ponds

The great ponds include Whitcomb Pond, Little Bog Pond, and Lower Trio Pond. These ponds provide foraging habitat for aquatic species such as otter, mink, raccoon, moose, common loon, common merganser, American black duck, mallard, belted kingfisher, red-spotted newt, mink frog, pickerel frog, green frog, and bullfrog, and produce aquatic insects with airborne adults which are important prey for bats, swallows, chimney swifts, cedar waxwings, and flycatchers.

Streams

Nash Stream is the most significant stream on the property, and traverses the NSF for about 12.5 miles north to south. Other major streams range in length from less than a mile to about 5 miles. All but three of the significant streams are tributaries of Nash Stream; the others flow into Phillips Brook, Christine Lake, and the Upper Ammonoosuc River.

These streams and their edges provide potential habitat for wood turtle, star-nosed mole, water shrew, and spring, dusky, and two-lined salamanders, as well as beaver, otter, mink, American marten and raccoon. Bats, birds, and other predators of aquatic insects also forage over the streams.

Wetlands

Nash Bog is the largest wetland with more than 200 acres, and is predominantly (77%) mixed emergent marsh and shrub scrub, with smaller areas of emergent marsh (8%), shrub scrub (7%), and deciduous forested wetland (8%). Nash Stream meanders through the wetland from north to south.

Nash Bog provides breeding habitat for several wildlife species that are uncommon or absent elsewhere on the property. These include Wilson’s Snipe, sora, song sparrow, and red-winged blackbird.

Most of the other wetlands occur in series along various streams, although a few are relatively isolated. They range in area from <1.0 to 34 acres, with twenty-five wetlands less than 2 acres and only five exceeding 10 acres. The majority are active or inactive beaver flowages. About half the wetlands include only a single wetland type; the others include various combinations of open water, emergent marsh, shrub scrub, and forested types. Significant numbers of standing dead trees occur in four wetlands. Softwoods dominate the forests along wetland shorelines.

Wildlife known or likely to utilize these wetlands include moose, white-tailed deer, beaver, raccoon, water shrew, star-nosed mole, southern bog lemming, mink, otter, fisher, barn and tree swallows, olive-sided flycatcher, Wilson's and yellow warblers, northern waterthrush, rusty blackbird, swamp sparrow, American woodcock, spring peeper, mink frog, and pickerel frog. Bats and birds will forage over

wetlands and use standing dead trees as roosts. In the winter of 2006-2007 the NSF forester conducted habitat improvement work here to enhance alder stands to benefit woodcock.

Vernal Pools

A vernal pool is a surface water or wetland, which provides breeding habitat for amphibians and invertebrates that have adapted to that unique environment (NH DES Rule Env-Wt 101.108). These temporary ponds, usually small and shallow, occur annually in the same locations, gaining their water from snowmelt, spring rains, and/or elevated groundwater levels. They typically dry up largely or completely in late summer. Lack of water or extremely low oxygen levels during part of the year precludes the survival of fish populations in these ponds. The absence of fish provides a safe breeding environment for amphibians, and a number of species breed only in these fishless ponds.

To date there has been no specific survey for vernal pools on the NSF. However, a wetlands survey conducted in 1992 did document amphibian egg masses in thirteen wetlands. Vernal pools provide essential breeding habitat for wood frogs and spotted salamanders, as well as a variety of aquatic invertebrates. Red-spotted newts, gray tree frogs, green frogs, spring peepers and American toads also may breed in vernal pools.

Habitat in the NSF, as the name suggests, is primarily upland forest which covers 38,562 acres, 97.4% of the property. This does not imply, however, that forest habitat conditions are uniform across the property. Forest types occurring can be grouped into three broad categories, softwood, hardwood, and mixed, but species composition within these groups varies from one location to another. Past harvesting has created a range of age classes as well. The 1988 inventory indicates that poletimber stands occurred most extensively, covering 60% of the total Forest (down 5% from the original management plan), followed by sapling stands at 17% and sawlog and seedling stands, each at slightly above 10%. Overall, we expect that the forest structure at NSF has made the predicted shift to an older size class distribution since that time (see Forest Management chapter).

Northern Hardwood Forest

Northern hardwood forest (i.e., sugar maple - beech - yellow birch forest as discussed in the Ecological Resources chapter) comprises the most extensive wildlife habitat in the NSF. This forest type consists principally of mixed stands of sugar maple, beech and yellow birch. Black cherry, red maple and white ash occur as common associated species. Shade intolerant species including trembling and bigtooth aspen, paper birch, pin cherry, and striped maple, are common in even-aged seedling and sapling stands regenerating after clearcutting. Hardwood stands occur on the best growing sites on mid to upper slopes below 2,700 feet elevation, and occupy more than 18,000 acres.

Northern hardwood forests support a wide diversity of wildlife species, including red-bellied snake, downy and hairy woodpeckers, least flycatcher, white-breasted nuthatch, red-eyed vireo, ovenbird, rose-breasted grosbeak, smoky shrew, northern and southern flying squirrels, woodland jumping mouse, bats, porcupine, and fisher. Beechnuts provide an important food source for mast-consuming species, including blue jay, white-breasted nuthatch, flying squirrels, black bear, and white-tailed deer. Species using younger age classes include chestnut-sided and mourning warblers, common yellowthroats, American redstarts, and alder flycatchers.

High-Elevation Spruce-Fir Forest

Softwood habitat in the NSF consists principally of mixed stands of red spruce and balsam fir. Some white pine occurs at lower elevations, and black spruce, tamarack and cedar occur in a few boggy areas. Softwoods currently occupy about 12.5% (4,890 acres) of the NSF.

NHFGD's Wildlife Action Plan (WAP) characterizes the Nash Stream area as an important component of the landscape. Most of the state forest is classified as Tier 1, highest ranked habitat in the state (Map 4) The highly ranked areas correspond to high elevation spruce-fir habitats along with Nash Stream and its tributaries. More than 60% of the softwood acreage in the NSF exists as high-elevation spruce-fir forest in areas above 2,700 feet elevation, which are designated as natural areas. The property includes four areas of high elevation habitat: the northwest peaks, Whitcomb Mountain, Long Mountain, and the Percy Peaks. Together they comprise more than 8,000 acres.

Areas classified as mountain top and upper mountain slope constitute more than 13,000 acres. Long Mountain is the largest high elevation area on the property, with a summit elevation of 3,640 feet, and 3,100 acres above 2,700 feet, of which 1,346 acres is softwood. The northwest peaks encompass six separate named peaks within the NSF and several others beyond the boundaries, and is the most extensive contiguous high elevation area in the upper Connecticut River watershed. This area includes 1,887 acres above 2,700 feet within the NSF, of which 325 acres is in softwood and another 511 acres is in softwood-hardwood. The area includes Sugarloaf, the highest elevation on the property, with a summit of 3,701 feet. Whitcomb Mountain consists of two peaks which are separated by a notch at 2,340 feet. The northern peak rises to 3,610 feet and encompasses 1,700 acres above 2,700 feet; the southern peak rises to 3,360 feet and encompasses 1,061 acres above 2,700 feet. The Percy Peaks, with summits at 3,418 feet and 3,220 feet, cover the smallest high elevation area. They occupy 350 acres above 2,700 feet, most of which is on the North Peak.

The high-elevation spruce - fir and mixed wood forest is some of the most important wildlife habitat found on the NSF. It includes some of the finest examples of these fragile unfragmented ecosystems in Coos County. Extensive, unbroken stands of spruce and fir forest, much of it in an older aged condition with its complex structure of downed trees, rugged terrain, various size classes, contribute to a mosaic of habitat that has high value for a variety of wildlife. These forests provide critical habitat for Bicknell's thrush and American marten but they are also important for snowshoe hare, spruce grouse, and black-backed woodpecker. Difficult to access, these remote forests are rarely visited, affording wildlife refuge and are used by denning black bears and wintering moose. These areas are also susceptible to natural disturbances, such as wind and ice storms or insect outbreaks, which provide benefits to numerous species. In addition, the abundance of wetlands, seeps, and springs found in these forests are vital to the health of aquatic ecosystems found at lower elevations.

Low-Elevation Spruce-Fir Forest

There are four major softwood areas at low elevations. The largest, located between Nash Bog and East Branch, includes some 260 acres in eleven pure stands of up to 78 acres, interspersed with hardwoods and mixed stands.

A number of old strip cuts exist in this area. About 190 acres of pure softwoods occur with mixed stands on a large flat northeast of Little Bog Pond, and two areas each with about 140 acres of pure softwoods, exist north of Simms Stream and west of the Bordeau Trail. Several contiguous areas of 30-70 acres also occur, but most other scattered patches of low elevation softwoods cover less than 20 acres.

Since relatively little spruce-fir forest currently exists at lower elevations on the property, the extensive high elevation spruce-fir forests provide the primary habitat for boreal forest species such as gray jay, boreal chickadee, spruce grouse, blackpoll warbler, white-winged crossbill, and yellow-bellied flycatcher. The Bicknell's thrush inhabits areas above 3,000 feet. Marten and lynx could also occur in these areas. Low-elevation softwoods may provide important deer wintering habitat although none have been documented. Other mammals closely associated with spruce-fir include snowshoe hare, red squirrel, northern flying squirrel, deer mouse, southern red-backed vole, and porcupine.

Mixed Forests

Mixed-wood stands in the NSF consist primarily of northern hardwood - spruce - fir forest (see Ecological Resources chapter) that includes mixtures of sugar maple, yellow birch, beech, red maple, red spruce and balsam fir. The area of mixed forest is extensive, covering some 15,543 acres. Of the mixed forest acreage, 73% is predominantly hardwoods and 27% is predominantly softwoods.. Mixed types include beech/sugar maple/spruce; beech/red maple/spruce; sugar maple/birch/ash; spruce/fir/sugar maple; and spruce/fir/birch on lower mountain slopes; birch/spruce/fir mountain slopes; and spruce/fir/birch on mountain tops.

Typical wildlife using mixed stands at lower elevations include white-tailed deer, fisher, flying squirrel, red-backed vole, weasel, moose, bobcat, black bear, barred owl, pileated woodpecker, black-capped chickadee, winter wren, and various warblers, as well as many species typical of either hardwood or softwood stands. Mixed stands at high elevations support wildlife typical of high elevation softwoods.

Upland Openings

Upland openings in the NSF include roadsides, logging roads, log yards, and clearings around structures on leased lots. Vegetation in these openings includes grasses, sedges, and various forbs, often with low shrubs along the edges. Drainage swales along the edges of roads and log landings provide patches of moist, open habitat.

Openings with tall herbaceous vegetation provide habitat for a number of upland species that are unlikely to occur in forest interiors. These include northern brown snake, garter snake, song sparrow, meadow vole, and meadow jumping mouse. These openings also provide foraging areas for species such as robin, American goldfinch, song sparrow, snowshoe hare, white-tailed deer, red Fox, coyote, and bats. The swales provide habitat for American woodcock, common snipe, star-nosed Mole, and various amphibians.

Sand and Gravel Banks

Exposed banks exist along some stretches of Nash Stream, in several excavated pits, and in scattered road cuts. They range in height from a few feet to more than 100 feet. Sections with relatively loose but stable deposits provide potential nesting sites for belted kingfisher and bank swallows, which excavate nesting burrows in vertical banks. More level areas of sand deposits provide nesting sites for painted and snapping turtles. Wood turtles, if present, will use sandy deposits in streams and rivers for nesting. These areas are also attractive to carnivores including bobcats, foxes and coyotes.

Structures

The 91 camps existing on leased lots, with associated outbuildings, provide a unique habitat feature in the NSF. Door and window ledges and exposed rafters likely provide the only available nest sites for eastern phoebes and barn swallows, and are used by American robins as well. Loose boards and tarpaper, and attics accessible through cracks and knotholes provide roost and nursery sites for cavity-dwelling bat

species (little brown bat, northern long-eared bat, eastern small-footed bat, silver-haired bat, tricolored bat, big brown bat). Red squirrels and white-footed mice also likely gain access to forage, take shelter in. winter, and have young.

6.3 WILDLIFE SPECIES

Comprehensive wildlife inventory efforts began in May-July, 1992 with point count bird surveys on transects in previously managed areas of the Forest, in selected high elevation areas, and at the majority of wetlands. Wetland surveys also documented reptiles, amphibians, and mammals. Track surveys for mammals in February-April, 1993 and surveys for bats and stream salamanders in July, 1993 also expanded current inventory information. Each fall wildlife biologists conduct a survey of mast (nut) production in selected beech stands on Nash Stream Forest. For the past 18 years NHFGD wildlife biologists have been conducting ruffed grouse drumming counts each spring along the West Side Road. These counts are important indices to grouse abundance. In the winter of 2012 biologists conducted snow track surveys with the use of snowmobiles on trails located in Nash Stream.

Reptiles and Amphibians

Wetland surveys and chance encounters have documented eleven amphibian species and one reptile species in the NSF. **Table 3** provides a list of potentially resident species.

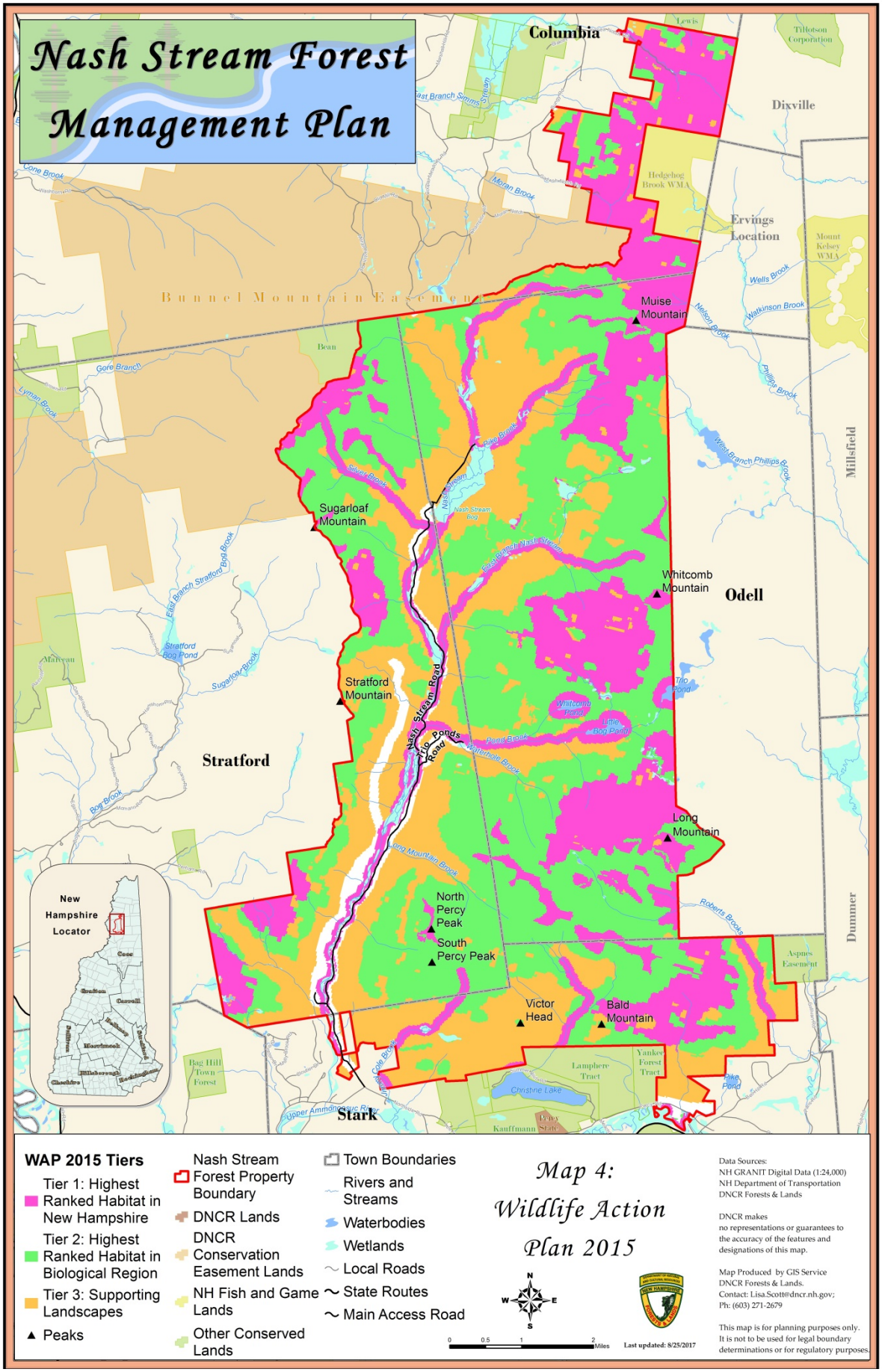

Nash Stream Forest
Management Plan
Columbia
Dixville
Ervings Location
Odell
Millsfield
Dummer
Stark
Stratford
Bunnel Mountain Easement
Muise Mountain
Whitcomb Mountain
Sugarloaf Mountain
Stratford Mountain
Long Mountain
North Percy Peak
South Percy Peak
Victor Head
Bald Mountain
Nash Stream Road
Trio Ponds Road
New Hampshire Locator
WAP 2015 Tiers
Tier 1: Highest Ranked Habitat in New Hampshire
Tier 2: Highest Ranked Habitat in Biological Region
Tier 3: Supporting Landscapes
Peaks
Nash Stream Forest Property Boundary
DNCR Lands
DNCR Conservation Easement Lands
NH Fish and Game Lands
Other Conserved Lands
Town Boundaries
Rivers and Streams
Waterbodies
Wetlands
Local Roads
State Routes
Main Access Road
Map 4:
Wildlife Action Plan 2015
Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
DNCR Forests & Lands
DNCR makes no representations or guarantees to the accuracy of the features and designations of this map.
Map Produced by GIS Service
DNCR Forests & Lands.
Contact: Lisa.Scott@dncr.nh.gov;
Ph: (603) 271-2679
This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.
Last updated: 8/25/2017

TABLE 3
Amphibian and Reptile Species Known or Expected to Occur in NSF.
Known occurrences are in bold.

AMPHIBIANS	REPTILES
Blue spotted salamander	**Garter snake**
Bullfrog	Painted turtle
American toad	Redbelly snake
Gray treefrog	Ribbon snake
Green frog	Ringneck snake
Leopard frog	Smooth green snake
Mink frog	Snapping turtle
Northern dusky salamander	Wood turtle
Pickerel frog	
Redback salamander	
Red-spotted newt	
Spotted salamander	
Spring peeper	
Spring salamander	
Two-lined salamander	
Wood frog	

Birds

Field surveys during the breeding season to date have documented ninety bird species potentially breeding in the NSF (**Table 4**). These include 21 resident species, 28 short-distance migrants, and 39 long-distance neotropical migrants. The most commonly detected species in the 1992 point count surveys include: winter wren, swainson's thrush, red-eyed vireo, black-throated blue warbler, black-throated green warbler, ovenbird, and white-throated sparrow, each of which accounted for more than 5% of all the individuals observed. Hermit thrush, chestnut-sided warbler, and pine siskin accounted for 3-5% of individuals observed. Fifteen species occurred on all eight transects surveyed. These species include the black-capped chickadee, hermit thrush, blue-headed vireo, Nashville warbler, yellow-rumped warbler, blackburnian warbler, chestnut-sided warbler, and American redstart, all of which occurred in lower numbers. **Table 5** lists undocumented bird species which may occur, and **Table 6**, those which occur as migrants, transients, or winter visitors.

TABLE 4
Birds Documented in NSF During the Breeding Season

Alder flycatcher	Canada warbler
American black duck	Cedar waxwing
American crow	Chestnut-sided warbler
American goldfinch	Chimney swift
American redstart	Common grackle
American robin	Common loon
American woodcock	Common merganser
Barn swallow	Common raven
Barred Owl	Common yellowthroat
Bank swallow	Dark-eyed junco
Bay-breasted warbler	Downy woodpecker
Belted kingfisher	Eastern wood-pewee
Bicknell's thrush	Evening grosbeak
Black-and-white warbler	Gray catbird
Black-backed woodpecker	Gray jay
Blackburnian warbler	Great crested flycatcher
Black-capped chickadee	Golden-crowned kinglet
Blackpoll warbler	Hairy woodpecker
Black-throated blue warbler	Hermit thrush
Blue-headed vireo	Least flycatcher
Blue jay	Lincoln's sparrow
Boreal chickadee	Mallard
Broad-winged hawk	Magnolia warbler
Brown creeper	Mourning warbler
Nashville warbler	Sora
Northern harrier	Spotted sandpiper
Northern parula	Spruce grouse
Northern saw-whet owl	Swainson's thrush
Northern waterthrush	Swamp sparrow
Olive-sided flycatcher	Tennessee warbler
Ovenbird	Tree swallow
Philadelphia vireo	Veery
Pileated warbler	White-breasted nuthatch
Pine siskin	White-throated sparrow
Purple finch	Wilson's snipe
Red-breasted nuthatch	Wilson's warbler
Red-eyed vireo	Winter wren
Red-shouldered hawk	Yellow-bellied flycatcher
Red-tailed hawk	Yellow-bellied sapsucker
Red-winged blackbird	Yellow-rumped warbler
Rose-breasted grosbeak	Yellow warbler
Ruby-crowned kinglet	
Ruby-throated hummingbird	

Ruffed grouse	
Rusty blackbird	
Scarlet tanager	
Song sparrow	

TABLE 5
Bird Species Not Yet Documented Which May Occur in the NSF During the Breeding Season

Black-billed Cuckoo	Merlin
Cape May Warbler	Northern Rough-winged Swallow
Eastern Phoebe	Red Crossbill
Great Horned Owl	Sharp-shinned Hawk
Hooded Merganser	Virginia Rail

TABLE 6
Bird Species Which May Occur in the NSF as Migrants, Transients, or Winter Visitors

American Tree Sparrow	Lapland Longspur
Bohemian Waxwing	Merlin
Common Goldeneye	Northern Shrike
Common Nighthawk	Osprey
Common Redpoll	Palm Warbler
Cooper's Hawk	Peregrine Falcon
Fox Sparrow	Pine Grosbeak
Golden Eagle	Ring-necked Duck
Horned Lark	Rough-legged Hawk
Killdeer	White-crowned Sparrow

The 39 species of neotropical migrant birds currently breeding in the NSF include 17 warblers, 6 flycatchers, 4 thrushes, 2 vireos, 2 swallows, one hawk, one swift, one kinglet, one tanager, one grosbeak, and the ruby-throated hummingbird.

Table 7 lists neotropical migrant birds nesting in the NSF and their relative abundance based on preliminary surveys. Of the 39 species, 6 can be considered abundant, 15 can be considered common, and 19 are uncommon based on preliminary surveys. Several of the uncommon species (Tennessee warbler, Wilson's warbler) are near the southern limits of their range at Nash Stream; several are generally less common north of the White Mountains than in southern New Hampshire (great-crested flycatcher, wood thrush, yellow warbler, scarlet tanager) and several species (chimney swift, ruby-throated hummingbird, bank and barn swallows, northern waterthrush) have limited habitat within the NSF.

TABLE 7
Neotropical Migrant Birds Nesting in the NSF

Uncommon Species	Common Species	Abundant Species
Bank swallow	Alder flycatcher	Black-throated blue warbler
Barn swallow	American redstart	Black-throated green warbler
Bicknell’s thrush	Bay-breasted warbler	Chestnut-sided warbler
Black-and-white warbler	Blackburnian warbler	Ovenbird

Uncommon Species	Common Species	Abundant Species
Broad-winged hawk	Blackpoll warbler	Red-eyed vireo
Chimney swift	Blue-headed vireo	Swainson's thrush
Eastern wood-pewee	Canada warbler	
Great-crested flycatcher	Common yellowthroat	
Least flycatcher	Nashville warbler	
Northern parula warbler	Magnolia warbler	
Northern waterthrush	Mourning warbler	
Olive-sided flycatcher	Rose-breasted grosbeak	
Philadelphia vireo	veery	
Ruby-crowned kinglet	Yellow-bellied flycatcher	
Ruby-throated hummingbird		
Scarlet tanager		
Tennessee warbler		
Wilson's warbler		
Wood thrush		
Yellow warbler		

Mammals

Wetland surveys and incidental sightings have documented twelve mammal species on the NSF to date. **Table 8** provides a list of documented and potential mammals. Moose (*Alces alces)* is a popular mammal in New Hampshire, moose numbers have declined significantly statewide in recent years and a multi-year study is underway to better understand the cause.

TABLE 8
Mammals known and likely to occur on NSF

Mammals Documented in the NSF	
American marten	Moose
Beaver	Raccoon
Black bear	Red fox
Bobcat	Red squirrel
Coyote	River otter
Eastern chipmunk	Snowshoe hare
Fisher	White-tailed deer
Other mammals likely to occur in the NSF	
Big brown bat	Northern long-eared bat
Deer mouse	Northern short-tailed shrew
Eastern small-footed bat	Porcupine
Ermine	Pygmy shrew
Gray fox	Red bat
Hairy-tailed mole	Rock vole
Hoary bat	Silver-haired bat
Little brown bat	Smoky shrew
Long-tailed shrew	Southern bog lemming
Long-tailed weasel	Southern flying squirrel
Lynx	Star-nosed mole
Masked shrew	Striped skunk
Meadow vole	Tricolored bat
Mink	Water shrew
Muskrat	White-footed mouse
Northern bog lemming	Woodchuck
Northern flying squirrel	Woodland jumping mouse

Invertebrates

The native fauna of the NSF includes many more invertebrate species than all the vertebrates put together. No invertebrate surveys have been conducted to date. While the taxonomy of some macroinvertebrate orders is relatively accessible, identification of most invertebrates is highly technical and requires microscopic examination. Documentation of mollusks, dragonflies, butterflies, and some additional insects present on the property may be feasible within the foreseeable future. A complete inventory of invertebrate species is beyond current capabilities.

Threatened and Endangered Species

No federally listed animal species are known to breed in the NSF at the present time. Canada Lynx is federally listed but no known occurrences have been recorded on the NSF. Peregrine Falcons nest within twenty miles of the Forest, and may forage within the boundaries of the tract. Bald Eagles nest and winter within 20 miles of the Forest, but eagle use of the relatively small water bodies at Nash Stream likely is limited to occasional migrants and transients. Northern long-eared bats were likely once common on the Forest, but populations across the northeastern part of its U.S. range have declined precipitously due to white-nosed syndrome. As a result, the species is was listed as Threatened under the federal Endangered Species Act. No lynx tracks have been detected in Nash Stream but tracks have been verified not far from the property boundary east of Trio Ponds.

Several state listed animal species occur or potentially occur in the NSF. Common Loons nest regularly on Trio Ponds. Northern harriers have been known to nest in Nash Bog, but how regularly has not been determined. Marten are periodically documented in the Forest in high elevation spruce-fir and have also been sighted in riparian zones along the Nash Stream. Lynx may occasionally frequent the high elevation and lower elevation spruce-fir habitat, as transients if not residents, but snow track surveys conducted by NHFGD through the Forest in the winter of 2013 failed to detect any of these animals. Small-footed bats may occur in the forest during the summer months, as a small population hibernates at a site in Gorham, about 25 miles away. Little is known of this species' habitat preferences. In summer they have been found in buildings, under rock slabs, and under loose bark. Documentation would require examination of a specimen.

Species of Management Concern

Biologists on the Technical Team, in consultation with other biologists with specialties in certain taxa, have identified 32 species of management concern, so considered because of rarity in the state or region, particular sensitivity to habitat alteration or human disturbance, and/or economic importance (**Table 9**). These species were further categorized into primary and secondary targets for management.

TABLE 9

Primary and Secondary Target Species of Management Concern

Primary Target	Secondary Target
Amphibians	
None	Blue-spotted Salamander
Reptiles	
Wood Turtle	None
Birds	
American Black Duck	Red-shouldered Hawk
American Woodcock	Northern Goshawk
Bicknell's Thrush	
Black-throated Blue Warbler	
Canada Warbler	
Chestnut-sided Warbler	
Common Loon	
Olive-sided Flycatcher	
Ruffed Grouse	
Rusty Blackbird	
Veery	
Mammals	
American Marten	Beaver
Bobcat	Black Bear
Canada Lynx	Hoary Bat
Eastern Small-footed Bat	Red Bat
Little Brown Bat	Silver-haired Bat
Moose	Tricolored Bat
Northern Long-eared Bat	
White-tailed Deer	

Primary targets meet all of the following criteria:

- Species is of conservation concern (endangered, threatened or of special concern) or a management priority (game species) in NH.
- Known or high likelihood of occurring on Forest.
- Existing plans call for increasing populations or existing populations highly threatened.
- Suitable habitat exists or could exist through active habitat management or restoration.
- Ecological conditions on Forest are such that required habitat to sustain species is feasible to attain and would not have a significant negative impact on other priority species.

Secondary targets meet one or more of the following criteria:

- Species is of conservation concern (endangered, threatened, special concern, species of greatest conservation need in the Wildlife Action Plan) and species potentially occurs (but not known to be present) on the Forest; **OR**
- Species is a management priority in NH but existing plans call for stabilizing or decreasing populations; **OR**
- Species is relatively common by a keystone species for a particular habitat that is of high conservation concern.

Information summaries for these species, as well as those listed as threatened or endangered and expected to occur in the NSF, follow in **Table 10**. Additional species may be added at a later date as changes occur in state and federal lists, and as more information becomes available regarding the status of other species in the Forest.

Table 10

Target species of management concern with preferred habitat and management recommendations.

Species	Justification	Preferred Habitat	Habitat Availability In NSF	Status in NSF	Management Recommendations
Amphibians					
Blue-spotted Salamander	Regional concern	Breeds in ephemeral and semi-permanent pools, swamps, ponds, marshes, and ditches. Threats mostly associated with development and roads.	Vernal pools, perhaps portions of Nash Bog.	Unknown	Map vernal pools; follow vernal pool guidelines in *Good Forestry in the Granite State.*
Reptiles					
Wood Turtle	Regional concern; Special concern species in state	Meandering streams with sandy bottoms and overhanging alders, and adjacent woodlands.	Potentially Columbia Brook beaver pond, parts of Nash Bog	Upper Ammo on southern extent of Nash Forest modeled as suitable habitat. Higher gradient streams probably not suitable.	Survey for presence of species; develop management plan as appropriate.

Species	Justification	Preferred Habitat	Habitat Availability In NSF	Status in NSF	Management Recommendations
Birds					
American Black Duck	Economic importance; SGCN[a]	Ponds and open water, wetlands with brushy edges	Little Bog, Mountain, Trio, and Whitcomb Ponds, and Columbia Brook beaver pond	Uncommon	Cut groups or strips perpendicular to shoreline edge to enhance brushy edges if needed; avoid recreational activity in areas of suitable shoreline nesting habitat.
American Woodcock	Economic importance; SGCN	Grassy openings of at least 0.5 acres, brushy areas and early successional hardwoods on loams and sandy loams, all within areas of 25 acres	Localized in valley bottoms and on lower slopes and upland plains	Moderately common; encountered on upper West Side Road off the Bordeau Trail. Surveys targeting this species restricted by access limitations during mud season.	Identify areas with suitable soils and designate as Woodcock management areas; inventory grassy openings, alder/dogwood cover, and regenerating hardwoods on suitable soil types; create and/or maintain grassy openings of 0.5-1.0 acres and maintain availability of regenerating hardwoods less than 20 years old within each 25 acre area of suitable soil type.
Bicknell's Thrush	PIF priority species, NH Special Concern	Breeds in montane conifer forests, generally above 2700'. Prefers dense 'krumholtz' conditions or similar softwood regeneration.	Known from Sugarloaf in early 2000s and Muise Mt. in 2001. Not recorded on Percy Peaks in 2001 (only year that site was surveyed). Survey routes currently exist on Sugarloaf and east flank of Whitcomb, but recent data from these not immediately available.	Check old data, but presumably uncommon (2000's data from Sugarloaf was a single bird 4/5 times the route was run).	Minimize/prohibit harvesting above 2700'
Black-throated Blue Warbler	PIF priority species	Large, continuous tracts (250+ acres) of hardwood or mixedwood with 50-80% canopy cover and a dense understory (0-5' layer) of hobblebush and/or small saplings of sugar maple, American beech, striped maple, and softwoods.	Most hardwood stands with a well-developed understory plus similar sites at higher elevations where fir starts becoming a significant component of the understory.	Common breeder in the Forest	Maintain or create hardwood and mixedwood stands with 50-80% canopy cover and a dense understory (0-5' layer).

Species	Justification	Preferred Habitat	Habitat Availability In NSF	Status in NSF	Management Recommendations
Canada Warbler	Regional concern; SGCN	Most abundant in moist, mixedwood forests with a 50-70% canopy cover and dense understory (0-5') and midstory (6-30'). Often found in swamps, riparian areas, and upland forests with mossy hummocks, root masses, and downed logs.	Probably occurs widely in suitable habitats on the Forest.	Common breeder in the Forest	Maintain or create mixedwood stands with 50-70% canopy cover, a dense understory (0-5') and midstory (6-30'), and an uneven forest floor. Leave as much woody debris on site as possible, and do not disturb tipups or logs in or near wet areas during harvest. Retain softwood inclusions in hardwood stands.
Chestnut-sided Warbler	PIF priority species	Young (5-15 years old) hardwood forest with <30% canopy cover and dense shrubs and saplings 3-10 feet high for nesting and foraging. Some larger saplings used as singing perches and to obscure nests.	Existing patches of young hardwood forest.	Common breeder in the Forest	Maintain or create well-stocked hardwood seedling/sapling stands ≥ 1 acre in size with < 30% canopy cover.
Common loon	State listed as Threatened	Deep freshwater lakes; Nests on ground at water's edge	Nesting habitat on Trio Ponds; foraging also on Whitcomb and Little Bog Ponds	Rare; nests on Trio Ponds	Work with Loon Preservation Committee to identify nest location(s); assess nest site fidelity; identify and protect critical nesting habitat from human activity and habitat alteration.
Northern Goshawk	SGCN	Mature forest with large diameter trees and high canopy closure, in association with areas with ample grouse and Snowshoe Hare populations, often near wetlands.	Assessment of potential habitat incomplete	Rare; known activity in Lower Nash Stream valley, vicinity of Nash Bog	Identify areas of activity and recent nest sites; define management areas for species; within these management areas, manage for large diameter hardwoods (>85%); avoid harvesting activity during March-July; avoid harvesting adjacent to nesting sites; maintain habitat for Ruffed Grouse, Snowshoe Hare through timber management activities.
Olive-sided Flycatcher	PIF priority species, NH Special Concern	Breeds in montane and northern coniferous forests, at forest edges and openings, such as meadows, bogs, and ponds. Uses isolated large trees and snags for feeding and singing.	Old beaver flowages along streams, pond borders, Nash Bog, and areas of young forest.	Uncommon breeder in the Forest	Although some published recommendations include small clearcuts, there is some evidence that they become ecological traps where nest predation is high.

Species	Justification	Preferred Habitat	Habitat Availability In NSF	Status in NSF	Management Recommendations
Red-Shouldered Hawk	SGCN	Mature hardwood or mixed forest with large diameter trees and high canopy closure, in close proximity to wetlands and at elevations<2,500 ft.	Bag Hill Area, Nash Stream valley, eastern ponds area, East Branch, Nash Bog vicinity, upper Nash Stream	Rare; known activity in vicinity of Little Bog Pond	Identify areas of activity and recent nest sites; define management areas for species; within these management areas, manage for large diameter hardwoods and high canopy closure (>85%); avoid harvesting activity during March-July; avoid harvesting adjacent to nesting sites.
Ruffed Grouse	Economic importance; SGCN	Inhabits brushy, mixed-age woodlands, early successional to mature hardwood and mixed forests, often with aspen and birch as a component. Optimal habitat for ruffed grouse include young (6 to 15-year-old), even-aged deciduous stands typically supporting 20-25,000 woody stems/ha. Broods prefer areas with a dense understory and fairly open herbaceous ground cover.	Likely in any patches of young forest. Found wide spread in Forest. Depending on season could be found in most forested habitats but more likely in dense hardwood or mixed wood forest regeneration, high elevation mixed wood stands	Moderately common. Surveys targeting this species restricted by access limitations during mud season.	Maintain 3-4 age classes of aspen/birch or northern hardwoods in close association; managed patches should be 5-10 acres in size; leave 1-2 downed trees/acre (> 8 inches in diameter) for drumming logs; leave 2-6 scattered individual snag trees for future drumming logs.
Rusty Blackbird	Special concern in state; Regional concern; SGCN	Northern swamps, bogs, and pond shores with spruce-fir forest and standing dead trees	Little Bog, Long Mountain, Trio, and Whitcomb Ponds; Columbia Brook, East Branch, and Bag Hill beaver ponds.	Rare	Map areas of occupied and potential habitat; identify nesting areas; avoid habitat alterations in occupied areas; consider cutting groups or strips perpendicular to shoreline edge to enhance brushy edges in unoccupied areas; avoid recreational activity in nesting areas; maintain beaver population.
Veery	SGCN; PIF priority species	Damp, hardwood forest with intermediate (30-80%) canopy cover and a dense understory (0-5' layer). Often associated with riparian areas, regenerating forests, and beaver wetlands.	Likely in any of the lower elevation hardwoods, especially near water.	Common breeder in the Forest	Maintain or create hardwood stands with 30-80% canopy cover and a dense understory (0-5' layer) proximate to wetlands and/or riparian areas; leave as much slash, stumps, tip-ups, and woody debris on site as possible to provide shelter and nest sites; delimb trees where felled.

Species	Justification	Preferred Habitat	Habitat Availability In NSF	Status in NSF	Management Recommendations
Mammals					
American Marten	State threatened; SGCN	Extensive coniferous and mixed forest in mountainous regions	The higher elevations of the NSF provide extensive suitable Marten habitat.	Uncommon; species found at high elevation and sighted in riparian areas along Nash Stream	Increase softwood and mixed wood forest types and woody debris; protect high elevation forests from development including roads and trail infrastructure.
Beaver	Economic importance; creates and maintains important habitats for other target species	Low gradient streams	Columbia, Jimmy Cole, Pike, and Waterhole Brooks, East Branch, Nash Stream, and several small unnamed streams	Uncommon	To the extent possible, resolve Beaver/human conflicts with beaver pipes rather than destruction of dams or off season trapping.
Black Bear	Economic importance	Mixed forest with dense understory near water	The lower elevations of the NSF provide extensive bear habitat.	Moderately common	Locate, map and maintain areas of bear clawed beech; promote development of mature beech stands; maintain permanent wildlife openings; develop educational programs for lease holders and campers on bear issues
Bobcat	Economic importance	Mixed forest in rough terrain with rocky and brushy habitats wetlands and early successional forests	Most of the NSF provides suitable Bobcat habitat Areas supporting high prey base more favored.	Uncommon	Identify and map potential denning areas; avoid habitat alteration and human activity in vicinity of denning areas; promote forest practices that develop early successional stand types and habitats that favor Snowshoe Hare
Canada Lynx	Federally and State listed as endangered; SGCN	Extensive softwoods with substantial Snowshoe Hare populations	High elevations of Long Mountain, Whitcomb Mountain, and northwest peaks, low elevation softwood stands or other habitats supporting hares	Unknown	Minimize human activity in high elevation softwoods; where feasible manage vegetation adjacent to high elevation areas to encourage Snowshoe Hare populations.
Eastern Small-footed Bat	State endangered; Regional concern; SGCN	Forested areas near water; summer roosts and maternity colonies may occur in buildings but generally are on rocky slopes (mostly south facing).	Vicinity of eastern ponds, Nash Bog, Columbia Brook beaver pond, any rocky hillside is potential habitat.	Unknown	Survey potential habitat for bat activity and check for presence of species. Do not harvest over rocky hillsides May 15-Aug 30. Best to harvest during winter.
Hoary Bat	Special concern in state; SGCN	Roost in tree foliage or even in woodpecker holes and squirrel nests.	Nearly anywhere within the Forest.	Unknown	Survey for this species along with other bat species.

Species	Justification	Preferred Habitat	Habitat Availability In NSF	Status in NSF	Management Recommendations
Little Brown Bat	Significant population declines in recent years.	Feed primarily over wetlands and ponds. They use rivers, streams, and trails as travel corridors. They prefer summer roosts close to water. Roosts include barns, attics, and outbuildings. Males may use tree cavities as well as buildings. Over winters in mines and caves.	Camp buildings, Any forested areas, particularly near streams ponds and wetlands.	Unknown	Survey existing buildings for evidence of bat use; work with affected camp owners to protect any indoor colonies located; assess opportunities for bat box installation and implement bat box program as appropriate.
Moose	Economic importance	Extensive forests with numerous aquatic habitats	Most of the NSF provides suitable Moose habitat, Use of forest stands will shift by season, high elevation ridgelines are particularly important as wintering habitat	Common	Maintain regenerating hardwoods and promote understory development in older stands; identify key moose wintering habitat and adjust the location of timber harvests adjacent to these areas accordingly
Northern Long-eared Bat	Federally listed as Threatened; SGCN	Will use a variety of deciduous species - choice may be influenced by availability. Large (>16 in), tall trees with intact bark and moderate levels of decay are commonly chosen, especially if they have hollows. Over winters in caves or mines. Forages over ponds and clearings, and within the forest between the tree canopy and the shrub layer.	Any of the deciduous or mixed forest areas within the Forest. Potential to use camps as well.	Unknown	Survey for this species along with other bat species. Leave a variety of sizes of snags for bat roosts. Harvest in winter when bats are not in forest.
Red Bat	SGCN	Roosts and form maternity colonies in tree foliage in a variety of deciduous tree species, often in the largest trees high off the ground near the outer canopy edge and near sources of water. Forest harvesting can limit availability of suitable roost/maternity trees. Migrate south in fall.	Any of the deciduous or mixed forest areas within the Forest	Unknown	Survey for this species along with other bat species. Leave a variety of sizes of snags for bat roosts. Harvest in winter when bats are not in forest.

Species	Justification	Preferred Habitat	Habitat Availability In NSF	Status in NSF	Management Recommendations
Silver-haired Bat	Special concern in state; Regional concern; SGCN	Roosts in deep tree cavities generally in large tall trees, often in early to moderate stages of decay. Most often in mature stands with sugar maple, white cedar, and white birch. Migrate south in the fall.	Any forest stands outside of high elevation areas.	Unknown	Survey for this species along with other bat species. Leave a variety of sizes of snags for bat roosts.?
Tri-colored Bat (formerly Eastern pippestrelle)	Special concern in state; SGCN	Forage over open water and along forest-field edges, new clearcuts and group cuts. Roosts in tree foliage. Hibernate in caves or mines, although they occasionally use other structures. Females form maternity colonies in live or dead foliage of deciduous trees. Females may prefer to roost in oak and maple trees. Though a foliage-roosting species, individuals occasionally roost in man-made structures.	Any of the deciduous forest areas within the Forest. Potential to use camps as well.	Unknown	Survey for this species along with other bat species. Leave a variety of sizes of snags for bat roosts.
White-tailed Deer	Economic importance	Mixture of forest and openings, with areas of coniferous forest for winter cover	Deer wintering habitat is extremely limited in the NSF at the present time, and winter deer activity occurs primarily in the southeast section of the property; relatively small size and number of forest openings and long distance from agricultural lands limits habitat suitability of NSF for deer.	Uncommon	Restore and maintain low elevation softwoods; maintain hardwood regeneration; encourage mast production; seed log landings and woods roads to grasses and clovers.

6.4 WILDLIFE GOALS, OBJECTIVES, STRATEGIES AND IMPLEMENTATION

GOAL: STRIVE TO SUSTAIN VIABLE POPULATIONS OF ALL NATURALLY OCCURRING NATIVE WILDLIFE SPECIES WITH A PARTICULAR EMPHASIS ON TARGET SPECIES.

Objective 1: Assess and continue to monitor high priority (i.e., primary target) vertebrate and selected invertebrate populations, and identify opportunities to carry out high priority wildlife research in the NSF.

Formal surveys from the mid-1990s and incidental observations have yielded significant information on the occurrence and distribution of wildlife in the NSF. Some limited surveys continue today. In addition, knowledge of regional wildlife distributions, habitat relationships and population trends enables some inference about the status of various species at Nash Stream. However, much remains to be learned.

Biologists on the Technical Team have compiled a list of primary and secondary target species of management concern (Table 10). An increase in knowledge of wildlife distributions and species status over the last 20 years has resulted in the list of target species being changed considerably from the list in the original plan. Additional research and monitoring efforts designed to determine the status, distribution, and habitat needs of these animals in the NSF will be a priority. An additional priority will be wildlife response to forest and habitat management that takes place as a result of this management plan.

Wildlife inventory and monitoring require adequate personnel and funding. Both of these are limited within the state agencies involved in managing the NSF. As a result, the state's ability to implement a wildlife inventory and monitoring program is currently severely restricted. Partnerships and cooperative funding agreements would need to be developed to carry out additional work. Wildlife research by academic interests, such as the University of New Hampshire, Plymouth State University, and Dartmouth College should be promoted.

Strategies:

1. Maintain existing long term monitoring programs.
2. Develop and implement programs to inventory targeted wildlife (Table 10) not yet recorded on NSF.
3. Develop and implement monitoring programs for selected additional target wildlife species to develop population baselines and track changes in relative abundance over time.
4. Take advantage of opportunities to collaborate with wildlife researchers to answer high priority research questions.

Implementation:

- NHFGD biologists will continue to conduct annual ruffed grouse drumming surveys.
- Work with pertinent NHFGD staff and other organizations to inventory salamanders, wood turtles, bats, marten, lynx, and/or vernal pools as resources allow.
- Investigate possibility of conducting wildlife surveys in conjunction with planned Continuous Forest Inventory plots (see Forest Management chapter).

- Look for opportunities to dove-tail regional monitoring efforts for selected target wildlife. Examples of these could include Bicknell's thrush, rusty blackbird, Canada lynx, wood turtle, and spruce grouse.

Objective 2: Work towards the following desired future condition for forest and non-forest structure and composition to provide suitable habitat for the entire suite of primary and secondary target species.

Structure Category	**ASTM Acres**	**Property Acres**
Regeneration (i.e., seedling)	5-10%	2-5%
Sapling-Pole	25-35%	14-19%
Sawtimber	40-50%	22-27%
Large Sawtimber/Old Forest	10-20%	52-57%
Upland Openings	3%	1-2%
Notes: *"ASTM Acres" are the manageable acres in the area suitable for timber management, See Chapter 8, Table 15.* *"Property Acres" include all the acres for the entire property.* *"Regeneration" is achieved primarily through group selection, and the occasional clear cut in early successional habitats.* *"Large Sawtimber/Old Forest "includes over 18,000 acres that will be left unmanaged in the Natural Areas as well as trees that are allowed to grow past the desired rotation age in the ASTM.*		

The desired future condition of habitats at Nash Stream Forest includes a mix of forest age classes across the landscape to maintain and enhance the populations of the target species in Table 10. The predominant use of uneven-aged management at Nash Stream Forest over the past 30 years since State acquisition has resulted in a shift in forest composition, structure and age as predicted in the original plan. There has been a significant reduction in both the average size of forested openings and the overall amount of young forest habitat on the property, as well as the species that depend on those habitats. While management will continue to favor older forests, a modest goal of two to five percent of the entire property acreage in the regeneration size class primarily through implementation of group selection and the occasional clear cut in early successional hardwoods will still be in line with the overall vision and will provide some measure of continuous young forest habitat for those species that rely on this type.

Some wildlife species occurring at Nash Stream Forest are relatively unaffected by these changes in the species composition and age structure of the forest. Small mammal populations are highly cyclical, and population highs and lows within given habitats appear to be relatively independent of most changes in habitat conditions. Other species, however, are directly dependent on tree species, the size of forested openings and the overall amount of young forest habitat on the property. Population levels of these species have likely changed as the forest has aged.

Bird species which reach their highest abundance in regenerating stands (Alder Fly-catcher, American Redstart, Common Yellowthroat, Chestnut-sided Warbler, Mourning Warbler, and White-throated Sparrow) have likely declined in numbers at Nash Stream in the last 30 years. The current decline in

moose numbers may have been further exacerbated at Nash Stream by the lack of available browse that was once abundant in large regenerating clear cuts on the property.

Young forest habitat that results from larger openings such as clear cuts and patch cuts, and to a lesser extent from group selection (openings less than 2 acres in size) provides dense cover and nesting opportunities for species such as ruffed grouse, American woodcock, turkey, snow shoe hare, moose, white-tailed deer, and chestnut sided warbler. Rusty blackbirds nest in dense, regenerating spruce-fir forest. Many of the species that rely on young forest habitat are prey for carnivores including bobcats, lynx, and various raptors. Additionally, the initial vegetative stages of these cuts can include a heavy growth of soft mast species including raspberry and blackberry, providing food for a wide spectrum of wildlife including black bears, American marten, and many bird species.

Some species require a mix of old and young trees within the same forested stand. Species such as black-throated blue warbler, Canada warbler, and veery require dense understory and/or midstory vegetation coupled with a mature overstory. Uneven-aged forest management, using a technique such as group selection and even-aged techniques such as crop tree release or shelterwood can help create this condition by allowing sufficient sunlight to hit the ground to promote new understory growth.

Upland openings, including grass/forb or shrub dominated areas provide another important source of food and cover for wildlife. American woodcock will use wildlife openings as small as one half acre for breeding. Wood turtles, songbirds, and bats forage in upland openings. Raptors and mammalian predators benefit from the small mammals found in such openings. And even songbirds that require a mature forest canopy (e.g., veery and black-throated blue warbler) forage in upland openings prior to fall migration.

Strategies:

1. Assess the current condition and distribution of forest size classes by type as well as non-forest habitats across NSF.

2. Identify timber or habitat management operations that may aid in attaining the desired habitat structure and composition objectives.

3. Monitor forest structure distribution at least every 10 years to determine if structure objectives are being met.

Implementation:

- Update forest resource inventory to identify timber management opportunities in line with forest structure objectives.

- Prioritize, plan, and administer those timber management operations that will attain forest and non-forest structure objectives.

- NHFGD Wildlife Biologists will continue to review commercial and non-commercial forest management operations through the State Lands Management Team (SLMT) to provide technical assistance in identifying opportunities to meet forest structure objectives.

Objective 3: Land managers will consider and incorporate management recommendations for primary and secondary target species of management concern for timber sales, noncommercial habitat projects, and public recreation projects.

Each commercial forest management operation has tangible benefits for some wildlife but not others. By incorporating the management strategies outlined in Table 11 (see **Chapter 8**), we can help to ensure operations have beneficial impacts for as broad array of target species as possible.

Strategies:

1. Managers should refer to and incorporate species and habitat management guidelines from Table 11 (see **Chapter 8**), recommendations in *Good Forestry in the Granite State*, and available regional habitat guidelines for primary target species.

2. Managers should seek technical assistance from Fish & Game wildlife biologists to ensure planned forest, habitat, and recreation projects incorporate target species management recommendations.

Implementation:

- In addition to the strategies outlined in Section 6.3, the State Lands Biologist will maintain a seat on the State Lands Management Team and will seek input from the Regional Biologist on proposed projects.

- NHFGD Regional Biologist conducts site visit, if needed, to ensure project is consistent with wildlife goals and objectives of the plan and communicates recommendations to the Regional Forester as well as the State Lands Biologist to incorporate into SLMT comments.

- As needed Regional Biologist assists Regional Forester with implementation of project.

Objective 4: Develop new standards for forest resource inventory that will allow analysis of within-stand features important to primary and secondary target species.

Wildlife biologists have come to recognize that data collected with standard forest resource inventory procedures are often deficient in within stand features that are important to wildlife. Dead and down woody material is used as feeding, denning, or hunting sites by small mammals, black bears, marten, weasels and woodpeckers. It also provides moist microhabitats for amphibians including blue-spotted salamander. Cavities and snags provide nesting and roosting sites for 15 birds and 18 mammals including black bear, American marten, and all target bat species. Understory and midstory cover are important habitat attributes to veery, Canada warbler, and black-throated blue warbler, among others. This objective is formulated to refine future inventories on NSF enabling managers to assess if sufficient within stand features are being provided.

Strategies:

1. Over the next five years, develop guidelines for collecting data on within-stand features important to wildlife including dead and downed woody material, numbers of cavities and snags, understory and midstory vegetative cover, and evidence of deer wintering.

2. Analyze data from updated forest resource inventory to determine if the habitat needs for primary and secondary target species are being met.

Implementation:

- Convene a team of DNCR foresters and wildlife biologists to develop guidelines.
- Pilot new forest inventory guidelines in the field and make adjustments as necessary.
- Incorporate new guidelines into future forest resource inventories.
- Summarize collected data and compare to habitat needs as outlined in *Good Forestry in the Granite State* or other relevant references.
- If deficient in some areas of NSF, incorporate strategies in forest operation plans to ensure sufficient within stand features are provided.

Objective 5: Provide appropriate opportunities for the public to use and enjoy the wildlife resources of NSF including hunting, fishing, trapping, wildlife viewing and photography.

Public interest in wildlife inhabiting the NSF is high. Comments received at public meetings during the creation of the original management plan indicate a strong interest in maintaining traditional recreational activities. With respect to wildlife, the Vision specifically states traditional consumptive and non-consumptive wildlife uses will be allowed. Hunting and trapping are among these traditional wildlife uses and both are allowed within state law.

Trapping permits for the NSF, as for other state lands, are issued through a random selection process by NHFGD. For administrative purposes, the Forest has been divided into five trapping units. Only one permit is issued per unit for a two-year period. Each trapper is presently required to file an annual trapping report indicating the number and species of animals taken.

Non-consumptive wildlife uses include wildlife observation and photography. These are among the most popular wildlife-based recreation activities in the state and the region. According to the 2011 National Survey of Fishing, Hunting, and Wildlife-Associated recreation, 17.5 million people went out specifically to observe wildlife. This is significantly more than the number of people who went hunting or fishing (7 million). Opportunities should be provided to maintain this popular recreational activity.

Even so, recreational activities and developments can have significant impacts on wildlife habitats and populations. For example, development of public use areas, such as parking lots and camping areas, consume habitat directly. Snowmobile trails through softwood stands can adversely impact deer wintering in the area by increasing their metabolic energy consumption and allowing easier access to the area by predators. Therefore, the planning, development and maintenance of recreational sites will incorporate consideration of wildlife and wildlife habitat needs (Section 6.3 and Table 11).

Strategies:

1. Work towards achieving forest structure objectives to enhance habitat for both game and nongame wildlife, which will result in enhanced hunting, trapping, and wildlife viewing opportunities.

2. Provide appropriate access to NSF for hunters, fishers, trappers, and wildlife viewers.

3. Ensure current and proposed recreation activities are compatible with wildlife goals and objectives.

Implementation:

- Implement strategies under Objective 2 to attain forest structure goals and objectives.

- Assess recreation access needs and provide appropriate motorized and non-motorized access for hunting, fishing, trapping, and wildlife viewing while still ensuring that suitable habitats are provided for long-term sustainability of wildlife.

- Continue the current trapping permit allocation process for NSF.

- Develop a recreational monitoring program for NSF to assess participation levels, quality of wildlife-based recreation experience, and compatibility with maintaining high quality wildlife habitat.

- Incorporate consideration of wildlife and wildlife habitat needs (Section 6.3 and Table 11) in the planning, development, and maintenance of recreational sites.

- Continue to vet proposed recreation projects through SLMT to ensure input from NHFGD wildlife biologists.

Objective 6: Regional wildlife biologists will participate in developing strategies with Nash Stream Forest managers to monitor for, protect against, and control the introduction of invasive plant and wildlife species on Nash Stream Forest.

Invasive species have become an increasing concern among natural resource managers since the first plan for NSF was written. Native vegetation that is critical as food or cover for wildlife can be compromised by non- native plants which can out-compete native plants and can be less desirable for wildlife. Of particular concern is the vulnerability of the wetlands and riverine systems within the Forest to the threat of invasive plant such as Japanese knotweed. The close proximity of forest roads to Nash Stream and other brooks and the multitude of camps adjacent the Nash Bog represents potential vectors for introducing invasive plant species. Regional initiatives to identify the locations of invasives in Coos County are currently underway. In addition to introduced plants, non- native fish and wildlife species can be a threat to the NSF ecosystem as well. While no known invasive wildlife species have been documented at Nash presently, wildlife biologists have become vigilant over the potential for feral swine to exploit the landscape in New Hampshire. At present this threat has been limited to the central part of the state but in the past, these animals have been found as far north as Lancaster. Through their foraging activities feral swine can have devastating effects on native vegetation and would be direct competitors for native food resources with deer, black bear, turkey and other native wildlife. During the last decade one red deer was shot in Groveton area. This species is not native to the area and is believed to have escaped from a local breeder. None are known to exist on the NSF presently.

Strategies:

1. Regional biologists will continue to participate on the Upper Connecticut Cooperative Invasive Species Management Area (UCCISMA) working group to address invasive plant issues within Coos County.

2. Forest managers will help to develop and support strategies for limiting the threat of introducing non- native species at NSF and initiate suppression measures for existing invasives on the Forest. (refer to Climate Change chapter for additional information regarding invasives)

3. Biologists will work with Forest managers to ensure that an education campaign is developed to inform and educate visitors and camp owners about invasive plants and animals and provide directives on how the public can contribute in addressing this threat.

4. Regional biologists will educate DNCR forest managers on how to monitor for feral swine. All wildlife surveys or forest inventories that occur on NSF will include a component for identifying signs left by these animals.

Implementation:

- Ensure that the Nash Stream Forest is included in Region and County wide efforts by UCCISMA to monitor for, and control invasive species.

- Implement monitoring on NSF and map invasive plants. Initiate control efforts when and where appropriate as resources are available.

- Over the next two years develop an educational package regarding invasive plants and animals that will target visitors to the NSF and the lease camp owners. DNCR mangers will also receive training on identifying the tracks and sign of feral swine.

- Foster ongoing communications with USDA Wildlife Services to participate in their efforts to monitor for feral swine. Consider opportunities for engaging willing hunters and other recreational users on the Forest to provide timely information should they spot sign of feral swine or any other non-native animal.

6.5 WILDLIFE MANAGEMENT GUIDELINES

1. **Vernal Pools** - A vernal pool is a temporary, isolated freshwater pond containing water for 2 months or more that dries up during summer months and does not support fish. Vernal pool habitat includes the pool (or depression) and an area up to 200 feet wide surrounding the pool.

2. All vernal pools are considered significant unless determined not to be. Central to a determination of significance is the presence of species that only breed in or prefer vernal pool habitats and the absence of fish.

3. Forestry and recreational activities should not disturb the pool, its edges or adjoining soils. Log landings, haul roads and heavily used skid trails should not be located within the vernal pool habitat. Recreational trails should not be located in or immediately adjacent to pool depressions. Trees should not be intentionally felled into or across pool depressions. Tops and slash should be kept out of the pool. If an occasional top does fall into the pool depression, it should be left to avoid site disturbance.

4. Uneven-aged management practices will be used within vernal pool habitats. The pool depression and a surrounding 50-foot area should remain in a shaded and mostly undisturbed condition with minimal disturbance to the forest floor.

5. Within the vernal pool habitat, soil disturbance (rutting, compaction and disturbance of the mineral soil) will be minimized. Equipment will be operated when the ground is frozen and covered with snow, whenever possible. When operations must be scheduled during dry seasons, equipment will be kept out of the 50-foot shade area and logs will be winched out. Water diversion structures associated with skid trails and roads should be used to prevent sediment from entering the shaded 50-foot zone and pool depression.

6. **General Vegetation Management -** Identified wildlife objectives will provide a basis for establishing vegetative composition and age structure goals in association with site capabilities, management constraints, silvicultural objectives and present conditions. Vegetative goals will recognize that wildlife species richness requires a balance of vegetative types and age classes varying from regenerated to old forest stands distributed in time and space across the landscape.

7. The maintenance of large contiguous forested blocks through uneven-aged management will be emphasized. Forest operations planning will consider the understory structure (within-stand vertical diversity) and canopy closure requirements of wildlife groups targeted to benefit from the operation.

8. Horizontal diversity (between-stand variations) needs of targeted wildlife groups will be considered in establishing planning unit composition and age structure goals, and in the planning of both even-aged and uneven-aged management operations.

9. Few nonforested upland openings occur in the Nash Stream Forest. Most are former log landings. Where permanent openings are desired, they should be maintained in a mixture of grasses, forbs and brambles by mowing or burning at three to five-year intervals.

10. **Beaver Impoundments -** Beaver will be encouraged, except when their activity threatens established roadways. Emphasis will be placed on resolving beaver/human conflicts with beaver pipes rather than destruction of dams or trapping. Beaver dams shall not be breached without prior review by the State Lands Management Team.

11. **Spruce and Fir Forest -** Spruce and fir communities above 2,700 ft. or on slopes greater than 35% will not be actively managed. Most of these areas are designated as natural areas.

12. Low elevation spruce and fir communities are limited in distribution and should be promoted on all suitable sites. Cutting in these stands should occur only when advanced softwood regeneration is present or the probability of regenerating softwood is high.

13. All spruce and fir communities subject to timber harvesting should be managed to sustain a dense softwood canopy across most of the stand while promoting softwood regeneration.

14. Softwood stands should be examined for evidence of winter use by deer tracks, established trails, winter pellet groups, bark scarring, and excessive browsing of hardwoods in and around softwood stands. Management in these areas, and adjoining stands, should be designed to maintain functional shelter, encourage softwood regeneration, and provide accessible browse.

15. Group selection is recommended for softwood stand management. Openings should remain small, 20 to 40 feet in diameter, to favor softwood regeneration. Openings should be distributed uniformly throughout the treatment area. No more than half the stand should be treated at each entry, unless it is too small for this to be practical. Openings created by natural mortality must be considered when determining the total area of allowable cuts.

16. To ensure uninterrupted winter wildlife mobility through wintering area, travel corridors of dense softwood cover should be maintained during all operations in softwood stands. The appropriate width and character of travel lanes will vary by location, however, these should generally be at least 200 feet wide and located in areas of frequent wildlife use, such as along streams and slope breaks.

17. **Northern Hardwood Forest Types -** Northern hardwood communities should be managed primarily on long rotations using a variety of uneven-aged techniques to maintain stands with varying degrees of vertical diversity and canopy closure.

18. Softwood inclusions within hardwood stands should be retained during cutting operations.

19. Promote tree species diversity in northern hardwood stands by managing to increase the abundance and distribution of less common species, such as white ash, black birch, white birch, black cherry, hemlock and aspen.

20. **Mixedwood Forest Types -** Where site conditions allow, operations in mixed stands should promote the development and regeneration of softwoods.

21. Large group or patch selection and even-aged management techniques shall be considered to manage aspen and birch where they occur in mixedwood stands.

22. **Key Mast Stands -** Stands with at least 20% of their basal area in American beech and showing extensive claw marks or broken branches from black bears are key mast stands.

23. Key mast stands should be managed by uneven-aged management techniques to promote the development of large crowned beech trees and to increase the proportion of beech in the stand.

24. Beech trees that have been repeatedly climbed by bears should be retained during cutting operations.

25. **Cavity Trees, Den Trees and Snags -** To maintain self-sustaining populations of all snag and cavity dependent wildlife, the following should be retained during forest management operations unless they present a clear safety hazard: live trees with excavated or natural cavities suitable for nests or dens; standing dead trees greater than 6" dbh and 15 feet tall; and live trees greater than 12" dbh with broken tops.

26. Cavity and/or snag trees will be retained in all upland habitats wherever feasible.

27. Cavity trees are particularly important in wetlands and riparian corridors. Trees flooded in beaver impoundments should not be harvested (see also I. #9).

28. In all managed stands, a minimum of one live tree per acre greater than 18" dbh should be retained as a deferment tree to remain uncut through its natural life span and period of decay. Preferably, trees designated as deferment trees have at least two major defects, such as cracks or large broken limbs.

29. **Dead and Down Trees -** Dead and down trees are important within stand habitat elements, providing cover and foraging substrates for small mammals, reptiles and amphibians. While top-wood and slash has value, large logs are more important due to the greater substrate they provide and longer period of time they last.

30. Harvest operations can increase the abundance and improve the distribution of dead and down logs. In stands where downed logs are not available, at least one cull per acre should be marked for felling and leaving. Encourage loggers to leave noncommercial sections of logs in the woods rather than piled at the landing.

31. Raptor Nests - Field staff will watch for and note the location of large stick nests. Hawks and owls frequently re-use nests or nest in the same stand over a period of many years.

32. No cutting should occur within 300 feet of active nests of most raptors from mid-March through July. At all times, an uncut buffer of at least 100 feet should surround large stick nests, and only light selection cutting should occur within 300 feet.

33. A 20-acre undisturbed area should be maintained adjacent to known nest sites of northern goshawks or red-shouldered hawks.

34. **Species Diversity -** Trends in species diversity should be monitored and evaluated. A master list of flora and fauna should be compiled and maintained from data derived from regularly scheduled and ongoing inventory and monitoring efforts, plus, as funding allows, specially designed studies such as breeding bird surveys, creel surveys, mammal tracking studies, fisheries habitat and aquatic species inventories.

7. FISHERIES AND WATER RESOURCES

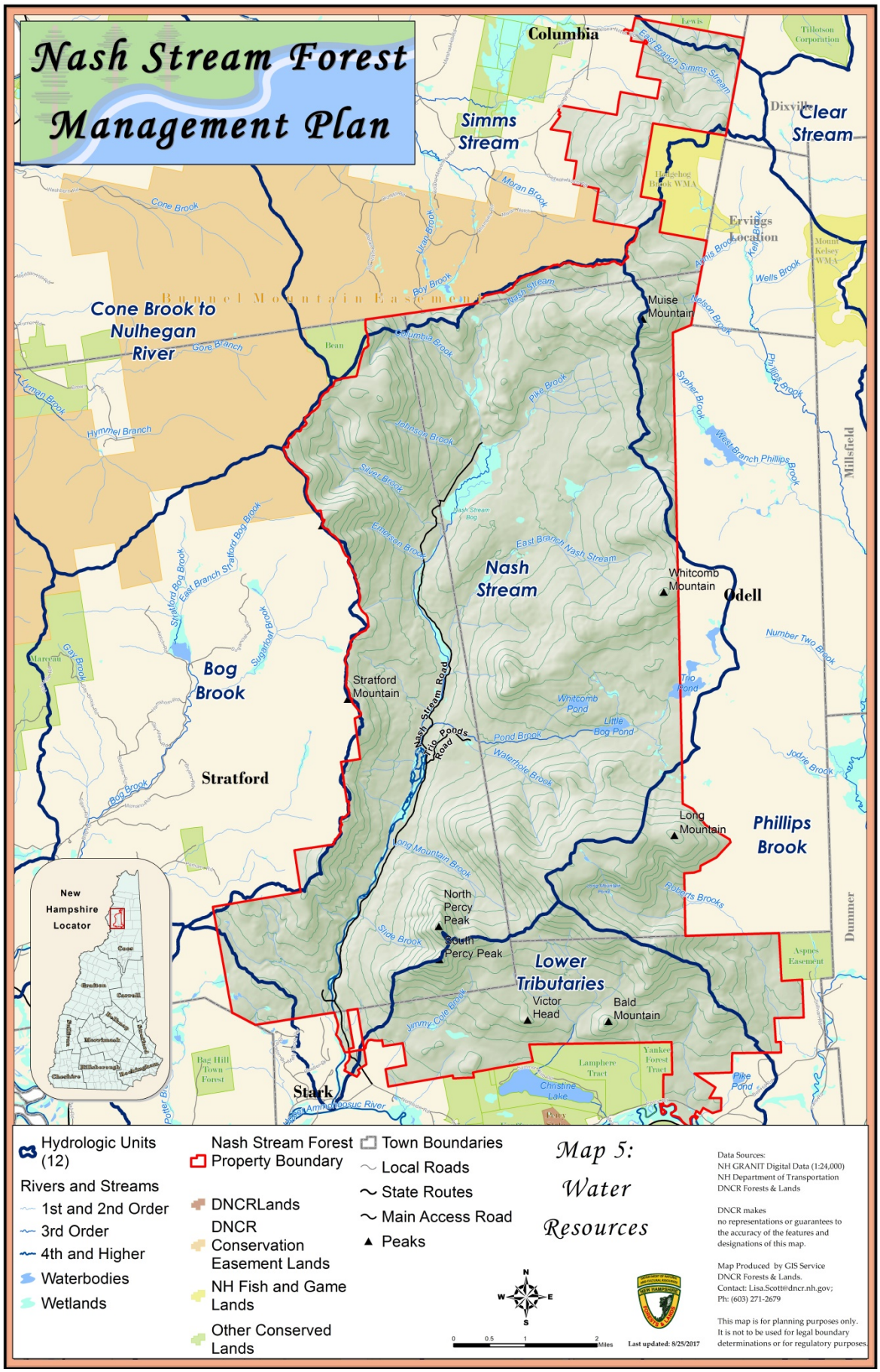
7.1 HISTORY

Nash Stream Forest (NSF) includes three great ponds (waterbodies exceeding 10 acres in surface area), forty wetlands, and more than fifteen streams. Seventy percent of the property falls within the Nash Stream watershed, which flows into the Upper Ammonoosuc River (Map); all of it is in the Connecticut River Drainage. All surface waters are classified for use as "B" waters (fishable, swimmable) by the state and there are no known sources of discharge affecting water quality. The Nash Stream watershed continues to provide recreational opportunities for wild Brook Trout. There is some recorded data from acid rain studies done in 1980 for Lower Trio Pond.

The first fisheries management in the Nash Stream watershed occurred in 1896, when the first recorded instance of hatchery Brook Trout were delivered to the town of Groveton (NH Fish and Game Commission 1897). It is likely these fish were stocked in the Trio Ponds or Nash Stream itself. In 1898, 10,000 Brook Trout fry from the Colebrook Hatchery were delivered to E. E. Tibbetts of Groveton and these fish were likely stocked into the Trio Ponds.

Historic camp journals indicate the Trio Ponds have been stocked annually since 1900. The Nash Bog was created in 1900 as a result of dam construction and likely received hatchery Brook Trout. The stocking records for Nash Stream and the surrounding ponds are incomplete and lack pertinent information from the turn of the century to about 1940. These early stockings did not mention which waterbodies received fish; only the number of fish delivered to a particular person in a town was recorded. The Trio Ponds were stocked with Brook Trout fry transported in milk cans by horse and buggy or backpack in the early part of this century and later by an all-terrain vehicle. Aerial stocking of the ponds began in the late 1950s and early 1960s.

The first biological survey of Nash Stream and the area ponds was conducted by NHFGD in 1939. Fish collections were made from Nash Bog, Silver Brook, East Branch and Nash Stream. Eight species, all native to the watershed, were captured: Blacknose Dace (*Rhinichthys atratulus*), Brook Trout (*Salvelinus fontinalis*), Common Shiner (*Luxilus cornutus*), Fallfish (*Semotilus corporalis*), Longnose Dace (*Rhinichthys cataractae*), Longnose Suckers (*Catostomus catostomus*) Slimy Sculpin (*Cottus cognatus*) and White Sucker (*Catostomus commersoni*). Fisheries habitat was measured in Nash Stream and stocking recommendations were made based on the quality of the habitat present. This was the first attempt at quantifying fish habitat and determining stocking rates based on scientific data with the primary objective of providing opportunities for angling with supplementation. Fish surveys conducted in the watershed in 2005-2014 revealed five additional species that were not found during the 1939 surveys: Burbot (*Lota lota*), Common Sunfish (*Lepomis gibbosus*), Creek Chub (*Semotilus atromaculatus*), Northern Redbelly Dace (*Chrosomus eos*) and a few Brown Trout (*Salmo trutta*) which are stocked annually into the Upper Ammonoosuc River.


Nash Stream Forest
Management Plan
Columbia
Simms Stream
Clear Stream
Cone Brook to Nulhegan River
Bunnel Mountain Easement
Muise Mountain
Nash Stream
Bog Brook
Stratford
Stratford Mountain
Whitcomb Mountain
Odell
Phillips Brook
Long Mountain
North Percy Peak
South Percy Peak
Lower Tributaries
Victor Head
Bald Mountain
Stark
Millsfield
Dummer
New Hampshire Locator
Hydrologic Units (12)
Rivers and Streams
1st and 2nd Order
3rd Order
4th and Higher
Waterbodies
Wetlands
Nash Stream Forest Property Boundary
DNCRLands
DNCR Conservation Easement Lands
NH Fish and Game Lands
Other Conserved Lands
Town Boundaries
Local Roads
State Routes
Main Access Road
Peaks
Map 5: Water Resources
Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
DNCR Forests & Lands
DNCR makes no representations or guarantees to the accuracy of the features and designations of this map.
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Last updated: 8/25/2017
Miles

Nash Bog was reclaimed in 1947 and again during the winter of 1955 using the fish toxicant rotenone. At that time, this was the principal trout management technique employed by NHFGD to control unwanted species, including suckers and bullheads. Brook Trout were then restocked after the rotenone was no longer toxic, generally a few weeks later. Members of the Groveton Fish and Game Club assisted NHFGD with both reclamations. The 1955 reclamation included sections of Pike, Columbia, Silver, and Number Two Brooks.

Brook Trout was the principal species targeted by anglers in Nash Stream. Wild and stocked populations existed. However, in 1967, at the request of the Groveton Fish and Game Club, a few thousand Rainbow Trout (*Oncorhynchus mykiss*) were stocked in Nash Bog. Some of the Rainbow Trout grew to a large size, with a few 5-pound specimens reportedly found dead on the bank of the stream after the floodwaters receded following the failure of the Nash Bog Dam in 1969.

Nash Stream has been stocked since the early 1940's. The stream lost most of its good pool habitat, depth and instream and overhead cover due to the catastrophic flood that occurred in May1969. Because of this, summer stream temperature likely increased and therefore thought to be more suitable for Rainbow Trout, which are more tolerant of warmer water. Starting in 1970, Nash Stream was stocked annually with catchable size Rainbow Trout as a way to provide angling opportunities within the impacted habitat. Rainbow Trout stocking was terminated in 1991 in an effort to restore the native Brook Trout fishery in the area. From 1993 to the present, only Brook Trout yearlings have been stocked in Nash Stream, and this occurs in late spring. Currently, 1,500 Brook Trout yearlings are stocked annually into Nash Stream.

7.2 WATER RESOURCES

There were six ponds in the NSF: Nash Bog (273 acres), Little Bog Pond (also known as Fourteen and a Half Pond, 37 acres), Long Mountain Pond (2 acres), Trio Pond #1, Trio Pond #2, and Whitcomb Pond (19 acres). Today there are only four: Trio Pond #1 and #2 are now one body of water called Lower Trio that spans 68 acres and Nash Bog returned to a stream when the dam breached in 1969. Operation and maintenance of the dams on Lower Trio and Little Bog Ponds are the responsibility of both the NHFGD and the DES Dam Bureau. Chapter 151, Laws of 1992 amended RSA 482:48 III (a) transferred the dams from DNCR to NHFGD.

Nash Bog Pond

Nash Bog Pond was an artificial pond, approximately 273 acres in size, located in a valley bottom in the upper part of the Nash Stream Watershed (**Figure 1**). Nash Bog Dam was built between 1896 and 1900, and the resulting pond was used to hold water for log drives and for downstream water use until 1969 when the dam breached. Nash Bog is no longer a pond today. **Figures F1-F5** (images of the former Nash Stream Bog Dam pre- and post-failure) illustrate the impoundment area of Nash Bog both historically and as it currently appears. Today, the old pond is now a drainage marsh-shrub swamp system. Currently, there are reports of several beaver ponds in the old stream bed that produce good fishing for wild Brook Trout.

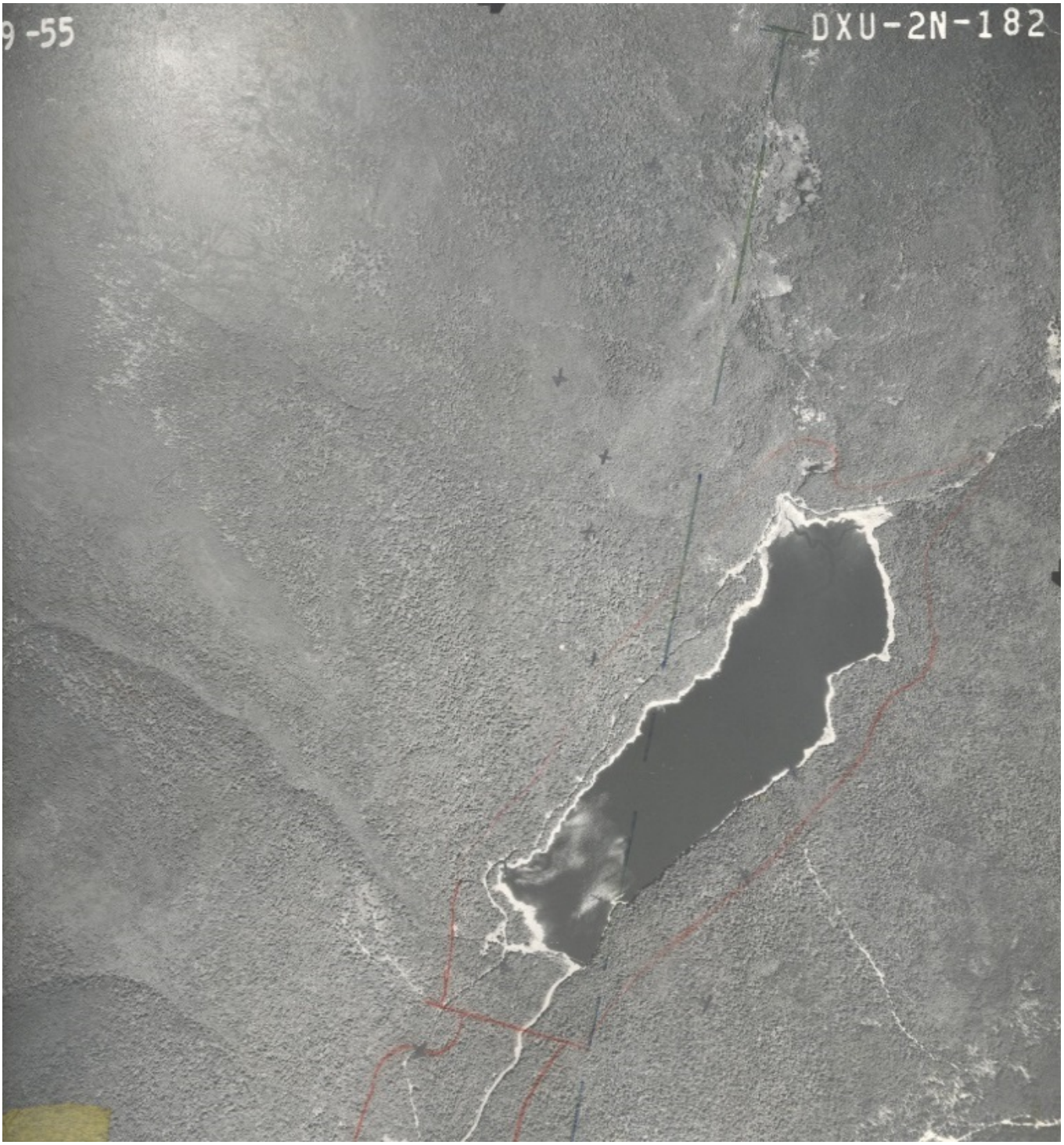


Figure 1 *Nash Bog Pond in 1955, prior to the 1969 dam breach and flood.*

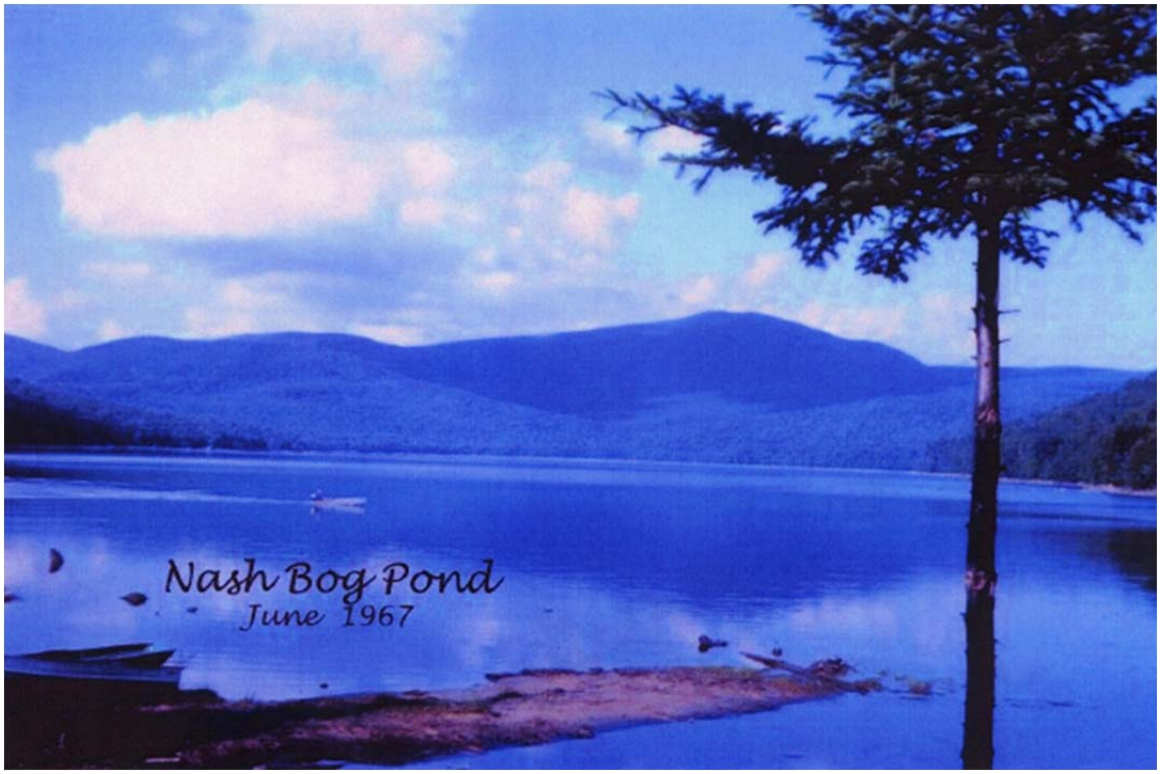


Figure 2 *Nash Bog Pond in 1967, prior to the dam breach and flood.*

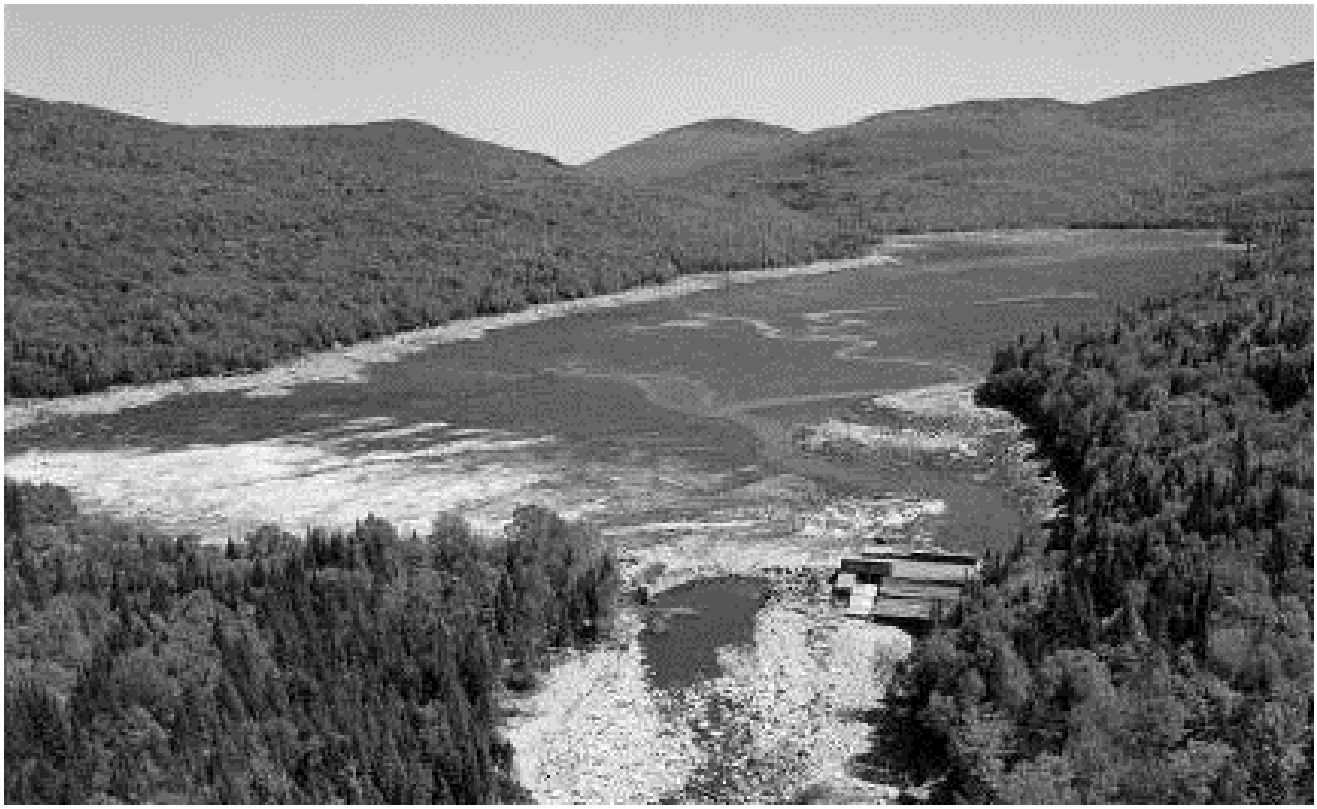


Figure 3 *Nash Bog after the Nash Stream Flood in 1969.*

Figure 4 *Aerial view of Nash Pond Bog Dam.*

Figure 5 *Nash Pond Bog Dam remnants after the Nash Stream Flood in 1969.*

Little Bog Pond

Also known locally as Fourteen and a Half, Little Bog Pond is located in the Pond Brook drainage, which flows into Nash Stream. It is a 37 acre artificial pond with a rock crib dam, at 2,042 feet elevation, with a half-wooded and half-rocky shoreline and a maximum sounded depth of 10 feet. The pond is accessible with conventional vehicles and suitable for small boats. The pond was surveyed in 1989 when 15 Brook Trout were captured. They ranged in size from 4.4 to 15.4 inches with an average size of 8.2 inches. Fish surveys were conducted in 2012 and 2013, but too few fish were caught to draw conclusions about the status of the fish population and the fishery. Little Bog Pond was stocked with fingerlings through 2011 and were replaced with yearling and two-year old Brook Trout due to poor overall survival and low catch rates of the fingerlings. The pond is currently stocked with 1,500 yearling and 250 two-year old Brook Trout. The dam was damaged in 2005 during a high flow event, and will be reconstructed to meet current dam safety standards.

Long Mountain Pond

Long Mountain Pond is a natural, shallow pond of about 2 acres at an elevation of 3,400 feet. It is drained by Roberts Brook which flows out of the NSF and into Phillips Brook. It is remote, no fisheries surveys have been conducted and no stocking has occurred here. Its shores are rocky, and it is unknown if any fish populations are present in this pond.

Lower Trio Pond

Also called Big Trio Pond, Lower Trio Pond was formerly two separate, natural ponds (Trio #1 and #2), and is now a single 68-acre pond raised by an earthen dam, at 2,315 feet elevation; about 26 acres of it lie within the NSF. The maximum depth is about 27 feet. A survey was conducted in 1989 and 18 Brook Trout were caught. The fish ranged in size from 4.1 to 14.3 inches and averaged 8.4 inches. Three, and possibly four, age classes of fish were present indicating good holdover capacity. It was last surveyed in October 2012. Catch rates were similar. The Brook Trout ranged in size from 4.9 to 14.6 inches and averaged 10.7 inches. Lower Trio is currently stocked annually with Brook Trout fingerlings by aerial methods. The number varies between 10,000 and 14,000, depending on the fingerling production and survival.

Whitcomb Pond

Located northwest of Little Bog Pond, Whitcomb Pond is a 19 acre natural pond, with a rocky shoreline. The outlet flows into a small stream that enters Pond Brook about one mile downstream of Little Bog Pond and is accessible by a half-mile walk from the parking area at Little Bog Pond. It is at an elevation of 2,250 feet and has a maximum depth of 7 feet and an average depth of 5.5 feet. This pond was classified in a 1955 survey as being best suited for warm water fish. It was surveyed in 1990. This sampling effort procured 15 Brook Trout that ranged from 4.4 to 13.0 inches and averaged 6.2 inches. There is heavy growth of aquatic vegetation in the summer that supports juvenile fishes. It was last surveyed using gill nets and angling in 2012 and 2013, but catch rates were very low and therefore no management recommendations or changes could be made. Approximately 2,875 fingerling Brook Trout are stocked annually by aerial methods.

Nash Stream

The largest stream and the namesake of the property, Nash Stream originates on the north slope of Muise Mountain near the Columbia town line and flows south to the Upper Ammonoosuc River. This Stream

drops about 2,100 feet in elevation over a distance of twelve and a half miles (Map 5). The reach approximately one mile upstream of the former Nash Bog Pond is very steep (6 percent) with several waterfalls that are two to eight feet in height. It remains moderate to high gradient as it flows downstream, but is relatively flat and sinuous starting about one mile to about 0.4 miles upstream of the former Nash Bog Pond. The stream then becomes more bog-like with swampy edges and meanders through the former ponded area for more than 1.5 miles and splits into multiple braided channels. Downstream of this area, the stream flows nearly 8 miles to the property boundary; much of the stream is moderate gradient at this point, but has several very flat areas. Most of the streamside borders of this reach are well scoured by the 1969 flood, and the substrate is primarily cobble and boulders. The Nash Stream Road follows much of this reach very closely and access is quite easy for anglers and other recreationalists. Upstream of that, access is sporadic and often requires a moderate to difficult walk over uneven terrain with no nearby road or trail.

Tributaries of Nash Stream

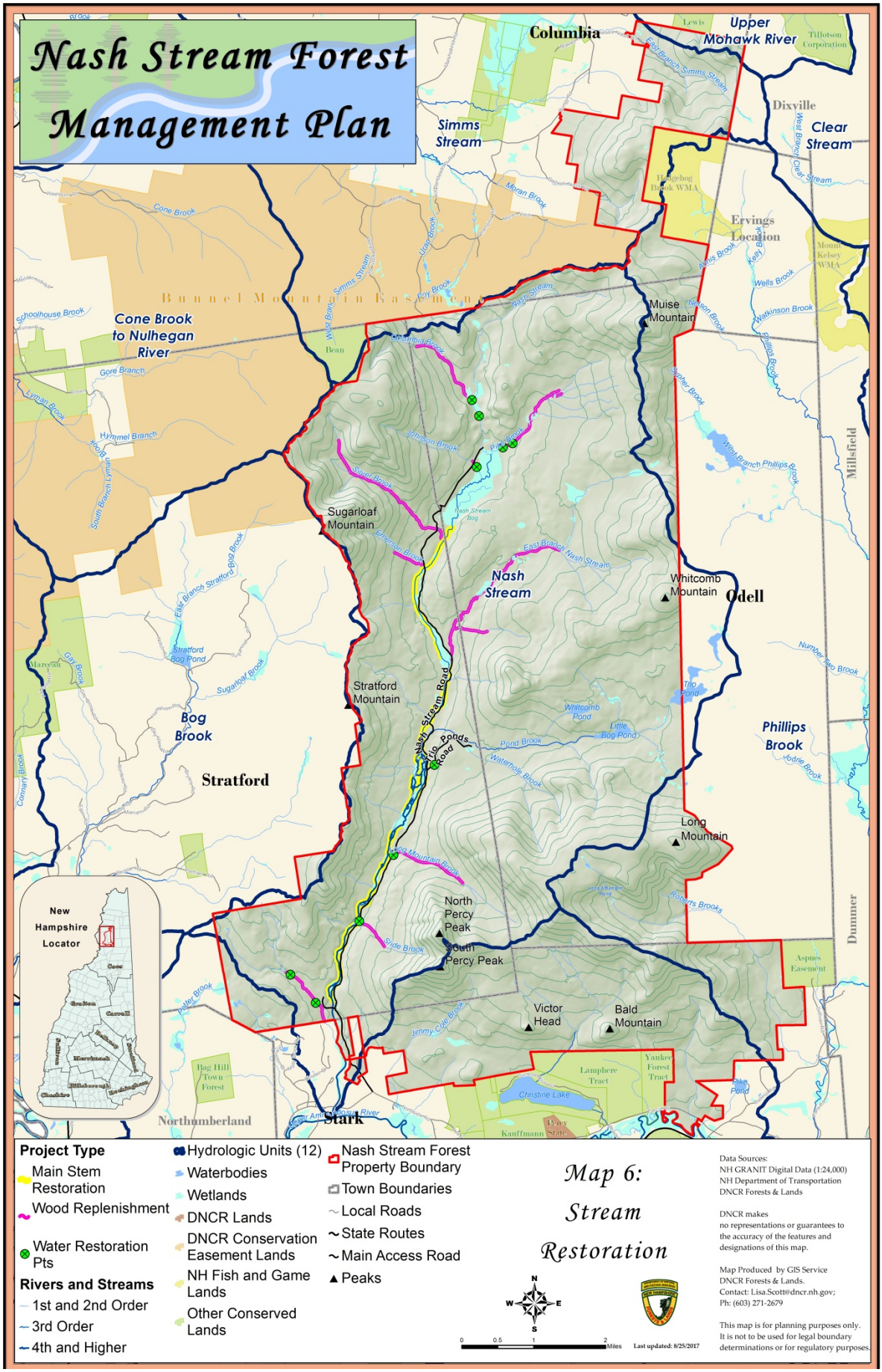
Major tributaries of Nash Stream include Farrer Brook (2.5 miles, 2-5% high gradient, Slide Brook (1.1 miles, 10-25% very high gradient), Long Mountain Brook (0.8 miles, >5% very high gradient), Pond Brook (2.6 miles, lower 2/3 2-5% high gradient, upper 1/3 >5% very high), Johnson Brook (1.5 miles, >5% very high), East Branch (4.1 miles, >5% very high), Silver Brook (2.7 miles, >5%very high), and Columbia Brook (2.1 miles, lower half 2-5% high gradient, upper half >5% very high). NHFGD research has documented that many wild and some hatchery Brook Trout in the mainstem of Nash Stream utilize some of these tributaries for thermal refuge during the summer months and spawning during the fall. Biomass studies have indicated some of these brooks are very productive with biomass estimates greater than 50 kg of wild trout per hectare (i.e. Farrer Brook, East Branch and Johnson Brook). Other major streams range in length from less than a mile to about five miles, and have gradients ranging from 3 to 28 percent. All but three of the significant streams are tributaries of Nash Stream; the others flow into Phillips Brook, Christine Lake, and the Upper Ammonoosuc River.

The Nash Stream Restoration Project

The Nash Stream Restoration Project was started in 2005 by Trout Unlimited (TU), NHFGD and New Hampshire Division of Forests and Lands (NHDNCR), largely to restore the instream habitat that was negatively impacted by the 1969 flood and because more than 90% of the watershed is state owned and therefore public access has been assured in perpetuity. The first steps of the project were to assess fisheries habitat and fish populations in the Nash Stream watershed. Habitat surveys of Nash Stream conducted in 1990-91, 2005 and 2007-2009 revealed a lack of pool and instream woody habitat, the long-term result of the Nash Pond Bog dam failure and resulting flood in May 1969. Fish surveys have been conducted in Nash Stream and the tributaries in multiple years between 2005 and 2017. Additionally, research on Brook Trout has been conducted in Slide, Emerson, Long Mountain and Johnson Brooks to determine the most important habitats for wild Brook Trout; this work clearly documented that instream wood and pools are vital to healthy, productive Brook Trout populations.

When the initial assessments were completed, a detailed analysis of restoration options was conducted and restoration work on Nash Stream began in 2009, although some restoration work was done in Farrer Brook in 2007 and in Long Mountain Brook in 2008. Restoration activities consist of two general types: 1) reconnecting fish populations and habitat through the removal of human-created barriers, in this case the removal of culverts that were preventing access to habitat upstream, and 2) the restoration of instream processes and habitat, primarily by the careful placement of logs/trees and boulders into Nash Stream and its tributaries. Instream wood has been identified as one of the fundamental natural habitat elements that

is now lacking in aquatic habitat due to many reasons including the active removal of wood from aquatic habitats and the preclusion of trees from naturally falling into aquatic habitats. In the case of Nash Stream, much of the instream wood was removed by the 1969 flood, and the trees next to the tributaries were predominantly harvested decades ago resulting in very little instream wood for the past four decades. As of December 2014, restoration work has been completed in about seven miles of Nash Stream and approximately one mile of Emerson and Johnson Brooks. Additionally, on several tributaries, three culverts were removed and six culverts were replaced with road/stream crossings that do not impact stream habitat or fish passage. An additional culvert was removed on Nash Stream and replaced with a bridge. More instream work is planned for about two miles of Nash Stream between Long Mountain Brook and the NSF boundary and several tributaries, and at least one more road/stream crossing will be replaced.


Nash Stream Forest
Management Plan
Columbia
Upper Mohawk River
Dixville
Clear Stream
Simms Stream
Cone Brook to Nulhegan River
Bunnel Mountain Easement
Muise Mountain
Sugarloaf Mountain
Nash Stream
Whitcomb Mountain
Odell
Stratford Mountain
Bog Brook
Stratford
Phillips Brook
Long Mountain
North Percy Peak
South Percy Peak
Victor Head
Bald Mountain
Stark
Northumberland
Millsfield
Dummer
New Hampshire Locator
Project Type
Main Stem Restoration
Wood Replenishment
Water Restoration Pts
Rivers and Streams
1st and 2nd Order
3rd Order
4th and Higher
Hydrologic Units (12)
Waterbodies
Wetlands
DNCR Lands
DNCR Conservation Easement Lands
NH Fish and Game Lands
Other Conserved Lands
Nash Stream Forest Property Boundary
Town Boundaries
Local Roads
State Routes
Main Access Road
Peaks
Map 6: Stream Restoration
Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
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Last updated: 8/25/2017

7.3 FISHERIES GOALS, STRATEGIES AND IMPLEMENTATION

GOAL: MANAGE FOR SUSTAINABLE FISHERIES OF WILD POPULATIONS OF FISH INDIGENOUS TO THE NASH STREAM FOREST WITH A PARTICULAR EMPHASIS ON WILD BROOK TROUT.

Objective 1: Identify and evaluate fish habitat, status of all fish populations and the use of fisheries resources in Nash Stream Forest.

Since 2005, fish and habitat surveys and research conducted in the Nash Stream watershed helped document several important findings about Brook Trout. First, the tributaries contain healthy populations of wild Brook Trout, and many of them are some of the most productive wild Brook Trout streams in New Hampshire. Second, many of the Brook Trout live their entire lives within a small area of tributary; however, many of them migrate from the mainstem of Nash Stream to smaller tributaries to find relatively cool water in the summer and spawning habitat in the fall. Most often return to the mainstem within a week after spawning. We have started to refer to the tributaries as the "spawning factories" in the watershed, although clearly Brook Trout also spawn in the mainstem. Many of the Brook Trout born in the tributaries migrate into the mainstem to grow. It is essential that these tributaries remain accessible to migrating Brook Trout. Third, the restoration work completed to date has been successful in increasing both the number and size of wild Brook Trout in the mainstem and tributaries. There are more angling opportunities for wild Brook Trout in Nash Stream than just several years ago, especially in the mainstem because much of the habitat there has been restored. Fourth, genetic studies conducted in 2006-2008 indicate stocked fish do not appear to be contributing to the wild Brook Trout populations within this watershed. It is not clear why the stocked Brook Trout are reproductively unsuccessful, but fisheries staff have observed stocked Brook Trout spawning in late November, which is the time that the Brook Trout in the source hatchery population spawn in the hatchery, while the wild Brook Trout spawn in late September through the first three weeks of October. It is possible that the stocked trout simply spawn too late in the fall for the eggs to survive. It is for these reasons, that the current management of the fisheries in the streams of Nash Stream watershed is focused on wild Brook Trout, with some stocking in the mainstem of Nash Stream to provide angling opportunities where the fish habitat has not been restored.

Although recent fisheries surveys have been completed on the ponds, additional assessments are necessary to better characterize the status of trout populations.

Strategy:

1. Determine the existing habitat and water quality in all ponds and streams.
2. Determine the status of existing fish populations in all ponds and streams.
3. Determine the current use of fisheries resources by the Public.
4. Determine the potential threat of non-native aquatic species to the native fish community.

Implementation:

- Conduct fish habitat surveys in all ponds and streams.
- Assess summer water temperatures and pH in all ponds and streams.
- Assess dissolved oxygen concentrations in all ponds.
- Conduct fish population surveys in all ponds and streams.

- Obtain quantitative data on the status and distribution of wild Brook Trout.
- Conduct a creel and recreational fisheries use surveys as needed.
- Develop a Decision Tool to determine potential management responses to non-native aquatic species.

Objective 2: Provide for sustainable recreational wild fisheries accessible to all user groups.

Fisheries management will emphasize self-sustaining native species, primarily Brook Trout. Stocking will continue in areas where natural reproduction is limited or non-existent in order to maintain consumptive and non-consumptive angling opportunities. Fishing regulations may be revised to conserve wild populations of Brook Trout in the watershed, but at this time the fish survey data do not indicate there is a need to revise fishing regulations.

Two (Lower Trio and Whitcomb) of the three ponds that are stocked in the NSF are being managed as put, grow, and take trout fisheries, meaning they are stocked annually with smaller sized fish that will grow to harvestable size within the waterbody. Little Bog Pond was stocked with fingerlings through 2011 but because return rates were low, annual stockings of yearling and two-year old Brook Trout took place and will continue. Regulations are currently 5 fish or 5 pound creel limit, open season from the fourth Saturday in April to October 15, and no gear restrictions. Continued stocking of Whitcomb Pond will depend on the return rate of trout to the angler. Historically, the pond has produced a few large trout on various occasions, but the habitat is marginal for Brook Trout, due to its susceptibility to relatively high summer water temperatures. However, Whitcomb Pond may be an important recreational asset because it provides a semi-remote outdoor experience since it only has one camp on it and access is by foot.

Nash Stream is stocked with yearling Brook Trout. Regulations for the stream are a 5 fish or 5 pound creel limit, January 1st to October 15th open water season, and no gear restrictions. No stocking occurs in any of the tributaries to Nash Stream, and they are open to fishing. The above regulations apply except in Pond and Long Mountain Brooks, which are managed for wild Brook Trout, and have a shorter season, only artificial flies and lures can be used, and all fish must be released.

Strategy:

1. Identify waters capable of sustaining wild Brook Trout fisheries.
2. Manage for wild Brook Trout fisheries in waters that support self-sustaining populations at densities >13 lbs/acre.
3. Sustain and improve wild Brook Trout fisheries through the use of appropriate angling regulations and habitat restoration or enhancement activities that maintain or enhance wild population levels or fish size.

Implementation:

- Periodically monitor the effect of angling on the fisheries using fish population and angler survey data.
- Revise angling regulations as needed to conserve those fish populations and fisheries.

- Where appropriate, continue to conduct fish habitat restoration activities to improve wild fisheries.
- Assess effects of habitat restoration activities on fish habitat and fish populations.
- Stocking can be used in areas where the habitat is determined to not be suitable for wild Brook Trout fisheries. Only species of fish native to the Nash Stream watershed will be used for stocking.

Objective 3: Manage fish habitat and populations in concert with other uses of Nash Stream Forest.

Strategy:

1. Identify best management practices appropriate for the other uses in NSF.

Implementation:

- Use "*Good Forestry in the Granite State*" and consult with NHFGD biologists to determine appropriate buffer sizes along streams for forest management activities.
- Use "*New Hampshire Stream Crossing Guidelines*" for all permanent stream crossings.

7.4 FISHERIES MANAGEMENT GUIDELINES

1. **Management -** Fisheries management will strive to develop self-sustaining natural populations of native fish species and maintain consumptive and non-consumptive angling opportunities.
2. Special fishing regulations such as catch-and-release, minimum fish lengths, and fishing gear restrictions may be implemented to help protect the sustainability of fish populations and to maintain/enhance fishing opportunities.
3. Fish habitat will be protected during all management activities using best management practices to protect water quality during management operations.
4. **Habitat Enhancement -** Habitat enhancements will focus on areas which lack adequate in-stream cover and over-wintering habitat (i.e. pools) in order to encourage self-sustaining populations of fish.
5. Habitat restoration and enhancement projects will only be considered where stream channels are considered stable.
6. Emphasis will be on the use of native materials for habitat improvement structures.
7. Structural restoration and enhancement techniques will harmonize with surrounding visual setting.
8. Disturbances created during habitat enhancement projects will be kept to a minimum so as to maintain federal and state water quality standards.
9. All stream habitat improvements will be subject to approval by NHDES Wetlands Bureau in accordance with RSA 482-A.

10. **Stocking** -Stocking will be done primarily where natural reproduction is limited or non-existent to maintain consumptive and non-consumptive angling opportunities. Only species of fish native to the Nash Stream watershed will be used for stocking.

11. Fish used for stocking will be certified disease free and be of the highest quality possible.

12. Fish stocking rates will be based on stream and pond resource classification criteria in combination with angler use and harvest data.

7.5 RIPARIAN ZONE MANAGEMENT GUIDELINES

1. **Designation** - Riparian zones are aquatic-terrestrial transition zones without definitive boundaries that encompass wetlands, uplands or some combination of these two land forms; vegetated uplands adjacent to a natural water course or water body that directly affect or are affected by the adjacent water course or waterbody.

2. **Management** - Riparian zones will be managed for water quality, bank stability, structural habitat for fish and wildlife, shade, litter input, and other qualities where appropriate, including recreation values, wildlife corridors, and timber. Riparian values overlap and progressively decrease away from the stream or waterbody.

3. Resources that depend on riparian zones will be given preferential consideration over other resources or uses when there are conflicts between them.

4. No management practice which causes detrimental changes in water quality or fish habitat will be permitted. Such changes include adverse changes in water temperature or chemical composition, blockages of water courses, and deposits of sediment.

5. No timber harvesting shall occur within 150 feet of Whitcomb Pond, Trio Pond, and Little Bog Pond (except as necessary for recreation development and timber salvage purposes with approval of the U.S. Forest Service) in accordance with the Conservation Easement.

6. At least 50% of the basal area of trees within 150 feet of Nash Stream from the breached dam downstream to the property boundary, and Pond Brook from Trio Pond to the confluence with' Nash Stream will be retained in accordance with the Conservation Easement. At a minimum, at least 50% of the basal area of trees within 50 feet of all other perennial streams or waterbodies will be retained during timber harvesting operations unless site specific prescriptions warrant otherwise, such as management for beaver, aspen or waterfowl.

7. For all other streams and ponds not specifically mentioned within the CED, the riparian management zone recommended practices described in Section 4.3 of "*Good Forestry in the Granite State*" (Bennett, 2010) shall be followed.

8. Management practices in riparian zones will be implemented to ensure the sustained recruitment and accumulation of large woody debris adjacent to stable streams. During management operations, standing live trees within 100 feet of streambanks will be managed to maintain and/or recruit at least one tree of the following size per 100 lineal feet of adjacent stream per decade:

Stream Width	Minimum DBH
10-20 ft.	18"
20-30 ft.	24"
> 30 ft.	36"

9. Existing natural woody material will be left in streams as well as in the wet soil environment immediately adjacent to streams, waterbodies, and wetlands.

10. Trees with cavity holes or broken tops, standing dead trees, and downed trees not considered a safety hazard, will be retained during management operations in riparian zones.

11. Special care will be given to softwood stands adjacent to streams during management operations.

12. To avoid peak reptile and amphibian breeding periods and minimize soil compaction, logging operations in riparian zones will be restricted to frozen ground or late-summer harvests whenever practicable.

13. **Water/Soil -** Stream crossings will be minimized. All stream crossings will adhere to Best Management Practices (BMP) guidelines and comply with applicable state law.

14. In order to prevent erosion and sedimentation, a BMP filter strip will be established between all water courses (streams, ponds, and wetlands) and disturbed areas (skid trails, truck roads, log landings, and recreation developments) where soil has been exposed and surface runoff may carry sediment. Filter strip widths will be established in accordance with BMP guidelines to protect water quality.

15. Equipment use will be limited in filter strips to prevent exposure of mineral soil. Harvesting practices which do not expose mineral soil such as felling and winching of timber may take place. If mineral soil is exposed where natural regeneration may be slow to re-establish, it will be stabilized by seeding and/or mulching.

16. Log landings, new haul roads and heavily used skid trails will be located outside filter strips. Existing roads that were developed within filter strips and used prior to state ownership may continue to be used if relocation would result in greater overall site disturbance.

17. The development of main recreation trails will be avoided within prescribed filter strip widths while allowing for the occasional location of spur trails to wetland and stream vantage points. Existing recreational development within prescribed filter strip widths may continue to be used provided their use is compatible with the protection of water quality and other riparian functions.

8. FOREST MANAGEMENT

New Hampshire is located in an extensive forested ecosystem that covers the northeastern United States and eastern Canada. Forests are valuable resources that sustain regional and local economies, diverse populations of plants and animals, provide important high quality water resources, and recreational opportunities for millions of residents, citizens and visitors. This community of trees is one of the State's greatest assets. Forest management is the care and management of this asset. Forest management often involves some sort of commercial logging practices to harvest timber for human use. The harvested timber provides benefits to our citizens by providing employment, raw materials for mills and secondary industries, and building materials and other wood products for homes including furniture, firewood, wood pellets and paper products. Forest management also provides access for people to use the forest by constructing and improving woods roads. Forest management practices provide valuable habitat for wildlife including game and non-game animals.

8.1 HISTORY

The 1894 New Hampshire Forestry Commission Report presents evidence that the southwest portion of the Nash Stream property was cleared for "arable land" (suitable for farming) use prior to 1819. Cut logs were probably worked downstream to a local sawmill. Limited markets existed at that time for pine, oak and hemlock logs. However, most land clearing yielded raw material that, once processed, became pot or pearl ashes. These crude chemicals provided welcome income in the form of credit at local country stores. Pot or pearl ashes were shipped by the thousands of bushels to Boston from local merchants.

Logging did not become a major industry until the Grand Trunk Railroad came through in 1852. At that time valuable trees were "culled" from woodlands and driven downstream to meet the very specific demands of the lumber trade. Later, a developing market for wood fiber changed early "culling" to wholesale "clean cutting" even the smallest trees for pulp. The combination of culling and clean cutting probably contributed to what was referred to as the "secondary forest" in much of Coos County and in the Nash Stream Forest in 1894.

Nash Stream was a significant log driving stream along with the Connecticut and Androscoggin Rivers. In 1870, Gilbert Soule incorporated the Nash Stream Improvement Company to construct dams and blast rocks to improve the river for log drives at a cost of $30,000. Three dams were constructed on the main Nash Stream. The first was the Big Bog dam (at Nash Bog) which was begun in 1896 and began holding water in 1900. The East Branch dam, just below its confluence with Nash Stream, was built soon after the Big Bog dam. Soule's dam, constructed just south of Long Mountain Brook, completed dam construction on the main stream.

Smaller dams, sometimes referred to as "squirt" dams, were also constructed on feeder streams. One of these was where the present road crosses over the upper reaches of the East Branch, approximately 4,200 feet (road distance) from the Main Nash Stream Road. This dam was also referred to as Nineteen Valley dam. At the head of the watershed, Trio Pond dam was constructed sometime around 1896, rebuilt in 1943, and rebuilt again by the NHFGD in 1981. Little Bog dam, also called Fourteen and a Half (as the logging camp was numbered) was constructed sometime between 1896 to 1900 when the other dams were being built.

Early logging crews also made use of gravity and horses to move wood. Horses pulled wood-filled sleds and guided "bunched" wood downslope to access roads. "Sluices" constructed on mountain slopes used gravity to feed wood to concentration areas for more efficient handling.

Around the turn of the 20th century, a network of twenty four or more logging camps in and around the Nash Stream property provided food, lodging, supplies, and maintenance support for logging crews working the woods. Camps included office, horse hovel, bunkhouse, clerks' office, cook shack, and blacksmith shop, and ranged from a few men and horses to camps consisting of 50 men and 8 to 10 horses. At this time much of Nash Stream Forest was owned by the famous Connecticut Valley Lumber Company (CVL). In 1919 portions of the CVL land, as well as several other private lots were purchased by the Odell Manufacturing Company. Other parts of present day Nash Stream Forest also owned by CVL as well as some other private lands were sold to Groveton Paper Company in 1926.

Log drives stopped in the 1930s when the use of trucks became more economical to haul logs in any season. There has been a road into Nash Stream valley for probably a century or more.

Logging camps also went out of use at this time and were either taken over as sporting camps or rotted away.

Except for the very steepest and highest areas, all of Nash Stream Forest has been cut over at least once. Evidence of softwood pulp cutting in the early 1900s is seen at the 3,000 foot elevation and higher in sheltered spots. Yellow birch and sugar maple logs were cut from accessible areas beginning in the 1940s. Hardwood pulp removals started in the 1950s. In more recent years, many wood product markets came into existence, including chips for fuel. As a result, most accessible and productive areas have been repeatedly cut.

Table 11

Commercial forest operations implemented at Nash Stream Forest

Project	Year Completed	Treated Acres	MBF	Tons	Buyer
3.354	1997	450	385	7,768	AB Logging
3.363	2001	490	459	5,661	Brown Logging
3.365	2002	250	446	3,378	JR Logging
3.370	2004	135	206	4,550	Brown Logging
3.370A	2004	198	166	3,994	Brown Logging
3.373	2006	190	214	3,017	Brown Logging
3.376	2008	250	152	4,544	AB Logging
3.389	2009	500	564	3,840	Kel-Log
3.396	2013	300	407	7,152	AB Logging
3.401	2015	450	416	7,306	Yves Marquis
3.407	2016	335	297	5,253	Yves Marquis
	Total	3,548	3,712	56,463	

In 1983 the holdings of Odell Manufacturing were combined with several other private land holdings into the Groveton Paper Company ownership. Under management by Groveton Paper Company the land was managed at varying levels of intensity for timber products. The harvesting involved several clearcuts which eventually developed into young high quality northern hardwood stands.

After a series of ownership turnovers, the land was purchased by the State of New Hampshire in 1988. Under State ownership, no harvests were conducted for several years until a new comprehensive management plan was completed. Since that time several harvests have been completed. **Table 11** shows the commercial forest operations on record. Since 1997 about 3.712 million board feet and 56,463 tons of low grade forest products have been harvested. This equates to about 25,000 cords of total forest products harvested or roughly 1,250 cords harvested per year since 1997.

8.2 FOREST PRODUCTS

Economic Impact

Timber harvests from state reservations provides employment for timber buyers, loggers, truck drivers, equipment manufacturers, mill workers, mill equipment manufacturers, re-manufacturing facility workers such as carpenters, cabinet makers, firewood dealers, biomass plant workers and the state forestry and wildlife staff.

The forest products harvested are re-sold several times and end up in home centers and lumber retailers where they provide employment for sales personnel. Forest products can have a strong positive effect on the economy often through remanufacturing and value added. For example, pulpwood can yield a stumpage (on the stump) value of $4-$8 per ton (NH Dept. of Revenue Administration (NH DRA) – Average Stumpage Value List) compared to a final manufactured value of $500 per ton (personal communication – Lloyd Irland), a conversion return of about $83 per $1 of stumpage. Other forest products may not show this dramatic of a conversion return but still a very good one, such as the case with sugar maple sawtimber which often fetches a stumpage price of $150-$330 per thousand board feet (NH DRA) and has a manufactured retail value of $4,950 to $10,000 per thousand board feet (Goose Bay Lumber Company website) depending on quality. Using price mid-points, the conversion return is approximately $31/$1 of stumpage value. Much of this value is realized by the community through employment, product sales and re-manufacturing related value added products.

Timber harvests also provide direct benefits to local communities in the form of the timber yield tax. About 10% of the stumpage value of any timber product harvested is paid to the town by the landowner in the form of a yield tax. If a harvest at Nash Stream Forest yields $40,000 in stumpage, the local community will receive about $4,000 in additional taxes from the sale.

Forest management activities on state reservations are designed to improve the quality of the timber resources so they may be sold to regional timber markets. The regional markets reflect those uses that are usually important to local communities. Some forest products have little value and are consequently difficult to find buyers, while many others are desirable and buyers are plentiful, offering prices that make harvesting worthwhile. Primary forest products are described below.

Veneer

Veneer is a thin layer of high quality wood that is glued to lower quality wood to give a better appearance to the product. Veneer is often peeled or sliced from a log instead of being sawn out. This increases the yield of veneer from each log and eliminates waste such as sawdust. Veneer logs usually return the highest price of all timber products. In New England high quality hardwoods such as sugar maple, red oak, white ash and yellow birch are sought for veneer. In order to qualify for veneer, logs must be perfect with no knots or other defects and generally have a small heart. Unfortunately, veneer usually makes up a very small portion of the timber grown in New England. At Nash Stream Forest the yield of veneer can be increased by growing well stocked, young stands to encourage straight trunks that shed branches quickly, followed by periodic release from competing trees to increase vigor and diameter growth. The long rotations that this management plan calls for is expected to encourage veneer production.

Sawtimber

Sawtimber refers to logs that are sawn for lumber products. Sawtimber values can range from very high to very low depending on tree species, quality and size. Hardwoods usually bring the highest prices,

however softwoods are capable of growing far more board feet per acre. Hardwood markets have traditionally been somewhat volatile with consumer preferences shifting back and forth from the grainy woods like red oak and white ash to the "white woods" such as maple and birch. Softwoods such as spruce and fir generally have a stable market and have been a backbone species of the north country forest industry. Spruce and fir stumpage prices may vary slightly over time but traditionally do not see the type of fluctuations that hardwood prices do.

Sawlogs should be grown in well stocked, young stands, followed by periodic releases to encourage vigorous diameter growth. Tight stocking at a young age encourages the death of the lower branches on the bole and better quality logs. Tending practices, such as thinning and crop tree release, encourage the shedding of dead branches. Long rotations of 100 to 140 years for most hardwoods and 70 to 90 for softwoods can allow the timber enough time to grow to valuable diameters and realize high value.

Pallet Logs

Lower quality logs are often referred to as pallet logs. Traditionally, this term was used because pallet logs yielded low quality lumber only suitable for making pallets for shipping materials, or other low quality products that only required strength. Pallet logs are now used to designate low quality logs of both hardwoods and softwoods. Pallet logs are a by-product of a good timber management program. Because of their abundance there is a surplus of pallet quality logs on the market.

Hardwood pallet logs will have knots on three to four sides and softwood pallet logs will have large black knots (3 inches in diameter or larger). The first log in a tree often will be the highest quality log because it is larger in diameter and has few or no branches due to mechanical or self-pruning. However, logs located above the butt log in many trees have a greater number of larger knots and other defects, and are considered pallet logs.

Pulp

Low quality wood that cannot be used as sawlogs or pallet logs provides a cheap source of raw materials for paper called pulp. The wood fibers are mechanically or chemically separated, then formed into thin sheets as paper. Traditionally, there has been a fluctuating market for paper pulp for nearly a century. Recently however, the closure of nearly all the pulp mills in northern New England due to lack of demand and stiff overseas competition has decimated this low grade market. In the past, pulpwood competed with firewood and biomass chips for markets, and prices fluctuated accordingly. Presently, prices and demand are at an all-time low, and it remains to be seen if this market will ever return. Although pulpwood is a low value forest product, it can produce very high returns to a community's economy through high conversion returns from manufacturing and re-manufacturing when the market is healthy. Paper made from New England pulpwood was some of the finest quality paper in the world. Glossy publication paper used for catalogs and magazines often came from New England paper mills.

Chips

When trees are cut during a timber harvesting operation, the higher quality products mentioned above are removed from the tree. The remaining low grade parts of the tree may be fed through a chipper to produce biomass chips. The chips are blown into a trailer and delivered to a biomass power plant where they are fed into a boiler for generating steam power. Older plants are not very efficient but newer plants can be extremely efficient and generate both electricity and heat.

When biomass is produced as a by-product of a long rotation, high-quality timber management program, it may be considered a "green" fuel because it is a renewable resource (Ebert, J – Biomass magazine.) When trees are harvested for lumber and the low grade material is utilized to produce energy, the location from which they were harvested will quickly begin to recapture carbon again, and in a relatively short period of time the site will store as much carbon as it did prior to cutting, unlike petroleum products which take millennia to create. At Nash Stream Forest biomass chips are typically produced from the tops and branches of trees that have grown sawlogs and veneer, or the small low quality trees that have been thinned from a stand early in the rotation to provide space, sunlight, nutrients and water to the remaining sawlog quality trees. If left behind after harvesting, this waste material would break down rapidly on the forest floor and release its carbon back into the atmosphere in a short period of time anyway. In addition the carbon stored in the building materials and other long-term products produced from the harvested trees will remain sequestered.

Biomass is grown locally, so local dollars stay in the regional community. In the Northeast, several schools, hospitals and community centers are converting their infrastructure to enable the use of biomass chips for heating purposes. Careful harvesting at Nash Stream Forest can provide energy resources to the local communities and the surrounding region. With the loss of the regional pulp mills the chip market has become the only viable option of removing and utilizing low grade forest products.

Firewood

Trees in New Hampshire forests have always produced firewood for burning. Whether fuel for native American campfires or firewood burned in a wood stove, locally produced firewood provides a good opportunity to sustainably heat local homes at an affordable price. Most hardwood trees are suitable for firewood although some species are better than others. Often species with the densest wood also produce the highest amount of British Thermal Units (BTUs). Firewood is generally harvested from the tops of sawtimber trees or from trees that have been thinned out of the forest. Like other low value products, firewood should be a by-product of a well-managed forest.

Forest Carbon

Carbon storage is a topic that has generated much interest in respect to forests and forest products. Tree tissues are estimated to contain roughly about 50% elemental carbon. As individual trees continue to get larger over time, each tree is storing more carbon within its tissues. As parts of trees such as leaves, needles and lower branches die off they fall to the forest floor where they slowly decompose. From this decomposition process some carbon mixes with oxygen and then is cast off to the atmosphere as carbon dioxide (CO_2) and some carbon is stored as organic materials on the forest floor and in the soil layers below. The capture of carbon from the atmosphere into the tree, forest floor and soil is often referred to as carbon sequestration.

Scientists have long known that forests have the ability to sequester carbon that otherwise would be in the atmosphere and thereby reduce the amount of greenhouse gases that contribute towards climate change. Forest carbon is now recognized as an "ecosystem service" commodity that under certain conditions can be monetized through sale to emitters to balance or offset their carbon emissions. In return for payment, the offset provider commits to maintaining the sequestered carbon for a period (generally 100 years). Currently the primary market for forest carbon offsets is the California regulatory cap-and-trade system which is scheduled to expire in 2020. Financially viable forest carbon offset projects generally require several thousand acres of forest with stocking above the regional average. Forest carbon offset projects can include both reserved and managed lands and can include storage in long-lived wood products.

Storing carbon was once considered to be an on-site process naturally cycling forest biomass, but more recent thinking also takes into account the forest products being removed from the site. Wood products that are long lasting and are not burned or that do not decompose can store carbon for a long time. Veneer and high quality lumber are generally long-lived products that are maintained for a long period of time because of their high value. By-products of sawtimber such as sawdust, slabs and edgings are often re-processed as paper pulp or as biomass fuel. Biomass fuels also include chips and pellets made from low grade forest products which are burned for heating buildings or to produce energy, often in the form of steam for electrical production or municipal heating or optimally both products. The burning of biomass chips or pellets as a fuel does produce carbon dioxide that is released into the atmosphere. However, some people consider sustainably harvested biomass chips to be a "green" fuel or a carbon neutral fuel because the carbon produced is being recycled from the immediate environment. Biomass chips offset the use/burning of fossil fuels which would release in the atmosphere carbon products that otherwise have been stored and would continue to be stored for a very long time out of the atmosphere.

8.3 FOREST INVENTORY

An initial timber cruise was done in the fall of 1988 to measure, map and evaluate the timber resources. The cruise was carried out through the combined efforts of the Division of Forests and Lands, U.S. Forest Service, The Society for the Protection of New Hampshire Forests, and The Trust for New Hampshire Lands, under the technical direction of the James W. Sewall Company of Old Town, Maine. Final cruise map and data computations were also done by the James W. Sewall Company. Results were compiled by the use of the GRANIT computer system under a joint contract between the Office of State Planning, Division of Forests and Lands, and the University of New Hampshire Complex Systems Research Center. The timber cruise area totaled 29,348 acres and included forests up to 2,700 feet elevation considered accessible for logging or showing evidence of previous access. Cruise point data was collected on a 600 foot grid and variable plot sampling of the timber resource was done using a 10 basal area factor (BAF) prism. The Society of American Foresters (SAF) cover type descriptions were used to determine stand types. Size classes for stands were defined from seedling through large sawtimber.

The Division of Forests and Lands, Forest Management Bureau is in the process of re-inventorying Nash Stream Forest at a much more detailed level than the initial survey. Cruise points are taken on a 200 foot by 400 foot grid, with a variable plot system that uses a 2 phase sampling technique utilizing 20 and 80 BAF angle gauges to evaluate the forest overstory. In addition to the SAF cover types, the current resource inventory utilizes several additional cover types, defined by the Forest Management Bureau to determine stand types. Size class definitions have also been expanded to include an "uneven aged" classification for areas dominated by three or more different size classes. Forest stands are generally mapped down to a size of five acres or more, but may also include smaller sub-stands which are unique and easily identified. Compartments are cruised in their entirety prior to planning or implementing a timber harvest. To date, approximately half of the area suitable for timber has been re-inventoried.

Forest Composition

At the time of State purchase, a timber cruise was conducted on the 29,348 acres that were considered accessible for logging. Nash Stream Forest was dominated by hardwood cover types with 56% of the accessible acres (16,420 acres) in nearly pure or pure hardwood. The "hardwood" cover type is applied to stands that contain 75% or more of their basal area in hardwood species **(Figure 6)**.

Mixedwood stands include "hardwood/softwood" and "softwood/hardwood" cover types. Hardwood/softwood types contain 50-74% of their basal area in hardwoods and the remainder of their basal area in softwoods. Softwood cover type/hardwood types contain 50-74% of their basal area in softwoods and the remainder of their basal area in hardwoods. These mixedwood types occurred on 28% 10,840 acres or 37% of the accessible area (28% and 9% respectively).

Softwood stands are stands that contain 75% or more softwood basal area. This cover type only occupied 2,088 acres or 7% of the accessible area in pure or nearly pure stands.

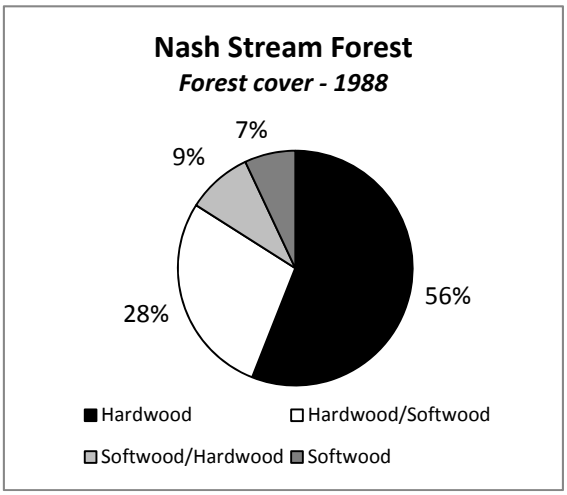


Figure 6 *1988 Forest cover in percent of acres for the 29,348 acres below 2,700 feet of elevation considered accessible for logging.*

The soils and soil capability ratings from the 2014 GIS data show only 6.7% (IFSG 1C and 2B) of the soils suitable for softwood dominance. Generally, Nash Stream Forest soils are far better suited to growing hardwoods because they tend to be only slightly washed loamy tills with good mineralogy for New Hampshire. The soils offer little opportunity within the areas available to harvesting and other silvicultural operations to increase softwood cover types. Nash Stream Forest soils do however have an affinity for growing high quality hardwood sawtimber consistent with the management vision. Previous cutting results put forest cover types in line with soil capabilities.

Yellow birch, sugar maple, white birch, red maple and beech are the primary hardwoods. Other hardwoods include aspen and white ash. Dominant softwood species are balsam fir and red spruce.

The current composition of Nash Stream Forest has not changed much over the 26-year period. Most silvicultural operations conducted by the state involved tending current forest cover types and some regeneration cutting.

Forest Structure

Almost 90 percent of the trees at the time of the 1988 inventory were 4 inches in diameter or smaller, 98.3% of the trees were less than 12 inches in dbh, and fewer than four trees per acre (0.02%) are larger than 16 inches in diameter. About one-third of the 4-inch and smaller trees were short-lived species of pin cherry and striped maple which die out as the forest moves into a mid-life condition.

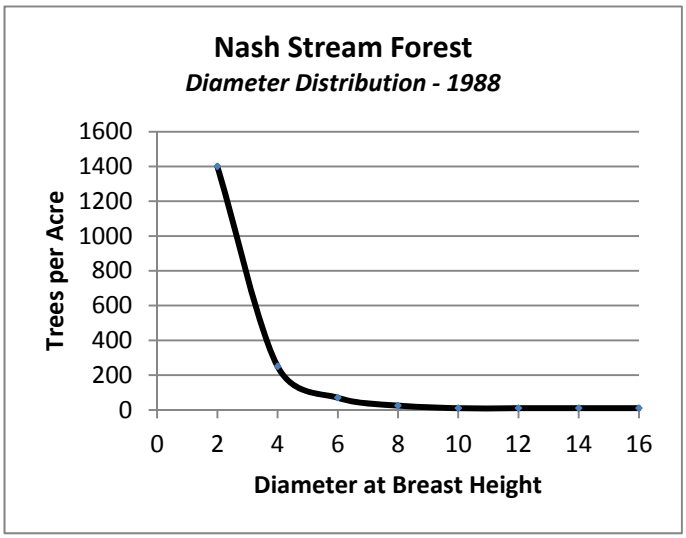


Figure 7 *Distribution of tree diameters at breast height on accessible acres (from the 1988 timber cruise).*

DNCR does not currently have up to date inventory data for the entire property due to limited agency resources. However, it is believed that the dbh distribution shown in **Figure 7** has shifted substantially to the right increasing the average stem size because (1)

regeneration cutting levels are much lower than previous to State ownership and (2) many stands that were in the sapling size class at the time of purchase by the State have grown into pole and small sawtimber size classes.

Forest Size Classes

Forests are often described by the diameter of the trees. Although the nomenclature for size classes have their origins in timber management, they are also very useful for wildlife habitat assessment and management as well as other ecological assessments. Size class is often used as a substitute for tree age since the annual rings are hidden within the tree and trees are time consuming to core and count. Size class can be easily and quickly assessed visually or computed using inventory data.

Graphic description of tree size class specifications.

seedlings			saps		Poletimber					Sawtimber						
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16+

Average diameter at breast height in inches

Figure 8 *Tree size classes are graphically shown here. Seedlings range from 0 to 2.5 inches in diameter at breast height (dbh), while saplings range from 2.6 inches to 4.5 inches dbh, poletimber from 4.6 inches to 9.5 inches dbh and sawtimber larger than 9.5 inches dbh.*

Seedling and Sapling Size Classes

Seedlings are trees up to 2.5 inches in diameter at breast height. Saplings are 2.6 to 4.5 inches in diameter. Stands classified in the seedling and sapling size classes during the 1988 inventory totaled 9,382 acres. Almost 75 percent of the seedling and sapling stands were pure hardwood heavily stocked with shade intolerant species such as paper birch, aspen and early successional species of pin cherry and striped maple. Mixedwood seedling and sapling stands were mostly composed of red maple, beech, red spruce and balsam fir. The few pure softwood stands in these size classes consisted of red spruce and balsam fir and sometimes, on the lower elevations, included small quantities of white pine and tamarack. Seedling and sapling size class sampled in the 1988 inventory reflect cuttings that occurred within the last thirty years prior to State ownership.

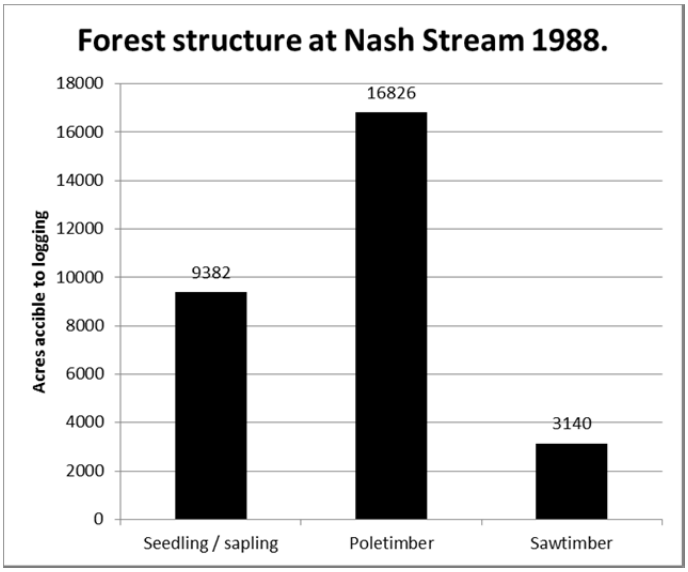


Figure 9 *Forest structure of the 29,348 acres considered accessible to logging during the 1988 forest inventory. See figure 10 for a description of size classes.*

Those stands regenerated prior to State ownership ranged in age from about 1 to 30 years and had an estimated mean stand diameter range of approximately 0 to 3.9 inches at breast height during the 1988 inventory. Modeling the results from Solomon and Leak (1986 page 15) to predict the current condition of those stands after 26 years of growth suggests a range in mean stand diameter of 3.5 to 7.0 inches at breast height. Consequently several of the previously clearcut stands prior to State ownership have passed through the seedling and sapling stage into the pole timber size class. The only acres currently in the seedling size class are acres regenerated by DNCR since purchase. In approximately 10 to 15 years the

last of the stands regenerated prior to State purchase of NSF are forecasted to pass out of the sapling stage and into the pole timber stage.

Poletimber Size Class

Poletimber ranges in size from 4.6 to 9.5 inches in diameter at breast height. During the 1988 inventory stands classified as poletimber size class totaled 16,826 acres of the forest. The combination of hardwood and mixedwood poletimber stands totaled about 15,037 (about 50% of the accessible acreage); softwood poletimber occupied only 1,789 acres (less than 10%). Sugar maple, white ash, yellow birch and beech made up the hardwood poletimber stands on the fine textured upland soils. Red maple and/or beech poletimber often mixed with scattered patches of red spruce and balsam fir occupied the coarser and often wetter soils. Softwood poletimber stands were dominated by balsam fir with lesser amounts of red spruce.

Over the 26 years since the 1988 inventory many of the pole timber stands have grown into a small sawtimber size class. Using Solomon and Leak (1986) again to model stand growth, it is predicted that the pole sized stands of the 1988 inventory which occupied the diameter range of 4.6 to 9.5 inches at breast height have now grown to the range of roughly 7.7 inches to 13.5 inches in diameter. **Figure 10** illustrates this shift from poletimber to mostly sawtimber.

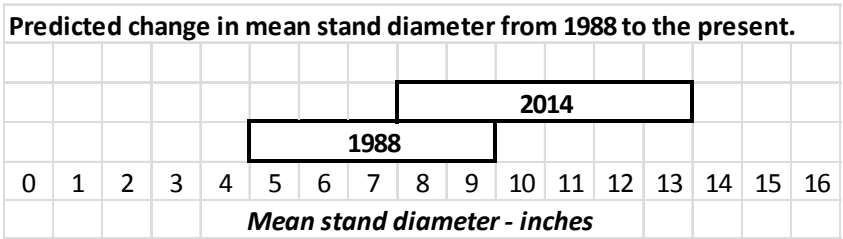


Figure 10 *Predicted change in mean stand diameter for stands in the poletimber size class from 1988 to the present time using a growth model adapted from Solomon and Leak (1986). Most of the 1988 poletimber stands are predicted to have grown into the small sawtimber size class.*

Sawtimber Size Class

Approximately 3,140 acres (11%) of the timber resource was in the sawtimber size class (9.6 inches+) in 1988. About two-thirds of the sawtimber stands consisted of pure hardwoods; the balance was mixed with softwoods. There were no pure softwood stands in the sawtimber size class. Hardwood sawtimber was generally just above the poletimber size class with a mean diameter at breast height of 12 inches+/-.

Since the time of purchase by the State work has mostly focused on thinning poletimber stands and small sawtimber stands. As mentioned above, much of the acreage in poletimber during the 1988 inventory is predicted to have moved to the small sawtimber size class. Also, many of the small sawtimber stands present in the 1988 inventory have probably grown into the large sawtimber class (15-inches +). Overall we expect that the forest structure at Nash Stream has made the predicted and desired shift to an older and more natural age/diameter distribution since State ownership.

Timber Volume and Quality

During the 1988 inventory sawlog volume was measured in average board feet per acre based on the International 1/4 Inch Rule from stands of all size classes. Spruce and fir sawlogs were measured from 5.6+ inches in diameter and hardwoods from 8.6+ inches in diameter.

Average softwood sawlog volume per acre in all stands was almost twice that of hardwoods. Softwoods averaged about 1,700 board feet per acre and hardwoods about 1,060 board feet per acre with total average volume of approximately 2,760 board feet per acre for all stands. Spruce and fir log volume was

primarily scattered throughout stands of mixed hardwood and softwoods and was considered about average quality.

Hardwood log volume consisted primarily of medium to low grade (Grade 2 and 3) white birch, yellow birch and sugar maple. High grade sawlogs (Grade 1) comprised less than 10 percent of the hardwood sawlog volume.

Cord volume was measured in average cords per acre (standard 128 cubic foot cord) from stands of all size classes. Average cord volume was estimated to be just under 12 cords per acre consisting primarily (86%) of hardwood species. More than half (52%) of the cord volume was pulp grade primarily of yellow birch, white birch and sugar maple.

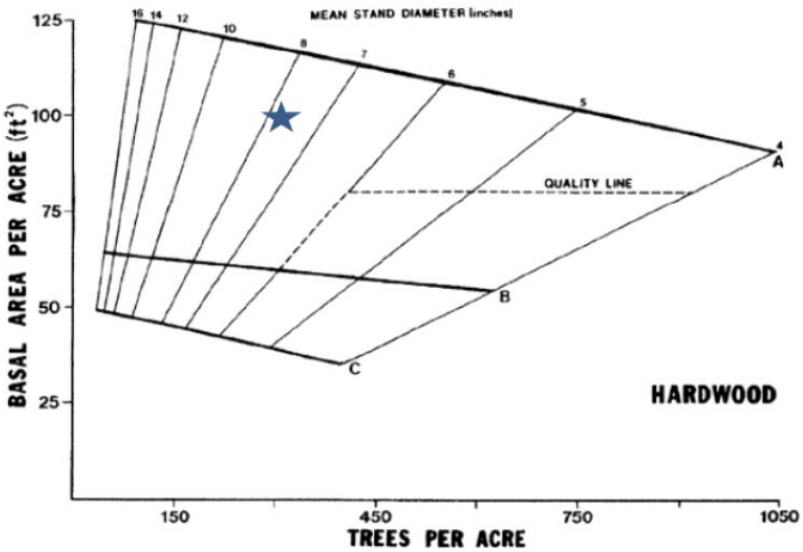


Figure 11 *The mean stand diagnostics from the current inventory data (star) suggests Nash Stream's forests are very well stocked and in need of additional silvicultural treatments. Chart is from Leak, Solomon and DeBald (1986).*

Since State purchase, 7,047 acres have received additional updated inventory as part of routine management operations. Of that acreage, 6,589 acres are considered manageable for timber products. The results from this cruise data are not directly comparable to the 1988 information due to variations in cruising methods, however it provides a snapshot of Nash Stream Forest's timber resources. The cruise data shows mean sawlog volume per acre to be 3,602 board feet per acre and cord volume to be 13.1 cords per acre, suggesting greater stocking than in 1988. Simulations by Solomon and Leak (1986) showed stands in this general size and age class tend to carry about 2,739 board feet per acre. It seems like the Nash Stream timber stands then are carrying a somewhat higher proportion of volume in sawtimber. This is in direct agreement with the management vision for long rotation, high quality timber products.

The post-1988 inventories also provide a snapshot of diagnostic stand characteristics. For example, the mean basal area per acre is 100 square feet and there are on average 327 stems per acre. This results in a quadratic mean stand diameter of 7.5 inches at breast height. Using these diagnostics on the northern hardwood stocking chart (Figure 11), the mean stand stocking is about 88% of the distance from zero to the A-line. Stands are generally regarded as ready for tending anywhere above 60%, therefore these stands are very well stocked and in need of additional silvicultural treatments to grow high quality timber. These treatments should be "commercial treatments" that yield timber harvest revenue.

Growth and Stocking

The 1988 inventory estimated the mean gross volume growth for all trees 4.6 inches in diameter and larger. Gross volume growth (to a 4.0 inch top) was estimated to be 65 cubic feet per acre per year. Hardwood growth was about 70 percent of this total with yellow birch, sugar maple and paper birch

making up almost half of the total growth. Balsam fir, one of two major softwood species, made up almost 20 percent of total growth.

Average basal area per acre for all trees 4.6 inches in diameter and larger was 74 square feet with yellow birch, sugar maple and paper birch making up more than half of the total. Hardwoods made up 71 percent of the total basal area.

For trees 4.6 inches in diameter and larger, yellow birch, sugar maple and beech had the largest average tree diameter at just under 10 inches. Average diameter for all other species, including softwoods, ranged from 6 to 8 inches dbh with 8 inch most common.

The Division of Forests and Lands is currently collecting little growth data from Nash Stream Forest, however plans are in the works to collect growth data in the future. A proxy for direct growth data are the Forest Inventory and Analysis (FIA) data provided by the USDA Forest Service – Northern Research Station for northern New Hampshire. According to FIA, the northern three counties of Coos, Carroll and Grafton have an average growth of 35.83 cubic feet per acre or roughly (35.83/85 = .42) 4/10ths cord per acre per year. Considering that the 1988 inventory estimated 65 cubic feet per acre per year it appears that Nash Stream's forests were doing exceptionally well. One explanation for this exceptional growth is that Nash Stream Forest's soils are generally deep, fine textured and relatively fertile. Another probable factor is that Nash Stream Forest was primarily a very young forest at the time of State purchase and young forests tend to grow faster than older forests. The majority of Nash Stream is currently composed of even aged stands due to past cutting practices.

8.4 TIMBER MANAGEMENT GOALS, OBJECTIVES, AND STRATEGIES

GOAL: MANAGE NASH STREAM FOREST AND ITS TIMBER RESOURCES TO ACHIEVE A CONTINUOUS YIELD OF WOOD PRODUCTS FROM AN ECOLOGICALLY SUSTAINABLE FOREST.

Objective 1: Manage timber in concert with other uses of Nash Stream Forest.

Strategies:

1. Emphasize a sustained yield of forest products consistent with the traditional uses of the Nash Stream Forest, maintaining and improving public access, and the conservation of other resource values.

2. Coordinate timber management and harvests with the State Lands Management Team and other federal and private natural resource specialists to ensure consideration of multiple resource values and user interests.

3. Use timber management, including harvesting, as a vegetation management tool to maintain or enhance resource values and land uses.

4. Implement guidelines to integrate timber management with other resource values and land uses.

5. Carry out timber harvesting only after potential impacts and management opportunities associated with other resource values and land uses have been identified and appropriate modifications made.

6. Notify the public of each proposed timber harvesting operation for public input and response.

7. Provide interpretive opportunities for timber management practices and integration with other uses.

Objective 2: Determine the commercial forest area suitable for timber management.

Strategies:

1. Identify and map areas where other resource values or land uses take precedence over timber production.

2. Locate and map areas designated in the Conservation Easement Deed where timber cutting is prohibited or restricted.

3. Identify and evaluate areas where soil/site and ecological land capabilities are suitable for timber harvesting.

Objective 3: Implement procedures to achieve and maintain a healthy and ecologically sustainable forest and timber resource.

Strategies:

1. Monitor and map changes in forest associations including composition and distribution of tree species, and growth characteristics.

2. Utilize silvicultural prescriptions that favor natural regeneration of native species, use and build upon soil/site capabilities, and other ecological principles.

3. Emphasize the growth of long rotation, high quality forest products.

4. Use uneven-aged management as the preferred method for managing and regenerating timber stands.

5. Implement guidelines to protect the forest environment during timber management and harvesting.

6. Establish control areas within the designated commercial forest area to study natural development and ecological processes of representative natural communities.

Objective 4: Provide for an ecologically sustainable yield of forest products from the designated commercial forest area.

Strategies:

1. Evaluate available inventory data and determine the present distribution of tree species by age and size class. Develop forest structure goals that take into consideration a sustainable distribution of size classes based on management rotations.

2. Begin a program of Continuous Forest Inventory (CFI) in the area suitable for timber harvesting to determine the rate of timber growth.

3. Determine appropriate target ages for each species based on, but not limited to, soil/site capabilities, culmination of volume growth, stem quality, desired stand structure, and biotic needs.

4. Establish timber management criteria and silvicultural guidelines that support a sustainable timber resource.

5. Evaluate each planning unit within the area suitable for timber management to determine a sustainable allowable cut.

6. Develop a five year timber implementation work plan, updated annually.

7. Anticipate and respond to forest product market opportunities.

8. Provide opportunities for all interested parties who are deemed "responsible bidders" to bid on any timber sold in accordance with policies adopted by Governor and Council.

Objective 5: Provide for long-term monitoring of forest conditions.

Strategies:

1. Inventory and map timber and other forest resources on a continuing basis to maintain up-to-date information for long-range planning.

2. Use regular inspections for insect and disease infestations and other damaging agents to supplement inventory and mapping as tools for long-term monitoring of forest and timber conditions.

3. Continue to implement a forest operation tracking system.

4. Evaluate the effects of timber management practices on sustainable forest health and productive growth.

5. Use the results of monitoring to modify timber management and other human activities.

Objective 6: Identify timber management research needs and seek opportunities for answering research questions.

Strategy:

1. Work closely with other units of government, educational institutions, and others to encourage, establish and/or participate in timber management and related subject research activities of mutual benefit.

8.5 IMPLEMENTATION OF TIMBER MANAGEMENT

Conservation Easement and Timber Management

Timber management is a primary emphasis of the Conservation Easement Deed (CED). The CED places constraints on the management and use of the timber resources as part of a multiple use natural resources management program. The terms and conditions of the CED relating to timber management are listed in **Chapter 1**.

Continued management of the Nash Stream Forest timber resource is important for a variety of reasons. Forestry is a traditional and fundamental use of land in New Hampshire. The growth, harvest and utilization of timber have contributed to the social, cultural and economic definition of the North Country for over two centuries. The importance of maintaining the Nash Stream watershed in the North Country timber base was emphasized repeatedly during negotiations to acquire the land, and is a condition of the

CED. There was strong public support for this use during the initial planning. Nash Stream Forest is capable of producing high quality timber of importance to local, regional and even global economies. Proper forest management is compatible with other public values and potential uses of the property.

The Nash Stream Forest will be managed on a sustained yield basis for all forest products, including timber, wildlife, clean water, public recreation, and aesthetic enjoyment. Annual growth of timber will exceed annual removal within management zones for a period of several decades and probably long thereafter. Management options will be dictated primarily by soil/site capabilities based on ecological land groupings, with the long-term strategy of a balanced, sustainable and site appropriate species distribution; special efforts will be made to restore softwood stands to their original distribution based on site evaluation. Emphasis will be on long-rotation production of hardwood solid wood products, with pre-commercial and commercial improvement harvests to channel growth into quality.

As per the CED, timber management will not occur in areas above 2,700 feet or on slopes exceeding 35%, and will be conducted in accordance with the buffer requirements of RSA 224:44 (re-codified as 227-J:9) along streams, navigable rivers, ponds and bogs. In addition, harvesting in these areas will be more restrictive than the requirements set forth in the CED and will meet or exceed the recommendations of the current version of "Good Forestry in the Granite State". Other areas, particularly those with special ecological features that might be disturbed by harvesting activity, will be set aside as well. Core natural areas will be prohibited from harvest, while natural area buffers and corridors may receive limited management. Monitoring (control) areas will be established below 2,700 feet of elevation to study natural forest developments in both managed and unmanaged sites. Timber harvesting activity will be limited, but not necessarily prohibited, in areas of high recreational use. Road construction and maintenance will be dictated by soil and site conditions and by access requirements consistent with recreation and wildlife management plans.

Even-aged management will be an accepted silvicultural method, but restrictions on clearcutting will be more stringent than those set forth in the CED. Clearcutting will be used only when no other silvicultural method will accomplish the desired condition. Any clearcuts, if prescribed, will be located and designed to conform to topography and contour, consistent with visual quality guidelines, so as to have minimal aesthetic impact. Summer harvesting will be allowed, if necessary, to accomplish silvicultural objectives. Artificial regeneration (planting) will be discouraged, except for educational and restoration purposes using native species.

Notwithstanding state law (RSA 430:2), chemical herbicides or pesticides will be used only when absolutely necessary. Invasive species are currently not a problem at Nash Stream, however the State reserves the right to utilize pesticides to control invasive plants and animals if necessary to protect the natural resources of the property. Timber salvage necessitated by natural catastrophe such as fire, blowdown or insect infestation shall be allowed. Because of liability to abutting landowners, forest fire suppression will be allowed. Control of nonnative exotic plants, animals and insects will be emphasized.

At all times, timber management will be consistent with wildlife habitat objectives. All timber harvesting will be carried out only after assessment of its impact on historical resources. The maintenance of water quality will be of utmost priority; established best management practices for controlling soil erosion will be required at all times.

A 20-year planning window will be used to implement the timber management plan. Within this planning window, 5-year implementation plans will be developed such that the entire acreage specified for timber management will receive attention or treatment within a 20-year period. Work units will be established to

allow the most efficient and economical management within specific areas, and to provide for in-depth pre-harvest inventory. Determination of sustainable yield and allowable cut will be on an area basis, and checked utilizing a volume basis.

No Harvest Areas

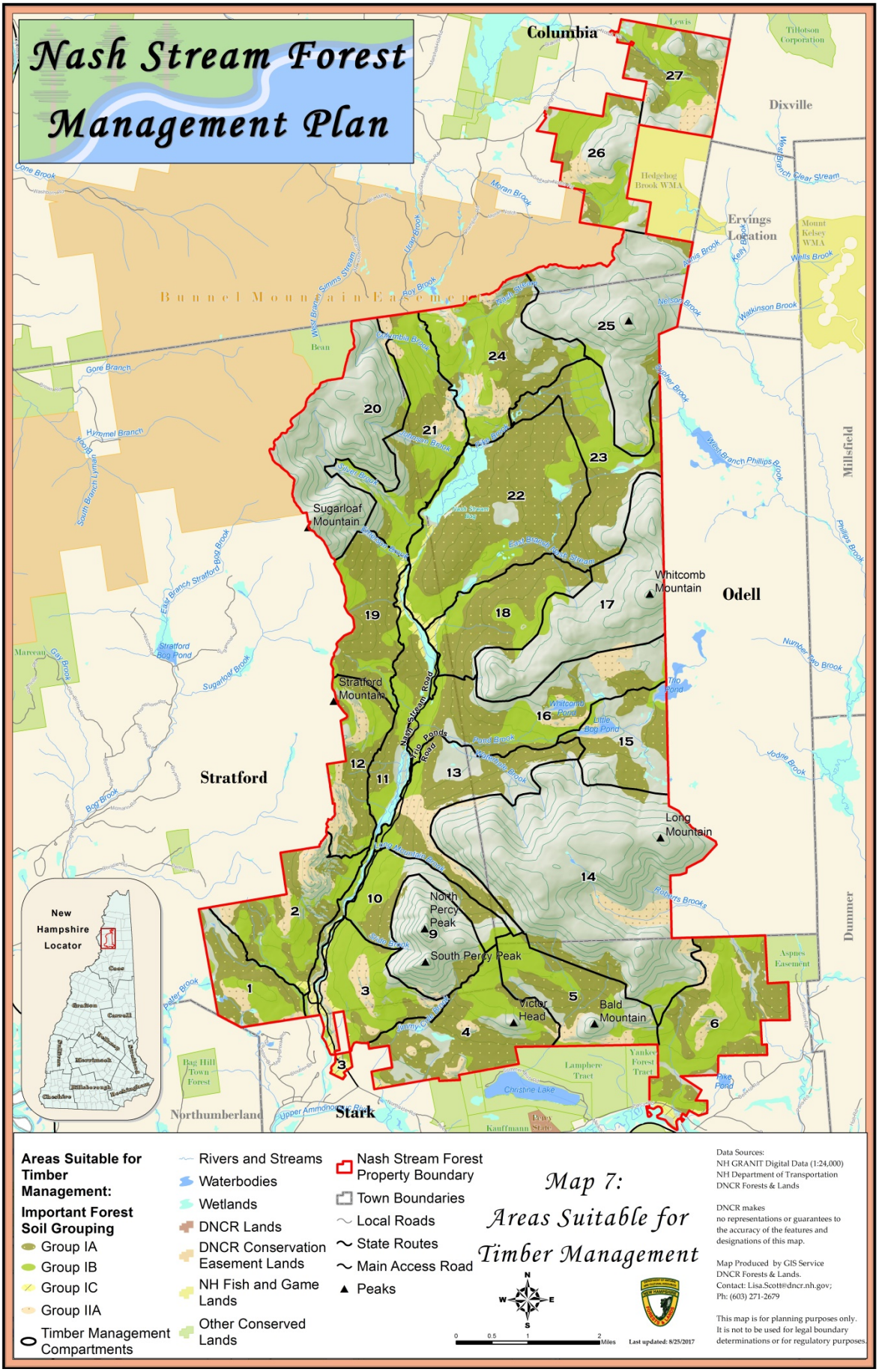
Areas specified by the CED where no timber harvesting shall occur are described as follows:

1. No logging shall occur at high elevations above 2,700 feet or on steep slopes greater than 35 percent or. Areas of steep slope and high elevation were identified for mapping purposes through GRANIT data analysis. DNCR has updated these areas using more current GIS data. Minimum map unit size for steep slope is 30 meters (98.4 feet) by 30 meters (98.4 feet). High elevation totals about 8,148 acres (just under 21% of the forest); steep slope, below 2,700 feet, totals about 2,462 acres **(Refer to Map 7)**.

2. A 150-foot buffer around the three ponds drained by Pond Brook: Whitcomb Pond, Trio Pond, and Little Bog (Fourteen and a Half) Pond; the buffer totals an estimated 55 acres determined from the ordinary high water mark of the ponds **(See Table 12)**.

TABLE 12
Area Impacted by CED Timber Management Constraints

CED Constraints	Acres
Area Above 2,700 ft. Elevation	8,148
Steep Slopes > 35% (below 2,700 ft.)	2,462
150 ft. Pond Buffers	
Whitcomb Pond	16
Lower Trio Pond	13
Little Bog Pond	26
Total	10,665


Nash Stream Forest
Management Plan
Columbia
Dixville
Errings Location
Odell
Stratford
Stark
Northumberland
Millsfield
Dummer
Bunnel Mountain Easement
Sugarloaf Mountain
Stratford Mountain
Whitcomb Mountain
Long Mountain
North Percy Peak
South Percy Peak
Victor Head
Bald Mountain
Nash Stream Road
Little Ponds Road
Hedgehog Brook WMA
Mount Kelsey WMA
Bog Pond
Stratford Bog Pond
Little Bog Pond
Christine Lake
Lamphere Tract
Yankee Forest Tract
Bag Hill Town Forest
Aspnes Easement
Kauffmann State
New Hampshire Locator
Areas Suitable for Timber Management:
Important Forest Soil Grouping
Group IA
Group IB
Group IC
Group IIA
Timber Management Compartments
Rivers and Streams
Waterbodies
Wetlands
DNCR Lands
DNCR Conservation Easement Lands
NH Fish and Game Lands
Other Conserved Lands
Nash Stream Forest Property Boundary
Town Boundaries
Local Roads
State Routes
Main Access Road
Peaks
Map 7:
Areas Suitable for Timber Management
Miles
Last updated: 8/25/2017
Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
DNCR Forests & Lands
DNCR makes no representations or guarantees to the accuracy of the features and designations of this map.
Map Produced by GIS Service
DNCR Forests & Lands.
Contact: Lisa.Scott@dncr.nh.gov;
Ph: (603) 271-2679
This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.

Restrictions on Logging near Streams and Ponds

Restrictions on logging near streams shall be more stringent than those set forth in the CED as follows:

1. As defined in the CED, no timber harvesting shall occur within 150 feet of Whitcomb Pond, Trio Pond, or Little Bog Pond, and no more than 50% of the basal area shall be cut, or otherwise felled within 150 feet of Nash Stream and Pond Brook;

2. For those streams not mentioned within the CED the riparian management zone practices described in Section 4.3 of "Good Forestry in the Granite State" (second edition, December 2010) will be followed. The only fourth order stream or higher is that section of Nash Stream from the intersection of Pond Brook flowing south to the property boundary according to NH DES publication "DES List of Fourth Order and Higher Streams" WD-08-9.

Guidelines for Riparian Management Zones (GFGS 2010 Section 4.3)

Stream order or water body	No management zone	Riparian management zone
Intermittent streams	none	75
1st and 2nd order streams	25	100
3rd order streams	50	300
4th order streams and larger	25	300
Ponds < 10 acres	none	100
Lake or great pond	25	300

Restrictions on Clearcutting

Restrictions on clearcutting shall be more stringent than those set forth in the CED as follows:

1. Clearcuts shall not exceed 30 acres in size nor exceed more than 15% of the total easement area in any 10-year period. Any increase in these limits requires approval of the U.S. Forest Service;

2. Clearcutting will be used only when no other silvicultural method will accomplish the desired condition;

3. Clearcutting, when used, will be limited to sites with strong recuperative capacity;

4. Cutting will be done in the context of a larger watershed unit and in relation to all previous cuts in the unit (at a minimum, as per the CED, no new adjacent clearcuts shall be made until previous clearcut regeneration is at least 15 feet tall);

5. Clearcuts will be relatively small to ensure availability of seed sources and to minimize losses of dissolved substances and eroded material;

6. When possible, clearcutting will be limited to frozen ground periods to minimize damage to the forest floor;

7. Roads will consume an absolute minimum amount of area;

8. Riparian zones will be protected;

9. Proper ecological weight will be given to early successional plant species (these species play an important role in recovery processes by conserving nutrients and minimizing erosion and are also important wildlife foods);

10. Planned target ages will be long enough for the ecosystem to regain, by natural processes, nutrients and organic matter equivalent both to that lost as a result of product removal and to losses accelerated by clearcutting;

11. Cutting will be consistent with wildlife and plant habitat goals.

Available Forest Land

The Conservation Easement Deed places timber management constraints on an estimated 10,665 acres. Wetlands, ledge, power line, un-surveyed lots, and other non-forest areas total 888 acres leaving 28,048 acres of available forest for potential timber management use.

Areas Suitable For Timber Management

Approximately 75% (21,613 acres) of the available forest described above consists of stable and productive soils suitable for timber management. This represents more than half (54%) of the property. The remaining 46% consists of areas restricted by the Conservation Easement Deed (high elevation, steep slopes and pond buffers), limited soils, non-forest and other areas. Timber cutting on limited soils will be restricted to the enhancement of non-timber values such as wildlife and endangered species habitat.

Ecological Land Capabilities

Eight ecological land groups (ELGs) have been identified within the area suitable for timber management (ASTM) to guide timber management planning. ELGs provide a basis for evaluating forest and land capability for timber management. Understanding ELGs and forest and land capabilities provides a means for determining timber management techniques that are consistent with natural stand dynamics and forest community development. Such management techniques include the ability to support the natural distribution and development of the forest.

Species Composition and Distribution

Timber management practices will be used that support the natural distribution and development of forest associations. The distribution and development of forest associations in the ASTM can be determined from Ecological Land Groups identified in **Table 13**.

Ecological Land Groups #5, 7 and 10 support pure hardwood forests on lower and middle mountain side slopes. These ELGs total slightly less than 70% (14,089 acres) of the ASTM and are dominated by Important Forest Soils (IFS) Group IA soils. Group IA soils are deep, loamy, fine-textured and moderately well-drained soils that generally support combinations of site demanding northern hardwood species such as sugar maple, yellow birch and white ash.

About 29% (6,029 acres) of the ASTM is made up of ELGs #6, 9, 11 and 12 that support mixedwood forests on lower and middle mountain side slopes. These ELGs are dominated by IFS Group IB soils that are less fertile and coarser, sandy loams, moderately well and well-drained. These soils generally support combinations of less site demanding hardwood species such as beech, red maple, aspen, and paper birch. Scattered individual stems and small groups of softwoods such as red spruce and/or balsam fir often occur where soils are shallower.

The remaining soils in the ASTM are in ELG #14. This ELG supports softwoods on outwash, alluvial (OAL) soils that are primarily sandy outwash soils on valley bottoms that support combinations of red spruce and balsam fir that may naturally cycle between softwood and hardwood compositions.

TABLE 13 *Ecological Land Groups in the Area Suitable for Timber Management (ASTM)* *Location + Soil History + Forest Association = Ecological Land Group (ELG)*				
LOCATION	**SOIL HISTORY**	**FOREST ASSOCIATION**	**ECOLOGICAL LAND GROUP**	**IFS SOIL GROUP**
Valley Bottom (374 acres)	Outwash, Alluvial (Lacustrine)	Spruce/Fir/Pine (pure softwood)	(14) VB/OAL/SFP	IA 132 acres
				IC 242 acres
Lower Slope Mountain Side (4,886 acres)	Frigid Non Hardpan (Glacial Till)	Beech/S Maple/Spruce (hardwood/softwood mix)	(12) LSS/FNT/EMS	IA 986 acres
		Beech/R Maple/Spruce (hardwood/softwood mix)	(11) LSS/FNT/ERS	IB 3,773 acres
		S Maple/Birch/Ash (pure hardwood)	(10)LSS/FNT/MBA	IA 37 acres
		Spruce/Fir/S Maple (softwood/hardwood mix)	(9)LSS/FNT/SFM	IA 90 acres
Middle Slope Mountain Side (15,232 acres)	Frigid Hardpan (Glacial Till)	S Maple/Birch/Ash (pure hardwood)	(7)MSS/FHT/MBA	IA 10,010 acres
		Spruce/Fir/S Maple (softwood/hardwood mix)	(6) MSS/FHT/SFM	IA 432 acres
				IB 748 acres
	Frigid Bedrock (Glacial Till)	S Maple/Birch/Ash (pure hardwood)	(5)MSS/FBT/MBA	IA 222 acres
				IB 3,820 acres

Note: Superscript number ( ) preceding each ecological land group refers to group number in **Appendix K** - Ecological Land Group Descriptions.

Soil/Site Capabilities and Target Ages

Soil/site capability is a measure of the soil productivity and associated habitats. Soil/site capabilities determine the ability of soil on a given habitat to support and grow naturally occurring trees to a desired age and condition. When a final crop tree reaches a desired age and condition(s) based on the soil/site capabilities, it has reached its target age.

Target ages are based on soil/site capabilities and generally correspond to the culmination of volume growth and stem quality. Target age is used as a guide to determine the approximate age to harvest trees (and stimulate replacement through the process of natural regeneration), desired stand structure, or biotic contribution.

TABLE 14 *Target Ages by Soil/Site Capability Group*	
Soil/Site Group	**Target Years**
Hardwood/Fine Tills	140
Mixedwood /Washed Tills	100
Softwood /OALs	80

Three soil/site capability groups have been identified in the ASTM from which target ages (Table 14) have been determined. The three soil/site capabilities and associated ecological land groups are as follows:

1. Hardwoods on mountain side slopes over fine till soils - includes ELGs #5, 7 and 10;
2. Mixed hardwoods and softwoods on mountain side slopes over washed or compacted till soils - includes ELGs #6, 9,11 and 12;
3. Softwoods on valley bottoms over out-wash, alluvial or lacustrine (OAL) soils -ELG #14.

Hardwood Fine Tills on Mountain Side Slopes

This soil/site capability group includes ELGs #5, 7 and 10. This is very productive group with a natural tendency to grow combinations of pure hardwoods such as sugar maple, beech, yellow birch and white ash. This capability group is generally characterized by fine textured and fertile soils which provide opportunities for long target ages and growth of large, high quality trees. Research indicates that sugar maple matures at 20 to 24 inches in diameter breast height and culminates growth at approximately 140 years of age. Computerized growth forecasts published by Solomon and Leak (1986) were used to determine when current annual increment (CAI) would fall below mean annual increment (MAI). This point is a standard used in forestry to determine when a forest is "economically mature"[1]. Using conditions similar to Nash Stream Forest, **Figure 13** shows that the two metrics (MAI and CAI) cross at approximately 120 years. Research indicates that economically mature stands are generally dominated by sugar maple with 16 to 18 inch diameters at breast height[2]. To be consistent with the Nash Stream Vision, the original target age of 140 years will be retained to promote long rotation management of larger diameter hardwood trees.

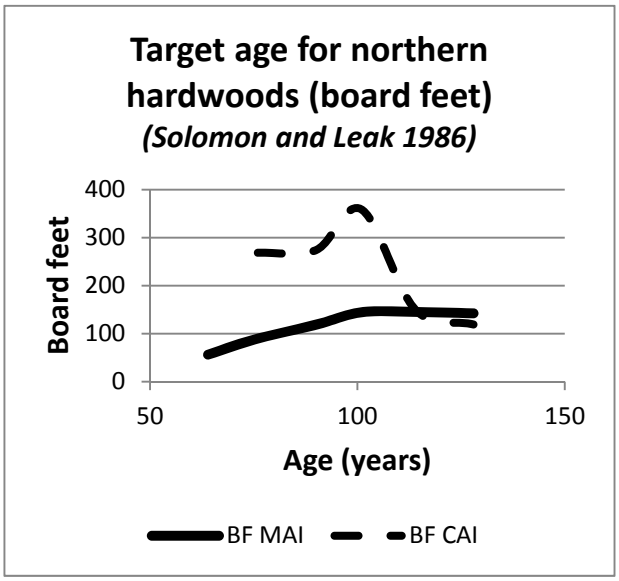


Figure 13 *Results of a SIMTIM growth forecast by Solomon and Leak (1986) showing the culmination of board foot growth at slightly less than 120 years.*

Mixedwood Washed Tills on Mountain Side Slopes

This soil/site capability group includes ELGs #6, 9, 11 and 12. This group tends to support stands of mixed hardwood and softwood species that include beech, red maple, aspen, paper birch, red spruce and balsam fir. Stand compositions range from nearly pure beech and red maple on coarse loose sands and gravels to heavy concentrations of spruce and fir with hardwoods over soils with a water retentive layer. In general, soils in this capability group are coarser textured and less productive than fine tills. The growth of large diameter trees is less common. Stands in general tend to culminate growth in 80 to 90 years. However, beech and red maple may remain commercially productive up to age 100 to 120 years. But balsam fir, aspen and paper birch experience extensive decay and mortality between 60 to 80 years of age. The target age of these low quality stands is generally set at 80 to 100 years. To be consistent with the Nash Stream Vision, the target age of 100 years was set to promote long rotation management.

[1] Bettinger, Boston, Siry and Grebner 2008 ***Forest Management and Planning***, Academic Press.
[2] DeGraaf, Yamasaki, Leak and Lester 2006 ***Technical Guide to Forest Wildlife Habitat Management in New England***, University of Vermont Press.

Softwood Outwash Sites on Valley Bottoms

This soil/site capability group includes ELG #14 and has a strong tendency toward growing red spruce and balsam fir. Red spruce is a long lived tree species which may reach maturity in 80 to 100 years or more. However, some individual red spruce stems may remain healthy for several hundred years. Balsam fir is a short lived species and tends to experience heavy decay in 70 to 80 years (sometimes earlier on some sites). Some work has been done on the growth of spruce-fir stands by Frank and Bjorkbom in Maine. Table 1 of their publication was used to calculate the mean annual increment and current annual increment of an average spruce – fir stand. Using the method described for northern hardwoods, similar data for spruce – fir was plotted (**See Figure 14**). The MAI and CAI lines cross at about 75 years indicating a rotation of about 70 to 80 years. Because of differences in longevity between spruce and fir, target ages in individual softwood stands may vary based on the proportion of spruce and fir.

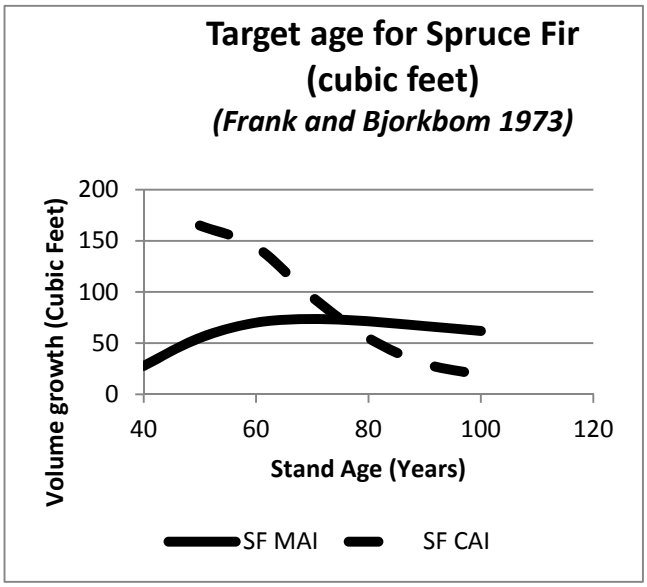


Figure 14 *Target age for spruce/fir stands developed from table 1 of Frank and Bjorkbom (1973). Cubic foot volume growth culminates at slightly less than 80 years.*

Forest Structure Trend

Forest structure refers to the proportion of age and size classes of trees. Unmanaged forest structures often follow somewhat of an inverse J-shape or rotated sigmoid curve such as the structure of "The Bowl" (dashed line) an old growth stand in the White Mountain National Forest (Figure 15). In a forest, the exact shape of the curve is determined by many variables such as the amount of disturbance encountered, soil/site capabilities, elevation, climate, and biotic factors such as insects and diseases.

Forest structure in the ASTM will be managed to provide a similar trend in the distribution of size classes consistent with soil/site capabilities (e.g. hardwood fine tills on mountain side slopes). Each soil/site capability (and consequent ecological process) is dissimilar and unique. There is ample information on the natural structure of northern hardwood forests on fine till soils, and to a lesser degree softwoods on outwash, alluvial or lacustrine soils. Unfortunately, there is limited information about mixedwoods on washed till soils. The solid line in **Figure 15** represents the forest structure for northern hardwoods across the area suitable for timber

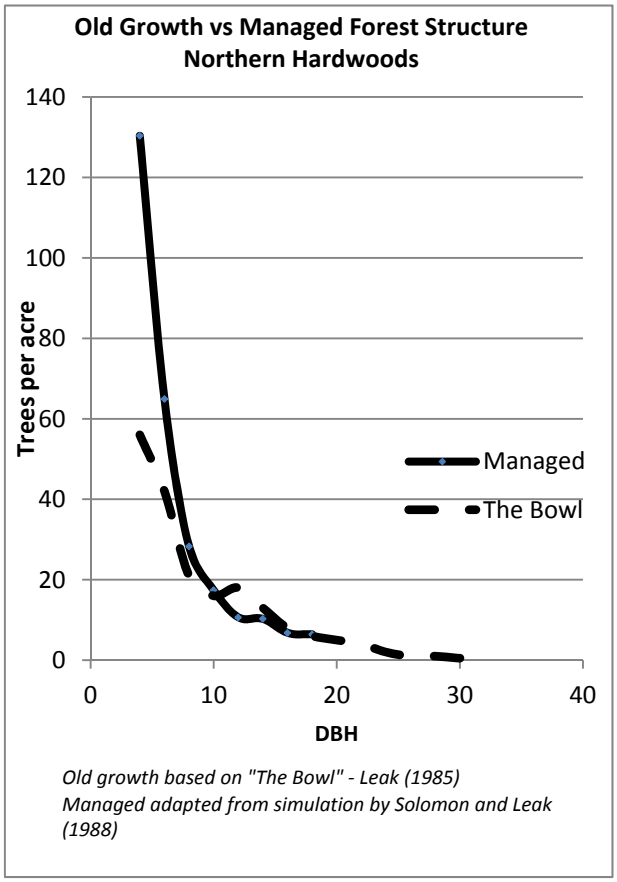


Figure 15 *A comparison of old growth structure (dashed line) to managed structure (solid line) across the ASTM at Nash Stream.*

management at Nash Stream Forest which was adapted from simulation by Solomon and Leak (1988). The simulated structure includes single tree, group and patch selection treatments as well as the gamut of even age stand diameter classes expected once Nash Stream Forest is in a balanced age class condition.

Stand Management and Natural Regeneration Patterns

Individual stem mortality and small group or patch disturbance (regeneration) patterns are the natural tendency on about 92% (18,848 acres) of the ASTM providing opportunities for uneven-aged management practices. These sites include ELGs #5, 7, 10, 11 and 12 that support combinations of sugar maple, beech, yellow birch and white ash on the fine textured till soils and red maple and beech with softwood on the coarser and sometimes shallower till soils.

ELGs #6 and 9 make up another 6% of the ASTM that support mixtures of red spruce, balsam fir, birch, and maple. Somewhat larger openings appear to naturally occur on these sites which are best suited to both uneven-aged and even-aged management techniques.

The remaining ELG #14 in the ASTM includes pure softwood sites that may naturally cycle between softwood and hardwood compositions and even and uneven-aged structures. A combination of even and uneven-aged management practices would come close to natural patterns on these sites.

Silvicultural Practices

Silvicultural practices will be used to provide high quality commercial growing stock specified in the Vision. These practices will strive to emulate natural regeneration patterns and trends of forest structure. However, natural stand development does not often produce the best quality commercial growing stock. If this were true there would be no need for the use of silvicultural practices. Natural disturbance patterns will guide commonly accepted silvicultural practices to achieve long rotation, high quality forest products and to promote an uneven-aged forest structure.

As stated in the Vision, uneven-aged management will be the preferred method of managing and regenerating timber stands. Uneven-aged management utilizes silvicultural practices that remove individual stems and small groups of stems to create multiple openings of varying size in the forest canopy. Unlike even-aged management which ultimately has one final stand replacing harvest at the end of the rotation, uneven-aged management retains a perpetual forest cover with a slowly shifting mosaic of small openings across a stand over time. This form of management results in a multi-aged stand that contains a range of size classes. Generally, to be considered uneven-aged, a stand needs at least three distinct age classes, approximately 20 years apart.

The most common practice will be tending, selecting individual trees for removal throughout a stand. Tending emulates natural stand structures, but lowers the stand stocking (trees per acre) to a suitable managed density to promote good stem growth and development. Forest thinnings and improvement harvests are other practices that may also be applied to redistribute radial stem growth to an optimum number of crop trees or to achieve a desired species composition.

Group selection will be the most common form of regeneration cutting and will be used to create small openings from several trees in size, but more often ranging from ¼ acre to one acre, and occasionally up to two acres. Openings in this size range will encourage mid to late successional tree species such as sugar maple, yellow birch, beech and spruce; and will provide a continuous supply of browse and cover for wildlife. Clear cuts from 5 to 30 acres may be used less frequently to create larger blocks of young

forest habitat for certain wildlife species based on recommendations from NHFGD biologists. Clear cuts may also be used to salvage timber from weather events or insect and disease outbreaks.

Attention will also be paid to within stand habitat features. Important non-commercial stem attributes such as large cavities, hard and soft mast producing tree species, snags, and three-pronged stems and broken-topped trees for nesting will be encouraged. The ability of the forest to rebuild soil nutrients and organic matter after logging will also be considered.

Sustained Yield

The CED requires that the timber resources shall be managed on a sustained yield basis consistent with multiple use objectives without impairment of the productivity of the land and forest resources. This means that the flow of wood products will be part of the production of a mix of values, and other products (usually commodities, but may be other uses), while achieving a desired state (Vision) of the forest.

Management will strive to sustain the condition of ecosystems for all the benefits and values such systems offer. Thus, the condition of the Forest is the dominant focus, and the sustained yield of products will be provided within this context.

Sustained yield timber management will be guided by a simple and direct method called "area control." The principle of area control is that an approximately equal area is regularly treated, or considered for treatment. Area control provides flexibility for modifications to cutting techniques and harvest volumes to protect or enhance non-timber values. In this manner, the area treated for timber management will remain relatively constant but periodic harvest volumes may vary.

The amount of acreage that can be harvested sustainably using area control can be calculated based on the manageable acreage and desired rotation age for each of the soil/site groups in the ASTM (see **Table 15**).

TABLE 15
Area Control Maximums by Acres for Tending and Regeneration Cutting.

Soil/Site Group (Forest Type)	Acres	Adj. Acres	Target Age (Rotation)	Tending Entries per Rotation	Tending Acres per Year	Regen Acres per Year
Hardwood / Fine Tills	12,104	9,683	140	5	345	69
Mixedwood / Washed Tills	7,349	5,879	100	3	176	59
Softwood / OAL	1,080	864	80	2	22	11
Early Successional Hardwoods	1,080	864	80	0	0	11
Total (acres)	**21,613**	**17,290**			**543**	**150**

Notes:

"Acres" were determined by GIS analysis of soil capabilities.

"Adj. Acres" represents a 20% acreage buffer for unforeseen site issues.

"Target Age" is based on soil/site capabilities and is used as a guide to determine when to harvest trees. Tending is the practice of maintaining a forest stand by reallocating growth to the best stems and improving species composition to desired conditions.

"Tending Entries" equals the number of times an individual stand would be "tended" during a rotation.

"Tending Acres" represents the annual maximum acreage to be treated for forest maintenance.
"Regen Acres" equal adj. acres divided by target age to provide the annual maximum regeneration acreage, typically implemented through the uneven-aged management practice of ***group selection.***

The area control method can be checked to ensure that harvested volumes do not exceed annual growth using the "volume control" method. The amount of volume that can be harvested sustainably each year, or the "allowable harvest," can be calculated based on the annual growth rates and the manageable acreage in the ASTM. Using the more conservative FIA growth rates discussed at the end of **Section 8.2** and the adjusted acres in the ASTM in **Table 15**, the allowable harvest can be calculated as follows: 4/10ths cord x 17,290 acres = 6,916 cords of growth per year. To further safe guard against over harvesting an additional buffer of 25% of growth should be applied, resulting in 5,187 cords per year. Averaging the last 20 years of active state management, approximately 1,250 cords have been harvested per year (see **Table 11**). This equates to about a quarter of the conservative annual allowable harvest calculated above.

Water Quality and Timber Harvesting

Riparian management zones are vegetated uplands adjacent to a natural waterbody where timber harvesting practices are modified or restricted to protect water quality, fish and wildlife habitat or other aquatic resources.

Riparian management zones will be maintained between all water bodies (e.g. streams, ponds, and wetlands) and disturbed areas (e.g. truck roads, major skid trails, and log landings) to slow and filter surface runoff from exposed soil that may carry sediment. Equipment operation will be limited in riparian management zones to prevent exposure of mineral soil. If mineral soil is exposed where natural regeneration may be slow to re-establish, it will be stabilized by seeding and/or mulching.

Unless otherwise designated by the Conservation Easement Deed (CED) or impacted by state law riparian management zone widths will be designated as a function of slope (up to 35% slope) according to best management practices[3] (BMPs) to protect water quality during forestry operations as shown in **Table 16**.

TABLE 16
Riparian Management Zone widths

Average Slope (percent)	Width (feet)
0-10	50
11-20	65
21-30	85
31-35	105

Harvesting practices which do not expose mineral soil, such as felling and winching of timber, may take place in riparian management zones consistent with recommended practices described in Section 4.3 of "Good Forestry in the Granite State" (second edition, December 2010) and in compliance with New Hampshire state statute RSA 227-J:9 which limits harvesting near surface waters.

Log landings, new truck roads or major skid trails will not be permitted in riparian management zones except when entering and leaving stream crossings according to BMP guidelines. Existing roads that were developed within riparian management zones and used prior to state ownership may continue to be used if relocation would result in greater overall site disturbance.

[3] Best Management Practices for Erosion Control on New Hampshire Timber Harvests (2016).

Third Party Certification

Third party certification is a process that recognizes sustainable, environmentally sound forest management. Certification requires an audit by an independent party to determine if the current forestry practices adhere to a particular set of standards.

The Division of Forests and Lands, Forest Management Bureau has begun to explore the feasibility of pursuing certification for State lands. Certification uses standards for forest management based on a set of principles, objectives, performance measures, and indicators that promote sustainable forestry practices and protect water quality, biodiversity, wildlife habitat, species at risk and forests with exceptional conservation values. The language in this plan already accomplishes these things and makes Nash Stream Forest an ideal candidate for a pilot certification of State lands.

8.6 TIMBER MANAGEMENT GUIDELINES

1. **Multiple Use -** Timber management practices will be implemented so as to maintain or enhance other resource values.

2. Ecological conditions and resources that serve public needs such as special habitat for game and non-game fish and wildlife species, timber stands for wood products, and forest areas for recreation opportunities will be sustained.

3. Roads used for timber management purposes will be kept to a minimum number and standard considering safety, environmental impacts, and cost.

4. **Sustained Yield -** Sustained yield refers to all forest products including timber, wildlife, clean water, public recreation, and aesthetic enjoyment.

5. The condition (i.e. Vision) of the Forest is the dominant focus, and the sustained yield of timber will be provided within this context. Sustained yield timber management will be guided by area control management based on ecological land groups suited to timber management. Sustained yield area control management will result in a relatively constant area treated for timber management but periodic harvest volumes may vary due to modifications to cutting techniques to protect or enhance non-timber values.

6. The land base for the determination of sustained yield of timber products will be the area considered suitable for timber management (ASTM). This area consists of stable and productive soils exclusive of high elevations, steep slopes, sensitive and fragile soils, natural areas (and buffers and corridors), non-forest areas, and other areas restricted by the Conservation Easement Deed or administrative designation.

7. **Public Notice -** Public notification will be made for timber harvest proposals for public information and response.

8. **Recreation/Visual Quality -**Timber management practices adjacent to or within areas frequented by the public for recreation will be modified to protect or enhance recreation values. Roads and trails will be left unobstructed and special care will be taken in regard to slash within sight of roads and trails.

9. Visual quality objectives will be determined for each timber harvest operation. Areas of scenic value will be managed for the protection of aesthetic qualities. Limited timber cutting will be allowed to improve aesthetics or safety such as:

    A. Removal of dead, diseased or high risk trees;

    B. Single tree or group selection (uneven-aged cutting techniques) for variety in plant size and species; and

    C. Small openings for vistas.

10. **Water/Soil -** Best management practices will be used during all timber harvesting operations to minimize erosion and reduce sediment and temperature changes in streams in accordance with "Best Management Practices for Erosion Control on Timber Harvesting Operations in New Hampshire, Resource Manual," Division of Forests and Lands, 2016 BMPs include such measures as water bars, temporary stream crossings, filter strips, hay bales, reverse grades, drainage devices, and seeding).

11. Temporary road, skid trail, and log landing design will include consideration for re-vegetation in order to stabilize soils, mitigate negative visual impacts, and provide for wildlife habitat.

12. **Special Areas -** Habitat of threatened or endangered species and areas of ecological significance including vernal pools, critical wildlife habitat, and natural areas will be protected.

13. In both buffers and corridors, the primary goal of timber harvest will be to promote other resource values (e.g., wildlife habitat). If timber harvesting is prescribed in buffers and corridors, the intensity of management will follow a gradient, involving less disturbance as the natural areas are approached.

14. Research control areas will be established in the area considered suitable for timber management and will be protected from logging disturbance.

15. **Genetic and Species Diversity -** Management practices that support the natural distribution and development of forest associations will be emphasized; natural successional tendencies will be encouraged. Characteristics of older successional stages such as large old trees, dead standing trees, dead downed trees, rotting wood in shade, and healthy, vigorous trees will be encouraged where possible; proper consideration will also be given early successional species such as pin cherry, raspberry, aspen, and paper birch.

16. **Ecosystem Diversity -** The integrity of natural communities and habitats of native species will be protected.

17. Timber management will support and promote a structurally diverse landscape and will strive to emulate natural disturbance and vegetative regeneration patterns and natural soil and site tendencies. Key indicators that will be used include the size and distribution of canopy gaps within stands, and the size and distribution of vegetative stand types within the landscape.

18. **Marketing/Utilization -** All interested parties qualifying as “responsible bidders” will be provided the opportunity to bid on any proposed timber sale in accordance with procedures adopted by Governor and Council.

19. A timber sale contract will be required for each timber sale detailing timber included and price, method of payment, period of contract, scaling specifications, cutting and utilization standards, logging and skidding restrictions, trucking constraints, site restoration and sanitation requirements, safety and indemnification clauses, and statutory requirements.

20. Forest Management Bureau staff will routinely inspect and supervise each timber sale while in operation.

21. A performance bond will be posted by the timber buyer and held by the state during the term of the contract to insure proper contract compliance and satisfactory completion of the sale. All timber will be paid for in advance of cutting.

22. All trees designated for cutting and removal will be utilized according to specified utilization standards based on current markets, species, and where tree form and branching permit.

23. **Silvicultural Treatments -** Each timber harvesting operation will be based on a detailed management prescription.

24. Uneven-aged management will be the method of choice for managing and regenerating timber stands. Uneven-aged silviculture will be used to:

    A. Regenerate shade tolerant and intermediately intolerant species.

    B. Maintain continuous forest cover and shade in environmentally sensitive areas.

    C. Produce a variety in plant sizes and species along trails, roads and other visually sensitive areas; and

    D. Meet wildlife habitat objectives.

    E. Create scattered small openings.

25. Limited, judiciously applied, and environmentally sound even-aged management (including clearcutting) may be appropriate to provide certain ecological conditions and wildlife benefits associated with early successional and young forest habitats. Even-aged silviculture may be used to:

    A. Promote regeneration and growth that occurs in the forest as a result of larger and less frequent natural disturbances.

    B. Regenerate shade intolerant species such as aspen and paper birch.

    C. Rehabilitate degraded or sparsely stocked areas.

    D. Meet wildlife habitat objectives.

    E. Protect forest health from damaging disease, insects, or other natural disaster.

    F. Make infrequent entries into management areas and minimize access road construction; and

    G. Open vistas.

26. Each timber harvesting operation will be part of a regeneration system designed to create conditions favorable for the eventual replacement of the existing stand with naturally occurring tree species.

27. **Wildlife Habitat -** Management will strive to attain and maintain vegetative composition goals and patterns consistent with ecological land capabilities and soil and site properties to integrate wildlife habitat concerns into long-term timber harvest and silviculture schedules.

28. Site specific wildlife habitat management practices will be considered with every timber harvesting operation and include: release of fruit producing trees; release of softwood understory trees; identification and retention of mast, cavity, snag, perch, raptor nest, and other critical wildlife trees; recruitment of woody debris adjacent to streams; encouragement of within-stand and between-stand diversity; protection of wildlife travel corridors, water resources, and deer wintering areas; and management of logging roads and landings to benefit wildlife.

29. Whenever possible, existing truck roads, skid trails and log landings will be used for forest management operations. New road construction should be minimized and proposed locations evaluated to ensure protection of wildlife habitat. Roads will avoid riparian zones, and minimize stream crossings.

30. Log landings and roads will be stabilized with annual rye and allowed to naturally re-vegetate upon completion of operations.

9. FOREST PROTECTION

9.1 FOREST HEALTH

The Division of Forests and Lands Forest Health Section monitors for and mitigates forest damage caused by insects, diseases and a variety of abiotic agents. This task is accomplished through aerial surveillance and mapping of damaged areas, inspecting areas of insect and disease outbreaks, direct service to landowners, cooperating with surrounding state and federal governments to control invasive and exotic pathogens, education, outreach, and enforcement of quarantines.

The Division of Forests and Lands implements and enforces forest health regulations to prevent the introduction or spread of exotic insects or diseases. RSA 430:2, 227-K:2 and 227-H:2 provide for the protection of forests from destructive insect and plant diseases. Regulated pests in New Hampshire are emerald ash borer, hemlock woolly adelgid, pine shoot beetle and currants, the alternate host for white pine blister rust. The Nash Stream Vision prohibits the use of pesticides unless necessary to control invasive species or a forest health crisis. State law (RSA 430:2 and RSA 227-K) gives the Commissioner of the Department of Agriculture, Markets and Food authority to take whatever measures deemed reasonable and proper to control damaging insect or plant disease infestations anywhere in the state. In addition, New Hampshire has banned the importation of untreated firewood without a commercial or home heating compliance agreement. All untreated out of state firewood is also banned on DNCR properties including Nash Stream. The Statutory Authority for the firewood quarantine is RSA 433:34, RSA 227-K:2 III, RSA 227-K:14; K:15; K:17, and RSA 227-G:3

Forest Health History

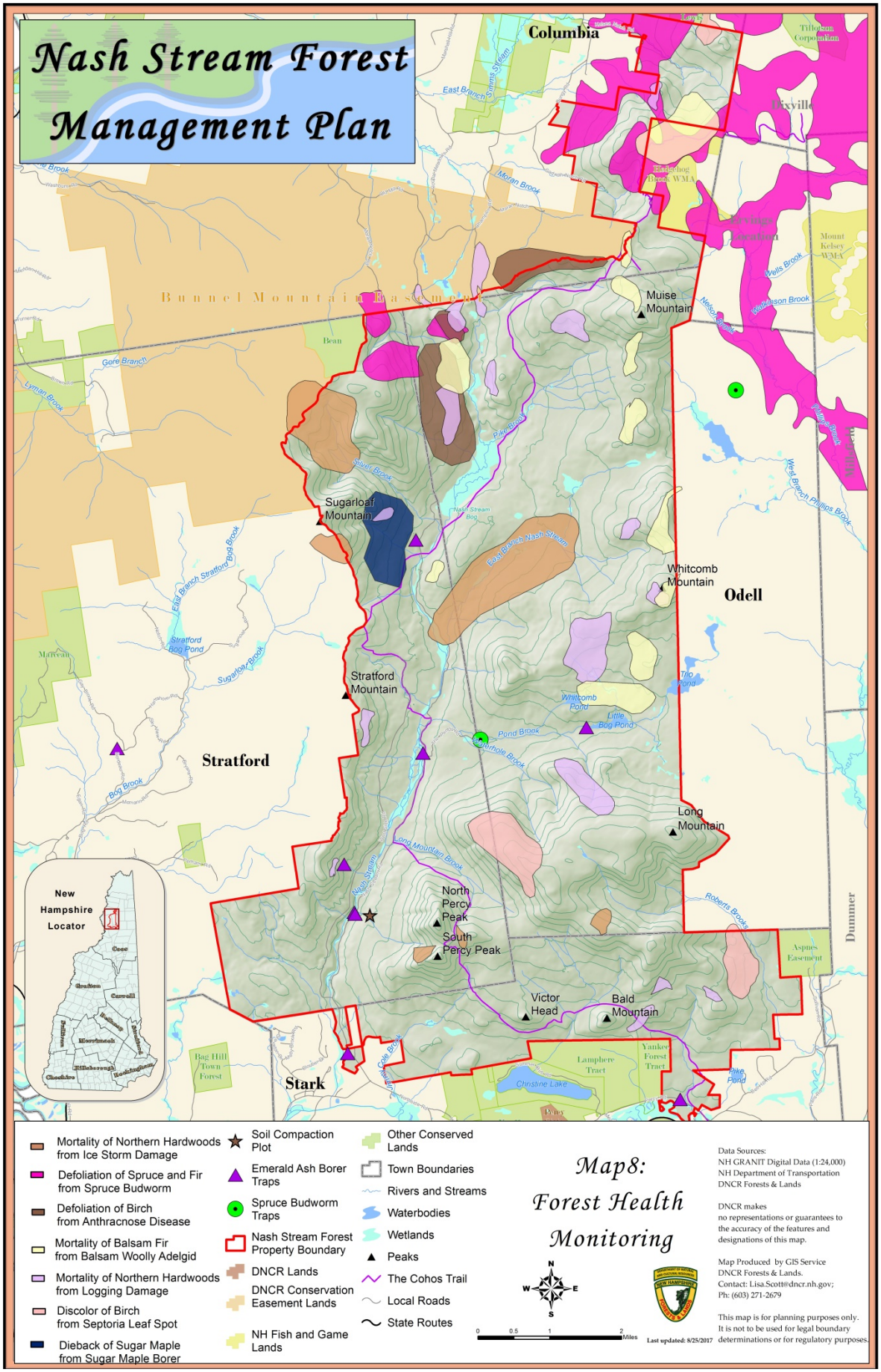
Potential damage causing agents range from insects such as spruce budworm, balsam woolly adelgid, and saddled prominent, to diseases like armillaria root rot and leaf anthracnose, or abiotic stressors such as ice storms, soil compaction, hail, or climate changes. Annual aerial surveillance and necessary follow-up ground checks will be conducted on Nash Stream to identify insect and disease situations. If a specific cause is determined to be abnormal and damaging to native populations, recommendations will be made for dealing with the situation that may involve control measures or monitoring and research. Follow-up inspections will be conducted to determine size, rate of spread and implications of the infestation to determine appropriate actions such as salvage harvesting, pesticide applications, or biological control releases and need for future monitoring. Forest insect and disease detection, evaluation and control plans will be consistent with the Vision for the Nash Stream Forest.

Aerial Surveys are conducted annually over Nash Stream as part of the annual statewide aerial surveys flown by the Division of Forests and Lands Forest Health Section. Since 1965 the following damage causing agents have been mapped **(Map 8)** on Nash Stream Forest (year mapped): spruce budworm (1983), anthracnose disease on hardwoods (1996), saddled prominent (2001), sugar maple borer (2005), 1998 ice storm damage (2005), balsam woolly adelgid (2006 & 2014), logging damage (2006), and septoria leaf spot on birch (2008).

Potential forest health issues are monitored in Nash Stream Forest using traps and other surveys (**Map 8**). Pheromone traps for spruce budworm have been deployed in Nash Stream annually since the late 1990's. There were unconfirmed reports of a spruce budworm outbreak in the Phillips Brook area (abutting property east of the Nash Stream Forest) in the 1930s. No documentation has been found to substantiate this information. Defoliation was mapped in the northern part of the property in 1983. Trap catches to date are still at endemic levels. Traps for emerald ash borer have been placed throughout the property by

Division of Forests and Lands, the NH Department of Agriculture, Markets and Food, and the Animal Plant Health Inspection Service. No emerald ash borer has been detected to date. A soil compaction study plot was established in 2007 in compartment 10 stand 3 prior to a timber harvest to assess damage to the residual stand.

Forest health monitoring surveys are also conducted each year by the USDA Forest Service at thirty-seven different plots throughout the state. Two of these forest health plots are situated near Nash Stream, but none are in the Forest. These plots are used to determine baseline information of forest health in order to evaluate changes. These plots would be representative of forest health conditions in Nash Stream and may be useful for monitoring climate change.


Nash Stream Forest
Management Plan
Columbia
Odell
Stratford
Stark
Dummer
Muise Mountain
Sugarloaf Mountain
Whitcomb Mountain
Stratford Mountain
Long Mountain
North Percy Peak
South Percy Peak
Victor Head
Bald Mountain
Bunnel Mountain Easement
Mortality of Northern Hardwoods from Ice Storm Damage
Defoliation of Spruce and Fir from Spruce Budworm
Defoliation of Birch from Anthracnose Disease
Mortality of Balsam Fir from Balsam Woolly Adelgid
Mortality of Northern Hardwoods from Logging Damage
Discolor of Birch from Septoria Leaf Spot
Dieback of Sugar Maple from Sugar Maple Borer
Soil Compaction Plot
Emerald Ash Borer Traps
Spruce Budworm Traps
Nash Stream Forest Property Boundary
DNCR Lands
DNCR Conservation Easement Lands
NH Fish and Game Lands
Other Conserved Lands
Town Boundaries
Rivers and Streams
Waterbodies
Wetlands
Peaks
The Cohos Trail
Local Roads
State Routes
Map8:
Forest Health
Monitoring
Data Sources:
NH GRANIT Digital Data (1:24,000)
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Last updated: 8/25/2017
New Hampshire Locator

9.2 FOREST HEALTH GOALS, STRATEGIES AND IMPLEMENTATION

GOAL: MAINTAIN A HEALTHY FOREST THROUGHOUT NASH STREAM

Objective 1: Reduce Damage by Spruce Budworm

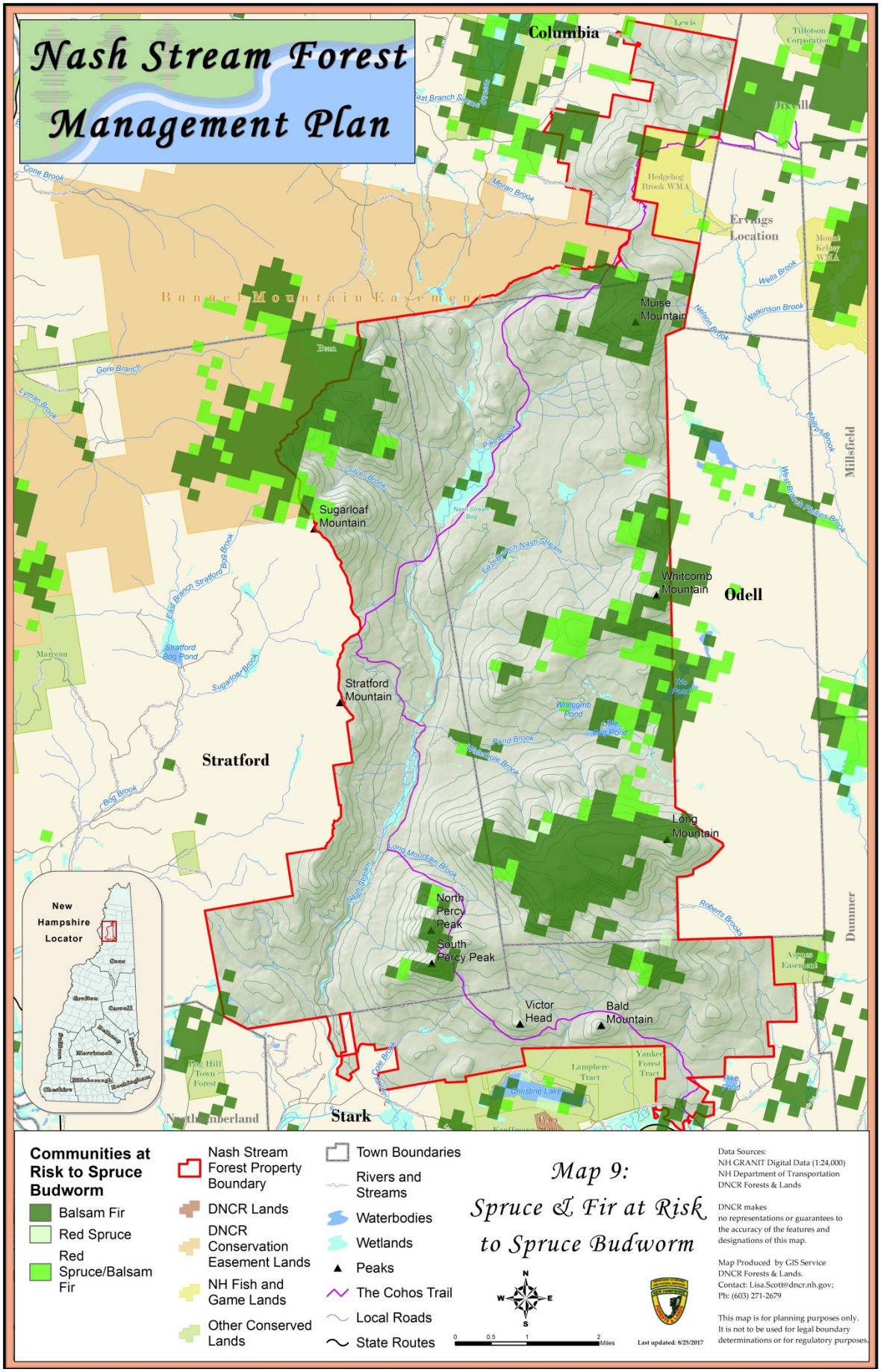
Spruce budworm is one of the most destructive native pests in northern spruce and fir forests. Periodic outbreaks can lead to heavy defoliation and mortality of spruce and fir. At this time there is no indication of any outbreaks in Nash Stream, however, there is currently an outbreak of spruce budworm in Quebec, Canada which is predicted to move south into Maine soon. Maine's pheromone trap catch has been increasing indicating the possibility of an outbreak. Trap catch numbers were slightly elevated from 2000-2006 in NH but no defoliation was detected.

Photo: Connecticut Agricultural Experiment Station Archive, Connecticut Agricultural Experiment Station, Bugwood.org

Strategies:
1. Determine where the mature fir stands are in Nash Stream and evaluate the site for harvest **(Map 9).**
2. If possible these stands should be harvested after the first defoliation is observed and before heavy defoliation takes place.
3. Consider spraying *Bacillus thuringeinsis* in areas not being harvested when an outbreak is imminent or when trees start to turn rust colored indicating 40-60 percent defoliation.

Implementation:

- The Forest Health Section will continue to monitor Nash Stream and has added an additional monitoring site beginning with the 2014 season.


Nash Stream Forest
Management Plan
Columbia
Lewis
Tillotson Corporation
Dixville
East Branch Sumner Stream
Cone Brook
Moran Brook
Hedgehog Brook WMA
Ervings Location
Mount Kelsey WMA
Wells Brook
Watkinson Brook
Nelson Brook
Bunnell Mountain Easement
Bean
Muise Mountain
Gore Branch
Lyman Brook
Phillips Brook
Millsfield
Pike Brook
Silver Brook
West Branch Phillips Brook
Sugarloaf Mountain
Nash Stream Bog
East Branch Nash Stream
Whitcomb Mountain
Odell
East Branch Stratford Bog Brook
Stratford Bog Pond
Marceau
Sugarloaf Brook
Stratford Mountain
Tile Pond
Whitcomb Pond
Tile Bog Pond
Pond Brook
Pleasant Hole Brook
Stratford
Bog Brook
Long Mountain
Long Mountain Brook
Nash Stream
North Percy Peak
South Percy Peak
Roberts Brook
Dummer
Aspens Easement
New Hampshire Locator
Coos
Grafton
Carroll
Belknap
Merrimack
Strafford
Sullivan
Hillsborough
Rockingham
Cheshire
Victor Head
Bald Mountain
Fog Hill Town Forest
Lamphere Tract
Yankee Forest Tract
Christine Lake
Pike Pond
Northumberland
Stark
Communities at Risk to Spruce Budworm
Balsam Fir
Red Spruce
Red Spruce/Balsam Fir
Nash Stream Forest Property Boundary
DNCR Lands
DNCR Conservation Easement Lands
NH Fish and Game Lands
Other Conserved Lands
Town Boundaries
Rivers and Streams
Waterbodies
Wetlands
Peaks
The Cohos Trail
Local Roads
State Routes
Map 9:
Spruce & Fir at Risk to Spruce Budworm
N
W
E
S
0
0.5
1
2
Miles
Last updated: 8/25/2017
Data Sources:
NH GRANIT Digital Data (1:24,000)
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Objective 2: Reduce tree mortality and timber value loss by balsam woolly adelgid.

Balsam woolly adelgid is an exotic pest that causes gouty twigs and eventually tree mortality. Tree mortality from balsam woolly adelgid has been reported throughout New Hampshire including Nash Stream Forest. Mortality of balsam fir was mapped in 2006 and 2014 on Nash stream.

Photo: Dawn Dailey O'Brien, Cornell University, Bugwood.org

Strategies:

1. Determine where the adelgid infested fir stands are in Nash Stream and evaluate high valued sites for harvest.

Implementation:

- The Forest Health Program will continue to map damage during our annual survey.

Objective 3: Reduce risk of Asian longhorned beetle

Asian longhorned beetle is an exotic wood boring beetle that kills healthy trees. While it has not been found in New Hampshire, it is a pest of concern because it is easily transported in firewood and could be brought to Nash Stream Forest by a camp owner or visitor.

Photo: Jen Weimer, NH Division of Forests and Lands

Strategies:

1. Educate landowners on the risks of moving firewood and firewood regulations through annual mailings and posting information at the entrance to Nash Stream.

2. Identify landowners from Asian longhorned beetle infested areas and identify risk areas for traps and surveys.

Implementation:

- Enforce firewood quarantines on Nash Stream Forest.

Objective 4: Reduce impacts from emerald ash borer.

Photo: Jen Weimer, NH Division of Forests and Lands

Emerald ash borer (EAB), widely considered the most destructive forest pest in North America, was first identified in New Hampshire in 2013. Efforts to slow ash mortality across North America have had marginal success and the future of ash as a component of native forests is in question.

Strategies (prior to infestation):

1. Inventory of ash resources should begin now so that valuable and potentially hazardous ash trees may be incorporated into the annual harvest plan within five years or so **(Map 10)**.
2. Harvest all merchantable ash within current and imminent timber sales. This will prevent loss of timber value and eliminate the need to re-enter a stand for small volumes.
3. Low value ash should be left on site to encourage slow dispersal of EAB through the landscape and to provide wildlife habitat values.
4. State Forest Health staff may select appropriate individual trees for participation in the National Seed Laboratory's ash seed collection program.
5. Small ash stands or individuals of particularly high ecological or wildlife value, if present, should be assessed by land managers to determine if protection via pesticide application is appropriate.
6. Detection tools such as girdled ash "trap trees," insect traps, and visual surveying may be utilized by Forest Health staff in and around Nash Stream to identify EAB populations early in the infestation process.

Strategies (infestation imminent):

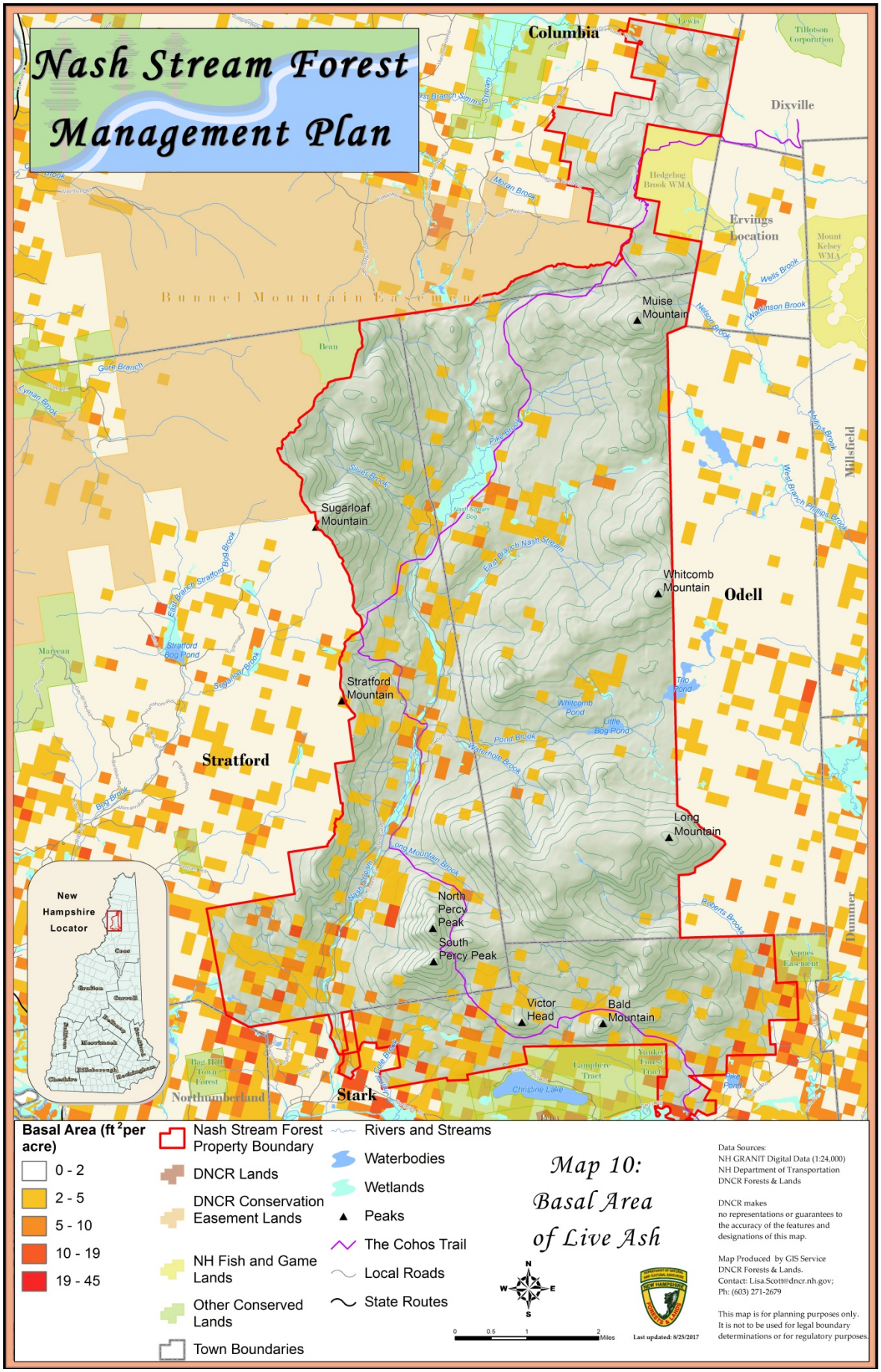
1. EAB infestation should be considered imminent once Nash Stream falls at least partially within the orange "Potential Expansion Area" on up-to-date EAB Management Zones maps, when the EAB quarantine is expanded to include the entire state of New Hampshire, or when two or more adjacent counties (Essex, Grafton, Carroll, and/or Oxford) are under quarantine regulations.
2. Once infestation is imminent, or EAB is detected in Nash Stream, harvests of ash resources planned for removal and not already accessed should be specifically targeted within one to two years, where possible.
3. Stands inaccessible for harvest may be utilized by Forest Health staff as biological control release sites.

Strategies (during infestation):

1. Harvests may be carried out while ash trees in Nash Stream are infested, conditional upon compliance with the current EAB quarantine. Movement of infested material within the quarantine zone is not regulated by federal law, but may hasten the spread of EAB to new areas. Within-quarantine spread is minimized by conducting winter harvests and requesting that buyers process or destroy ash materials before May 1 of the following calendar year.
2. Clusters of girdled ash trees may be created in stands not valued for harvest in order to lower localized EAB populations.
3. Stands inaccessible for harvest may be utilized by Forest Health staff as biological control release sites.

Implementation:

- Forest Health staff will continue to monitor Nash Stream for EAB using insect traps and surveys.
- Use inventory data to identify valuable and accessible ash resources; integrate these stands, when advantageous, into imminent harvest plans.
- Consult with Forest Health staff or the state entomologist, if needed, to ensure movement of harvested materials complies with up-to-date EAB quarantine regulations and boundaries.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Hedgehog Brook WMA
Mount Kelsey WMA
Aspnes Easement
Lamphere Tract
Yankee Forest Tract
Christine Lake
Bag Hill Town Forest
Bean
Marvean
Tillotson Corporation
Lewis
Moran Brook
Gore Branch
Lyman Brook
Wells Brook
Wellonson Brook
Nelson Brook
Mills Brook
West Branch Phillips Brook
East Branch Nash Stream
Silver Brook
Nash Stream Bog
Stratford Bog Pond
East Branch Stratford Bog Brook
Sugarloaf Brook
Bog Brook
Whitcomb Pond
Little Bog Pond
Tilo Pond
Pond Brook
Waterhole Brook
Long Mountain Brook
Roberts Brooks
Lake Pond
New Hampshire Locator
Basal Area (ft 2 per acre)
0 - 2
2 - 5
5 - 10
10 - 19
19 - 45
Nash Stream Forest Property Boundary
DNCR Lands
DNCR Conservation Easement Lands
NH Fish and Game Lands
Other Conserved Lands
Town Boundaries
Rivers and Streams
Waterbodies
Wetlands
Peaks
The Cohos Trail
Local Roads
State Routes
Map 10: Basal Area of Live Ash
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Last updated: 8/25/2017
Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
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Objective 5: Establish inventory and monitoring program for invasive plant species.

Invasive species have been identified as a significant threat to the ecological integrity of New Hampshire's natural communities and wildlife habitats (NHFGD WAP 2015). Invasive plants can displace or suppress native species through competition, and can reduce natural diversity, impact endangered or threatened species, degrade wildlife habitat, create water quality impacts, stress and reduce forest and agricultural crop production, damage personal property, and cause health problems (Cygan 2011).

The state has addressed the issue of invasive species through RSA 430:55, which defines an invasive species as, "an alien species whose introduction causes or is likely to cause economic or environmental harm or harm to human health." The state has also produced a list of 27 invasive plant species that are considered "prohibited," and cannot be sold, moved, or planted.

At NSF, no comprehensive inventory of invasive plant species has been conducted, with anecdotal reports suggesting that invasive plants are not currently a significant problem on the property. However, at least three species are known to occur on or near the property and are widespread in the North Country: glossy false buckthorn (*Frangula alnus*), Japanese knotweed (*Fallopia japonica*) and common reed (*Phragmites australis.*)

Glossy false buckthorn is a tall, deciduous shrub that produces a fleshy berry favored by birds and other wildlife species. While there have been no documented occurrences of this species at NSF, it has been observed growing in dense patches along wetland margins at both Cape Horn State Forest (Bowman & Bailey 2007) and Coleman State Park (Bowman 2009).

Japanese knotweed is a coarse perennial herb that grows in very dense colonies with stems up to 10' tall. It can colonize any area with disturbed soil, and has aggressively expanded on open stream banks and in river channels. Anecdotally, a few small occurrences have been observed at NSF, but Japanese knotweed would present a significant threat to the ecological health of Nash Stream if it were to become established along the waterway.

Common reed is a perennial wetland grass that grows 6-20' tall that flowers in July and August. The stems are hollow between nodes thus preferring to grow in quiet stagnant water. Any type of soil disturbance helps in colonization.

The Division of Forests and Lands should conduct an inventory of invasive plants on the property. This information should be gathered and stored in a centralized GIS database, which can then be used to prioritize sites and species for management and control activities.

9.3 FOREST HEALTH MANAGEMENT GUIDELINES

1. **Detection -** Regular and systematic detection activities that include aerial flights and ground surveys will be employed to detect abnormal forest cover changes and abnormal plant disease populations.

2. **Evaluation -** Cause and effect of abnormal forest cover changes and abnormal natural plant disease and animal populations will be identified and evaluated.

3. **Prevention/Control -** In compliance with RSA 430:2 and 227-H:2, the control of damaging insect and disease infestations will be a management strategy. Precautions will be taken to ensure

that the management strategy does not adversely impact native plants or wildlife, especially threatened and endangered species.

4. Preference will be given to prevention and control of damaging pest problems through silvicultural means, including commercial salvage operations.

5. If non-native species are determined to interfere with native plants or natural pests, management strategies will be developed and implemented to monitor, control or eradicate the problem species.

9.4 FIRE PROTECTION

Forest Fire Protection History

While the Nash Stream Forest area has been free from significant forest fires in recent history, we do know that a sizeable portion of the forest burned sometime during the turn of the last century. A map (Plate III) included in the 1909-1910 Report of the New Hampshire Forestry Commission shows burned land in northern New Hampshire during a survey conducted in July, 1903. According to that map, a swath of Nash Stream Forest from north and east of Sugarloaf Mountain southeast to the area of Fourteen and a Half Mile Road was burned over. In 1910, the NH Timberland Owners Association funded the construction and operation of the Sugarloaf Mountain fire tower, located in Stratford, New Hampshire. In the state of New Hampshire 1913-1914 Biennial Report, the Sugarloaf tower is listed as a state tower as of 1914. This structure was removed in 1982 by the State of New Hampshire. The tower had not been regularly manned since 1976. The watchman's cabin associated with the fire tower was destroyed by fire in 1994.

The Sugarloaf Mountain tower was one tower in a system of fifty-two towers (both state and federally owned) when the system was at its peak in the late 1940s and early 1950s.

Forest Fire Prevention

Fire prevention and information posters are posted at major access roads leading to Nash Stream. The Division of Forests and Lands works with media outlets, local fire departments, forest fire wardens, and schools to increase public awareness about local forest fire conditions and fire safety. Staff have one-on-one interactions with camp owners and visitors to the area to meet people, answer questions, and offer information. Camp owners are the only individuals allowed to have campfires on the Nash Stream Forest. A fire permit is required of all camp owners to be obtained prior to kindling any fire.

Pre-suppression

Four town Fire Wardens and 20 Deputy Wardens in the towns and unincorporated places that encompass the Nash Stream Forest have been appointed by the Director of the Division of Forest and Lands. Town Fire Wardens and Deputies have the responsibility to maintain equipment and resources to suppress all wildland fires in their area of responsibility (RSA 227-L:11).

In addition to town Fire Wardens and Deputy Wardens, approximately 15 Special Deputy Wardens have been appointed by the Director to serve within the fire districts that include the Nash Stream Forest. These Special Deputies are specially trained in preventing and/or suppressing wildfires and are empowered to act for a Forest Ranger and/or a Forest Fire Warden or Deputy Warden in their absence. Special Deputy skills include scouting, first aid, water pumping and pump mechanics, fire suppression techniques,

planning and logistics. While performing their duties, Special Deputies are employees of the State of New Hampshire.

The Division of Forests and Lands Forest Protection Bureau provides annual personnel training in all aspects of wildland fire-fighting. A basic forest fire course is offered through the NH Fire Standards and Training Council with instructors that include appointed Special Deputy and Division of Forests and Lands Forest Rangers.

Forest Rangers receive special forest fire training; many have credentials in nationally certified wildland fire courses. Forest Rangers assist Forest Fire Wardens in all forest fire activities. Rangers also assist local Wardens with determining needs for maintaining sufficient wildfire equipment caches. RSA 227-L:5 authorizes the State of New Hampshire to enter into cooperative agreements with the U.S. Forest Service and Northeastern Forest Fire Protection Commission for additional training and fire suppression assistance.

The State of New Hampshire cost shares in the forest fire training for Wardens and Deputy Wardens on a 50/50 basis at state established rates (RSA 227-L). Training costs for Special Deputies and Forest Rangers are borne solely by the State of New Hampshire.

In cooperation with the U.S. Forest Service, the Division of Forests and Lands offers grant dollars on a 50/50 cost share basis to New Hampshire communities to assist them in acquiring forest fire suppression and safety equipment. In addition, through a federal/state agreement, surplus military vehicles and equipment are available to New Hampshire communities for retro-fitting for wildland fire suppression activities.

Detection

At present, Mt. Prospect fire tower has the best view into Nash Stream. Milan Hill tower also looks into the area. During periods of high fire danger the New Hampshire Civil Air Patrol flies an aerial detection route that includes the Nash Stream Forest. The Division also maintains ground surveillance through mobile patrol units, Forest Rangers and forestry staff that are scheduled in the area. These personnel are the first line of detection. They have communication equipment and fire plans readily available to report fires to fire departments and local fire wardens. In addition, the mobile patrol units are equipped with suppression equipment in their vehicles and can take immediate suppression action.

Suppression

In the event of a forest fire, both local and state suppression forces respond and act jointly to suppress a fire. Suppression efforts may use local, state, compact and federal fire suppression forces as necessary. In the organized towns of Stratford, Columbia, and Stark, it is the responsibility of local fire departments to take initial suppression action. The state will assist these communities and act in unified command with town departments. The State of New Hampshire has responsibility for initial suppression of forest fires in the unincorporated place of Odell. In addition, fire departments from the towns of Northumberland, Milan, and Colebrook are available to assist with suppression efforts upon request. The State Division of Forests and Lands maintains a comprehensive cache of wildland firefighting equipment at its regional office in Lancaster. Equipment includes pumps, hose, hand tools, a supply of class A foam, etc. In addition, the state has two Type VI wildland engines that are based out of the Lancaster office and are available to respond to Nash Stream. All of this equipment is available to be used for wildland fire suppression when the need arises. A private helicopter contractor is available to assist with fire

suppression activities especially in remote and hazardous terrain. Equipment and personnel are also shared with the White Mountain National Forest.

Forest fire plans provide information and guidance to effectively suppress forest fires. Fire plans are prepared by the Forest Protection Bureau for towns, districts, regions and for the entire state. Each plan lists available firefighting equipment and personnel, local officials to contact, dispatch facilities, and other items including information about fire towers, Forest Rangers, and training resources. A fire plan is available for each community encompassing the Nash Stream Forest.

Town and district fire plans become elements of a regional and statewide plan. Forest fires that go beyond the capability of local resources and require assistance beyond the local area fall under a broader (regional or statewide) plan. Forest Rangers, Special Deputy Wardens and other fire suppression specialists and resources are available through cooperative agreements and mutual aid systems

The Nash Stream property is well served by a 66.5 mile network of roads. An estimated 60% or more of the property can be accessed by conventional fire suppression vehicles using about 42 miles of good gravel roads. Another 25 miles of non-gravel or winter roads provide restricted access to most of the remaining low-elevation areas by means of specialized or all-wheel drive vehicles. Only the most remote and highest elevations are limited to access by foot or by air.

The property is not considered to be a fireprone environment. Fuel types are typically northern hardwood and mixedwood at lower elevations with spruce-fir on the upper elevations. These fuel types are not known to build up heavy fuel loads that increase the threat of wildfire under normal weather conditions in northern New Hampshire. However, considering other factors such as the remoteness of the property, single-point access (from the south) for vehicles and equipment, and rugged topography, there is a potential for large forest fires during pro-longed dry spells.

Water for fire suppression purposes is readily available from numerous streams and water bodies on the property. Temporary water supply lines would need to be run from available water sources, and the use of helicopters to supply water may become necessary for remote areas.

Fire Bills

Town Fire Wardens and Deputy Wardens are authorized to expend municipal dollars to suppress wildland fires. Expenses of fighting forest and brush fires and other expenses lawfully incurred by Wardens and Deputy Wardens of said towns in preventing and suppression of forest fires, shall be borne equally by the municipality and the state, at rates established by the Commissioner of the Department of Natural and Cultural Resources, and the director of the Division of Forests and Lands (RSA 227-L:22,I)

If a fire occurs in the Nash Stream Forest, the fire bill will be paid in the same manner as bills for fires that occur on private lands, as provided for under RSA 227-L. Costs of fighting forest and brush fires in (incorporated) towns and other costs, including training and prevention activities, shall be shared equally by the town and the state, except in the case of unincorporated places.

Fire bills for fires in unincorporated towns, such as Odell, are initially paid by the state. Coos County will reimburse the state 50% of the approved fire bill and thereafter bill Odell for its proportionate share of the fire expense. Up to one-half of said costs, but in no case to exceed 10% of the assessed valuation of Odell, shall be added to the tax assessed the following year against Odell.

9.5 LAW ENFORCEMENT

In the early stages of the original Nash Stream planning process, the NH Division of Forests and Lands met with law enforcement agencies in the area of Nash Stream to discuss potential areas of concern and items of mutual interest. Agencies represented were Stark Police Department, Groveton Police Department, Coos County Sheriff, NH State Police, NH Fish and Game Department (NHFGD), NH Division of Parks and Recreation Bureau of Trails, and NH Division of Forests and Lands Forest Protection Bureau. Verbal agreements were made that the respective agencies would handle law enforcement matters in their domain.

The New Hampshire Fish and Game Department and the Division of Forests and Lands Forest Protection Bureau schedule routine patrols, with the Division of Forests and Lands taking the lead role in maintaining a high visibility of personnel on the property. Forests and Lands Forest Ranger staff have the ability to enforce all state statutes and administrative rules on this property. Camp checks, road and trail inspections, forest fire mobile patrols, ATV enforcement, and personal contacts with visitors are priority activities. The NH Fish and Game Department will also maintain high visibility on the property and vicinity for routine checks of fishing, hunting, snowmobiling, ATV, and other licensed recreational activities. Other agencies, including NH State Police, Stark Constable, Groveton Police, Stratford Police, and the Coos County Sheriff's Department, will respond in an emergency situation or when requested. At this time, the present law enforcement patrols are able to handle enforcement situations that develop. **All of these agencies may be contacted through the Lancaster Highway Dispatch Center at (603) 788-4641.**

Management and Protection Laws

The following state laws govern the management of state-owned reservations including the Nash Stream Forest: (This listing is not intended to be complete. For full reading of state laws consult the New Hampshire Revised Statutes Annotated.)

1. **RSA 79:1** — **Owner and Stumpage Value**
2. **RSA 162-C:6** — **Council on Resources and Development - Purpose; Management**
3. **RSA 206:10** — **Fish and Game Powers and Duties**
4. **RSA 206:23** — **Fish and Game Cooperation**
5. **RSA 212-A** — **Endangered Species**
6. **RSA 212-B:5** — **Conservation Programs**
7. **RSA 215-A:42** — **ATV and Trail Bike Trails**
8. **RSA 215-A:43** — **ATV Trail Evaluation Process**
9. **RSA 216-A:2** — **Duties, Director of Parks and Recreation**
10. **RSA 217-A** — **Native Plant Protection**
11. **RSA 227-C:9** — **Protection of Historic Resources**
12. **RSA 227-H:1** — **Declaration of Purpose**
13. **RSA 227-H2** — **Duties, Director of the Division of Forests and Lands**
14. **RSA 227-H:3** — **Acquisition of Reservations**
15. **RSA 227-H:6** — **Gifts of Land for Forestry Purposes**
16. **RSA 227-H:8** — **Use of Land for Recreation Purposes**
17. **RSA 227-J:6** — **Operations in Wetlands**
18. **RSA 227-J:7** — **Alteration of Terrain**
19. **RSA 227-J:9** — **Cutting Near Water and Highways**
20. **RSA 227-J:10** — **Care of Slash**

21. **RSA 227-L:11** **Fire Fighting**
22. **RSA 482:48** **Acquisition of Dams and Water Rights**
23. **RSA 483-B** **Shoreland Water Quality Protection Act**
24. **RSA 541:A:39** **Notice to Municipalities**

The purpose of ownership of state-owned forests and reservations is declared in **RSA 227-H:1**. Responsibility for management of state-owned forests is provided under **RSA 227-H:2**. **RSA 227-H:2** provides for multiple-use management of reservations guided by the principles of sustained yield including planting and harvesting trees. **RSA 227-H:8** provides for the use of reservations for recreational purposes and **RSA 216-A:2** authorizes cooperative recreational and forestry use. The management of fish and wildlife resources are carried out under the authority of **RSA 206:10** and **212-B:5**. **RSA 206:23** provides for cooperative fish and wildlife management programs. Management, operation and minor maintenance of the dams at Trio Ponds and Little Bog Pond are carried out under the authority of **RSA 482:48**.

RSA 215-A:42 provides the requirements for the establishment of new ATV and trail bike trails on state lands including the evaluation process, a memorandum of understanding between Fish and Game and DNCR, a memorandum of understanding with the local ATV club and a management plan for the property. It also establishes the reasons and process for closing ATV and trail bike trails on state lands. **RSA 215-A:43** outlines the coarse and fine filter process for evaluating proposed ATV and trail bike trails on state lands. **RSA 162-C:6** establishes the New Hampshire Council on Resources and Development's (CORD) responsibility manage and administer the lands acquired under the Land Conservation Investment Program (LCIP) to preserve the natural beauty, landscape, rural character, natural resources, and high quality of life in New Hampshire.

RSA 227-H:2 provides for the protection of reservations from fire, pests and other damaging agents. **RSA 227-L:11** directs forest fire wardens to extinguish all forest fires occurring in their towns and provide for the upkeep of woods roads and trails for the passage of men and equipment in case of forest fires. The protection of threatened or endangered wildlife is provided for by **RSA 212-A** and native plants and exemplary natural communities by **RSA 217-A**. Activities that may impact on historic resources are regulated by **RSA 227-C:9**.

Cutting of trees near water and public highways for forest management purposes is governed by **RSA 227-J:9** and the treatment of logging debris and slash under **RSA 227-J:10**. Permits for and notification of operating in and adjacent to wetlands is required by **RSA 227-J:6**, and any alteration of terrain or transportation of forest products in or on the border of surface waters is covered under **RSA 227-J:7**. The removal of vegetation along streams and water frontage for purposes other than forest management is regulated by **RSA 483-B**.

RSA 541-A:39 requires State agencies notify municipalities of any actions within its boundaries that directly affects that municipality, and **RSA 79:1** defines that the purchaser of timber from public lands is responsible for the timber tax to municipalities.

10. CLIMATE CHANGE

Since the mid- 20th century, scientists have recorded an unprecedented warming of temperatures across the earth. The scientific consensus is that the cause is due to human influences, also known as the anthropogenic climate change. (IPCC 2013, John et al. 2016) The largest human influence on rising temperatures, since the mid 1900's, has been the increase of greenhouse gases such as carbon dioxide (CO_2), methane and nitrous oxide in the earth's atmosphere. Within the Northeast, temperatures increased by approximately 2.4 °F (1.3 °C) between 1901 and 2011 (Janowiak et al. 2017). Within New Hampshire, average annual temperatures have increased 3 °F (www.statesummaries.ncics.org/nh), with the greatest warming occurring during the fall (2.4 – 3.9 °F) and winter (1.5 – 3.5 °F) seasons (Wake et al. 2014). These warming trends have resulted in warmer winter nights, days with temperatures below freezing reduced by two weeks, and a lengthening of the growing season by twelve to forty-two days since 1960 in northern New Hampshire (Wake et al. 2014). Milder winters have led to a decrease in the amount of precipitation falling as snow and the duration of snowpack (Campbell et al. 2010).

10.1 IMPACTS OF CLIMATE CHANGE

The effects of climate change are already starting to become evident in our day to day lives as well as in Nash Stream Forest.

Water Resources

One of the most obvious changes that has occurred as a result of climate change is that weather events are becoming more extreme (IPCC 2012, Melillo et al. 2014). New England in particular has experienced a substantial increase in extreme rain events as a result of climate change (Spierre and Wake et al. 2010). The observed changes in northern New Hampshire include an increase in mean annual precipitation of 6.9 inches (+16 %) from 1901 to 2011 (Janowiak et al. 2017). Additionally, the timing of when precipitation falls has shifted as well, with the greatest increase in precipitation observed in the fall (+3.0 inches) and the smallest increase in winter (+0.6 inches) (Janowiak et al. 2017). Perhaps the greatest impact in New England of a changing climate is the occurrence of extreme precipitation events (Speirre and Wake 2010, Wake et al. 2014). The amount of precipitation falling in very heavy events (heaviest 1% of all daily events) across the Northeast have increased 71% between 1958 and 2012, more than any other region in the country (Melillo et al. 2014). Although it is not possible to attribute a single extreme weather event to having been caused by climate change, climate change does increase the likelihood for these events to occur (Kunkel et al. 2012). For example, there has been a strong increase in the intensity, frequency, and duration of hurricanes, especially the frequency of the strongest hurricanes (Category 4 and 5), in the North Atlantic since the 1970s due to warming sea surface temperatures (Walsh et al. 2014).

Major river and stream flooding events are generally expected to increase in frequency and intensity in the Northeast as a result of the increases in heavy precipitation events (Demaria et al. 2016). These kinds of events have a dramatic impact on streams. Flooding can either add or remove substrate from a section of river, and in the process alter habitat for fish, mussels, or macroinvertebrates. Damage to roads, culverts, and other infrastructure can cause sedimentation or otherwise impair waterways. The effects of such events on New Hampshire streams have been observed several times since 2005 (NHFG 2013). In Nash Stream, there have been several large events that have washed out the road system. In 2006, a severe Mother's Day weekend rain storm dumped several inches of rain in a short period of time and partially blew out Little Bog Pond dam and wreaked havoc on the road system.

Beyond extreme rainfall, other changes in climate are expected to affect hydrology, water quality, and aquatic habitats. Warmer air temperatures and longer growing seasons can increase water temperatures, making water bodies less suitable for trout and other coldwater species, even in the absence of increased hydrological variability. (Staudinger et al. 2015, Williams et al. 2015). Base flows in the region's streams may be reduced and low base flows may occur more frequently as a result of earlier peak flows, more variable summertime precipitation, and increased frequency of abnormally hot weather (Walsh et al. 2014, Demaria et al 2016). This may cause many of the smaller, perennial headwater streams in Nash Stream Forest to become intermittent, and could lead to local extirpations of aquatic organisms, especially in streams where groundwater influence is already low. However, streams with adequate sources of groundwater are generally more resistant to climate change (Chu et al. 2008). Populations of fish or other aquatic organisms that are already isolated as a result of river fragmentation may be particularly susceptible to additional stresses resulting from climate change. In such cases, fragmentation reduces the ability for species to recolonize an area where they have been extirpated (NHFG 2013).

Many of the species typical of coldwater streams, like at Nash Stream, will be affected by climate change. As the temperature warms, the distribution of coldwater streams is expected to shift north and to higher elevations in New Hampshire and other northern states (Lyons et al. 2010). At the same time, there is significant uncertainty on the effects of climate change on the timing of certain fish and wildlife behaviors, like spawning or hibernation, as well as its influence on interactions among species.

Vegetation

In northern New Hampshire, the growing season is predicted to be extended by 3-7 weeks by the year 2100 (Kunkel et al. 2013, Ning et al. 2015). The impact of how this changing environment will affect Nash Stream can be hypothesized, but it is undetermined how long it will be until these impacts are realized. A longer growing season means a shorter frost-free period with less snowfall and shorter duration of snowpack. With less snowpack, there is an increased risk of soil frost and root damage during the winter from less insulation from the snow (Groffman et al. 2012). Increased summer temperatures and more variable summer precipitation increase the risk of stress on riparian and floodplain vegetation due to lower summer flows.

While there is scientific consensus that the climate will continue to warm in future decades, there is less certainty on the potential effects of warming temperatures and shifting patterns of precipitation on the distribution of plant species and the composition of ecological communities (NHFG 2013). The structure of forests, including the abundance of different tree species and the distribution of different ages of trees, is expected to change in response to climate change, but the degree and how it will change may differ amongst forest types (Janowiak et al. 2017, Manomet and NWF 2012, NHFG 2013). It is likely that our species-based definitions of natural communities may change, as individual plants react differently to increases in temperature and changes in the hydrological regime (NHFG 2013). It is expected that certain species will do better in northern New Hampshire than other species considering the changes in climate that are projected in the coming decades. Models of tree species abundance have been developed to provide insights into how tree species may respond into the future under low-emissions and high-emissions scenarios (Janowiak et al. 2017). For example, the Climate Change Tree Atlas (www.fs.fed.us/nrs/atlas) models future suitable habitat in the Northeast for 2100 and suggests that individual tree species will respond differently over time as the temperature warms. This model projects future suitable habitat of tree species, and suggests that spruce and fir will decline across the region, as will most of the northern conifer species (Janowiak et al. 2017). However, red maple, black cherry and red oak are expected to fare well with a changing climate. Sugar maple and yellow birch, which are the

two most dominant species in Nash Stream, show these species decreasing in the high emissions scenario, while under the low emissions scenario little change is expected in habitat suitability across the landscape. Sugar maple is a species that has fairly specific soil requirements, it does well on good quality soils; a species like this may not be able to shift its range within the region with greater warming expected under the high emissions scenario due to soil limitations.

There are relatively few occurrences of rare plant species at Nash Stream, and it is unknown how these populations might respond to the effects of climate change.

Wildlife

Wildlife will respond in several ways to habitat changes that occur as a result of climate change. The gradual shift in the vegetative species composition will correspondingly create changes in habitat types and distribution. These changes in habitat may have less of an impact to some species while others will feel these effects more profoundly. Species that are more mobile may have a greater ability to shift into habitats that have experienced less change and remain more suitable. Species which can only move short distances may experience accelerated declines or disappear locally in the event that habitat conditions change considerably over time. For example, the predicted decline in northern conifer species has the potential to diminish the habitat availability for wildlife which depends on evergreen tree species for their habitat needs (NHFG 2014). As a result, locations on the Forest which continue to be favorable to the growth of softwood as the climate changes (known as refugia) may have increased importance for wildlife habitat over time as the abundance of evergreen species declines.

Warming temperatures and a corresponding decrease in the extent and duration of snowpack will likely also influence wildlife distribution. Mammals adapted to snow including snowshoe hare may shift to habitats at higher elevations where snow is more certain. The natural areas that are designated in Nash Stream above 2700 feet in elevation will be increasingly important for their ability to serve as "snow reservoirs." The Nash Stream forest has several attributes, such as extensive forest cover and complex forest structures that suggest it may have more resilience than surrounding lands and be able to maintain important habitats for wildlife throughout the landscape seeking certain habitats. Additionally, changes to vegetation composition over time resulting from a changing climate may influence the growth of nut and berry (mast) producing species, impacting the type and amount of food resources available to wildlife. Impacts on the synchronicity, abundance and vigor of mast cycles may impact the fitness of individual animals and wildlife population productivity over time.

The NH Fish and Game Department (NHFGD) created a Climate Change section of the Wildlife Action Plan (WAP) that addresses the potential impacts of climate change to wildlife and their habitats (NHFG 2013) This provides a comprehensive analysis of the most vulnerable species to climate change and how it will affect these fish and wildlife over time. DNCR will work closely with Fish and Game Staff to implement the WAP on Nash Stream.

Forest Health

Climate change is expected to increase many threats to forest health, including insect pests, diseases and invasive plants. There are both direct and indirect impacts. Directly, some invasive plant species are disproportionality able to take advantage of an increased CO_2 environment, and many insect pests and invasive plant species may be able to expand their ranges northward in response to warmer temperatures (Ramsfield et al. 2016, Ziska et al. 2009). Some insect pests and invasive plants have so far been prevented from establishing or increasing in population in northern NH due to the cold winters, and warming temperatures decrease the probability of cold lethal temperatures. For example, mortality of hemlock woolly adelgid is dependent on cold temperatures during winter as well as the timing of cold

snaps. Warming trends will limit the probability of occurrence of cold lethal temperatures in NH and we may see northward migration of this and other insect species. Additionally, there is the potential for an accelerated life cycle of certain insect pests, allowing them to propagate more often and increase their populations rapidly with longer growing seasons (Ramsfield et al. 2016). Currently, northern NH has relatively few invasive species compared to southern NH, with warmer temperature there will be an increase.

On the positive side, tree pests such as spruce budworm are on the southern end of their range, and warming trends may limit the survival of this insect into NH in the future (Régnière et al. 2012). However, the warming temperatures will make our trees more susceptible to insects and diseases over time, as all of these forms of stress continue to increase. Importantly, these threats may add to the stressors impacting forests of the region caused by shifts in climate and thus be even more harmful to forest health. Increases in the populations of some invasive species could significantly alter the distribution and abundance of the native species with which they interact. (NHFG 2013)

Recreation

Recreational activities are already seeing some impacts due to climate change, largely due to direct effects of temperature shifts and changes to precipitation patterns and severity. There is the possibility that these effects may increase and have more significant impacts on recreational use in the future.

Trails utilized by all types of user groups are at high risk from both temperature and precipitation extremes. Unusually dry periods have the effect of destabilizing soils by causing overly dry surfaces and sub-surfaces, thus making them more susceptible to erosion by heavy precipitation or mechanical disturbances. Conversely, periods of heavy rainfall or extended periods can have the effect of making trails that were traditionally used, no longer viable due to overly wet trail surfaces that cannot be easily crossed without an investment in reconstruction and constant maintenance. There will be an increase in costs associated with continuing to maintain proper trail management.

During winter, traditional patterns of freezing of wet soils is relied upon, as well as sufficient snowfall patterns and amounts in order to provide a connected winter trail network for over-the- snow trail uses. Unusually warm periods with rainfall, not typical in the winter, make it increasingly difficult to maintain a consistently connected winter trail network.

10.2 EFFECTS OF CURRENT MANAGEMENT

Management activities on Nash Stream are already helping to address climate change. There has been an ecological focus on the property since state acquisition. Forest management is almost exclusively uneven-aged management, which works to create within-stand diversity for both species and age classes. Nash Stream strives to manage the Forest with a longer rotation than most forest lands in the area (see Chapter 8). This increase in age is a critical component to storing carbon on the landscape longer. Also, the practice of leaving retention trees and legacy trees within harvest areas also increases structural diversity as well as carbon stores. Softwood inclusions are retained on the landscape when possible, which will help provide habitat for wildlife. These softwood pockets may act as refugia for certain species as the climate changes. These forest management actions all contribute to increasing Nash Stream's resiliency for the future.

Since 2004, the Division of Forests and Lands, NH Fish and Game and Trout Unlimited have been working together to restore the trout fishery in Nash Stream as described in Chapter 7. Through these

projects, managers have been replacing undersized culverts with bridges or arch culverts. Crossings have been engineered to handle 100- 500 year storm events instead of 10-20 year events, which is important for increasing the resilience of both infrastructures as well as of aquatic ecosystems within the Forest. This project is improving the road system to absorb the extreme weather events and flashy rains that will be increasing over time. There have also been two permanent culvert removals. Temporary crossings will be put in place when needed, and until that time there will be natural substrate and no impediment where there was once a problem culvert. Road relocations have also taken place to re-connect the main stem to its floodplain. Replacing undersized culverts, improving stream connectivity in the main stem and tributaries, as well as joining streams to their natural floodplains will increase the resiliency of streams and other water features to changing precipitation patterns and more frequent and intense rain events.

10.3 GOALS, OBJECTIVES, STRATEGIES AND IMPLEMENTATIONS

GOAL: MANAGE NASH STREAM TO ENHANCE THE MITIGATION CAPACITY WHILE ADAPTING THE FOREST TO CURRENT AND ANTICIPATED CLIMATE CHANGE.

Objective 1: Manage Nash Stream to mitigate against climate change.

The ability of the forest to store carbon can help to mitigate against climate change. Forests are a critical component of the global carbon cycle, storing over 80% of the terrestrial above-ground carbon (Dixon et al., 1994). Forests aid in mitigating increasing atmospheric carbon dioxide concentrations by sequestering carbon into new biomass of growing trees and storing carbon in both living and dead biomass. Carbon sequestration is the process by which carbon dioxide is removed from the atmosphere. Young forests typically sequester atmospheric carbon into biomass at a faster rate than older forests (Figure 16). Although older forests often sequester carbon at a slower rate, these forests do a better job of storing significant amounts carbon over long periods of time (Keeton et al. 2011). There are 4 different ways that carbon is stored in the forest: in living biomass, the organic layer, the soil and the course woody material (Figure 17). Overall, the total ecosystem stores more carbon the older it is in temperate forests, while in boreal forests carbon storage peaks when stand ages are between 70 and 200 years. At Nash Stream, approximately 20,000 acres are designated as natural areas where no harvesting will occur. Due to the lack of wood removal, these forests will shift into the older age classes and keep storing more

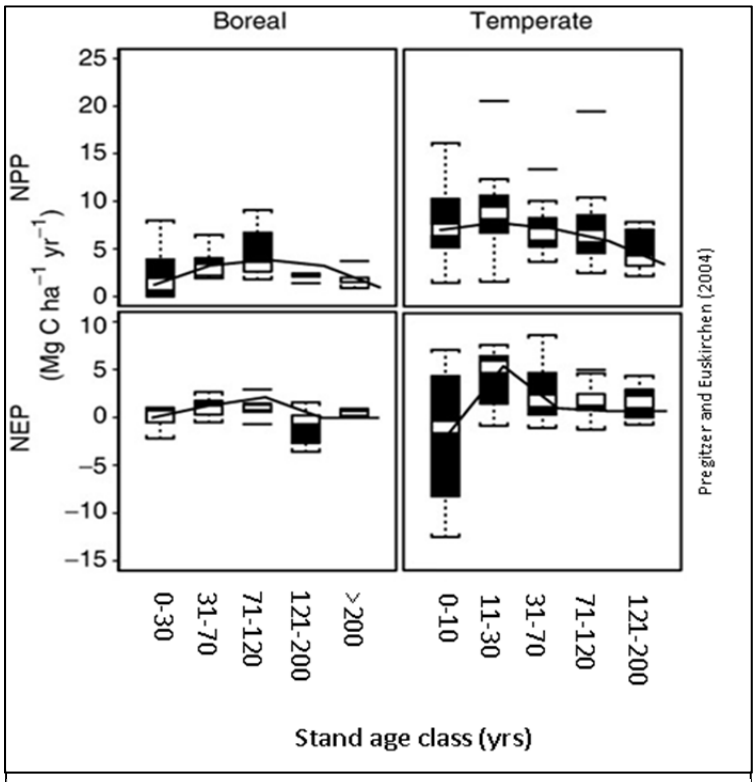
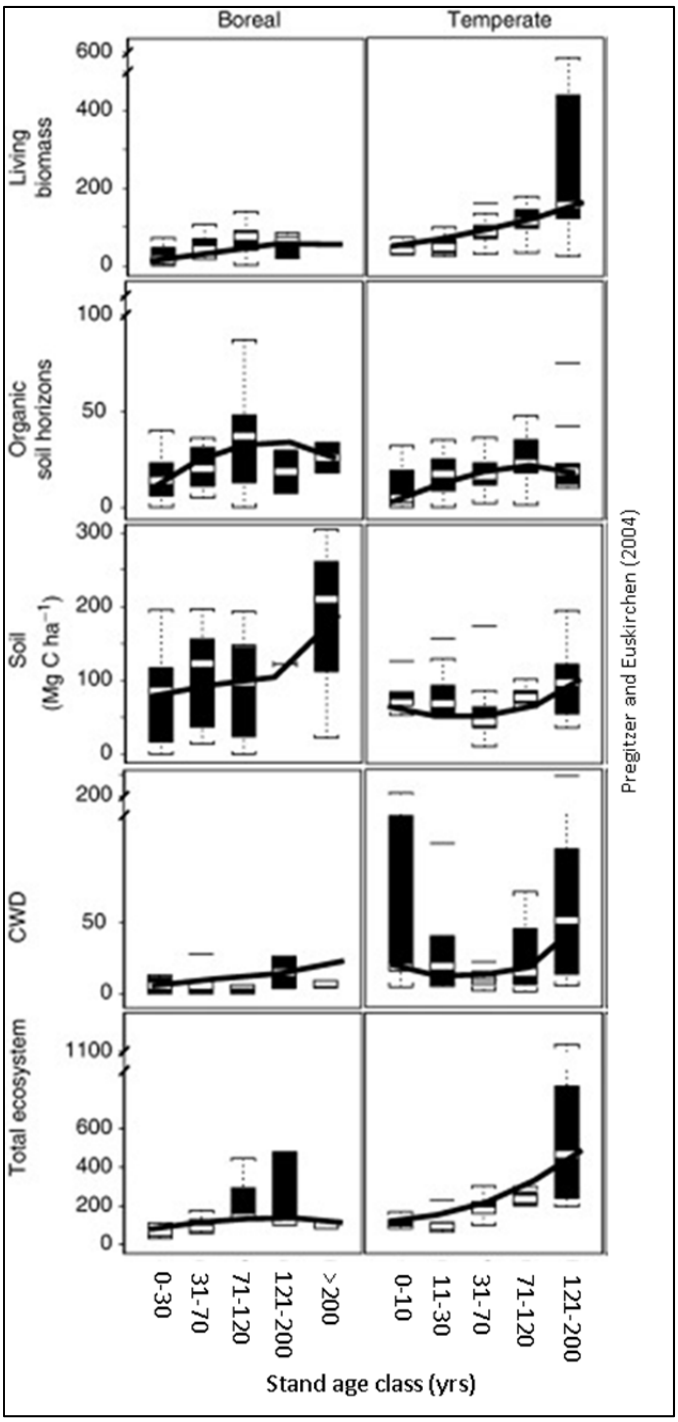


FIG 16 *Net Primary Productivity **NPP** (gross photosynthesis minus plant respiration)*
*Net ecosystem productivity **NEP** (gross photosynthesis minus ecosystem respiration)*

and more carbon. Additionally, Nash Stream employs long rotations in managed stands which result in older forest stands and greater carbon storage, enhancing mitigation in the areas where active management occurs. These management strategies will help to aid in mitigating against climate change.



Objective 2: Manage Nash Stream to adapt in response to climate change.

Another piece of the puzzle is adaptation, which is often defined as intentional actions that help human and natural systems accommodate climatic changes and subsequent impacts (Millar et al. 2007). Active management is a beneficial component in assisting forests to adapt to climate change. This works towards creating healthy forests that are able to maintain ecosystem integrity and continue to provide environmental benefits to people with a changing climate.

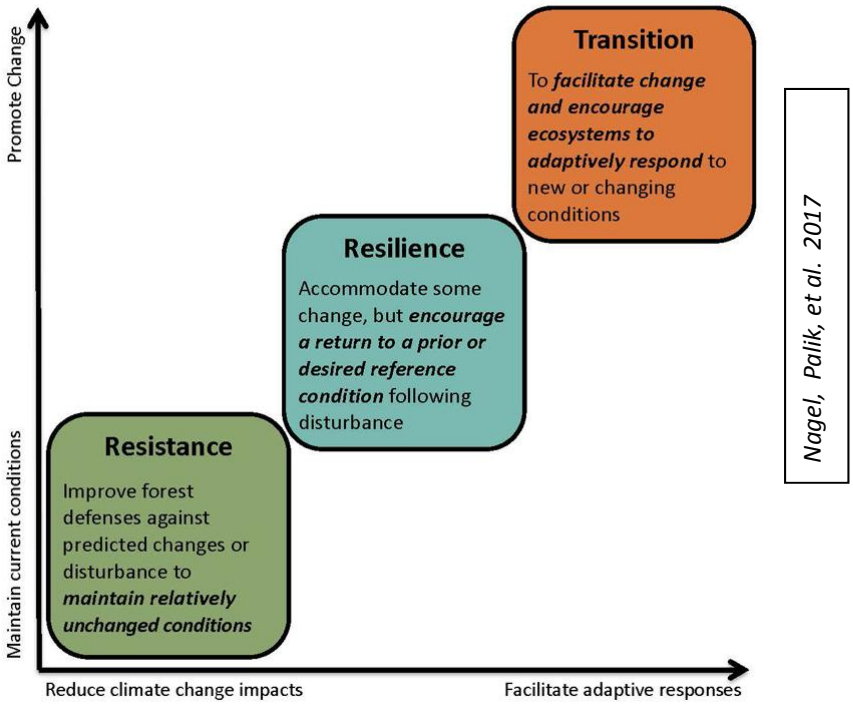
It is important to address both mitigation and adaptation when managing forest land, especially across a landscape such as Nash Stream. The forests at Nash Stream provide a wide range of benefits, including wood, wildlife habitat, recreation, scenic values and clean water, as well as carbon sequestration. Not all uses can be maximized simultaneously, but there are management actions that can help forests adapt to changing conditions while maintaining the ability of the forest to sequester carbon and provide for other ecosystem benefits. For example, two-aged or uneven-aged silvicultural approaches such as irregular shelterwood or group and patch selection methods that allocate adequate growing space for mid-tolerant species recruitment while also maintaining a large proportion of a given stand in mature forest conditions can maintain important elements of complexity and carbon in managed systems (D'Amato, et al. 2011). Likewise, the practices used at Nash Stream to extend the period between harvests and retain biological legacies can both enhance the amount of carbon stored in forests (Nunery and Keeton 2010, Urbano and Keeton 2017) and enhance the adaptability of forests (Swanston et al. 2016).

There are three main adaptive options; resistance, resilience and transition (Nagel et al. 2017, Swanston et al. 2016). In general, resistance actions improve the defenses of an ecosystem against anticipated changes in order for a community to remain unchanged when challenged by disturbance (Grimm and

Wissel 1997). The forest must sustain normal functioning in a resistance approach, while the current conditions are being maintained. This is a good approach for a relatively short period of time, however, as the climate changes this will take more effort over time as the ecosystem shifts further from historic norms (Swanston et al. 2016).

Resilience actions enhance the capacity of a system to absorb disturbance and recover by returning to near-prior conditions (Holling 1973), either naturally or through management. Resilience is effective until the degree of change exceeds the ability of a system to cope. An example of a resiliency approach is altering the structure or composition of a forest type by increasing species or structural diversity to increase the ability of an ecosystem to bounce back from disturbance and continue functioning under changing environmental conditions (Swanston et al. 2016).

Transition is a response to intentionally anticipate and accommodate climate change. Whereas the aim of resistance and resilience actions is the persistence of the current ecosystem, transition actions intentionally facilitate the transformation of the current system into an ecosystem with different characteristics. Assisted migration is an example of a transition approach, which is planting trees in an area where they don't typically grow, but may be within its range in the future after temperatures have warmed. For example, red oak does not grow in Nash Stream, but starting to plant such species would be a transition method to maintain a healthy and productive forest into the future as the climate changes. It can be difficult to implement transition actions because of the uncertainty regarding exactly how the climate may change in the future; thus, early steps to transition systems may focus on promoting species that are able to tolerate a variety of potential future climates.



During the life of this plan (10 years), there will be predominately a resistance and resilience approach adopted at Nash Stream. A resistance approach might be to thin in order to increase vigor and water availability while retaining the dominant species, such as sugar maple. A resilience approach might favor native species that are predicted to have increased habitat suitability under a future climate while maintaining considerable mature canopy to improving understory microclimate conditions and sustain a

diversity of habitats (Nagel, Palik et al. 2017). As discussed earlier, the Division of Forests and Lands will continue to use longer harvest intervals, which can be implemented in way to have adaptive benefits such as maintaining refugia for existing populations of vulnerable communities or populations. The Division of Forests and Lands will also continue encouraging structural retention and species and vertical diversity throughout harvest areas to improve resiliency (O'Hara and Ramage 2013). There will be little to no transition management practiced until managers complete the vulnerability assessment and assess where vulnerabilities exist and what the best adaptive approaches are dealing with climate change moving forward.

Objective 3: Complete a vulnerability assessment on Nash Stream

Although some regional assessments are available, no climate change assessments have been performed specifically for Nash Stream. The climate change chapter in this plan is the beginning stage of determining how climate change poses risks to the ecosystems in Nash Stream, but an assessment is needed to fully understand forest vulnerabilities. The U.S. Forest Service report *Forest Adaptation Resources: Climate Change Tools and Approaches for Land Managers* assists land managers with the complicated task of addressing climate change. Chapter 2 of that document discusses the steps necessary to complete a vulnerability assessment. The Northern Institute of Applied Climate Science is willing to provide assistance and expertise as the Division of Forest and Lands moves forward with a vulnerability assessment. Additionally, a vulnerability assessment has been completed for New England and northern New York which will help inform a more specific assessment of climate change effects on the Nash Stream Forest.

Objective 4: Conserve areas for habitat expansion and/or connectivity

Ensuring long-term viability of wildlife includes providing ways for them to move across the landscape as climatic conditions change. Species composition in many habitats is likely to change. Land conservation should be focused on connecting habitats to facilitate migration of species and support intact ecosystems over time despite changes in climate (NHFG 2013). The presence of both small and large corridors on the landscape may help species to migrate without additional assistance (Heller and Zavaleta 2009).

Due to its large size, Nash Stream Forest already acts as a valuable corridor for the movement of species across latitudinal and elevational gradients. Nash Stream already has designated natural areas as well as corridor areas. Stream restoration efforts have also increased stream connectivity throughout the property for fish, amphibians and invertebrates. Future projects should work to ensure connectivity with other protected parcels in the surrounding landscape.

Wildlife biologists and foresters will need to work collaboratively to detect and anticipate changes to forest composition as a result of climate change and potential impacts to wildlife habitats. This will underscore the necessity of implementing a robust long term monitoring program forest wide tailored at forest inventories which also monitor wildlife habitat health to detect changes over time. This effort will be critical to gauging the impact climate change will have to wildlife on Nash Stream State Forest. Utilizing documents such as the Fish and Game Wildlife Action Plan and "Resilient and Connected Landscapes for Terrestrial Conservation," which already identify regional conservation priorities for maintaining a network of resilient and connected habitats, will be beneficial in evaluating priorities.

Objective 5: Monitor and control infestations of insect pests, diseases and invasive plant and animal species

Many insect pests, diseases and invasive species (including terrestrial and aquatic plants and forest pests/pathogens) are currently limited by temperature and may expand into northern New Hampshire as a result of climate change (NHFG 2013). Nash Stream Forest is likely to see an increase in the abundance and variety of invasive plant species and forest pests. The Nash Stream Forester should work with the Forest Health Bureau and the NH Department of Agriculture, Markets and Food to develop a monitoring program to detect new infestations of these species, and to implement control activities to attempt to minimize their impacts to the ecological condition of the property.

Objective 6: Work with research partners to document changes in forest composition and structure as a result of climate change.

Modeling, research and ongoing monitoring of species, species assemblages, and ecosystems are critical to improving our understanding of the effects of climate change on NH's natural systems. New knowledge will allow for adaptive management of species and habitats. In this regard, Nash Stream Forest could serve as an ideal laboratory for performing this research. The Division of Forests and Lands is willing to partner with universities or non-governmental organizations (NGO) to establish or expand a network of monitoring plots to observe climate related changes, and coordinate among monitoring efforts. These monitoring efforts could include long-term wildlife population monitoring, invasive plant species, forest tree and other plant species composition, wetland hydrology, and phenology (NHFG 2013).

11. RECREATION

11.1 HISTORY

Recreational history of the Nash Stream Forest mirrors, to a large degree, the history of recreation on large industrial landholdings of the North Country. Allowing public access for activities such as hunting, fishing, trapping, hiking, snowmobiling and berry picking has been a long standing tradition in the Nash Stream Forest, and throughout the North Country. Logging roads, resulting from forest management, provided an improved access network for many recreational activities occurring today.

Hiking

The Nash Stream property has never been the hikers' destination that the White Mountains have been since the late 1800s. Nevertheless, mountain peaks, ponds, and other natural features of the property have provided destinations to some recreational hikers for many years. Berry pickers climbed South Percy Peak as early as 1876. Within four years after the foundation of the Percy Summer Club on Christine Lake, a path had been cut from their camps to the summit of North Percy. Mr. Earl Roberts of Lancaster published a trails map for Coos County in 1940 that identifies a dozen trails on the Nash Stream property. The current condition and use of many of these historic trails is unknown.

Until the late 1920s, the usual hiking route up Sugarloaf Mountain was a bushwhacked trail from Stratford Bog, although the fire-tower, built in 1910, was always reached from the Nash Stream side. By the early 1930s the Nash Stream side became the preferred route when the Nash Stream Road became passable to the fire warden's trail.

In 1998, construction began on the Cohos trail through Nash Stream. The Cohos Trail was a proposed through trail system that had its conceptual beginning as far back as 1978. It began as an editorial in the Coos County Democrat, an idea that Kim Nilsen conceived. In the late 1990's this proposal started to become a reality, with Nash Stream front and center in the master plan. Approximately 15 miles of trail was developed on Nash Stream, however, much of the trail was existing gravel roads, woods roads and old trails. In 2003, two remote campsites locations were approved; one on the Percy Loop trail, north of the Percy Peaks and the other on the Arm of Sugarloaf trail. The Percy Loop campsite was developed shortly after as a tent platform with an outhouse. The Arm of Sugarloaf site was not developed for many years. Finally, in 2012 a lean-to structure was erected on the approved site with an outhouse facility as well. This lean-to was donated by the Garland Mill and is a timber frame shelter.

Historically, there was a trail known as the West Side which went up the challenging steep ledges of the north summit of Percy Peaks. This trail has been closed for many years due to safety concerns and will not be re-opened.

Fishing, Hunting and Trapping

Since the turn of the century, Nash Stream was considered a very good trout fishing stream until the dam at Nash Bog Pond breached in 1969. Although records are incomplete, Nash Bog Pond and Trio Ponds were stocked as early as 1900. Sporting clubs built camps in the early 1900s. Members of the clubs who owned these early camps also trapped and hunted.

Snowmobiling

The development of snowmobiles after World War II made winter travel faster and easier for camp owners. With camps already in the valley, weekend and longer trips became common. Snowmobiles could easily follow the network of logging trails, opening up access to and from Columbia and Dixville, Phillips Brook, and the Stratford Bog area. This network provided the foundation for the present snowmobile trail system largely developed in the late 1960s.

Diamond International, owner of the property in 1987, requested public funds to help support and improve snowmobile use on their property. The Division of Parks and Recreation's Bureau of Off-Highway Vehicles (now the Bureau of Trails) negotiated a trail lease with the company, and Diamond received funds from the Bureau for the two years prior to state acquisition. A local snowmobile club, the Groveton Trail Blazers, has been maintaining snowmobile trails in Nash Stream Forest with federal, state and local funding. Sharing the winter trails with snowmobiles have been cross-country skiers, and, to a lesser extent, dog sleds.

All-Terrain Vehicle (ATV) and Utility Task Vehicles (UTV)

Diamond International, as well as previous owners, prohibited the use of motorized wheeled recreational vehicles on the entire property. The state continued the policy of prohibiting motorized wheeled recreation in the original 1995 Nash Stream Forest Management Plan. In 2002 the Plan was amended, in part due to strong political interest to develop an ATV trail on Nash Stream. At that time, a pilot program allowing ATVs on a limited section of trail was initiated for a period of three years. A nine-mile section of trail known as the "West Side Trail" was established which allowed ATVs to make a loop on the Stratford side of the property. This pilot program was extended to a five year period until the trail was officially recognized in 2007. In 2013, a second pilot ATV trail was initiated in the Kelsey Notch area. This new trail was established after significant stakeholder review, similar to the West Side Trail, and connects the "Ride the Wilds" trail systems across the northern part of the state. The legality of both of these trails was challenged during the current plan revision process (see **11.4 Recreation Implementation**).

Camping and Camp Lot Licenses

Diamond International had a longstanding recreational camp lot leasing program on the Nash Stream property. The program originated as a fringe benefit for company employees, but was expanded to include the general public in later years. One hundred and four camp lots existed at the date of state acquisition of Nash Stream. Thirteen of the original have since been cancelled (no camps, non-payment of fees, wishes of camp owner, etc.) There are 91 recreation lot licenses remaining on the property. The cabins built on these licensed properties are generally simple structures, and primarily have functioned as

hunting and fishing camps. With the purchase of Nash Stream on October 27, 1988, the state became the owner of existing leased camp sites.

Originally, the camps had a sunset clause, terminating the leases after 50 years. However, in 2002, the Nash Stream Forest Citizen Committee recommended to DNCR to eliminate the license termination date of June 30, 2039. The leased camp lots are now on the property in perpetuity and are able to be transferred and sold on the open market, however, the state retained the first right of refusal.

Approximately 45 or 50 years ago there was a campground near the Nash Bog Pond dam, supervised by the dam operator. The campground apparently ceased operations before the dam failed in 1969. Details of its operation are unavailable.

11.2 RECREATION RESOURCES

The natural features and intrinsic remoteness of the Nash Stream Forest are protected in a complete watershed with relatively limited access. It is the ponds, the mountain peaks, and the other natural features of the Nash Stream valley that create a landscape with a high aesthetic value and provide the primary recreational resource in the Forest.

In addition to these natural assets, a network of roads and trails and established recreation patterns exist on the property. There are 91 privately held recreational camp leases in the Nash Stream Forest, one lean-to and one tent platform. The road and trail system and boat launch on Little Bog (Fourteen and a Half) Pond provide the only recreation developments available to the public.

Hiking

Hiking opportunities in the Nash Stream Forest include designated trails, challenging walks on multiple-use woods roads, and off trail exploration. There are two hiking trails that lead to summits on the property, the Percy Peaks and Sugarloaf Mountain. The Percy Peaks trail is the most popular trail on the property, starting at the trailhead on the main road and ascending along Slide Brook to the 3,418-foot summit of North Percy Peak. The main Percy Peaks trail had a substantial amount of work completed in 2009. There were several small relocations to better stabilize the trail. The summit of North Percy provides an excellent 360 degree view of the surrounding region, and is a popular site for blueberry picking in August. There is no designated trail to South Percy Peak, although it is often visited. In 2003, the Percy Loop trail was constructed. The trail heads north from the junction with the Old Summer Club Trail and skirts around the northeast flank through Bowman Valley to Long Mt. Brook eventually coming out onto the main road.

The Sugarloaf Trail ascends to the 3,701-foot summit of Sugarloaf Mountain, which is the tallest mountain in the area. The summit is just over the boundary line on the abutting property. The trail begins from the main road and travels steeply up an old woods road on the eastern slope. The woods road was historically used as an access road to a fire watchman's cabin that is no longer there. The trail breaks off from the old woods road and becomes a steeper, narrow foot path.

The Pond Brook Falls Trail is located about 5.7 miles from the property entrance. This trail is only a few hundred feet long and leads to Pond Brook from a small parking area on the Main Road. A series of falls on the brook is a scenic and popular area with easy access.

The Cohos Trail runs the length of the Nash Stream Forest for a distance of more than 20 miles. Utilizing many of the existing roads and trails on the property, the Cohos Trail provides spectacular views and a variety of hiking experiences from easy to challenging. The Cohos Trail is one of the longest thru-hikes in the state. There is a Memorandum of Agreement (MOA) between the state and the Cohos Trail Association (CTA), subject to renewal every three years. The Cohos trail association built a new section of trail in the summer of 2016. This was first requested almost 10 years ago, and would relocate a 1.9 mile section of road walking along Nash Stream. The relocation is a four-mile section along the base of Long Mt. The new trail comes off from the Percy Loop trail and heads north to the Trio Pond Rd., then crosses the road and heads down along Pond Brook past the falls to Nash Stream Rd.

Originating from the Christine Lake area there are a series of trails that lead to various points of interest in the southeastern corner of Nash Stream Forest. The Old Summer Club Trail provides the main link to these trails and is a historic four mile connection to the Percy Loop trail. The popular Victor Head Trail is a short branch trail that ends at the low mountaintop Victor Head and its cliff face. There are other trails in this general area as well that create interesting loops and access into the narrow isolated valley between Bald and Long Mountains. Interest in the Cohos Trail has increased use on these local trails.

The 66.5 miles of woods roads on the property provide opportunities for recreational walking. More than 50 miles (76%) of these roads are currently gated to general vehicular traffic which provides excellent walking routes.

In recent years there is a movement among hikers to ascend as many mountain tops as possible, which has formed groups such as “NE 100 highest”, “52 with a view”, the “3000 footers”, etc. This interest has increased the recreational use on many of the smaller mountain tops within Nash Stream and the North Country. Numerous peaks over 3000 feet and lower ridge lines that were rarely visited in the past, have become frequent destinations for this goal oriented hiking.

Fishing, Hunting, Wildlife Viewing and Trapping

The Nash Stream Forest contains abundant forest and numerous water resources for recreation. There are more than 40 miles of streams on the property, including Nash Stream, which has 69 acres of surface water; the four ponds in the Forest total 81 acres. Several fishing experiences are available that include vehicle access sites such as Nash Stream and the boat launch on Little Bog (Fourteen and a Half) Pond, ponds and streams accessible by foot trails, and remote fishing sites not easily accessible by any means. Cold water fisheries are predominant. White-tailed deer and moose provide the most hunting potential. Black bear and game birds are also hunted. The fish and wildlife resources of the valley attract both local and out-of-state sportsmen. Nash Stream provides numerous opportunities for wildlife viewing.

Snowmobiling

Snowmobiling is the predominant winter recreation use in the Nash Stream Forest. Corridor Trail #5, a major north-south snowmobile trail that follows Nash Stream Road, passes through the property. Corridor Trail #28 branches off of Corridor Trail #5 and follows Trio Ponds Road easterly through the valley between Whitcomb and Long Mountains then off of the property. Corridor Trail #5A branches off of Corridor Trail #5 and follows the East Branch road, also called the “Picnic Loop,” eventually merging back into Corridor Trail #5. Primary 117 runs east-west along the Amos Emery Road out to Bell Hill Road. Primary 109 heads south off of Primary 117 leaves the property heading toward Northside Road.

A local snowmobile club, the Groveton Trail Blazers, maintains 47 miles of designated snowmobile trails on the property. One hundred percent of maintained trails are groomed. In addition to the maintained trail system, the remaining 29.5 miles of classified woods roads plus an undetermined number of lessor trails are also accessible by snowmobile. The Groveton Trailblazers maintains a parking area for snowmobilers on adjacent property.

All-Terrain Vehicle (ATV) and Utility Task Vehicles (UTV)

West Side Trail: Currently, about nine miles of trail are available for pass-through ATV and UTV travel utilizing the Bordeaux Trail, the West Side Road, and Andritz Trail. A memorandum of agreement (MOA) exists between the North Country ATV Club and the NH Bureau of Trails.

Kelsey Notch Trail (provisional): An additional four miles of trail in the north of Nash Stream Forest are also available for pass-through ATV and UTV travel from Route 26 through Kelsey Notch, north to Millsfield and south to the Bungy Road toward Columbia pass. This Connector trail is part of the "Ride the Wilds" trail system and is maintained by the Metallak ATV club through an MOA with the NH Bureau of Trails.

The period of use generally runs from May 23, after continuous snow cover has melted, through December 15, unless otherwise posted closed due to trail conditions.

No other roads or trails are open to ATV or UTV use on the property at this time.

Motorized Trail Bikes are not allowed on the property.

Other Uses

There are many locations of interest to recreational botanists, ecologists, birders, and outdoor photographers at Nash Stream. The variety of habitat due to the property's size and variation in elevation lend support to a diversity of plants, wildlife, and ecological features of interest to these recreational naturalists.

Mountain biking is allowed on the gravel roads of the Forest, but is not a significant recreation use. Cross country ski use is also light. There are no trails that are designated specifically for cross country skiing, although much of the existing winter trail system is suitable for this use.

Horseback riding is infrequent in the Nash Stream Forest, but the roads and trails are allowed for this use, unless otherwise posted. (See DNCR rule Res 7301.09)

Geocaching is an increasing activity that is becoming more popular throughout the country. There are a number of geocache sites on the Nash Stream Forest, which were placed without landowner permission. While DNCR supports this type of recreational opportunity, Geocache sites should receive approval through DNCR, following administrative rule Res.7301.26. Orienteering is also an activity that is gaining interest. Nash Stream forest provides an expansive, rugged landscape for these types of activities.

Resource interpretation as an element of recreational management has never been widely developed in the Nash Stream Forest, except for a short interpretive nature trail that connected to the Pond Brook Falls Trail, known as Lion's Lane, which has fallen into disuse and obscurity during recent years. The limited development of recreational infrastructure has served to keep points of interest uncluttered and visitor experiences more elemental.

Recreation Access

The network of roads at Nash Stream was originally constructed for logging access. Now, in addition to continuing to provide access for timber and wildlife management, the roads also provide access to camp leases, trailhead parking, scenic vistas, and other natural features of the valley and recreational opportunities afforded by the property.

Highway access to the Nash Stream Forest is good, and the tract is considered remote primarily by virtue of its distance from significant population centers. There is one public automobile road that accesses the Nash Stream Forest. This single access point offers opportunities to provide visitor information efficiently and, if need be, control access. Winter recreation users currently utilize the plow turnaround, located on the public road at the boundary of the Nash Stream Forest, for parking.

There are approximately 15.8 miles of maintained gravel roads open to general vehicular travel. Most of the 66.5 miles of roads are not open to vehicles but are available for muscle-powered travel. Gravel roads parallel both sides of the Nash Stream, and these could be considered the main roads in the Forest. The road on the east side of the stream, the Nash Stream Main Road, is open for automobile travel. The West Side Road is not open to conventional vehicular travel.

Approximately 1.5 miles up the Main Road from the entrance to the Forest is a small trailhead parking lot for the Percy Peaks Trail. The parking lot is maintained for a limited number of cars. Public vehicle access terminates at the gate just north of the Nash Bog on the Main Road. Roads normally available for public vehicle access are open in the spring, after mud season, and are closed in the fall.

During the fall, after October 1st, the northern most gate on the Nash Stream Road is opened during hunting season. This opening is weather dependent and is subject to closure. When the gate is open it allows public access to several more miles of road.

DNCR uses the latest edition of the United States Department of Agriculture's "Accessibility Guidebook for Outdoor Recreation and Trails" publication as best management practices in the construction and maintenance of new recreational trails on State Reservations when practicable. DNCR adopted a policy in 2013 that allows for the use of Other Powered Driven Mobility Devices (OPDMD) by persons with disabilities on all State Reservations **(Appendix H)**. This policy enables the use of alternative methods of mobility that are typically powered by electricity through areas not usually accessed by such means, but does not include the use of gas powered engines. Accessibility for persons with disabilities may also be obtained by motor vehicles in the areas where these uses are permitted on the property. The recently established ATV and UTV trails have opened many new areas of the forest for persons with disabilities.

Camp Lot Licenses and Camping

There are currently 91 camp licenses in effect at Nash Stream. Eighty-six are individual camps, four are association camps, and one is state owned. Sixty-seven of the individual or family camps are located in the unincorporated place of Odell; twenty are in the town of Stratford. The four association camps are located at Lower Trio Pond, Fourteen and a Half Pond, and two miscellaneous locations. The state-owned

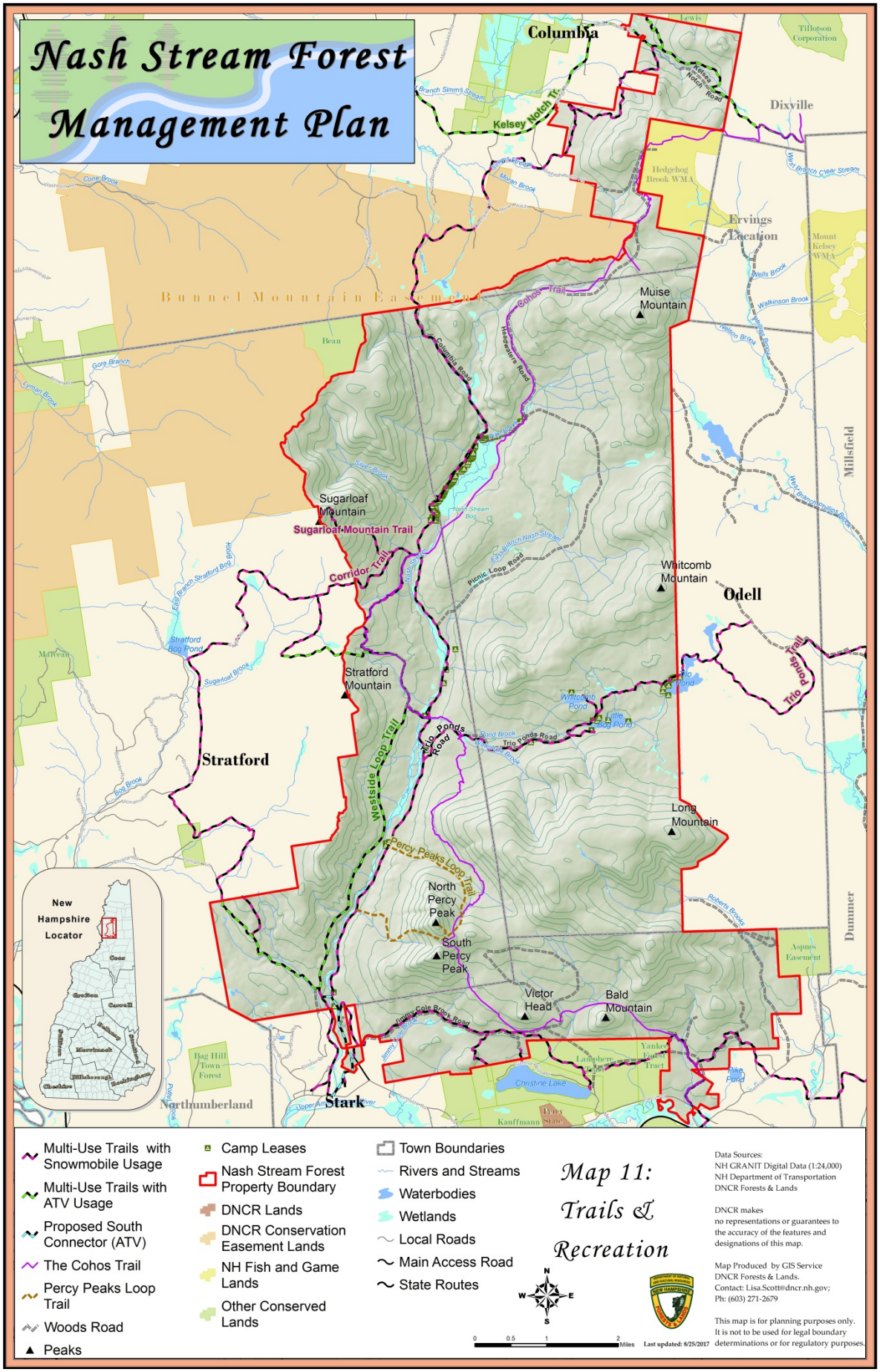
camp is located in the unincorporated place of Odell on Nash Bog. **Table 17** lists the number of existing recreation camp lots by location.

Table 17

Camp lot Locations

GENERAL LOCATIONS	NUMBER OF CAMPS
Fourteen and a Half Pond	6
Nash Bog	59
Lower Trio Pond	9
Whitcomb Pond	1
Misc. Locations	16
Total Camps	91

Along the Cohos trail in Nash Stream Forest there is an Adirondack style lean-to and a tent platform for through hikers. Camping is limited to 2 consecutive night stays at these designated sites according to DNCR Administrative Rule Res 7302.02(g). An MOA exists with the CTA to construct and maintain these shelters. No other camping is currently permitted on Nash Stream Forest.


Nash Stream Forest
Management Plan
Columbia
Dixville
Ervings Location
Odell
Stratford
Stark
Millsfield
Dummer
Northumberland
Bunnel Mountain Easement
Muise Mountain
Sugarloaf Mountain
Sugarloaf Mountain Trail
Corridor Trail
Stratford Mountain
Whitcomb Mountain
Long Mountain
North Percy Peak
South Percy Peak
Victor Head
Bald Mountain
Kelsey Notch Tr.
Cohos Trail
Westside Loop Trail
Percy Peaks Loop Trail
Trio Ponds Road
Trio Ponds Trail
Picnic Loop Road
Headwaters Road
Columbia Road
Kelsey Notch Road
Hedgehog Brook WMA
Mount Kelsey WMA
Bean
Marcean
Bag Hill Town Forest
Christine Lake
Kauffmann State
Aspnes Easement
Yankee Forest Tract
Lumphery Lake
Pike Pond
Tillotson Corporation
New Hampshire Locator
Coos
Grafton
Carroll
Belknap
Merrimack
Sullivan
Cheshire
Hillsborough
Rockingham
Multi-Use Trails with Snowmobile Usage
Multi-Use Trails with ATV Usage
Proposed South Connector (ATV)
The Cohos Trail
Percy Peaks Loop Trail
Woods Road
Peaks
Camp Leases
Nash Stream Forest Property Boundary
DNCR Lands
DNCR Conservation Easement Lands
NH Fish and Game Lands
Other Conserved Lands
Town Boundaries
Rivers and Streams
Waterbodies
Wetlands
Local Roads
Main Access Road
State Routes
Map 11:
Trails &
Recreation
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Miles
Last updated: 8/25/2017
Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
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Ph: (603) 271-2679
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11.3 RECREATION GOALS, OBJECTIVES AND STRATEGIES

GOAL: PROVIDE FOR A RANGE OF QUALITY RECREATION OPPORTUNITIES THAT ARE CONSISTENT WITH PROTECTING ENVIRONMENTAL INTEGRITY AND FEATURE THE NATURAL VALUES OF THE LANDSCAPE.

OBJECTIVE 1: Manage public use so that it is sensitive to and respectful of natural and cultural values.

Strategies:

1. Assess current and potential recreational demands and opportunities including roads, trails and parking areas.
2. Establish and implement a carry in/carry out policy for all recreational activities.
3. Determine and provide for appropriate parking.

OBJECTIVE 2: Establish recreational use standards and guidelines to ensure protection of natural resources and environmental quality.

Strategies:

1. Review existing department standards and guidelines for applicability; revise or develop new standards and guidelines where needed.
2. Work with other land-use activities to protect or enhance the visual quality of the landscape.

OBJECTIVE 3: Provide for and enhance recreational uses that are compatible with other management activities.

Strategies:

1. Continue public access for traditional, low impact, dispersed recreation including hunting, fishing, hiking, wildlife observation, and other limited motorized access on designated and properly maintained roads and trails.
2. Periodically evaluate existing snowmobile and ATV/UTV trail corridors to determine and implement needed trail improvements or alterations to enhance user experiences, user safety, and to ensure compatibility with other land uses.
3. Designate appropriate trail corridors and areas to be improved, maintained, or developed using department standards and guidelines. Work with formalized clubs and other volunteers when possible.
4. Consider opportunities for overnight backcountry experiences.
5. Assess non-motorized recreation opportunities such as hiking, wildlife observations, cross country skiing, dog sledding, horseback riding and other uses, and consider enhancements including the extension and improvement of selected trails and roads.
6. Provide appropriate levels of handicapped access to meet the intent and spirit of current laws and regulations.

OBJECTIVE 4: Integrate interpretation of natural processes, biodiversity, and cultural resources into recreational visits.

Strategies:

1. Provide interpretive panels in areas likely to receive public use.
2. Provide interpretive programming utilizing state, federal, and private resources.
3. Provide appropriate interpretive literature, such as brochures, on the Nash Stream.
4. Provide short educational loops near roads with different management histories, and self-guiding trails.

OBJECTIVE 5: Encourage volunteer participation in recreation development and management of the tract.

Strategies:

1. Maintain strong communications links between existing volunteer groups and managing agencies.
2. Continue to implement DNCR volunteer guidelines.
3. Provide opportunities for volunteer activities.

OBJECTIVE 6: Continue the use of existing private recreation camps.

Strategies:

1. Ensure full and proper execution of the department's existing camp lot license policy.
2. Prepare a plan for camp disposition, camp and site restoration for terminated camp licenses or abandoned camp lots.
3. Monitor and supervise the camp lot license for compliance with license terms.
4. Maintain close contact with the Camp Owners Association.
5. Implement policy to allow transfer and/or purchase by the state of private camps that become available.
6. Secure administrative and financial support for voluntary camp acquisitions.

11.4 RECREATION IMPLEMENTATION

Hiking

Current Trails: Maintain the current trail system on Nash Stream Forest. Focus will be placed on keeping up maintenance on the current trail system. Monitor existing trail corridors and surfaces for sustainability and impacts of use. No proposals for trails to new destinations or new trail networks have been submitted by any user groups, nor have any been determined to be needed by DNCR personnel at this time. All currently authorized hiking trails are to be maintained and/or improved in their current locations, unless severe erosion or other negative factors on a trail or on the surrounding resources cause a need to consider relocations of sections. While no new trails have been submitted or planned at this time, any proposals for

new trails during the life of this plan shall be evaluated by the appropriate staff and proceed through the DNCR review process. Maintenance of hiking trails will be done by DNCR staff and volunteers as needed.

Re Routes: Re-routes are permitted as needed when re-routes will lessen the impact to Nash Stream Forest. Implement the proposed trail relocation for the Cohos trail in the northern section of Nash Stream near Pike Brook. Currently the trail comes out onto an old woods road and crosses over Pike Brook out to Nash Stream Road. The proposed re-route would follow on the east side of Pike Brook and run alongside the brook to the Nineteen Valley Road. The new section of trail would eliminate a potentially hazardous water crossing as well as a portion of the trail that has been compromised by beavers. The Cohos Trail Association will continue to do routine trail maintenance on the Cohos trail. All work shall follow the best management practices for trail construction and maintenance as specified in the Special Use Permit with the Association.

Remote Mountain Tops: Maintain remote mountain tops without trails as a unique and increasingly rare recreational opportunity in the Northeastern States. Many of the mountain tops are in sensitive high-elevation habitats and/or in the natural areas. There should be no new trails within the natural areas and sensitive areas above 2,700 feet. No new trails to mountain tops will be constructed within the period of this plan. Monitor the impact of the levels of current use in order to determine if this is sustainable. If the impacts of dispersed use are determined to negatively affect the resource greater than can be sustained, consider development of a single official trail.

Fishing, Hunting, Wildlife Viewing and Trapping

Fishing: Fishing opportunities will be improved by the work described in **Chapter 7** with Fish and Game and Trout Unlimited. As funds are made available, road and trail crossings will continue to be improved to remove additional obstructions to fish movement and provide more in-stream habitat to encourage native fish populations such as brook trout.

Hunting, trapping and wildlife viewing: Hunting, trapping and wildlife viewing opportunities will be encouraged through improvement of wildlife habitats on the property as described in **Chapter 6**. Commercial timber harvesting as well as non-commercial vegetation management projects will work toward providing a range of forest age classes and species mixes to sustain a wide array of wildlife.

Snowmobiling

Continue to use and maintain the existing network of snowmobile trails within the NSF. No increase in mileage has been requested in this plan revision, but existing trails may need to be re-routed for forest management activities during the life of the plan. Monitor existing trail corridors and surfaces for sustainability and impacts of use. Assess conditions of trails and repair as needed. Relocations will be allowed only when necessary. Continue to seek collaborative funding to implement maintenance needs in cooperation with the Bureau of Trails and the snowmobile club.

ATV and UTV Use

Existing Trails: Maintain the current ATV & UTV trails on the property.

In May of 2016 a letter from the Society for the Protection of New Hampshire Forests, the Appalachian Mountain Club, and the Nature Conservancy was sent to the Council on Resources and Development (CORD) questioning the legality of the West Side Trail and the Kelsey Notch Trail. CORD spent several months re-examining the issue and determined that the West Side Trail was consistent with their management obligations under RSA 162-C:6. However, CORD found that they had insufficient information to determine if the Kelsey Notch Trail was consistent with RSA 162-C:6. To make a determination and to allow the Kelsey Notch Trail to provisionally re-open in the spring of 2017, CORD requested DNCR provide the following by January of 2017:

1. An updated coarse and fine filter analysis of the Kelsey Notch Trail, pursuant to RSA 215-A:43.

2. An updated interagency MOA between DNCR and Fish and Game for monitoring and enforcement, pursuant to RSA 215-A:42.

3. Continuation of the written agreements between DNCR and the local ATV/UTV club for use and maintenance, pursuant to RSA 215-A:42.

West Side Trail: Maintain and execute a current MOA between DNCR and Fish and Game for monitoring and enforcement. Maintain and execute a current MOA with the North Country ATV Club for continued use and maintenance of the trail.

Kelsey Notch Trail: The trail shall be allowed to remain open on a provisional basis in its current location for the next three years. Based upon the annual reporting that is required through the MOA between DNCR and Fish and Game, as well as additional information and studies that CORD feels are necessary, CORD shall make a determination at the end of this period to:

1. Find the trail consistent with RSA 162-C:6 and recognize it as a designated trail, or

2. Require additional information and extend the provisional period, or

3. Find Kelsey Notch inconsistent with RSA 162-C:6 and discontinue its use.

New Trail Proposals: Evaluate and review new trail proposals for consideration in this plan revision.

"East-West Corridor Trail" - A proposal was submitted by the Nash Stream OHRV Task Force (part of the North Country OHRV coalition) for an East-West Corridor Trail across the south end of Nash Stream as part of the "Ride the Wilds" trail system. The proposal was reviewed by the Nash Stream Technical Team which raised significant concerns with the location of the proposed trail. Upon review from CORD, the request was deemed to be inconsistent with both the management vision as well as RSA 162-C:6.

"Southern Connector Trail" - As a result, a new request from the OHRV community was proposed to review the one mile southern connector portion of the original request as a stand-alone project. The Southern Connector Trail would connect the existing West Side Trail to services south of Nash Stream.

The Nash Stream Citizens Committee voted to include the review of this proposal in the current plan. For the proposal to move forward it must pass the following steps:

- Review by the DNCR land management process
- Evaluation by the Nash Stream Technical Team
- Passage of the coarse and fine filter criteria
- Acknowledgement by DNCR and Fish and Game that adequate resources are available for the monitoring, maintenance, and enforcement of the new section of trail
- Updated MOU between DNCR and Fish and Game
- MOU with local club for maintenance
- Approval by the Nash Stream Forest Citizen's Committee
- Approval by the Council on Resources and Development (CORD)
- Three year provisional period

Future Trail Expansion: Since the inception of the property, the recreational focus has been on traditional low-impact uses. ATV and UTV riding was never intended to be a major component of the recreation plan. While the original plan called for *no* motorized wheeled vehicles, the 2002 revision allows for *limited* motorized access in response to public demand for this developing sport and important economic driver in the North Country. This plan will continue to emphasize traditional, low-impact, recreation as well as offer *limited* ATV and UTV access at Nash Stream Forest, consistent with the 2002 Vision for the property.

- No additional trails beyond the proposed Southern Connector Trail shall be considered during the life of this plan.
- Future requests for *limited* expansion of the ATV and UTV trail system at Nash Stream shall occur during scheduled management plan revisions and shall require review by DNCR, stakeholders, the Technical Team, the Citizens Advisory Committee, and approval by CORD (see **11.5 Recreation Management Guidelines, # 4)**.
- No trails for ATV or UTV use shall be permitted on the Nash Stream Road north of the West Side Trail.
- ATV and UTV use will continue to be limited to the edges, or fringe, of the property, and will be prohibited within the core of the forest

Other Uses

Multi-use Trails: There is an existing network of maintained roads, skid trails, and historic paths present on the property. There are no plans to develop any new non-motorized multi-use trails. DNCR will assess other recreation opportunities within the property in the next 10 year planning cycle and determine if an expanded use is consistent with the vision of the property. Monitor current uses allowed and assess its impact and close sections of trail if determined to be necessary.

Accessibility: Continue to provide universal access to persons with disabilities through maintenance of existing resources and policy programs. DNCR uses the latest edition of the United States Department of Agriculture's "Accessibility Guidebook for Outdoor Recreation and Trails" publication as best management practices in the construction and maintenance of new recreational trails on State Reservations when practicable. In addition, all recreational trails on State Reservations allow for accessibility in accordance with DNCR's policy on the "Use of Other Power Driven Mobility Devices" (see Exhibit H). Monitor feedback from all user groups to identify and propose potential areas of

improvement towards increased ease of accessibility. DNCR will repair infrastructure as needed if current accessibility is limited due to damaged or declined conditions. DNCR will establish proposals for consideration towards areas of improvement as they arise.

Developed Recreation: DNCR will keep emphasis on limited recreational infrastructure development in order to maintain open view-sheds and undeveloped characteristics of working forest lands. DNCR will determine if the current methods and inventory of signs and postings continue to serve the needs of visiting recreationalists. DNCR will consider proposals for improvements to existing methods and development of new methods as the need arises. Maintain and/or replace as needed signs and postings at current locations in order to communicate Laws & Rules, as well as to provide for direction and convenience.

The Cohos Trail Association has installed two new interpretive signs in 2015 and 2016 at trailheads on the property. The CTA will be responsible for maintaining signage but has extended opportunities for DNCR to place information on those signs. DNCR will work with the CTA to access these as needed.

Camp Lot Licenses

No new licensed camps will be allowed in Nash Stream. Camps that are present will follow the camp guidelines in the lease **(Appendix G)**. Assess camps periodically to ensure compliance with DNCR camp standards and guidelines **(Appendix F)**.

DNCR's vision for camps at Nash Stream Forest is primitive, unimproved structures to be used for temporary habitation on a recreational basis. Camps are not intended to be improved to the status of second homes or vacation homes. These buildings will not have basements, drilled wells, electrical service other than that provided by a small on-site generator, providing that the noise from such generator is not disruptive to other forest users, or provided from solar energy. Camps should have a small footprint and no greater than 1 1/2 stories inclusive of an attic or loft. Camps should be supported by stone or concrete blocks that rest on the surface of the soil so that the camp makes no permanent intrusion into the ground. Camps, being surface structures, are owned by the camp owner, however, the owner has no rights to the underlying ground surface. The camp should not impact other users of Nash Stream Forest.

Camping

There are no plans currently to provide a developed camping area during this 10-year planning cycle, however, the Division of Parks and Recreation will evaluate the future possibility of establishing a small campground or clusters of minimal structures such as yurts.

DNCR will continue to cooperate with the CTA or appropriate organization to provide dispersed designated campsites along the Cohos Trail and to monitor the existing sites along the Cohos Trail to assess impacts, carrying capacity and appropriate needs.

11.5 RECREATION MANAGEMENT GUIDELINES

1. **Water/Soil -** Best Management Practices (BMPs) will be used for erosion control on trails in accordance with "Best Management Practices for Erosion Control on Trails, A Resource Manual," New Hampshire Trails Bureau. BMPs include such measures as turnpiking trails, log bridges, filter strips, stepping stones, stone waterbars, and treadway hardening.

2. **Multiple Use Trails -** Multiple-use trail corridors will be encouraged, where consistent with recreational purpose, to minimize disruptions caused by additional trail construction and use.

3. **Trail Construction and Maintenance -** Recreation trails will be developed and maintained for the highest standard of use on that trail following "Best Management Practices for Trail Construction and Maintenance," adopted by the Department of Natural and Cultural Resources, supplemented by the following for:

    A. Hiking trails - Appalachian Trail Conference Standards.

    B. Snowmobile trails – New Hampshire Snowmobile Trail Manual, NH Bureau of Trails, DNCR.

    C. Mountain bike trails - established roadways unless otherwise posted; no off-road or cross country use permitted.

    D. Equestrian trails - (standards to be developed.).

    E. Other trail uses will be evaluated to determine the degree to which additional standards are required

4. **ATV Use-CORD Findings-** The New Hampshire Council on Resources and Development (CORD) has found that in order to perform its statutory duty to manage LCIP lands, members must review and find that any use of ATV/UTVs, as currently defined by statute, within Nash Stream Forest is consistent with the principles set forth in RSA 162-C:6 prior to implementation. CORD further finds that any ATV/UTV use in Nash Stream Forest must be limited to specific ATV/UTV trails approved by CORD in advance. In order to be consistent with the principles set forth in RSA 162-C:6, CORD finds that each proposed ATV/UTV trail must meet the following conditions:

    A. The trail must be designed, sited, and used so that it preserves and does not adversely impact natural resources and conservation attributes of the property and does not interfere with or detract from the other uses of Nash Stream Forest;

    B. the trail must be authorized in a current management plan, which has been reviewed by CORD for consistency with RSA 162-C:6 and has had appropriate public and state agency input;

    C. the trail must comply with the requirements of RSA 215-A and all other applicable ATV/UTV and environmental regulations and standards, and the state's most recently adopted best management practices for trail construction and erosion control;

    D. after construction, the trail must be continually managed to protect natural resources and conservation attributes and to limit interference with other uses of Nash Stream Forest;

    E. CORD must be adequately informed on an ongoing basis of the status of management, maintenance, and enforcement efforts related to ATV/UTV use, as well as impacts of ATV/UTV trails on the Nash Stream Forest; and

F. CORD reserves the right to periodically reassess whether ATV/UTV use in the Nash Stream Forest, or on any of the trails therein, remains consistent with RSA 162-C:6 and reserves the right to temporarily or permanently close trails if necessary as circumstances change over time.

5. Whenever possible, permanent roads and trails with gates or blocking that are not actively used for logging or other management purposes will be maintained and available for low-impact and semi-remote recreational activities.

6. **Wildlife -** Planning, development and maintenance of recreational sites will incorporate consideration of wildlife and wildlife habitat needs. Snowmobile and cross-country ski trails should avoid stands that are presently dense softwood or are being managed to develop dense softwood.

7. Beaver dams shall not be breached and impoundments shall not be drained for trail construction prior review by the State Land Management Team (SLMT).

8. **Visual Quality** - Recreation management activities will be sensitive to visual impacts.

9. **Camping Areas -** Should camping be considered appropriate for Nash Stream Forest, preference will be given to sustainable, backcountry camping accessed by means other than motorized vehicle, and where only primitive facilities are provided.

10. **Backcountry Campsites -** May be established when: there is an identified need and desire; there are identified sites suitable and desirable for camping that do not conflict unreasonably with natural values of the site; and when appropriate management resources are available to monitor and maintain quality campsites.

11. **Disability Access -** Recreation management will comply with the American Disabilities Act (ADA). Reasonable accommodation will be used throughout the planning process to provide access to individuals with disabilities. **(Appendix H)**

12. **Parking Areas -** Parking areas will be located and designed to meet minimum carrying capacity for trails and/or recreational area served.

13. **Health and Sanitation -** Consideration will be given to toilet facilities for parking areas and other developed sites that concentrate people. If septic disposal systems are considered necessary, they will be designed to accommodate anticipated use and comply with applicable state and federal law.

    A. Pit and composting toilets are appropriate where public use is light to moderate and soils are suitable.

    B. Vault, mulching, and leach field systems are appropriate where public use is moderate to heavy.

14. A "carry in/carry out" policy will be promoted for all solid waste.

15. **Interpretation -** Interpretive programming and signage will be consistent with the interpretive standards of the National Association of Interpretation. Signage will be minimal, designed and placed so as not to interfere with visitor experiences of that which is being interpreted.

12. PUBLIC USE GUIDELINES

1. **Access -** The only access to and from Nash Stream Forest by conventional vehicle is the gravel Main Road, about 2 miles north and east of N.H. Route 110 by way of the paved Emerson Road, or about 4 miles from U.S. Route 3 at Groveton Village.

2. **Open to Automobiles -** The main gate is closed in early December each year and opened each spring when road conditions allow. Some interior roads remain gated year round.

3. **Camping/Open Fires -** No overnight camping except in designated locations on the Cohos Trail. No open fires.

4. **Emergency Closure -** The Nash Stream Forest or any area within the Forest may be temporarily closed to the public during high fire danger periods and where it is determined to be hazardous for public use or detrimental to the resource or facility due to weather, pestilence, or other situation involving public health, safety, or welfare.

5. **Health and Sanitation -** The Nash Stream Forest is a carry in/carry out property where visitors and private camp lot owners are asked to bring out what they bring in. No person shall dump or dispose of any garbage, trash, debris, or any other refuse or waste material of any kind on the property.

6. **Removal or Disturbance of Forest Property -** No person shall cut, remove or damage any tree for any purpose, including firewood, or cut or damage any shrub or plant or pick any wildflowers, nor shall any person dig, excavate or remove sand, gravel, or other mineral from the Forest without written permission.

7. **Construction of Structures -** No person shall construct or erect any structure without written permission.

8. Portable deer stands that are temporarily installed without driving nails or inserting other devices permanently into a tree and that are removed without damage to any vegetation are permitted during legal deer hunting season, permanent tree stands or structures are not allowed.

9. **Human and Other Resources** — No person shall remove from, injure, disfigure, deface, destroy or disturb any object or feature of paleontological, archaeological, geological, or historical interest or value located in or upon the Forest.

10. **Vehicles** — All vehicles parked or stopped in any place that obstruct traffic or block any road or trail are subject to removal and impoundment at the owner's expense. No person shall park any vehicle within the forest during closure periods.

11. The use of all-terrain vehicles (ATVs) is limited to the designated trails. Trail bikes are prohibited. Snowmobiles are limited to areas or trails established for their use. Exceptions to the prohibition of ATVs and trailbikes and the use of snowmobiles are: 1) use by officials in the performance of their duties; 2) by persons with disabilities with written permission; and 3) the occasional legitimate use on a case-by-case basis with written permission. All provisions of RES-8500 trail use rules apply.

12. Mountain bicycles are allowed on established graveled roadways unless otherwise posted; no off-road or cross country use permitted.

13. **Hunting/Fishing/Trapping** are allowed under NHFGD regulations and enforcement. Baiting Black Bear for recreational and commercial hunting will be at the recommendation of the NHFGD.

14. No discharge of firearms is allowed within 300 feet of any occupied building.

15. **Releasing of Animals and Plants** — No person shall release any wild or domestic animal, or abandon any such animal, or plant or culture any seed or vegetation of any type within the Forest without written permission.

13. GLOSSARY

ADA - Refers to the Americans With Disabilities Act (1990).

Allowable Cut - The amount of timber volume considered available for cutting from a given area during a specified period based on such factors as soil/site capability, timber growth, forest condition, silviculture and administrative objectives, markets, and other factors.

Aquatic Ecosystem - Stream channel, floodplain, lake, water, biotic communities and the habitat features that occur therein.

Area Control - A means of determining timber volume to be harvested based on a specified area allocated for cutting (See **Volume Control**).

Areas of Ecological Concern - Designated areas that require special management strategies to protect unique ecological values such as rare plants, rare animals, and exemplary natural communities. Areas of ecological concern include natural areas, buffers, corridors, and control areas.

ATV (All Terrain Vehicle) - Any motor-driven vehicle with one or more tires designed to hold not more than 10 pounds per square inch of air pressure, having a capacity for passengers or other payloads, not to exceed 1,000 pounds net vehicle weight, and not to exceed 50 inches in width, which is designed or adapted for travel over surfaces other than maintained roads. (see RSA 215-A.)

Backcountry Camping - Remote camping with little to no developments, usually accessible only by trail or water.

Basal Area - The cross sectional area of a tree measured 41h feet above the ground, usually expressed in square feet. Basal area per acre (ba/a) of live trees measures the density of tree stems in a forest stand (See also DBH).

Biological Agent - Defined in state law, RSA 430:29.

Biological Diversity (biodiversity) - The variety, abundance and distribution of plant and animal communities, species, genetic composition and habitats within a given area. It also refers to ecological structures, functions, and processes at all of these levels; the diversity of life in all its forms, and at all levels of organization.

BMPs (Best Management Practices) - Proper methods for control and dispersal of water from truck haul roads, skid trails, log landings, and recreation trails to minimize erosion and reduce sediment and temperature changes in streams.

Board Foot (BF) - A measure of wood by volume. One board foot is the volume of wood equal to a piece 12 inches long by 12 inches wide by one inch thick. Board feet per acre (bf/ a) is a measure of density in a forest stand. (See International 1/4 Inch Log Rule.)

Buffer Area - An abutting or surrounding area of low intensity, or low impact human activity specifically designed to shield natural resource values within a designated area from negative influences, for example, a buffer area around a natural preserve.

Bushwhacking - term used to describe hiking through the forest where there is no defined trail.

Carry in/Carry out - A policy promoting the ethic that visitors should leave no trash behind them when they visit public or private lands. Litter, including biodegradable materials, should be responsibly disposed of off-site.

Cascade - Habitat type characterized by swift current, exposed rocks and boulders, high gradient and considerable turbulence and surface agitation, and consisting of a stepped series of drops. (See also Glide, Riff le and Pool.)

Chemical Agent - Referred to in the Vision as any substance, mixture of substances, pesticide (defined in RSA 430:29), or biological agent that, through application or use, may damage or pose a threat to natural ecosystems.

Clearcutting - (See Even-aged Management.)

Climax Forest - A term ecologists and others use to describe a forest's mature successional stage. Although all forests are dynamic, cli- max forests have relatively stable species composition and low or negligible overall growth rates. (See Old Forest.)

Commercial Forest - Forest land that produces or is capable of producing timber products on a regular basis and that has not been withdrawn from production for administrative, technological, physical, or environ- mental reasons.

Control Areas - Designated areas that will remain largely unaltered by human activity. Control areas will serve research and educational needs and will preserve plant and animal habitat.

Cord - A standard cord of wood is an imaginary rick, or stack of wood, measuring 4 feet by 4 feet by 8 feet and containing 128 cubic feet of wood, bark and voids. Cords per acre (cds/a) is a measure of density in a forest stand. (See RSA 438:3-Definition of Special Units of Measure.)

Corridor - An area or strip of land, such as a forest or waterway of low intensity or low- impact human activity, that functions as a passageway for living organisms from one area to another; a travel route followed by animals along a belt or band of suitable cover or habitat.

Critical Habitat - Specific areas, within the geographical area occupied by a species, essential to the conservation of the species and which may require special management considerations or protection.

Crop Tree - A tree which has been selected to be grown to the full rotation age of a stand, due to desired characteristic such as commercial quality or biotic contribution.

Cultural Resources - The physical remains of past ways of life. They include historic and prehistoric sites and the artifacts and features associated with these sites.

DBH (diameter at breast height) - The average diameter of a standing tree, measured outside the bark, at a point 41h feet above the ground.

Developed Recreation - Recreation characterized by concentrated public use generally featuring supportive facilities for such uses as campgrounds, picnic areas, and swimming areas.

Dispersed Recreation - Generally distributed, low density recreational activities where facilities, if provided, are designed primarily to minimize environmental impacts rather than comfort or convenience to the user.

Ecological Processes - Related actions contributing toward the natural interrelationships between living organisms and their environment; actions include predation, mutualism, successional development, nutrient cycling, carbon sequestration, primary productivity, and decay.

Ecological Land Capabilities - Based upon distinct combinations of natural, physical, chemical, and biological properties, the capabilities of a given area of land to respond in a predictable and relatively uniform manner to specified actions or stimuli applied to the landscape by natural or non-natural means. (See Ecological Land Group.)

Ecological Land Group (ELG) - A category of land with similar soil development histories and soil combinations, landscape features, climate, and differing from other ecological land groups that in a relatively undisturbed state and/or at a given stage of plant succession is usually occupied by a predictable and relatively uniform plant community (See Ecological Land Capabilities).

Ecologically Sustainable Forest - (See Sustainable Working Forest.)

Ecologically Significant Sites - Those sites identified and ranked through the Natural Heritage Bureau (NHB) classification system. (See Natural Heritage Bureau.)

Ecologically-based Forestry - The application of forestry principles guided by the interrelationships between living organisms and their environment for the purpose of attaining or maintaining a sustainable working forest (See Sustainable Working Forest).

Ecosystem Sustainability - The ability to sustain natural diversity, productivity, resilience to stress, health, renewability, and/ or yields of desired values, resource uses, products, or services from an ecosystem, while maintaining the integrity of the ecosystem over time.

Ecosystem Management - The careful and skillful use of ecological, economic, social, and managerial principles in managing ecosystems to produce, restore, or sustain ecosystem integrity and desired conditions, uses, products, and services over the long-term.

Ecosystem - A geographic area where it is meaningful to address the interaction of plants, animals, ecological processes, human social systems, soils, waters, sources of energy, and the forces that guide change over time.

Endangered Species Act - Refers to the federal Endangered Species Act of 1973, Public Law 93-205, as amended.

Endangered Species - Any species which is in danger of extinction throughout all or a significant portion of its range within the state pursuant to RSA 212-A:2 and 217-A:3, or any species determined to be an endangered species pursuant to the federal Endangered Species Act

Ephemeral Stream - A stream which flows only in direct response to precipitation, receives no water from springs, and no long- continued supply from melting snow or other surface source. The channel may or may not be well-defined but at all times is above the water table. (See Vernal Pool.)

Even-aged Management - A silvicultural system that has a final stand replacing harvest at the end of a desired rotation. Regeneration may be present and released at the final harvest or may be established as a result of the final harvest, but it is the final harvest that results in the start of a new stand of trees of essentially the same age that defines the practice. Cutting methods producing even-aged stands include clearcutting, shelterwood and seed tree.

(1) Clearcutting - The final harvest of a mature stand that removes all of the trees at the end of the rotation. This method may also be used to remove stands composed of predominately unacceptable growing stock or at risk trees. Regeneration of the new forest occurs naturally after cutting from seed sources and re-sprouting trees. Clear cuts between 5 and 30 acres tend to be the most effective from a silvicultural and wildlife habitat stand point.

(a) Patch Cuts - a modification of the clearcutting method using smaller openings between two to five acres in size to regenerate even-aged stands where larger openings are not practical or desirable due to restrictions on the landscape such as wet or inoperable ground. They may also be employed in areas where aesthetics of large scale openings are of concern.

(2) Shelterwood - a multi-staged harvest method that is designed to develop advanced regeneration under the shelter of a partial overstory near the end of a desired rotation. The final harvest is usually a complete overstory removal that releases the established regeneration resulting in a new even-aged stand.

(3) Seed Tree - The final harvest of a mature stand that removes all of the trees at the end of the rotation except for a small number of well-spaced overstory trees of a desired species which are left as a seed source for the establishment of regeneration.

Even-aged Stand - A stand composed of trees of the same age or the same age class. An age class is typically considered to be 20 years or up to 20 percent of the rotation age. From an ecological viewpoint, the minimum size of an even-aged stand could be considered as the size of the largest opening entirely under the influence of adjacent mature timber. The opening of critical size might be that which, at the very center, exhibited the same temperature regime as any larger opening.

Exemplary Natural Community - Remnants of New Hampshire's undisturbed landscape that represent the best remaining intact examples known of the state's flora and fauna (See Natural Community).

Exotic Species - A living organism artificially or otherwise established far from its natural habitat.

Fire-Adapted Ecosystem - An ecosystem with the ability to survive and regenerate in a fire prone environment.

Fishery - A complex of interactions within and between the population(s) of fish being harvested, the population(s) of fishermen, and the environments of each.

Forbs - Herbaceous, fleshy-leaved plants.

Forest Cover Type - A category of forest defined by its vegetative composition.

Forest Fire - An unenclosed and freely spreading combustion which consumes the natural fuels of a forest, i.e., duff, grass, weeds, brush, and trees.

Forest Fire Suppression - Any deliberate, planned action to stop, confine, or control a forest fire by breaking or weakening, directly or indirectly one or more sides of the combustion (fire) triangle consisting of fuel, oxygen, and temperature.

Forest Health - A measure of forest health is the degree of harmony between potential resource diversity that could be produced and resource productivity that can be sustained.

Fragmentation - The separation of a unit of land and its ecosystem with its various plants and animals from other, similar ecosystems by the intrusion of a barrier.

Functioning Stream Channel - A well- defined streambed that clears itself at least once a year of small debris and litter, exhibits channel bank formation, and may often contain alluvial deposits of sand, gravel and/ or rubble in the channel bed. (See Intermittent Stream.)

GIS (Geographic Information System) - A computer-based mapping system used to automate, manipulate, analyze, and display geographic data in digital form.

Glide - A slow moving, relatively shallow portion of a stream with little or no surface turbulence. (See also Riffle, Cascade and Pool).

Goal - A broad, unquantified, general statement of a desired state or process that operating programs strive to achieve. A goal is the principal statement from which objectives must be developed.

GRANIT - The New Hampshire GRANIT (Geographically Referenced Analysis and Information Transfer) system is a statewide geographic information system funded by the New Hampshire Office of State Planning and housed at the Complex Systems Research Center, University of New Hampshire. The system is being developed to provide a range of data and analytical tools to assist in resource management and planning issues at the state, regional and local levels.

Grant-in-aid Program - State administered program funded by OHRV license registrations. Provides assistance to organized non-profit OHRV clubs and political subdivisions for the purpose of encouraging development, construction, grooming, and safety on trails in New Hampshire.

Grooming (trail) - Process of leveling and conditioning winter trails for the enjoyment and safety of snowmobilers and skiers.

Group II Soils - Soils classified by the USDA Soil Conservation Service with physical limitations influencing forest management, i.e. steep slopes, erosive textures, surface boulders, excessive surface stones, and bedrock outcrops; good productivity but generally difficult and costly for forest management. On the Nash Stream Forest, soils in this group are considered unsuitable for timber management.

Group Selection - (See Uneven- aged Management).

Habitat - A place where the physical and biological elements of ecosystems provide food, cover, and space resources needed for the livelihood of a particular species of plant or animal.

Heritage Trail - A multi-use recreational trail project stretching the length of New Hampshire from Massachusetts to Canada.

High Quality Forest Products - Forest products of distinct and superior character grown under the highest merchantability standards inherent in the product, species and growing site.

HMU (Habitat Management Unit) - A given area where vegetative composition goals are determined and managed, consistent with ecological land capabilities and soil/site properties, that provide appropriate vegetative communities, patterns, and age-class structures required by wildlife species. (See Habitat.)

Integrated Resource Management - The simultaneous consideration of ecological, physical, economic, and social aspects of lands, waters, and resources in developing and carrying out multiple use, sustained-yield management. (See Multiple Use Management).

Interdisciplinary Team - A group of individuals with skills from different resources assembled to provide necessary insight to multiple stages of a process. An interdisciplinary team is assembled because no single scientific discipline is sufficient to adequately identify and resolve issues and problems.

Intermittent Stream - A watercourse that flows in a well-defined channel generally during wet periods of the year, that may receive water from springs, long-continued melting snow, or other surface source. (See Ephemeral Stream and Functioning Stream Channel.)

International 1/4 Inch Log Rule - Log rule used to inventory and measure estimated board foot (sawlog) volume in the Nash Stream Forest. Board foot measurements with this rule are consistent and accurate for sawmills producing mainly 1-inch boards with a 1/4-inch saw thickness. It is the standard log rule for reporting board foot volumes for timber tax purposes (RSA 79) in New Hampshire.

Interpretation - An educational and recreational activity that links the visitor to the resource. A means of expanding appreciation, knowledge, enjoyment, and protection of the resource.

Land Capability - (See Ecological Land Capabilities).

Landscape - An area composed of interacting and inter-connected patterns of habitats (ecosystems) that are repeated because of the geology, landform, soils, climate, biota, and human influences throughout the area. Landscape structure is formed by patches (stands or sites), connections (corridors and linkages), and the matrix. Landscape function is based on disturbance events, successional development of landscape structure, and flows of energy and nutrients through the structure of the landscape. A landscape is composed of watersheds and smaller ecosystems; the building block of biotic provinces and regions.

Long Rotation Forestry - The application of forestry practices that emphasize the growth of timber crops for the maximum period of years required to yield a specified economic or natural maturity condition.

Management Practice - A specific activity, measure, course of action, treatment or non-treatment.

Mast - The fruits and seeds of trees and other woody shrubs. Mast is an important wildlife food source for migrating and resident birds and mammals.

MBF - Thousand board feet. (See Board Feet).

Monitoring - A check-in process that can be carried out before, during, and after a planned event or management activity in order to facilitate awareness, acceptability and, if necessary, adjustment; to watch, observe, or check, especially for a specific purpose, such as to keep track of, regulate, or control. Successful monitoring and evaluation is dependent on the use of appropriate, predetermined indicators.

Multiple Use Management - The management of all the various forest resources including amenities and services, so that they are utilized in the combination that will best meet the needs of forest landowners and society; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and the harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit of output. (See Integrated Resource Management).

Native Trout - Original stock or strain of trout of which the genetic integrity has not been influenced by hatchery fish. (See Wild Trout).

Natural Area - A designated area which is relatively unaffected by human activity and which contains plants, wildlife, natural communities, geological features, or scenic values of state, regional, national or global significance. Replaces the terms “natural preserve area” and “core natural area” from the 1995 plan.

Natural Community - An interactive assemblage of organisms, their physical environment, and the natural processes that affect them. A unit that is classified and mapped by the NH Natural Heritage Bureau.

Natural Community System - more than one natural community co-occurring on the landscape and having a common set of characteristics such as; climate, landforms, disturbance, nutrients, soils, bedrock, and hydrology. A unit that is classified and mapped by the NH Natural Heritage Bureau.

Natural Disturbance - Disturbances that occur from natural causes, such as the toppling of a single tree from age or disease, wind or ice storms that take down groups or patches of trees, and forest fires that destroy large areas of forest. The pattern, or location, frequency, and degree of natural disturbances, along with soils and topography, provide inherent diversity in forest lands.

Natural Heritage Bureau (NHB) - A program administered within the Department of Natural and Cultural Resources (DNCR) which collects and analyzes data on the status, location, and distribution of native plant species and exemplary natural communities in the state. NHB works cooperatively with landowners, federal, state and private organizations to develop and implement measures for the protection, conservation, enhancement and management of native New Hampshire plants.

Neotropical Migrants - Birds that breed in North America and migrate to Central and South America and the Caribbean for the winter.

Non-commercial Forest - Forest land not producing, or not suitable or capable of producing, timber crops on a regular basis, such as areas of steep slope, thin soil, and wetlands.

Northern Hardwoods - A forest type of northern New England consisting primarily of sugar maple, American beech, yellow birch and associated species including red maple, hemlock, white ash, basswood, white birch, red oak, spruce, and fir.

Objective - A concise, time-specific statement of measurable planned results designed to achieve a desired state or process represented by the goal.

OHRV (Off Highway Recreational Vehicle) - means any mechanically propelled vehicle used for pleasure or recreational purposes running on rubber tires, belts, cleats, tracks, skis or cushion of air and dependent on the ground or surface for travel, or other unimproved terrain whether covered by ice or snow or not, where the operator sits in or on the vehicle. (See RSA 215-A.)

Old (growth) Forest - A forest that has reached an age where the species composition is relatively stable and/ or the average net annual growth is close to zero, and the natural species composition has not been altered by human activity. Sometimes referred to as "old growth" where the characteristics are unique to each forest type in the latter stages of forest succession.

Orienteering - Recreational use of a compass (and map) to navigate to specific points in the forest.

Overmature Stand - A condition where a stand of trees is older than normal rotation age for the type (species) and growing site. Overmature stands often provide important wildlife and other habitat conditions not found in younger stands (See Rotation).

Patch Cut - (See Even-aged Management).

Perennial Stream - A watercourse that flows throughout the year or nearly so (90 percent) in a well-defined channel; same as a live stream.

Permanent Wildlife Opening - An area of land that is managed to provide and maintain low shrub and/or herbaceous cover for wildlife habitat.

Pesticide - Defined in state law, RSA 430:29.

Planning Unit - A mapped landscape unit based on natural and physical features designed to meet management objectives. There can be and generally is some degree of interaction between adjacent planning units.

Pole - A live tree which measures between 4.6 inches and 9.5 inches in diameter 4112 feet above the ground.

Pool - A portion of a stream with reduced current velocity, often with water deeper than surrounding areas and which is frequently usable by fish for resting and cover. (See also Glide, Riffle and Cascade).

Potentially Affected Interests (PAI) - Includes all those interests who "will" be affected by an action (project) either directly or indirectly; all those interests who "think" that they will be affected; and those interests who for some "other" reason -need to, or want to, be involved. PAI and public are used interchangeably in this document.

Presalvage - Removal of merchantable trees highly vulnerable to loss or damage, in a stand which cannot be scheduled for early replacement. The objective of presalvage is to anticipate the loss of economic value in otherwise healthy trees threatened by a damaging agency.

Prescribed Fire - The application of fire under specified conditions to achieve specific land management objectives.

Prospecting - Exploration for minerals with mechanized equipment which will result in disturbance of land which could pose a danger to the public or cause environmental harm. (See Rock-hounding).

Public - (See Potentially Affected Interests).

Public Land Stewardship - The government's responsibility to manage itself and land under government jurisdiction with proper regard to the rights of all for clean air, water, and a healthy forest environment, to maximize the contribution of public forests to the enhancement of our living environment.

Public Way - Means any public highway, street, sidewalk, avenue, alley, park or park- way; or any way that is funded by state, city, town, county, or federal government, or laid out by statute; or any parking lots open for use by the public or vehicular traffic; or any frozen surface of a public body of water; provided, however, the off highway portion of any trail established specifically for OHRVs shall not be a public way (see RSA 215-A).

Public Involvement - Process designed to foster public understanding and comment in order to broaden the information base upon which management decisions are made.

Pulpwood - Wood or trees used to make pulp, from which paper products are manufactured. Trees of poor form or quality (rough and rotten), and generally of small size, that will not likely grow into sawlog quality, are commonly tallied as pulpwood during a timber cruise.

Put to Bed - The practice of temporarily closing roads between periods of use. This may involve removing all drainage structures, revegetating the roadbed and drainage ditches, and closing the area to vehicular traffic.

Residual Basal Area - The sum of the basal area of trees remaining on a harvested site.

Riffle - A shallow rapids where water flows swiftly over completely or partially sub- merged obstructions to produce surface agitation, but standing waves are absent. (See also Glide, Cascade and Pool).

Riparian Zone - Aquatic-terrestrial transition zones without definitive boundaries that encompass wetlands, uplands or some combination of these two land forms; vegetated uplands adjacent to a natural waterbody directly affect, or are affected by the adjacent waterbody.

Riparian Management Zone - Vegetated uplands adjacent to a natural waterbody where timber harvesting practices are modified or restricted to protect water quality, fish and wildlife habitat or other aquatic resources. Replaces the term "filter strip" from the 1995 plan.

Roads -Vehicular passage ways needed for the management and public use of Nash Stream Forest. Roads are classified into summer and winter roads divided into three classes: (1) Summer Roads Class B Gravel-all purpose; (2) Summer Class C Restricted Use-light duty vehicles; (3) Winter Roads Class D Non Gravel-restricted use.

(1) Summer, Class B Gravel -Roads used for frequent or continuous use for hauling and travel, except during winter and spring breakups when closures are required. Added fill and aggregate surfacing are required. Drainage structures are permanent. These roads are maintained for truck traffic, and if open to the public, for public travel.
(2) Summer, Class C Restricted Use-Roads used for short periods, then waterbarred and usually seeded between use periods. There is little or no aggregate surfacing. Drainage structures are usually temporary and are removed at the end of each use period. Use may be limited to dry ground and frozen ground periods. These roads are closed between use periods to vehicular traffic.
(3) Winter, Class D Non Gravel, Restricted Use-Roads used for intermittent and short periods, then waterbarred and seeded between use periods. There is little to no surfacing and usually no added fill. Use is limited to frozen ground conditions. Drainage structures are usually temporary and are removed at the end of each use period. These roads are closed to vehicular traffic between use periods.

Rock-hounding - The recreational pursuit and collection of rocks and minerals (as distinct from prospecting) using hand tools.

Rotation - The period of years required to grow a stand of timber to a desired age, usually either economic or biological maturity (see Target Age).

Salvage - Removal of trees that have been killed or damaged by injurious agents trees such as insects, disease, weather events, or wildfire. The objective of salvage harvesting is to utilize the injured, damaged or dead trees and recover economic values that might otherwise be lost.

Sanitation - Removal of trees that have been attacked or are in imminent danger of attack by a damaging organism in order to reduce the spread of the damaging organism to the residual stand. Sanitation cutting is conducted only if the character of the stands and the organism are such that the removal of susceptible trees will actually interrupt the life cycle of the organism sufficiently to reduce the spread to other trees.

Sapling - A live tree which measures between 2 inches and 4.5 inches in diameter 4.5 feet from the ground.

Sawlog - The portion of wood, generally measured in board feet, cut from a tree which will yield timbers, lumber, railroad ties and other products which can be sawn with conventional sawmill equipment.

Sawtimber - A live tree greater than 9.5 inches in diameter measured 4.5 feet above the ground.

Seedling - A live tree less than 4.5 feet tall or less than 2 inches in diameter measured 4.5 feet above the ground.

Sediment - Soil material that has been detached, transported, suspended, or settled in water.

Seed-tree Cut- (See Even-aged Management).

Shelterwood - (See Even-aged Management).

Single Tree Selection - (See Uneven-aged Management).

Skid Trail - The route used by forwarding machinery or animals to haul or drag forest products from the stump to the yard or landing.

Slash - Bark, branches, tops, chunks, cull logs, uprooted stumps and broken or uprooted trees and shrubs left on the ground as a result of a timber harvesting operation, right- of-way construction or maintenance and land clearance.

Soil/Site Capabilities - The productivity of soil and associated habitat based on combinations of land forms, vegetation and soil materials. (See Ecological Land Capabilities).

Species of Management Concern - Any plant or animal species that is threatened, endangered, or otherwise determined to be of particular management concern for any significant reason.

Stand - A group of trees reasonably similar in age structure and species composition as to be distinguishable from adjacent areas. For administrative and mapping purposes, minimum stand size is considered to be five acres unless special characteristics require attention to smaller areas (See Even-aged Stand and Uneven-aged Stand).

Standards and Guidelines - Bounds or rules within which all management practices will be carried out in achieving planned goals and objectives.

Succession (ecological) - The gradual and predictable process of progressive community change and replacement, leading toward a stable climax community; the process of continuous colonization and extinction of species populations at a particular site; sere.

Suitability - The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of economic and environmental con- sequences, and alternative or combined uses.

Sustainability - The ability to maintain a desired condition or flow of benefits over time.

Sustainable Forestry - Forest management practices for which the outcome will be sustained yield.

Sustainable Working Forest - A forest man- aged to maintain or achieve a healthy and productive forest together with human aspirations; a multi-dimensional managed forest that optimizes a sustained yield of wood products, soil and water quality, biological diversity, and human activity (See Integrated Resource Management).

Sustained Yield - The achievement and maintenance in perpetuity of an approximately even amount of annual or regular periodic wood yield consistent with multiple use objectives, without impairment of the productivity of the land and forest resources.

Target Age - When a final crop tree reaches a desired age and condition(s) based on the soil/site capabilities for that particular tree species and other factors such as desired commercial quality or biotic contribution (see Rotation).

Tending - A silvicultural method of selecting individual trees for removal throughout a stand in a fashion that emulates natural stand structures, but lowers the stand stocking (trees per acre) to a suitable managed density to promote good stem growth and development (see Single Tree Selection).

Threatened Species - Any plant or animal species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range within the state pursuant to RSA 212- A:2 and 217-A:3, or any species determined to be a threatened species pursuant to the federal Endangered Species Act.

Timber Harvesting - The felling, skidding, loading, and transporting of primary timber products.

Traditional Uses - Those kinds of uses in the Nash Stream Forest and "north country" of New Hampshire that have characterized the Forest and general area in the past and present, including: an integrated mix of timber and forest products harvesting; low intensity outdoor recreation; and a limited number of recreation camps or residences.

Uneven-aged Management - A silvicultural system that removes individual stems and small groups of stems, retaining a perpetual forest cover with a slowly shifting mosaic of small openings across a stand over time. This form of management results in a multi-aged stand that contains a range of size classes. Cutting methods that develop and maintain uneven-aged stands are single tree selection and group selection.

(1) Single tree selection - the periodic removal of scattered individual stems or multiple stems to emulate natural stand structures but lowering the stand stocking to promote good stem growth and the establishment of regeneration.
(2) Group selection - the periodic removal of trees in small groups producing openings from several trees in size, but more often ranging from ¼ acre to one acre, and occasionally up to two acres. Differing from single-tree selection in that the predominant characteristics of the group rather than individual stems, are evaluated for treatment.

Uneven-aged Stand - A stand of trees containing at least three well-defined age classes, typically at least 20 years apart, and that are intermingled individually or in small groups.

Vernal Pool - A vernal pool is a surface water or wetland, which provides breeding habitat for amphibians and invertebrates that have adapted to that unique environment.

Viable Populations - A wildlife population of sufficient size to maintain its existence over time in spite of normal fluctuations in population levels.

Viewshed - All the surface areas visible from the observer's viewpoint.

Volume Control - A means of determining timber volume to be harvested based on the volume, distribution, and growth of timber growing stock (See Area Control).

Watershed - The entire area that contributes water to a drainage or stream.

Wetland - An area that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, river overflows, natural ponds, and similar areas.

Wild Trout - A trout that is the result of natural reproduction in a stream. A wild trout can be descended from hatchery fish that holdover and reproduce in the wild (See Native Trout).

Wildfire - Any wildland fire not designated and managed as a prescribed fire.

Wildlife - Any member of any nondomesticated species of the animal kingdom, whether reared in captivity or not, including, without exception, any mammal, fish, bird, amphibian, reptile, mollusk, arthropod or other invertebrate, and includes any part, product, egg or offspring thereof, or the dead body or parts thereof pursuant to RSA 212- A:2.

Working Forest - (See Sustainable Working Forest).

Yarding - The transport of logs or whole trees from the stump to a yard, where wood is sorted. Yarding is usually done with chain-covered, rubber-tired skidders or forwarders.

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15. APPENDICES

APPENDIX A

STATE LAND RECORD

TRACT NASH STREAM FOREST # 3

GRANTOR State of NH

DATE OF DEED 8/4/89

DATE OF RECORD 8/7/89

GRANTEE
US Forest Service
Dept. of Agriculture
Washington, DC 20250

COUNTY Coos

BOOK 752 PAGE 252

CONSIDERATION $3,950,000. — 100/AC

CHARACTER Conservation Easement

ACRES

TREAS. BOOK PAGE

TOWN

DESCRIPTION

RECORDED
AUGUST 7, 1989
BOOK 752
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CONSERVATION EASEMENT DEED

THIS DEED made this 4th day of August, 1989, by and between the STATE OF NEW HAMPSHIRE, Concord, New Hampshire (hereafter "State"), the Grantor, and the UNITED STATES OF AMERICA, Washington, District of Columbia (hereafter "United States"), the Grantee. The State and the United States are collectively referred to as the "Parties".

WITNESSETH:

WHEREAS, the "New Hampshire Forest Management Initiatives Act of 1988", 102 Stat. 1805, (hereafter the "Act") authorizes and directs the Secretary of Agriculture to acquire certain lands and interests in land located in the State of New Hampshire; and,

WHEREAS, under the New Hampshire Land Conservation Investment Program, the State of New Hampshire is the owner of certain lands known as the "Nash Stream Tract" which are the subject of the Act; and,

WHEREAS, under the laws of the State of New Hampshire (R.S.A. 477:45, et seq), a conservation easement constitutes an interest in land; and,

WHEREAS, the Parties mutually seek to assure through the conveyance of this conservation easement the perpetual public use and protection of the Nash Stream Tract with primary management emphasis being the sustained yield of forest products consistent with the traditional uses of the land, including public access, and the conservation of other resource values; and,

WHEREAS, the acquiring Federal agency is the Forest Service, United States Department of Agriculture. The mailing address of the acquiring agency is United States Department of Agriculture, Washington, D.C. 20250.

NOW THEREFORE, for and in consideration of $3,950,000 and other good and valuable consideration, receipt of which is hereby acknowledged, the State hereby grants, with warranty covenants, unto the United States of America this conservation easement. The terms and conditions of this easement are covenants running with the land constituting a perpetual servitude thereon.

I. The Property.

The Nash Stream Tract, which is the subject of this easement and is hereafter referred to as the "easement area", is described in Exhibit A attached to and made a part of this instrument. The Parties acknowledge that some portions of the

Nash Stream Tract which are referenced in the Act are not subject to this easement and those portions are expressly excepted from the description of the easement area as set forth in Exhibit A.

II. The Use of the Easement Area.

A. Subdivision: The easement area shall not be subdivided or disposed of as smaller tracts.

B. Time Limitations on Rights and Privileges Conveyed to Third Parties:

No lease, contract or other right shall be granted or renewed for a term in excess of five (5) years except for public roads or utilities.

C. Allowed Uses of the Property: Allowed uses are those expressly reserved by the State for purposes of natural resource management, public recreation, and public roads and public utilities. Uses which are not expressly reserved by the State shall be prohibited by the State and deemed acquired by the United States. Reserved uses are as follows:

1. Public Recreation Reservations. The construction, operation, and maintenance of the following facilities and appurtenant structures is permitted: campsites, trails (including cross country ski trails and snowmobile trails), internal access roads, picnic areas, boat launches, trailhead parking areas, visitors' center, and ranger station.

2. Public Roads and Utilities. The installation, operation, and maintenance of public roads or public utilities may be granted by the State only with the prior written approval of the Forest Service. For the purposes of this instrument, internal roads constructed, operated and maintained by the State and which merely provide access within the property and do not provide for through travel are not considered public roads.

3. Existing recreation residences. Notwithstanding parts II-B and II-E-1 of this instrument, individual recreation residences which existed on the date of this instrument are permitted, provided that nothing in this instrument shall be construed as limiting the power of the State to limit the size, number or duration of existing permitted uses, to charge a fee for, or to terminate such uses.

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4. Natural Resources Management. Management for multiple uses consistent with the purposes and provisions of this instrument, including watershed, fish and wildlife, recreation, scenic, education and research, timber management as provided in part II-D herein, and sand and gravel resources. A dam at or in the immediate vicinity of the location of the old Nash Bog Pond dam may be constructed, maintained, and operated only for fish and wildlife management and recreational purposes at no expense to the United States. Specifically excepted from this easement are those rights held by Rancourt Associates, Inc., and its successors and assigns, for the extraction of earth and granular fill material as set forth in a certain deed dated October 27, 1988 and recorded in the Coos County Registry of Deeds in Volume 737 Page 840. For purposes of this conveyance, multiple uses means the harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.

D. Management and Use of Timber Resources: Timber resources shall be managed on a sustained yield basis, provided:

1. The land base for the determination of sustained yield is the easement area. Departures from sustained yield on the easement area may be made only in the event of natural catastrophe, fire, disease or insect infestation. For purposes of this conveyance, sustained yield means the achievement and maintenance in perpetuity of an approximately even amount of annual or regular periodic wood yield consistent with multiple use objectives without impairment of the productivity of the land and forest resources.

2. No logging shall occur on slopes greater than 35% or on areas above 2700 feet in elevation.

3. Clearcuts shall not exceed 30 acres in size. Larger areas may be clearcut only with the prior written approval of the Forest Service and only as needed to harvest timber damaged by natural catastrophe, fire, disease, or insect infestations. For the purposes of this conveyance, clearcut means the removal of all or virtually all merchantable timber in a single cutting. No clearcut harvest may be made adjacent to a previous clearcut regeneration harvest area until the average height of the regeneration from the previous cut is at least 15 feet. Except for departures as provided in Part II-D.1 of this easement, within any ten (10) year period, no more than 15 percent of the total easement area may be clearcut.

4. Logging on those areas near streams, ponds, or public highways is subject to the provisions of New Hampshire R.S.A. 224:44-a, except as further defined or restricted as follows:

(a) Any future amendments to R.S.A. 224:44-a shall apply to the easement area, except that amended terms shall not apply if those terms are less restrictive than as they existed as of January 1, 1989.

(b) For purposes of R.S.A. 224:44-a, Nash Stream from the breached dam downstream to the southern boundary of the easement area, and Pond Brook from Trio Pond to the confluence with Nash Stream, shall both be considered "navigable rivers".

(c) There shall be a buffer area of 150 feet around Whitcomb Pond, Trio Pond, and Little Bog Pond in which there shall be no timber harvesting, except that trees and vegetation may be cut in the buffer area as necessary for the construction and use of recreation facilities as reserved in Part II-C.1 of this easement and except that, with the prior written approval of the Forest Service, timber damaged by natural catastrophe, fire, disease, or insect infestation may be harvested. The buffer area shall be measured from the ordinary high water mark of the ponds.

(d) Any prior written consents by any state official or agent allowed under the provisions of R.S.A. 224:44-a as they may affect the easement area shall require approval in writing in advance by the Forest Service.

5. At all times, logging shall be conducted in conformance with the current applicable federal and state laws and regulations pertaining to the abatement of erosion and water pollution, including the use of best management practices prescribed for given activities.

E. Prohibited Uses of the Property. Although the State remains the fee owner of the property, uses which are not reserved by the State are prohibited of the State and deemed acquired by the United States. Without limiting the scope of the rights acquired by the United States or the scope of use prohibitions, the following prohibitions on common land uses in the area are enumerated for purposes of clarity:

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1. Residential uses, all forms whether temporary or permanent, including but not limited to, residential housing, condominiums, including time share condominiums, vacation homes, cabins, camps, and group housing;

2. Ski areas, ski lodges, ski lifts, resorts, outfitting establishments;

3. Landfills, dumps, storage areas for materials other than temporary storage of materials produced from the property;

4. Garages and warehouses, except as necessary for the actual administration and management of the property.

5. Mineral, oil, and gas, and related operations and developments, subject to rights outstanding in third parties and except for the sand and gravel rights reserved to the State in Part II-C-4.

F. Access.

1. The State and its assigns shall assure the public access to and use of the easement area.

2. The State and its assigns may reasonably restrict and regulate access and use in order to provide for public safety and prudent resource utilization and protection.

3. The State may charge reasonable fees for public entry and use of the easement area. All fees shall be fair and equitable, taking into consideration the direct and indirect costs to the State, the benefits to the recipient, the public policy or interest served, the comparable recreation fees charged by the Forest Service on the White Mountain National Forest, the comparable fees charged for similar uses of State-owned land and facilities, the economic and administrative feasibility of fee collection and other pertinent factors.

III. General Provisions.

A. This easement is subject to all valid existing rights of record existing at the time of conveyance.

B. This easement shall be enforceable in law or equity by the parties. The State shall bear the costs of any enforcement action and any costs of restoration necessitated by the violation of any of the terms of this easement. The State waives any defense of laches, estoppel or prescription. The

State shall not be liable for violation of the terms of the easement caused by Acts of God.

C. The easement area shall be administered and managed by the State in accordance with State laws and regulations and the terms of this easement. The State retains all responsibilities and shall bear the costs and liabilities related to the ownership, operation, upkeep and maintenance of the property, unless and until agreed to otherwise in writing by the Parties. Subject to outstanding rights in third parties, the State shall receive all revenues derived from the management and use of the property, unless and until agreed to otherwise in writing by the Parties.

D. The Forest Service shall administer this easement on behalf of the United States. The United States has an affirmative right to manage any resource or land use acquired by this easement which is not reserved by the State. The Forest Supervisor, White Mountain National Forest, shall administer this easement subject to such delegations of authority as may be forthcoming from time to time by the Secretary of Agriculture, or his subordinate officials. The Forest Service shall have the right to enter upon the easement area at any time for purposes of administration of this easement. Any Forest Service concurrences required under this easement shall be in writing and may be subject to such terms and conditions as the Forest Service may prescribe.

E. This easement shall be construed so as to effect the conservation purposes for which it was acquired by the United States. Ambiguities will be resolved in a manner which best effect the purposes of the New Hampshire Forest Management Initiatives Act of 1988.

F. The State shall hold harmless, indemnify, and defend the United States and its agents from all liabilities, including attorney's fees, arising from death or injury to any person resulting from any act, omission, condition or other matter related to or occurring on or about the property regardless of cause, or from liabilities otherwise arising from the management or administration of the property, except as regards those liabilities arising from the acts or omissions of the United States and its agents.

G. The easement area shall not be sold or conveyed to any entity without first having afforded the United States or its assigns a right to exercise a right of first refusal to

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acquire the land, in fee or additional partial interests. The State shall serve written notice of a proposed sale or conveyance to the Supervisor, White Mountain National Forest, and the United States Government or its assigns shall have 18 months from the date of receipt of the notice to acquire the land or interests therein. In such event, the State agrees to sell such lands or partial interests at no more than appraised fair market value as determined by an average of two appraisals performed by appraisers agreed upon by the Parties.

TO HAVE AND TO HOLD, the rights hereby granted unto the United States forever.

IN WITNESS WHEREOF, the duly authorized representative of the State of New Hampshire has hereunto set his hand and seal on the day and year first written above.

THE STATE OF NEW HAMPSHIRE

By: William G. Abbott

WILLIAM G. ABBOTT

Its Executive Director of the New Hampshire Land Conservation Investment Program

State of New Hampshire
County of Merrimack

The foregoing instrument was acknowledged on behalf of the State of New Hampshire before me this 4TH day of August, 1989 by William G. Abbott, Executive Director of the New Hampshire Land Conservation Investment Program.

John W. Barth

~~Notary Public~~/Justice of the Peace

Exhibit A

THE PROPERTY

I. Property in Columbia:

1. That property conveyed by Natural Dam Pulp and Paper Company, Inc., to Rushmore Paper Mills, Inc., dated August 15, 1963, recorded at Coos Deeds, Volume 477, Page 327.

2. Certain property described as Lot 1, Range 4, of the Lots and Ranges in said Town of Columbia and being a portion of the premises described and conveyed in a warranty deed from Nelson Bunnell to Groveton Papers Company, dated July 9, 1965, recorded at Coos Deeds, Volume 490, Page 344.

3. That property conveyed by Ada K. Marshall et al. to Groveton Papers Company, dated January 12, 1966, recorded at Coos Deeds, Volume 495, Page 301.

4. Parcel 1 as it is described in a deed from Clyde Shallow to Groveton Papers Company, dated December 20, 1966, recorded at Coos Deeds, Volume 503, page 165.

5. Parcel 2 as it is described in a deed from Clyde Shallow to Groveton Papers Company, dated December 20, 1966, recorded at Coos Deeds, Volume 503, Page 165.

6. That property conveyed by Louis Grandmaison to Groveton Papers Company, dated January 21, 1966, recorded at Coos Deeds, Volume 495, Page 199.

7. That property conveyed by Louis Grandmaison to Groveton Papers Company, dated June 24, 1966, recorded Coos Deeds, Volume 497, Page 177 subject to a right of way created by instrument dated November 14, 1962, recorded at Coos Deeds, Volume 475, Page 24.

8. That property conveyed by Green Acre Woodlands, Inc. to Diamond International Corporation, dated July 30, 1973, recorded at Coos Deeds, Volume 554, Page 646.

9. That property situated in Columbia conveyed by James J. Phelan, et al., Trustees of Connecticut Valley Lumber Company, to Groveton Paper Co., Inc., dated September 29, 1920, recorded at Coos Deeds, Volume 204, Page 273, being part of land conveyed by Groveton Paper Co., Inc. to Coos Realty Corporation January 1, 1926, recorded at Coos Deeds, Volume 236, Page 131, and part of land conveyed by Coos Realty Corporation to Groveton Papers Company, August 14, 1940, recorded at Coos Deeds, Volume 311, Page 189.

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II. Property in Odell:

1. Parcel 1 as described in a deed from Henry R. Reed, et al. to Odell Manufacturing Company, dated August 22, 1904, recorded at Coos Deeds, Volume 124, Page 138, being part of land conveyed by Odell Manufacturing Company to Groveton Papers Company, dated August 14, 1940, recorded at Coos Deeds, Volume 311, Page 184.

III. Property in Stark

1. Property described in deed from Percy Lumber Company to Odell Manufacturing Company, dated April 30, 1917, recorded at Coos Deeds, Volume 181, Page 351, (being part of land conveyed by Odell Manufacturing Company to Groveton Papers Company, dated August 14, 1940, recorded at Coos Deeds, Volume 311, Page 184); excepting and reserving that portion of the property described as Lots Nos. 103, 96, 38 and 54 and excepting and reserving Lot 5 and that portion of Lot 6 north of the railroad in Range 2 and subject to rights of way conveyed to the United States of America, dated December 8, 1969, recorded at Coos Deeds, Volume 526, Page 251, and dated September 18, 1939, recorded at Coos Deeds, Volume 304, Page 279, and to George G. Steady, April 18, 1977, recorded at Coos Deeds, Volume 596, Page 66.

2. Property described in deed from Paul Cole, et al. to Groveton Paper Company, Inc., dated March 6, 1936, recorded at Coos Deeds, Volume 279, Page 279, being part of land conveyed by Groveton Paper Company, Inc. to Groveton Papers Company, dated August 14, 1940, recorded at Coos Deeds, Volume 311, Page 187.

3. Property described in deed from Town of Stark to Groveton Paper Company, Inc., dated April 15, 1939, recorded at Coos Deeds, Volume 301, Page 341, being part of land conveyed by Groveton Paper Company, Inc. to Groveton Papers Company, dated August 14, 1940, recorded at Coos Deeds, Volume 311, Page 187.

4. Property described in deed from Frank G. Blake to Odell Manufacturing Company, dated August 6, 1910, recorded at Coos Deeds, Volume 120, Page 235, being part of land conveyed by Odell Manufacturing Company to Groveton Papers Company, dated August 14, 1940, recorded at Coos Deeds, Volume 311, Page 184.

5. Property described in deed from G. W. Smith to Odell Manufacturing Company, dated November 14, 1910, recorded at Coos Deeds, Volume 151, Page 102, being part of land conveyed by odell Manufacturing Company to Groveton Papers Company, dated August 14, 1940, recorded at Coos Deeds Volume 311, Page 184.

6. Property described in deed from Henry Pike to Groveton Paper Company, dated July 15, 1919, recorded at Coos Deeds, Volume 194, Page 235.

7. Property described in deed from Lester D. Fogg to Groveton Papers Company, dated September 6, 1945, recorded at Coos Deeds, Volume 340, Page 190.

8. Property described in deed from Frank E. Moses to Groveton Papers Company, dated March 30, 1948, recorded at Coos Deeds, Volume 361, Page 54.

9. Property conveyed by Richard Emery to Diamond International Corporation, dated December 14, 1982, recorded at Coos Deeds, Volume 654, Page 571.

10. Property described in deed from Charles A. Cole to Groveton paper Company, Inc., dated June 2, 1920, recorded at Coos Deeds, Volume 198, Page 246 (being part of land conveyed by Groveton Paper Company, Inc. to Coos Realty Corporation, dated January 1, 1926, recorded at Coos Deeds, Volume 236, Page 131 and by deed of Coos Realty Corporation to Groveton Papers Company, dated August 14, 1940, recorded at Coos Deeds, Volume 311, Page 189) excepting therefrom conveyance to Town of Stark, dated March 24, 1959, recorded at Coos Deeds, Volume 442, Page 44 and easements to Public Service Company of New Hampshire, dated August 22, 1946 and August 22, 1947, recorded at Coos Deeds, Volume 350, Page 212 and Volume 359, Page 134.

11. Property described in deed from Santina E. McVetty to Groveton Papers Company, dated May 25, 1951, recorded at Coos Deeds, Volume 384, Page 297 (Corrective Deed recorded at Coos Deeds, Volume 653, Page 587).

12. Property described in deed from Robert Poisson to Groveton Papers Company, dated June 30, 1960, recorded at Coos Deeds, Volume 453, Page 192.

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IV. Property in Stratford:

1. Property described in a deed from Town of Stratford to Groveton Papers Company, dated June 15, 1959, recorded at Coos Deeds, Volume 444, Page 362.

2. Property described in a deed from Andrew Jackson, et al. to Odell Manufacturing Company, dated February 5, 1908, recorded at Coos Deeds, Volume 138, Page 137, being part of land conveyed by Odell Manufacturing Company to Groveton Papers Company, dated August 14, 1940, recorded at Coos Deeds, Volume 311, Page 184.

3. Property described in a deed from R. L. Lumber Company, Inc. to Groveton Papers Company, Inc., dated July 24, 1972, recorded at Coos Deeds, Volume 549, Page 112.

4. Property described in a deed from Andrew Jackson to Odell Manufacturing Company, dated February 7, 1908, recorded at Coos Deeds, Volume 138, Page 136 being part of land conveyed by Odell Manufacturing Company to Groveton Papers Company, dated August 14, 1940, recorded at Coos Deeds, Volume 311, Page 184.

5. Parcel 1 as it is described in a deed from Zephir Riendeau to Groveton Papers Company, dated May 22, 1961, recorded at Coos Deeds, Volume 459, Page 247.

6. Property described in a deed from Town of Stratford to Groveton Papers Company, dated September 21, 1966, recorded at Coos Deeds, Volume 502, Page 238.

7. Property described in a deed from Lynam A. Jackson to Odell Manufacturing Company, dated January 15, 1910, recorded at Coos Deeds, Volume 120, Page 215, being part of land conveyed by Odell Manufacturing Company to Groveton Papers Company, dated August 14, 1940, recorded at Coos Deeds, Volume 311, Page 184.

8. Property described in a deed from George W. Smith to Odell Manufacturing Company, dated November 28, 1916, recorded at Coos Deeds, Volume 178, Page 372, being part of land conveyed by Odell Manufacturing Company to Groveton Papers Company, dated August 14, 1940, recorded at Coos Deeds, Volume 311, Page 184.

9. Property described in a deed from Fred N. Wheeler to Odell Manufacturing Company, dated February 27, 1912, recorded at Coos Deeds, Volume 156, Page 72, being part of land conveyed by Odell Manufacturing Company to Groveton Papers Company, dated August 14, 1940, recorded at Coos Deeds, Volume 311, Page 184.

10. Property described in a deed from Royal M. Cole, et al. to Odell Manufacturing Company, dated August 2, 1912, recorded at Coos Deeds, Volume 158, Page 356, being part of land conveyed by Odell Manufacturing Company to Groveton Papers Company, dated August 14, 1940, recorded at Coos Deeds, Volume 311, Page 184.

11. Property described in a deed from Zephir Riendeau to Groveton Papers Company, dated January 12, 1960, recorded at Coos Deeds, Volume 451, Page 293.

12. Property described in a deed from Connecticut Valley Lumber Company to Odell Manufacturing Company, dated October 8, 1918, recorded at Coos Deeds, Volume 190, Page 344, being part of land conveyed by Odell Manufacturing Company to Groveton Papers Company, dated August 14, 1940, recorded at Coos Deeds, Volume 311, Page 184.

13. Land in Stratford described in a Deed from James Phelan, et al. to Groveton Papers Company, Inc., dated September 20, 1920, recorded at Coos Deeds, Volume 204, Page 273, being part of land conveyed by Groveton Paper Company, Inc. to Coos Realty Corporation, dated January 1, 1926, recorded at Coos Deeds, Volume 236, Page 131 and from Coos Realty Corporation to Groveton Papers Company dated August 14, 1940, recorded at Coos Deeds, Volume 311, Page 189.

V. Excepting and reserving from the above, certain earth and granular materials situated within the property described herein and certain easements relating to the right to enter upon the property and remove such materials for a period of seven (7) years from the date hereof, all as more specifically described in an agreement between the State of New Hampshire and Rancourt Associates of New Hampshire, a New Hampshire general partnership, dated August 24, 1988. All earth and granular materials and easement rights excepted and reserved herein were conveyed by Diamond International Corporation to Rancourt Associates of N.H., Inc. by deed dated October 27, 1988 and recorded in Coos County Registry of Deeds Book 737, Page 840.

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APPENDIX B

STATE COOPERATIVE LAND MANAGEMENT PROGRAM
FOR LANDS ADMINISTERED
BY THE
FISH AND GAME DEPARTMENT
DEPARTMENT OF RESOURCES AND ECONOMIC DEVELOPMENT
DEPARTMENT OF ENVIRONMENTAL SERVICES
DEPARTMENT OF TRANSPORTATION

I. AUTHORITY

The Cooperative Land Management Program (the "Program"), derives its authority, from RSA 227-H:2, RSA 227-G:3, RSA 215-A:3, RSA 212-A:9 and RSA 227-C:9 of the laws of the State of New Hampshire. Member agencies cooperate in a effort to strive for conformity of policies across state lands and coordination of recreation and natural resource conservation management.

II. BACKGROUND

As presently constituted, the Program embraces the following agencies:

Fish and Game Department
Division of Forests and Lands, DRED
Division of Parks and Recreation, DRED
Water Division, DES
Department of Transportation

Under current State government organization, the Divisions of Forests and Lands and Parks and Recreation are units of the Department of Resources and Economic Development. The Water Division is a unit of the Department of Environmental Services. The Fish and Game Department and the Department of Transportation are separate individual agencies.

III. PURPOSE AND BASIC OBJECTIVE

The State Cooperative Land Management Program has been established for the purpose of promoting cooperation and coordination between the State's land management agencies to ensure comprehensive consideration of multiple uses and resource values on state-owned lands. As its basic objective, the Program seeks to identify, integrate, and evaluate land-use policies, plans, and practices of participating agencies which appear to offer the best opportunities for combining multi-discipline resource management and public use.

IV. STRUCTURE AND RESPONSIBILITIES

To effectively administer the Program, the commissioners and executive directors of the participating agencies have established a policy-making Executive Committee, an Administrative Committee and a multi-disciplinary State Land Management Team. Additional agencies are invited to regularly attend as technical resource members to assist the land managing agencies in achieving program objectives.

EXECUTIVE COMMITTEE - The Executive Committee members include Executive Director of the Fish and Game Department, Director of the Division of Parks and Recreation and Director of the Division of Forest and Lands, Department of Resources and Economic Development, Director of the Water Division, Department of Environmental Services, and a representative of the Department of Transportation. To promote cooperation and coordination between participating agencies, the Executive Committee has agreed to:

1. adopt cooperative land management policies and objectives that are consistent with individual agency missions and authorities;
2. provide oversight and direction to the Administrative Committee regarding the coordination of multi-disciplinary land-use issues;
3. authorize the implementation and evaluation of multi-disciplinary land-use management plans and practices recommended by the Administrative Committee;
4. provide for the coordination and utilization of agency resources on management actions, and;
5. resolve disputes whenever the Administrative Committee is unable to reach consensus on management issues.

The Executive Committee recognizes that each agency may operate under various Federal and State requirements, laws and practices regarding the disposal of property.

ADMINISTRATIVE COMMITTEE - The Administrative Committee is composed of the following, or their designee:

Fish and Game.....	Chief, Wildlife Division Chief, Law Enforcement Land Agent(s)
Forests and Lands	Administrator, Land Management Bureau Administrator, Forest Management Bureau Administrator, Forest Protection Bureau Administrator, Natural Heritage Bureau
Parks and Recreation	Supervisor, Park Operations State Park Planning and Development Specialist Chief Supervisor, Bureau of Trails,
Water Division	Chief Water Resources Engineer Land Agent
Department of Transportation	Administrator, Bureau of Right-of Way, or Administrator, Bureau of Environment, or Administrator Highway Maintenance

In addition, the following agencies are technical resource members that are active participants and fully engaged in the work of the Administrative committee:

Cultural Resources Department, Division of Historical Resources
Department of Agriculture, Markets and Foods
Conservation Land Stewardship Program, Office of Energy and Planning
White Mountain National Forest

Note: Others are invited to participate on an Ad Hoc basis to provide issue specific information, guidance and perspective.

The Administrative Committee is instructed to:

1. review and provide comment to the Executive Committee when land management related issues require interpretation for adherence to current State Agencies' policies and objectives;
2. formulate specific recommendations regarding the nature, extent, and timing of land-use management;

3. initiate and administer those management policies and practices which the Executive Committee has approved;
4. provide oversight and direction to the State Land Management Team regarding the formulation, implementation, and evaluation of site-specific land-use management projects,
5. evaluate the execution and results of such practices, and;
6. refer unresolved policy issues or conflicts to the Executive Committee.

Every two years, the Administrative Committee shall elect a new chairman. Generally, the chairmanship shall rotate among the member agencies. The retiring chairman shall serve as a vice-chairman for the following two-year term.

STATE LAND MANAGEMENT TEAM - The State Land Management Team consists of professional and technical land and resource management specialists from agencies participating in the Cooperative Land Management Program, including specialists in fish and wildlife habitat management, forestry, natural heritage, cultural heritage, forest, trail and park recreation, forest protection, forest nursery, and land management. Team composition may vary depending upon a subject property and project's physical characteristics, resource composition, or management action under consideration.

The State Land Management Team:

1. provides coordinated, multi-disciplinary resource planning and land management review and assistance at the project level consistent with the mission and policies of participating agencies;
2. participates in inter-agency development of long-range comprehensive land and natural resource management plans;
3. implements approved management plans and projects; provides interagency communications on the status and evaluation of management projects of shared interest, and;
4. defers unresolved issues, conflicts, and matters of policy to the Administrative Committee for resolution.

The Administrator, Forest Management Bureau, or designee, serves as Team coordinator.

V. PROGRAM POLICIES

In establishing this Program, the Executive Committee has adopted the following administrative policies:

1. The Administrative Committee shall meet in regular session at 9:00 a.m. on the second Friday of January, April, July, and October, or at other times by mutual agreement. The State Land Management Team shall meet in a regularly scheduled monthly session. Special sessions and modifications of regular meeting times shall be scheduled as circumstances dictate. Additional meetings or field trips, concerning individual items, shall be held as required. Each quarterly meeting or special session shall be open to other personnel of participating agencies and to anyone else who wishes to attend.
2. Each agency shall maintain an up-to-date inventory of property and lands under their jurisdiction.
3. If requested by a member of the Executive Committee, an agency's proposal for surplus land disposal or leasing shall be reviewed under this Program prior to submission of such proposals to the Council on Resources and Development pursuant to RSA 4:40.
4. As general policy, agency proposals that involve physical changes to a property or significant changes in public use shall be reviewed under this Program for consistency with the policies and objectives of participating agencies. Management actions that are of a routine or recurring nature do not require multi-disciplinary review. However, any Program member may request review by the appropriate Program committee.
5. From time-to-time, the Administrative Committee may present recommendations to specific policies and/or procedures to the Executive Committee which would contribute to improved coordination in regard to agency operations, funding, public access or use of properties, or to the utilization of agency personnel on specific projects.
6. Whenever the Administrative Committee is unable to reach consensus on a management question, the matter shall be submitted to the Executive Committee for

resolution. The State Land Management Team shall defer unresolved issues and conflicts to the Administrative Committee as appropriate.

7. In implementing this Program, the agency having primary jurisdiction over a property, or unit thereof, shall advise any other agency whose interests may be affected by proposed actions.

8. For the purposes of this Program, the term "multi-disciplinary" refers to the long range, comprehensive and balanced consideration of multiple user interests and natural resource values consistent with the mission and authorities of Program agencies.

9. Public use of the lands under this Program shall be regulated in such manner as to assure conformity with all restrictions imposed by the application of Federal funds to the acquisition, development, and management of said lands.

10. Policies and procedures of this Program shall conform with all applicable State statutes.

EXECUTIVE COMMITTEE APPROVAL:

Glenn Normandeau, Executive Director
Fish and Game Department

2/24/14
Date

Philip A. Bryce, Director,
Division of Parks and Recreation

2/24/14
Date

Brad W. Simpkins, Interim Director
Division of Forests and Lands

2/24/14
Date

Harry T. Stewart, Director
Water Division – Dept. of Environmental Services

3/7/14
Date

William J. Cass, Director
Division of Project Development
Department of Transportation

2/25/14
Date

ACKNOWLEDGMENT:

Richard A. Cook
Chairman, Administrative Committee

3/19/14
Date

Kenneth M. Desmarais
Coordinator, State Land Management Team

3-17-14
Date

APPENDIX C

TITLE I
THE STATE AND ITS GOVERNMENT

CHAPTER 12-A
DEPARTMENT OF RESOURCES AND ECONOMIC DEVELOPMENT

Section 12-A:9-c

12-A:9-c Nash Stream Forest Citizens Committee. –

I. There is established the Nash Stream forest citizens committee. Committee membership shall be as follows and shall include a minimum of 7 members who are residents of any community in the Great North Woods region:

(a) One resident of the town of Stark, appointed by the selectmen.

(b) One resident of the town of Stratford, appointed by the selectmen.

(c) One resident of the town of Columbia, appointed by the selectmen.

(d) One person who shall have expertise in forestry and timber harvesting, appointed by the speaker of the house of representatives.

(e) One person who shall have expertise in monitoring conservation easements, appointed by the speaker of the house of representatives.

(f) One person who shall have expertise in outdoor recreation and tourism, appointed by the president of the senate.

(g) One person who shall have expertise in forest ecology and management of natural areas, appointed by the president of the senate.

(h) Two persons appointed by the governor with the consent of the council, one of whom shall be a representative of a New Hampshire snowmobile club, and one of whom shall be a representative of a New Hampshire environmental organization.

(i) A Coos county commissioner, or designee.

(j) The commissioner of the department of resources and economic development, or a citizen appointed by the commissioner as designee.

(k) The executive director of the fish and game department, or a citizen appointed by the executive director as designee.

(l) One person who is a member of the Nash Stream Campowners Association, appointed by the commissioner of the department of resources and economic development.

II. Each member shall serve a 3-year term. Vacancies shall be filled for the unexpired term of office in the same manner as the original appointment. Members may serve successive terms. Persons serving on the Connecticut Lakes headwaters citizens committee shall not be eligible to serve as appointed members of the Nash Stream forest citizens committee.

III. The members shall elect a chairperson from among the public members. Preference shall be given to a resident of the Great North Woods region if a member from that area is willing to serve as chairman, otherwise another public member shall be elected.

IV. The committee shall meet at least annually and at such other times as the chairperson deems necessary. At least once annually, the committee shall meet to review the management

plan of the state-owned properties as prepared by the managing state agencies. The committee's meetings shall be open to the public, in accordance with RSA 91-A. Interested members of the public shall be allowed to speak before the committee or to submit statements. Records, reports, and working papers generated or used by the committee, or both, shall be made available to the public for inspection or copying. The committee shall not be responsible to the public for the costs of copying its documents.

V. The duties of the committee shall include and be limited to:

(a) Providing advice to the monitoring entity for monitoring compliance with the terms and conditions of the working forest conservation easement covering approximately 39,601 acres of the Nash Stream forest tract.

(b) Providing advice to the department of resources and economic development and the fish and game department on the management of public recreational use of the Nash Stream forest tract, including the seasonal use of the road system, snowmobile trails and their use, and the terms for access and use of the tract by motorized vehicles.

(c) Providing advice on the management of natural areas within the tract.

(d) Providing advice to the department of resources and economic development and the fish and game department on any proposed revision to the stewardship or management plans required by the conservation easements on the 39,601 acres or the natural areas and, should amendments to these easements ever be contemplated, on the proposed amendments.

(e) Any and all duties of the "Citizen Advisory Committee" as outlined in the Nash Stream Management Plan of 1995 and revisions of 2002.

VI. The commissioner of the department of resources and economic development shall designate a state employee from the department as the administrative officer of the committee. The administrative officer shall attend each meeting of the committee and provide recordkeeping and related administrative and clerical assistance to the committee.

VII. The terms and provisions of the conservation easements shall at all times provide the legal basis for the committee's advice and authority, and any legal opinion of the easement's terms shall be rendered by the attorney general.

Source. 2004, 45:1, eff. July 2, 2004.

APPENDIX D

TITLE XII
PUBLIC SAFETY AND WELFARE

CHAPTER 162-C
COUNCIL ON RESOURCES AND DEVELOPMENT

Land Conservation Investment Program

Section 162-C:6

162-C:6 Purpose; Management. –

I. The general court recognizes that in order to maintain New Hampshire's distinctive quality of life, strong economic growth must be balanced with responsible conservation initiatives, and that the history of conservation in New Hampshire has been marked by cooperation among government, business, individuals, and conservation organizations. The general court further recognizes the strong traditions of both public and private land ownership and use, and the need to respect investments in the conservation of natural resource lands in the state for the perpetual use of the people of New Hampshire. In addition, the general court recognizes that the land conservation investment program was undertaken, in part, with significant donations of cash and land value by citizens of the state who intended that the conservation value of these lands be protected in perpetuity.

II. In addition to its other responsibilities, the council shall manage and administer the lands acquired and funds established under the land conservation investment program under the former RSA 221-A, according to the provisions of this subdivision and consistent with agreements entered into with persons with ownership interests in such lands.

III. The council shall manage the lands acquired under the former RSA 221-A so as to preserve the natural beauty, landscape, rural character, natural resources, and high quality of life in New Hampshire. The council shall maintain and protect benefits derived from such lands and maintain public access to such lands, where appropriate. On state-owned lands, whenever the council shall deem it in the best interest of conservation and protection of the values outlined in this section, it may, with the consent of the governor, authorize the exchange of any interest in the property when the conservation values of the property would be degraded if no action were taken. Prior to submitting a request to the governor to exchange any interest in the property, the council shall provide at least 30 calendar days advance notice to the local governing body and conservation commission. Such exchanges shall be reviewed and approved by the council, shall involve lands contiguous to the original acquisition which have equal or greater conservation value, and shall convey only those interests necessary to compensate for the potential degradation.

IV. Notwithstanding paragraphs I-III, the council shall recognize that the interest of public safety and welfare may, from time to time, require minor expansion, minor modification, or minor alteration of existing roads within the state highway system. After review and approval by the council, and notwithstanding RSA 162-C:10, the department of transportation may obtain interests in lands acquired under the former RSA 221-A adjacent to state highways. Permissible

expansion, modification, or alterations under this section shall include drainage easements, slope easements, lane widening, the addition of a passing, climbing, or turning lane, or similar adjustments, but shall not include construction of a new highway or portion thereof, construction of a bypass for an existing highway, or similar major alterations. Approval shall not be granted if reasonable and prudent alternatives exist nor if individual or cumulative approvals are likely to materially impair the conservation purposes for which the parcel was originally protected. Projects determined by the council to be outside of the scope permitted by this subdivision shall require approval from the general court.

V. The review and approval process required by paragraph IV shall give full consideration to the management provisions contained in paragraphs I-III. The department of transportation shall submit a written request to the council with plans and supporting documentation to demonstrate compliance with the provisions of this chapter. A quorum of the council, consisting of at least 6 members, shall hold a public hearing within 90 days of receipt of a complete request to release land conservation investment program interests. The council shall provide at least 10 calendar days notice in advance of such hearing. Notification shall be made, at the expense of the department, to the landowner, local governing body and conservation commission, abutters, the Society for the Protection of New Hampshire Forests, The Nature Conservancy, the Audubon Society of New Hampshire, the New Hampshire Wildlife Federation, and the county conservation district, or their successors. Notification of the public hearing shall be published, by the department, in a paper of general circulation in the municipality and shall be posted, by the department, in at least 2 public places. At the hearing or within 15 days after the hearing, a majority of the council members attending the hearing shall vote to approve or deny the application, unless a time extension is requested by the department. Aggrieved parties, which include all parties who must be notified under this paragraph, may appeal the council's decision to the superior court in the same manner as planning board decisions are appealed under RSA 677:15.

VI. Compensation for any interest in land obtained by the state department of transportation under this section shall be at the appraised full fair market value of those property interests at the time of the department's acquisition. Alternative forms of compensation such as replacement land with comparable conservation value, or a combination of monetary compensation and replacement land may be considered in appropriate circumstances provided all parties owning an interest in the property agree to such terms.

VII. Compensation due to the state under this section shall be deposited in the trust fund of the New Hampshire land and community heritage investment program established under RSA 227-M and used for the purposes of that program. Compensation due to municipalities shall be dedicated to the acquisition or monitoring of protected lands consistent with the purposes of this chapter. Compensation due to landowners of conservation easement lands shall be as specified in the conservation easement, deed, or as otherwise negotiated. Any party aggrieved by the amount of compensation may file a petition with the superior court in the same manner as damage appeals are filed from the board of tax and land appeals under RSA 498-A:27.

Source. 1995, 10:4. 1998, 364:1. 2000, 245:2, eff. June 8, 2000.

APPENDIX E

Nash Stream Forest Citizens Advisory Committee	
January 1, 2017	
Representative	**Name/Term End**
Town of Stark	Albert Cloutier August 22, 2019
Town of Stratford	Mike Lynch May 6, 2017
Town of Columbia	Norman Cloutier August 24, 2019
Expertise in forestry and timber harvesting	Kevin S. Evans August 29, 2019
Expertise in monitoring conservation easements	David Scanlan August 29, 2019
Expertise in outdoor recreation and tourism	Bill Noons June 30, 2017
Expertise in forest ecology and management of natural areas	David Govatski August 30, 2019
New Hampshire snowmobile club	Jim Herbert June 30, 2018
New Hampshire environmental organization	Jeff Lougee June 28, 2019
Coos county commissioner, or designee	Michael Waddell September 13, 2019
The Commissioner of DRED or designee	Ted Burns May 13, 2017
Executive Director of the Fish & Game or designee	John Lanier August 2, 2019
Nash Stream Camp owners Association	Rita Goumillout December 9, 2019

APPENDIX F

PRIVATE CAMP LOT LICENSE POLICY

BACKGROUND

One hundred and four (I04) camp lot leases (now 91) were acquired in 1988 with the purchase of Nash Stream Forest. The following conditions were included in an agreement negotiated between the Department of Natural and Cultural Resources (DNCR and the owners of the camps that existed on the property at the time of state acquisition: 1) ownership cannot be transferred after June 30, 2004, and 2) all private camp lot licenses terminate on June 30, 2039. This agreement recognized the investment in time and money of the camp lot lessees in their camps and allowed a reasonable period of time in which to recoup this investment with the objective of phasing out the lease lots.

The Nash Stream Forest agreement was based on a long-standing DNCR policy established in 1965 by its predecessor agency, the Forestry and Recreation Commission designed to terminate exclusive-use rights of state-owned property.

Despite the apparent similarity and same basic purpose of the two policies, (DNCR's long-standing policy and the Nash Stream Forest private camp lot license agreement) to return exclusive, privately used state-owned land to public use, there is a major and significant difference. Since 1965, state land acquisitions included fee purchase of land and buildings, if present, with the express purpose of removing any buildings "...to improve the conduct of state programs, or otherwise (serve) in the public good" as stated in the Division of Forests and Lands 1961-70 Decade Report.

With the 1988 acquisition of Nash Stream Forest, the state of New Hampshire departed from this long-standing policy by not purchasing the 104 privately owned camps. Additionally, the existing, private recreation camps are permitted by the Conservation Easement Deed held by the United States of America.

The Nash Stream Forest Camp Owners Association requested that the June 30, 2004 transfer prohibition date and June 30, 2039 license termination date be eliminated. They pointed out (at the October 2001 public listening sessions for the Nash Stream Forest Management Plan revision process) their camps have long been a part of the Nash Stream Forest landscape and culture of the North Country, and contribute to the local economy. These attributes are principles to be achieved in the Vision of the Nash Stream Forest Management Plan. In addition, they stated, the Nash Stream camps provide revenue to the state through their annual fees ($86,624 in FY 15) that help offset property management costs.

This document will set forth the Department of Natural and Cultural Resources policy with regard to these recreation camps.

GOAL/OBJECTIVES

The established and ultimate goal of DNCR is to remove the private recreation camps from state land and to return the lease sites to public use. However, DNCR acknowledges that implementation of its long-standing policy to terminate exclusive-use rights of state-owned property should have included the purchase of the 104 (now 91) privately owned camps with state acquisition of the Nash Stream Forest in 1988. Further, DNCR recognizes that the camps serve to achieve principles defined in the Vision of the Nash Stream Forest

Management Plan as pointed out by the Camp Owners Association.

The Nash Stream Forest Citizen Advisory Committee recommended to DNCR, at their February 13, 2002 meeting, that the Nash Stream Camp Owners Association request to eliminate the transfer restriction date of June 30, 2004 and license termination date of June 30, 2039 be granted for the privately owned camps.

GUIDELINES/CONSIDERATION

The transfer (sale, gift, etc.) restriction date of June 30, 2004 and overall license termination date of June 30, 2039 are eliminated. License terms and renewals shall be in five-year increments, granted at the option of licensees, subject to the approval of the Attorney General and Governor and Council. Transfers of individual or family camps shall not be limited and shall not be transferred to or owned by more than two individuals at any one time. Camp lot licenses shall be transferred to new camp owners. The state of New Hampshire shall have "first refusal option" to purchase any camp, not transferred to an immediate family[1] member and placed on the open market, from willing sellers at the fair market value of structures and improvements. To be consistent with DNCR policy, elimination of the transfer restriction date of June 30, 2004 and elimination of the overall termination date of June 30, 2039 is contingent upon the state of New Hampshire having "first refusal option".

Association camps shall be limited to the total number of memberships existing at the date of state acquisition of the Nash Stream Forest. Individual association memberships may be transferred to immediate family only. Association camps may be transferred to one or two individuals if "first refusal option" is declined by the State, or to one or two immediate family but may not be transferred to another association, group or organization.

DNCR reserves the right to remove from state land, or to utilize for public benefit, any camp purchased by the state. DNCR also reserves the right to remove, sell or otherwise utilize for public benefit any camp that becomes the property of the state through abandonment or other reason.

Through June 30, 2009, Camp Lot License annual rents were uniform for all lots within Nash Stream Forest. Dated March 27, 2009, an appraisal report by Scot D. Heath of Heath Appraisal Services, entitled “Market Rent Study - Leased Camp Sites – Nash stream State Forest”, determined the annual rent to be under market value, and recommended and recommended specific levels of License fees based on site amenities. DNCR adopted the following three (3) categories and phased in over the next four (4) years the recommended rent increases determined by the appraisal work:

1) Basic Camp (FY 15 rent @ $928)
2) Shorefront with vehicle access (FY 15 rent @ $1,094)
3) Shorefront without vehicle access (FY 15 rent @ $1,014)

The rents may be adjusted at each five-year renewal. However, any increases shall not exceed the accumulated yearly percentage change in the Consumer Price Index for the previous five-year license period, as determined by the United States Department of Commerce and as adjusted regionally for the northeast.

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1 Defined under RSA 633:3-a as father, mother, stepparent, child, stepchild, sibling, spouse, or grandparent

APPENDIX G

Camp Lot ID #:

#1 Licensee
Name of LICENSEE:
Mailing Address:

Telephone:
Telephone:

#2 Licensee
Name of LICENSEE:
Mailing Address:

Telephone:

NASH STREAM FOREST
RECREATIONAL RESIDENCE AND SITE LICENSE AGREEMENT

The State of New Hampshire acting through its Department of Natural and Cultural Resources, Division of Forests and Lands, having a mailing address of 172 Pembroke Rd, Concord, New Hampshire, 03301 ("STATE"), and XXXXXXX, ("LICENSEE") with an address of XXXXXXX**,** enter and execute this Recreational Residence and Site License Agreement ("AGREEMENT") effective as of the date of signing by the LICENSEE.

WITNESSETH

Whereas, the STATE is owner of the Nash Stream Forest ("PREMISES"), located in the Towns of Stratford, Stark, Odell and Columbia, County of Coos and State of New Hampshire; and

Whereas, the PREMISES contains within its bounds 91 lease lots ("LICENSED SITE") on which are located privately owned and/or occupied camps; and

Whereas, it is recognized that these camps have historically been an intrinsic part of the PREMISES, landscape and culture of the North Country, and contribute to the local economy; and

Whereas, a Conservation Easement Deed granted by the State of New Hampshire to the United States of America on the PREMISES prohibits residential uses including vacation homes, cabins and camps, but allows existing camps to continue for forest-related recreation, subject to specific conditions set by the STATE; and

Whereas, the STATE manages the PREMISES, and the camps thereon, under a written plan known as the "Nash Stream Management Plan" (the "PLAN"); and

Whereas, on June 6, 2002, Commissioner George M. Bald, Commissioner of the Department of Resources and Economic Development revised the Nash Stream Management Plan as follows:

- eliminated the transfer (sale, gift, etc.) restriction date of June 30, 2004;
- eliminated the overall license termination date of June 30, 2039; and
- required that the STATE have first right of refusal; and

Whereas, the revised PLAN dated 2002 states that the STATE shall have "first refusal option" to purchase any camp not transferred to an immediate family member and placed on the open market from willing sellers at the fair market value of structures and improvements; and

Whereas the PLAN further states that to be consistent with STATE policy, elimination of the transfer restriction date of June 30, 2004, and elimination of the overall termination date of June 30, 2039, is contingent upon the STATE having "first refusal rights"; and

Whereas, the LICENSEE is the owner/lessee of a camp ("RECREATIONAL RESIDENCE") that was in existence on the PREMISES on October 27, 1988, the date of the STATE'S acquisition.

Therefore, in consideration of: safeguarding the natural resources of the PREMISES, maintaining a natural and remote character forest setting, assuring safety of the general public and the LICENSEE, preventing urbanization of the LICENSED SITES, and the annual rental hereinafter specified, the STATE hereby licenses the LICENSEE to use Camp Lot ID **#:** _____, ("LICENSED SITE") for the purpose of a private RECREATIONAL RESIDENCE for personal forest-related recreation residence use subject to the following terms and conditions:

1. DEFINITIONS: As used herein the following terms shall have the following meanings:

a. The "LICENSEE" shall mean not more than two (2) signatories ("#1 LICENSEE", "#2 LICENSEE") to the AGREEMENT. LICENSEES may change subject to Section 9.

b. The "LICENSEE" shall include the #1 LICENSEE, the #2 LICENSEE, their agents, employees, invitees, guests, family, contractors of others making or claiming entitlement to use the LICENSED SITE pursuant to this AGREEMENT.

The "STATE" shall include the Commissioner of the Department of Natural and Cultural Resources

c. Department of Natural and Cultural Resources, the Director of the Division of Forests and Lands, their employees of each, and their contractors and agents.

d. The "LICENSED SITE" shall mean the immediate area ("CURTILAGE") of land upon which is located the RECREATIONAL RESIDENCE, all associated auxiliary buildings and other improvements, including driveways and parking areas. The LICENSED SITE shall have no monumented or mathematically described boundary.

e. "Adjoining Land" includes all of the PREMISES, including all access roads and trails.

f. "Commercial Use" shall mean any activity which brings revenue to anyone using the LICENSED SITE.

g. "Personal Recreation Residence Use" shall mean the use of the LICENSED SITE only for intermittent personal recreation use of a non-commercial nature by the LICENSEE, members of the LICENSEE'S immediate family and guests. Year-round occupancy of the LICENSED SITE shall not be allowed.

h. "Trees" shall mean any vegetation having a diameter at breast height of two (2) inches, or greater.

i. "Legal, Year-Round Residence" shall mean the place of one's true, fixed, and permanent domicile and principal establishment for the privilege of voting and other legal rights.

j. "Dug foundation" shall mean any improvement foundation requiring the excavation of earthen materials below original grade

k. "Grandfathered" shall mean in existence at the time of the execution of the AGREEMENT.

l. "Immediate family" as defined under RSA 633:3-a, shall mean father, mother, stepparent, child, stepchild, sibling, spouse, or grandparent.

m. "foot print" shall mean the aggregate footprint measured from the drip edge of the impervious surfaces, including sheds, decks, boat houses and other structures.

2. TERM / RENEWAL: The term of the AGREEMENT is thru June 30, 2019, unless sooner cancelled or revoked as provided herein. At the expiration of said term, if the LICENSEE is not then in default, sixty days prior to termination of this AGREEMENT, the STATE shall deliver a new AGREEMENT to the LICENSEE for a successive five (5)-year term, subject to approval by Governor and Council. If the LICENSEE does not execute and return the new AGREEMENT within thirty days, the AGREEMENT shall terminate, and the STATE shall proceed to take back the LICENSED SITE in accordance with Section 10.

3. RENTS/TAXES: The LICENSEE shall pay an annual RENT ("RENT") of **$**_____ for the use of the LICENSED SITE. **Camp Lot ID #:_____. Beginning July 1, 2014, the ensuing 5-year renewal annual fee payments will remain the same after being adjusted at year one according to the change in the Consumer Price Index over the past 5-year License period.** The RENT shall be due and payable by August 1 annually by check made payable to Treasurer, State of New Hampshire and delivered to the Department of Natural and Cultural Resources, 172 Pembroke Rd, Concord, New Hampshire 03301. RENT payments not received by August 31 shall be considered overdue, subject to a $25.00 late-payment charge, and such late payment is just cause for cancellation of the AGREEMENT.

The STATE reserves the right to change the RENT based on the policies set forth in the then current policies of the STATE as they are set forth in the Nash Stream Forest Management Plan, which may be amended from time to time by the STATE.

The STATE reserves the right to change the RENT at each subsequent renewal, and at any transaction of the AGREEMENT outside the immediate family, based on the then current policies of the STATE as they are set forth in the Nash Stream Forest Management Plan, which may be amended from time to time.

The LICENSEE shall pay, in addition to any other payments provided hereunder, the full amount of real and personal property taxes levied against the LICENSED SITE as a consequence of the application of RSA 72:23 I, which provides for taxation of certain STATE properties used or occupied by persons or entities other than the STATE.

All taxes assessed on the RECREATION RESIDENCE and improvements, including water supplies and septic systems, shall be paid by the LICENSEE.

Failure of the LICENSEE to pay the duly assessed real and personal property taxes when due shall be cause to terminate the AGREEMENT by the STATE. The foregoing shall not deprive the LICENSEE of the right to contest or review all such taxes by legal proceedings or in such other manner as may be suitable.

4. USE AND OCCUPATION OF LAND: The LICENSEE shall be permitted to cross the PREMISES and to enter, occupy and use the LICENSED SITE for a RECREATION RESIDENCE for personal recreational use and related purposes acceptable to the STATE. The LICENSEE shall not be permitted to use the LICENSED SITE for any other purpose except by prior written permission of the STATE. The LICENSED SITE shall not be used as a legal, or year-round residence, or as a temporary place of domicile for greater than four (4) consecutive weeks.

The LICENSEE and all persons using the LICENSED SITE with the consent of the LICENSEE shall comply with all laws and regulations of the State of New Hampshire governing State forests and State parks and all Federal, State, County and municipal laws, ordinances or regulations which are applicable to the area or activities covered by this AGREEMENT.

5. ACCESS: The LICENSEE shall have the right to use any open road traditionally used by vehicles on the PREMISES while traveling to and from the LICENSED SITE.

The STATE reserves the right to close, lock, gate, or otherwise restrict access along, through, or over roads at anytime during periods of saturated road conditions or high fire danger, when business operations make traveling hazardous in the opinion of the STATE, or for other safety, health, or environmental purposes deemed necessary by the STATE.

The RENT received by the STATE is for the use of the LICENSED SITE only and is not to be construed as providing the LICENSEE with any greater rights of access over the PREMISES than is provided to the general public, or to create any greater obligation on the part of the STATE to provide access beyond that obligation to the general public. The RENT received from the LICENSEE is not considered as payment of a fee to use the roads accessing the LICENSED SITE.

The LICENSEE agrees that it travels over the roads and land of the STATE at the LICENSEE's own risk. The LICENSEE shall indemnify, hold harmless, defend and reimburse the STATE from and against any and all claims, actions, suits, damages, liabilities, costs or expenses, including reasonable attorneys' fees, of any kind or nature whatsoever on account of injuries to or death of any person or damage to property arising out of the travel of the LICENSEE over the PREMISES.

6. STRUCTURES, MAINTENANCE, and ALTERATIONS: The LICENSEE shall not construct or establish any new building, additions, or other improvements or alterations to the LICENSED SITE without the prior written consent of the STATE. The LICENSEE has sole responsibility to obtain all necessary permits at its own cost and expense from any governmental authority to place, construct, or maintain any buildings or other improvements on the LICENSED SITE.

A. New Improvements: Any new building, accessory structure, or other improvement constructed or placed upon the LICENSED SITE shall conform to all applicable laws and regulations and are subject to the approval process described in Paragraph 6D.

With written approval from the STATE, the construction of any buildings or other improvements on the LICENSED SITE shall be semi-permanent in nature, i.e., without a dug foundation (see definition), except that excavation for sauna tubes, out houses, and general leveling using natural and processed gravel products shall be allowed. Concrete product foundations and slabs shall not be allowed except by written permission from the STATE. All new construction shall be of substantial solid construction, be in keeping with the natural setting, and shall not be permanently faced with tar or roofing paper. New metal buildings and vinyl siding, or the like, shall not be allowed.

B. Existing Improvements: Alterations of the interior of existing structures and repairs to the interior or exterior to assure structural stability or improve appearance shall be allowed. Any renovation, reconstruction, or expansion of an existing improvement shall conform to all applicable laws and regulations, and be subject to the approval process described in Paragraph 6D.

C. Minor Maintenance: Minor maintenance involving repairs-in-kind resulting in no effects to the natural resources and no changes in footprint or profile of the camp shall not require approval from the STATE.

D. Improvement Approval: The LICENSEE shall obtain written approval from the STATE prior to any construction, reconstruction, or placement of permanent buildings or other improvements of any kind on the LICENSED SITE. The STATE shall not give such consent until the LICENSEE has supplied detailed improvement plans including the following:

- A statement of purpose,
- Dimensioned sketches showing plan and profile views of the proposed improvements,
- A dimensioned sketch showing proposed improvement location and setback distances with respect to any water source, driveway and parking area, existing improvements, and abutting Licensed Site improvements within 50 feet of the proposed improvement, and
- Other information reasonably needed to enforce the terms of the AGREEMENT.

At the time of request, the STATE reserves the right to require the LICENSEE to make upgrades to the camp, including installing State approved sanitary waste and gray water systems (see Section 6.G), in order to bring the LICENSEDED SITE into full compliance with the AGREEMENT.

The STATE shall approve the proposed improvement provided that it does not conflict with the Conservation Easement covering the PREMISES held by the United States of America, meets the above standards and otherwise meets, in the STATE's sole judgment, these development criteria:

1. Compatible with the natural surroundings;

2. Unobtrusive on the landscape;

3. Unless grandfathered, the footprint shall not exceed 1,000 square feet in area as measured from the drip-edge, one and one half (1&1/2) stories with a single pitch to center ridge roof, and 25 feet in height (excluding chimneys and stove pipes). If existing improvements exceed such dimensions, there shall be no further expansion. No new improvement shall cause the footprint to exceed 1000 square feet as measured from the drip-edge, exceed one and one half (1&1/2) stories with a single pitch to center ridge roof, or exceed 25 feet in height;

4. Having low impact on the environment; and

5. Maintaining a rustic appearance by using natural materials such as wood and stone.

The STATE may impose reasonable conditions on its approval of the proposed project in order to meet these criteria.

Once the STATE approval has been granted, any local, County, State or Federal required permits must be obtained and a copy forwarded to the STATE for record keeping.

Failure to undertake the proposed activities in accordance with the approvals under this paragraph and all applicable laws and regulations shall constitute a default under the AGREEMENT.

E. Tent Use: Tent platforms shall be considered as permanent structures, and shall be included in the square foot calculation of allowable building impact.

F. Use of Mobile Accommodations: Unless grandfathered, or as otherwise permitted below (short term) mobile homes and RVs shall not be used on the LICENSED SITE. A Mobile home, RV travel trailer, truck camper, tent trailer, etc. may be used as a temporary RECREATIONAL RESIDENCE or accessory structure during RECREATION RESIDENCE construction, or for short term use by the LICENSEE's guests, upon written permission from the STATE.

G. Sanitary Waste and Gray Water Disposal: All sanitary waste and gray water disposal systems existing on or before July 1, 2004, shall be considered grandfathered for purposes of the terms of the AGREEMENT. This does not imply that they are in compliance with existing laws. The failure of any such system after January 1, 2004, shall be subject to municipal, County, State and Federal permit requirements. Failure to immediately begin repair of the failed system, or failure to remove without intent to replace in-kind, shall constitute a default under the AGREEMENT. All proposed additions or new sanitary waste and gray water disposal systems must be approved in writing by the State and must comply with municipal, County, State, and Federal permit requirements. However, no future drains, sewers, or wastewater outlets that empty upon the surface of the ground or empty into any pond, bog, stream, or open water on the PREMISES shall be allowed.

H. Water Supply: No machine drilled wells shall be allowed. Existing hand-dug wells, well points and gravity feed water systems shall be grandfathered. New water systems not in place as of July 1, 2004, shall be allowed upon written approval from the STATE, subject to local, State, and Federal regulations.

I. Utilities: The LICENSEE has no rights to install utilities including power lines. The use of electric generators shall be a privilege, and allowed only between the hours of 6 am and 10 pm. Any generator use determined to constitute a noise nuisance shall result in loss of privilege.

Propane gas systems shall be allowed. Propane deliveries shall be subject to road conditions.

J. Satellite Dishes / Radio Antennas: Satellite dishes and television antennas shall not be allowed. One permanent, external radio antenna shall be allowed.

K. Road Construction / Maintenance: The LICENSEE shall not repair, or construct new, any driveway or associated parking area without the prior written consent of the STATE. Construction shall be at the LICENSEE's expense, and shall be limited to one single-lane width with associated parking for two cars.

Existing and approved driveways shall be of native gravel materials. No paving, concrete, or similar surfacing is allowed.

If the LICENSED SITE is accessible by automobile, the LICENSEE must provide a parking area in a manner to avoid obstruction of any road open to public travel, subject to written approval by the STATE.

Road maintenance will be performed only as required for the STATE'S management activities. Maintenance of any road is not implied and should not under any circumstances be expected. However, if the STATE ceases to maintain a road adequately for the LICENSEE'S access to the LICENSED SITE, the LICENSEE may make improvements to the road with permission from the STATE.

L. Gates: No gates or traffic barriers shall be installed to the LICENSE SITE without prior written consent of the STATE. Any agreed-to gate will be erected at the LICENSEE'S expense and both gate design and locks and keys must conform to the STATE's standards.

Except for the above provision, the LICENSEE shall not restrict passage over existing public roads or rights of way on the PREMISES by any means, including locking, closing, or erecting barriers.

M. Housekeeping: The LICENSEE shall maintain all buildings and other improvements located on the LICENSED SITE during the term of this License AGREEMENT in a neat, sanitary, and safe condition. Standards of repair, orderliness, neatness, sanitation and safety shall be those acceptable to the STATE. The exterior of all structures shall be sided (covered) with a material that is aesthetically appropriate to and will blend with the forest setting.

The LICENSEE shall dispose of all garbage, trash, and other solid waste by removing all such material from the LICENSED SITE and depositing same at an approved facility maintained for such purpose at no cost to the STATE. Notwithstanding any prior practice, positively no disposal shall take place on the PREMISES. On-site burning of trash is not allowed.

Any building materials shall be stored in an orderly fashion. Only those materials needed for work in progress shall be stored on the LICENSED SITE. When work is completed, materials and construction debris shall be removed in a timely manner.

No unregistered vehicles shall be stored on the LICENSED SITE or on the PREMISES. Any unauthorized vehicle shall be removed at the expense of the LICENSEE. Historic motor vehicle "relics" of the past located on the PREMISES shall remain the property and responsibility of the STATE.

All RECREATION RESIDENCES must display the LICENSED SITE number, to be provided by the STATE. Signs shall not be nailed to trees.

Posting "Private Property" or "No Trespassing" signs is prohibited.

N. Hazardous Materials: No combustible or hazardous materials or substances shall be kept on the LICENSED SITE, except that LICENSEE may keep reasonable quantities of those materials commonly used for ordinary household purposes or recreational activities, provided they are stored, used, and ultimately disposed of in a lawful manner.

O. Landscaping: The LICENSEE shall not cut, use or remove any timber, trees, wood or other forest products on the LICENSED SITE and the PREMISES for any purpose including firewood, except where approved by the STATE. The LICENSEE shall take all reasonable precautions to prevent unauthorized persons from doing any cutting or destruction of live trees or other plant growth on the LICENSED SITE. Removal of dead or hazardous problem trees from the LICENSED SITE shall be coordinated with the STATE's representative and accomplished at LICENSEE's expense. The LICENSEE may immediately remove blow-down trees and debris blocking open roads or driveways, or that present an immediate danger to human safety or hazard to structures or improvements on the LICENSED SITE, with timely verbal follow-up notification to the North Region Forester, or his designee, in Lancaster at (603) 788-4157.

The LICENSED LOT must be kept clean, neat, and free of litter, debris and forms of scrap metal. Firewood must be neatly stacked in a woodshed or in one area, and not exceed a two (2) year supply.

Sheet plastic and tarps may be used as temporary covering for protection from the weather. Colors should blend with the natural environment.

LICENSEE shall not introduce any non-native plant or animal species, except for domestic pets that will be properly restrained, or any invasive plant or animal species on the LICENSED SITE or the PREMISES. "Non-native" means species that do not naturally occur on the PREMISES or in the northeastern United States.

Any earth or soil removal or relocation by any means is prohibited without permission of the STATE. State laws strictly regulate any shoreline alteration or improvements such as docks, piers, beaches, dredging or filling that could affect water quality or wildlife habitat. The LICENSEE shall not make such alterations or improvements without obtaining the STATE's permission and complying with all applicable laws.

No fences are allowed without approval of the STATE.

P. State Recreational Use Laws: LICENSEE shall fully comply with all State statutes, rules, and regulations dealing with fishing, wildlife, wildland fire and motorized and non-motorized recreational use of the PREMISES.

Q. Fire Prevention: All chimneys shall be equipped with adequate spark arrestors. The opening of any chimney shall be at least 3 feet horizontally and 10 feet vertically from any overhanging tree.

Outdoor fires shall require a proper permit from the local fire warden. No incinerators shall be permitted on LICENSED SITE. Outdoor fireplaces shall be approved by the local Forest Fire Warden.

R. Fire and Vandalism: The LICENSEE shall use every precaution to prevent damage to the timber, trees, wood and other forest products on the LICENSED SITE, and improvements thereon from fire, vandalism, or malicious mischief. LICENSEE shall take all reasonable action to suppress any fire, which occurs on the LICENSED SITE or the PREMISES, and shall immediately report fire or other damage to the STATE and appropriate authorities.

No material shall be disposed of by burning in open fires without a written permit from the local Forest Fire Warden.

LICENSEE shall be liable to the STATE for any damages incurred by the STATE as a result of any fire caused by LICENSEE.

S. Firewood/Brush: No wood or timber standing on the LICENSED SITE shall be cut or used without approval from the STATE. The LICENSEE may cut such brush and limbs as are necessary to maintain existing openings and to prevent damage to structures on the LICENSED SITE. No firewood may be brought to LICENCED SITE from out-of-state sources. Per DRED order 2009-01, firewood from out-of-state is prohibited due to the risk of spreading exotic forest insects and diseases.

LICENSEE may collect and buck up dead and down trees throughout Nash Stream to be utilized as firewood at the License site. Trees have to be both dead and down on the ground, no felling of trees is allowed. No ATV's or other motorized vehicles may be used to gather wood off designated roads and trails. No firewood may be taken off of the property to be used at a different location. Each camp may take no more than 2 cords per calendar year and must carry the Firewood Permit. A Firewood Permit shall be issued with along with the License. The Firewood Permit is automatically renewed when the annual rent is paid.

T. Restricted Use of LICENSED SITE and PREMISES: LICENSEE shall not interfere with logging or other forestry operations on the LICENSED SITE or PREMISES by, for example, blocking roads with vehicles or causing damage to roads by driving over them during adverse climactic conditions. LICENSEE shall not interfere with or damage any of the STATE's property, including, but not limited to, any cut wood fiber, logging equipment, dams, boats, tools, signs, notices, or other property of the STATE or its agents, employees, lessees or LICENSEES, whether on the LICENSED SITE or the PREMISES, and the LICENSEE shall prevent such interference by any invitees, guests, employees or agents of LICENSEE.

The LICENSEE shall be liable for all damage caused by LICENSEE to the LICENSED SITE or to the PREMISES, and any damage caused by the LICENSEE shall be an event of default under the AGREEMENT. The LICENSEE shall reimburse the STATE for the costs and losses associated with any such damage or interference.

U. Nuisance Behavior: The LICENSEE shall not engage in any obnoxious, dangerous, or offensive activity or any activity that may be or result in a nuisance to other persons lawfully present on the PREMISES, or any activity that may result in a diminution in the value of the PREMISES.

V. Animal Management: No animals, other than common household pets, shall be kept on the LICENSED SITE or the PREMISES. Animals must not pose a health or safety threat to humans, native wildlife, or the forest habitat. Livestock is prohibited. Under no condition may any animal be permanently released onto the PREMISES. Household pets shall be under the control of their owners, and shall not be a nuisance to users of the PREMISES, or to other LICENSE SITES.

W. STATE'S Right to Pass: The rights granted to the LICENSEE pursuant to the AGREEMENT shall not in any way affect the right of the STATE to enter upon, use and enjoy the LICENSED SITE at any and all times for any business purpose, including forestry, land management, timber harvesting, road construction, maintenance and the like. The STATE shall have the right to enter upon the LICENSED SITE, for the purpose of inspection of the LICENSED SITE and the exterior of the buildings and/or other improvements to enforce the terms of the AGREEMENT, or in the event of an emergency. The LICENSEE acknowledges that the STATE's activities may affect the LICENSEE's enjoyment of the LICENSED SITE, and the LICENSEE expressly consents to such activities and in particular any visual, noise and/or aesthetic impacts.

X. Risk/Destruction by Catastrophic Events: In the event of destruction by fire, human error or natural, or by other natural disaster events, the LICENSSEE may rebuild in-kind a recreational residence on the LICENSED SITE if the STATE determines that the LICENSED SITE can be safely occupied. Any such rebuild must be approved in writing by the STATE based on plans provided by the LICENSEE in conformance with Section 6 (D) above. The building must be completed in two (2) years.

The LICENSEE may elect to abandon the LICENSED SITE by written notice to the STATE. In which case the AGREEMENT shall terminate and the LICENSEE is responsible for disposal of the improvements and restoration of the LICENSED SITE to its natural condition.

The LICENSEE has the responsibility of inspecting his LICENSED SITE, access road and immediate adjoining area for dangerous trees, hanging limbs, and other evidence of hazardous conditions and, after securing permission from the STATE, of removing such hazards. In the event of imminent danger, said hazards may be immediately removed, after which the LICENSEE shall notify the STATE of the actions taken.

Y. Boats, Boat Houses, Docks, and Moorings: The LICENSEE shall not construct or place any boat house, docks, wharves, or moorings on or in water bodies in the PREMISES. Boat houses and docks in existence upon the date of State acquisition of the Nash Stream Forest may remain in place in their present location and configuration. Repairs to existing boat houses and docks shall require approval of the STATE and permits from the New Hampshire Department of Environmental Services.

Boats are permitted but they shall be either secured to existing docks or to the shore or removed from the water body after each use. All boats shall be removed from the water body at the end of the boating season (before freeze-up).

7. ENCUMBRANCES: The LICENSEE shall not at any time mortgage or otherwise encumber the LICENSED SITE. Nothing contained herein shall prevent the LICENSEE from giving a mortgage on buildings and improvements erected by LICENSEE. However, under no circumstances will the existence of such mortgage or encumbrance diminish or alter any of the rights of the STATE hereunder, particularly with reference to termination of the AGREEMENT. Any mortgagee or creditor of the LICENSEE shall be limited to the same rights of the LICENSEE, which shall not be in any way enlarged or altered by the existence of the mortgage or encumbrance, and shall explicitly state its subordination to the rights of the STATE.

8. WORKING FOREST: LICENSEE hereby acknowledges as follows:

A. That the STATE is engaged in land management for a variety of commercial and recreational purposes including, but not limited to, the commercial growing and harvesting of wood fiber from its timberlands, including those timberlands adjacent to the LICENSED SITE;

B. That the commercial growing and harvesting of wood fiber involves activities such as road and trail building, surveying, inventorying, pre-commercial thinning, spraying of both herbicides and insecticides, fertilization and commercial harvesting operations;

C. That above mentioned commercial forestry operations may involve the use of equipment including, without limitation, skidders, graders, trucks, bulldozers, airplanes, helicopters, delimbers, and chainsaws;

D. That the removal of wood fiber may involve the use of the road and/or trail network serving the LICENSED SITE; and

E. That the State is permitted to allow access by the public to and across the PREMISES, except on the LICENSED SITE.

The LICENSEE, in recognition of A through E above, hereby consents to such activities and in particular any visual, noise and/or aesthetic impacts, and hereby covenants that the LICENSEE will not, in any manner, interfere with the STATE or the public's activities on the PREMISES.

9. TRANSFERS AND ASSIGNMENTS: The LICENSEE shall not transfer, assign or otherwise encumber this License AGREEMENT or any rights arising hereunder without the prior written consent of the STATE. In approving any assignments or transfers hereunder, the STATE may require the LICENSEE to pay to the STATE an administrative processing fee of $50. Subleasing of the LICENSED SITE is not allowed.

An immediate family transfer only requires that a copy of the new LICENSEE'S insurance policy and a "Change of Licensee" form (see Addendum A attached) be completed and mailed to: NH Division of Forests and Lands, Bureau of Land Management, 172 Pembroke Rd, Concord, NH 03301.

In the event of intent to offer for sale outside the immediate family, the LICESSEE shall notify the STATE in writing to the address given above. Thereupon, the STATE shall have sixty (60) days to either notify in writing the LICENSEE of the STATE'S decision to purchase, or shall provide the LICENSSE a "Release of Right of First Refusal". Upon the STATE'S notification of decision to purchase, the LICENSEE and the STATE shall enter into a purchase and sale agreement within fifteen (15) days from the date of notification.

The STATE shall have "first refusal option" to purchase any camp at the time of sale at fair market value of the structures and improvements, not transferred to immediate family.

10. DEFAULT/TERMINATION FOR CAUSE: If the LICENSEE shall fail to pay the RENT as provided herein, or shall fail to pay all taxes, charges and assessments as provided herein, or shall fail to comply with any of the conditions or regulations of the AGREEMENT or any subsequent reasonable changes in or additions to the AGREEMENT, the STATE need not make demand of the actual RENT due and shall have the right at its option at any time thereafter to terminate the AGREEMENT, re-enter and take possession of the LICENSED SITE after giving thirty (30) days advance notice in writing to LICENSEE. If, during said thirty (30) day period, after receipt of notice of termination from the STATE, the LICENSEE shall cure any default, the notice to terminate shall automatically be vacated, otherwise the same shall remain in full force and effect. Such right of termination shall be in addition to any other rights or remedies, which the STATE may have at law. No waiver by the STATE of any default shall operate as a waiver of any other default or of the same default on a future occasion.

In the event of a termination for cause, the STATE shall not be liable to refund to the LICENSEE any payments made by the LICENSEE.

Upon notice of expiration, cancellation or lapse of the AGREEMENT, the LICENSEE shall within sixty (60) days of bare-ground, open-road access, remove all personal property, RECREATION RESIDENCE or structures from the LICENSED SITE. Failure to do so within the sixty (60)-day period, shall and does give the STATE the right, permission or consent to dispose of said property, RECREATION RESIDENCE and auxiliary structures or anything whatsoever remaining in any manner that the STATE or its agents may see fit, without limitation or liability of any kind on the part of the STATE. Also, use of LICENSED SITE for the purpose of camping, vacationing or similar use may be denied during this sixty (60)-day period.

11. OWNERSHIP OF BUILDING AND OTHER IMPROVEMENTS: Should the AGREEMENT be terminated at the LICENSEE'S request, by way of default on the LICENSEE'S part, or due to termination of the AGREEMENT by the STATE due to the LICENSEE'S violation of the terms of the AGREEMENT**,** any buildings or improvements presently located on the LICENSED SITE or subsequently established on the LICENSED SITE by the LICENSEE during the term of this AGREEMENT shall become the property of the STATE upon termination of this AGREEMENT unless removed by LICENSEE not later than sixty (60) days following termination of the AGREEMENT.

In the event that any improvements are removed from the LICENSED SITE, the LICENSEE shall reasonably restore any disturbed area to a reasonable condition as determined by the STATE. The LICENSEE shall reimburse the STATE for any costs born by the STATE associated with such restoration.

12. HOLD HARMLESS AND INDEMNIFICATION: The LICENSEE shall indemnify, hold harmless, defend and reimburse the STATE from and against any and all claims, actions, suits, damages, liabilities, costs or expenses, including reasonable attorneys' rents, of any kind or nature whatsoever on account of injuries to or death of any person or damage to property arising out of any act or omission of the LICENSEE, it agents, contractors, or invitees in their use of the LICENSED SITE or the PREMISES.

13. CONDEMNATION: If at any time during the term of the AGREEMENT, the LICENSED SITE shall be taken or condemned by any authority having the power of eminent domain, the AGREEMENT shall terminate and the LICENSEE shall thereupon be relieved of further performance hereunder. If a material part, but not all of the LICENSED SITE, shall be so taken or condemned, the LICENSEE shall have the option to surrender this lease and be relieved of further performance hereunder, or the LICENSEE may elect to remain in possession of the remaining portion of the LICENSED SITE, in which event the fixed rent herein provided shall continue to be paid by the LICENSEE in an undiminished amount. The LICENSEE shall have the right to assert a claim against said condemning authority for loss of any of the LICENSEE's improvements caused by said taking, but the LICENSEE shall have no claim for damages for loss of the LICENSEE's interest in the LICENSED SITE, and except for such loss of improvements, the LICENSEE shall have no claim against any award to the STATE made as a result of any such taking.

14. NOTICES AND PAYMENT: Any notice required to be given hereunder shall be either mailed, certified mail return receipt requested, or personally delivered, via U.S. mail, postage prepaid, to the LICENSEE or the STATE at their respective addresses listed on page 1 of the AGREEMENT. Notice shall be deemed given on the day it is received. Payment of RENT shall be made by check or money order to Treasure – State of New Hampshire, and shall be delivered to or mailed by regular first class mail to the STATE's address set forth on page 1 of the AGREEMENT.

15. INSURANCE: During the term of the AGREEMENT, and any extension thereof, the LICENSEE, at LICENSEE'S sole cost and expense, shall maintain with respect to the LICENSED SITE, comprehensive public liability insurance in a combined single limit of $300,000 and the LICENSEE shall provide the STATE with a certificate of insurance designating the STATE as an additional insured.

16. NO WARRANTIES: The STATE hereby makes no express or implied warranties to the LICENSEE as to the STATE's right, title or interest in the LICENSED SITE and the PREMISES, or as to the adaptability or suitability of the LICENSED SITE or the PREMISES for the uses set forth herein.

17. ENTIRE AGREEMENT: The AGREEMENT supersedes all prior oral and written agreements between the parties with respect to the subject matter hereof. Any modification or addition to the AGREEMENT shall be in writing and duly executed by the parties hereto.

18. INSPECTION AND COMPLIANCE: The STATE, its representatives, or agents retain the right to enter and inspect the LICENSED SITE at reasonable times to ascertain compliance with the terms of the AGREEMENT.

19. MISCELLANEOUS: All of the above respective covenants, obligations, representations, warranties and indemnities of the parties hereto shall be binding upon the heirs, successors, executors, administrators and assigns of the parties hereto and shall continue in full force and effect for the duration of the AGREEMENT and, where applicable, shall survive the termination of the AGREEMENT.

20. NON-WAIVER OF RIGHTS: The failure of either party to insist in any one or more instances upon strict performance of any of the provisions of the AGREEMENT, or to take advantage of any right hereunder, shall not be construed as a waiver of any such provision nor the relinquishment of any such rights, but the same shall continue and remain in full force and effect.

21. UNDERSTANDING; WAIVER: Execution of this AGREEMENT constitutes complete and full understanding of the AGREEMENT, its terms and restrictive covenants.

IN WITNESS WHEREOF, the parties hereto have caused this AGREEMENT to be executed:

STATE

BY:_____ _____
Jeffrey J. Rose, Commissioner Date
Dept. of Natural and Cultural Resources

BY:_____ _____
Brad W. Simpkins, Director Date
Division of Forests and Lands

LICENSEE

_____ _____ _____
(Licensee #1) Witness Date

_____ _____ _____
(Licensee #2) Witness Date

ADDENDUM A

NASH STREAM FOREST CAMP LOT LICENSE

CHANGE OF LICENSEE

Camp Lot ID #: _____

Licensee shall notify the State in writing of any camp transfers or address changes. This notification shall be considered as a request to transfer or assign the Camp Lot License. (See AGREEMENT: Section 9, second paragraph)

Old Licensee #1 Name: _____

New Licensee #1 Name: _____

Address: _____ Phone # _____ day

_____ Phone # _____ evening

Old Licensee #2 Name: _____

New Licensee #2 Name:_____

Address: _____ Phone # _____ (day)

_____ Phone # _____ (evening)

Signature of ***Old*** Licensee #1 _____ Date _____

Signature of ***Old*** Licensee #2 _____ Date _____

If you have any questions, please call me at 603 271-2214.

Sincerely,

Tracey Boisvert

Tracey Boisvert
Administrator, Land Management

State of New Hampshire
Department of Natural and Cultural Resources
Division of Forests and Lands
172 Pembroke Rd
Concord, New Hampshire 03301

APPENDIX H

NEW HAMPSHIRE DEPARTMENT OF RESOURCES AND ECONOMIC DEVELOPMENT
DIVISION OF FORESTS AND LANDS AND DIVISION OF PARKS AND RECREATION
POLICY ON THE USE OF
OTHER POWER DRIVEN MOBILITY DEVICES (OPDMD)

Effective on March 15, 2011, the U.S. Department of Justices (DOJ) revised the rules governing the Americans with Disabilities Act (ADA) as it pertains to the use, in public places that are open to pedestrian use, of "other power-driven mobility devices" (OPDMD) by individuals who provide a credible assurance that the mobility device is required because of the person's mobility disability.

The State of New Hampshire Department of Resources and Economic Development (DRED) and its land management Divisions of Forests and Lands and Parks and Recreation is committed to making all reasonable efforts to ensure that its facilities[i], programs and services are accessible to, and usable by, all people including those with disabilities. DRED's goal is to provide equal access to all facilities within the agency and to treat everyone with dignity and respect.

The use of wheelchairs and manually powered mobility aids are allowed anywhere foot traffic is allowed if the device meets the ADA definition of a wheelchair which is: a device designed primarily for use by an individual with a mobility disability for the main purpose of indoor or of both indoor and outdoor locomotion[ii]. These devices are not OPDMDs or motor vehicles.

As required by the new ruling, DRED has made modifications to policies concerning access by persons with disabilities, incorporating guidelines and management practices without changing the characteristic of habitat and natural resource.

DRED Program[iii] and Management

The Divisions of Forest and Lands and Parks and Recreation cooperatively manage the State Reservations to conserve, manage and protect forest resources and provide the public with opportunities to use and appreciate these resources.

Assessments of DRED lands:

The State Reservations are in the process of being assessed to determine where reasonable modifications can be made for the use of OPDMDs, as defined herein, without creating a substantial risk of serious harm to the immediate environment or natural or cultural resources, or posing a conflict with Federal or State land management laws and regulations. OPDMDs, as defined herein, are allowed on State Reservations until an assessment is completed, that demonstrates that a class (or type) of OPDMD cannot be operated. DRED may restrict certain types of OPDMDs only if those restrictions are based on one or more of assessment factors listed by the US Department of Justice, and if appropriate notice to the public has been provided about what class of OPDMD, if any, may be used.

Impacts of OPDMDs on DRED Lands

Pedestrian use by the public must be done in a way that does not conflict with DRED's management or the purpose for which the land was acquired or developed.

The use of an OPDMD also needs to comply with the recent DOJ ruling. In considering whether a particular OPDMD can be allowed, assessment factors[iv] established by the DOJ are considered and particularly, if the use of an OPDMD creates a substantial risk of serious harm to the immediate environment or natural or cultural resources[v]. These assessment factors include DRED's determination of type, size, weight, dimension and speed of an OPDMD and whether is can be used in a manner that does not jeopardize others accessing DRED lands or the natural resource.

Definitions and Use
Devices that meet the definition of OPDMD[vi], must be safely used on DRED lands in areas that are not otherwise paved. It is recommended that users who need to employ such devices for mobility and are otherwise unfamiliar with the trail first contact the agencies for local trail conditions.

Only persons with a mobility disability are permitted to use OPDMDs on DRED properties. DRED personnel may inquire as to the use of an OPDMD by an individual, to provide credible assurance that the mobility devise is required because of the person's disability.

OPDMDs, as defined below, are permitted on non-motorized recreation trails and forest roads and at developed facilities such as campgrounds, picnic areas, visitor centers, and regional offices.

OPDMDs that are powered by a gas-powered internal combustion engine are prohibited on all State Reservations. All are to move at the speed of the pedestrians on similar terrain.

Type, Dimension & Weight Criteria	Terrain Description	Examples	Permitted Areas
Device does not exceed 36" wide, 48" in length and weighs less than 500lbs.	Designed for use on soft, uneven, steeply graded or rocky surfaces.	• Segway PT • Electric scooter • Electric bicycle	• Non-motorized Trails • Dispersed recreational use • Forest Road
Device does not exceed 48" in width or greater than 95" in length and weighs less than 1500 lbs.	Designed for use on exterior walkways or routes.	• Segway PT • Electric scooter • Electric bicycle • Electric golf cart	• Rail trail • Campgrounds • Picnic Areas • Exterior pedestrian routes at facilities

As technology advances and new devices are developed, public use patterns change, and impacts to natural and cultural resources are reevaluated, DRED may modify the definition of OPDMD permissible within specific facilities or on specific trails as necessary.

Users of OPDMD which do not meet the criteria of devices allowed may request an evaluation of their device by submitting a written request to the Commissioner of the Department of Resources and Economic Development.

State Reservations[i]

Non-Motorized Recreation Trails/Forest Roads
The natural surface of existing trails or logging roads can be unimproved, have natural barriers such as a fallen tree and large erratics/rocks. Such trails and roads almost always have uneven surfaces, roots and other vegetation and debris, can be narrow and have steep grades, soft fine soils that can be wet and mucky, and in some areas standing water and may not be suitable for all OPDMDs that fit within the criteria of use.

[i] RSA 227-G:2 XVI. "Reservation" means public land under the jurisdiction of the department including, but not limited to: state forest, state park, natural area, historic site, geological site, recreation trail, memorial area, fire tower, wayside area, heritage park, resource center, agricultural area, state forest nursery, fish pier, administrative facility, information center, demonstration forest, certain islands, and lands under lease to the department.

Developed Facilities
Individuals may use an OPDMD at developed facilities such as campgrounds, picnic areas and beaches. The surface of these walkways or routes can be improved by pavement, gravel or remain as dirt. Barriers and uneven surfaces have been minimized.

Additional Use and Safety Requirements

The person operating the OPDMD may not carry another person.

The OPDMD must not be operated in a dangerous or reckless manner that jeopardizes the safety of the operator or other persons.

DRED does not accept responsibility for the storage of any OPDMD.

All other DRED administrative rules are in full effect.

DRED does not accept any liability from damage caused by the operator of the OPDMD or injury to others caused by the operator of the OPDMD.

Complaints and appeals may be submitted in writing to:
Commissioner
Department of Resources and Economic Development
PO Box 1856
Concord, NH 03302-1856
603-271-2411

Additional Information
Director
Governor's Commission on Disability
57 Regional Dr.
Concord, NH 03301
603-271-2773

Adopted on this day 30 August 2013

Jeffrey J Rose

Jeffrey Rose, Commissioner, Department of Resources and Economic Development

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[i] 28 CFR 35.104 - *Facility* means all or any portion of buildings, structures, sites, complexes, equipment, rolling stock or other conveyances, roads, walks, passageways, parking lots, or other area or personal property , including the site where the building, property, structure, or equipment is located.

[ii] 28 CFR 35.104 - *Wheelchair* means a manually-operated or power-driven device designed primarily for use by an individual with a mobility disability for the main purpose of indoor, or of both indoor and outdoor locomotion. This definition does not apply to Federal wilderness areas; wheelchairs in such areas are defined in section 508(c)(2) of the ADA, 42 U.S.C. 12207 (c)(2).

[iii] 28CFR 35.150 - Existing Facilities: General. A public entity shall operate each service, program or activity so that the service, program or activity when viewed in its entirety is readily accessible to and usable by the individuals with disabilities. This paragraph does not - (3) require a public entity to take any action that it can demonstrate

would result in a fundamental alteration in the nature of a service, program, or activity or in undue financial and administrative burdens....*[burden of proof lies with the public entity].*

[iv] 28CFR 35.137(b)(2) i. The type, size, weight, dimensions, and speed of the device; ii. The facility's volume of pedestrian traffic; iii. The facility's design and operational characteristics; iv. Whether legitimate safety requirements can be established to permit the safe operation of the other power-driven mobility device in the specific facility; and

v. Whether the use of the other power-driven mobility device creates a substantial risk of serious harm to the immediate environment or natural or cultural resources.

[v] The use of an OPDMD cannot fundamentally alter the program of the facility.

[vi] 28CFR 35.104 - *Other power-driven mobility device* means any mobility device powered by batteries, fuel, or other engines - whether or not designed primarily for use by individuals with mobility disabilities - that is used by individuals with mobility disabilities for the purpose of locomotion, including golf carts, electric personal assistance mobility devices (EPAMDs) such as the Segway; PT, or any mobility device designed to operate in areas without defined pedestrian routes, but that is not a wheelchair within the meaning of this section.

APPENDIX I

Department's Response to Comments Received Regarding the First Draft of the Nash Stream Management Plan

What we heard: Draft Management Plan did not adequately address climate change issues

Response: The issue of climate change and its expected impacts to the natural resources of Nash Stream were a common theme in the comments. The primary comment received was that the original draft did not adequately address the issue. One of the challenges regarding climate change is the science regarding the best way to deal with it does not always agree. However, there are some generalities on dealing with climate change that are much more broadly accepted. It is in these areas that we tried to focus. In addition, the impacts of climate change are broad and far-reaching, and can affect all other chapters of the plan, including forest management, infrastructure, insect and disease problems, etc. *Therefore, it was decided that a stand-alone chapter pertaining to this specific topic would be the most suitable way of discussing the issue.* To make sure we have the latest thinking on this issue, the division contacted a regional climate change expert to help develop this chapter. Maria Janowiak works for the U.S. Forest Service as the Deputy Director of the Northern Institute of Applied Climate Science. Maria has provided advice and feedback on the climate change chapter in the current draft.

What we heard: Form a new stakeholder committee and develop a new draft; use a process more like the original plan

Response: Comments were received that suggested we should have a process more in-line with the original process used to develop the 1995 plan, and some suggested scrapping the first draft and starting the process over with a new stakeholder committee. The original plan was developed by a steering committee appointed by then-Governor, Judd Gregg. In addition to the steering committee, a technical team had been formed to work on the specific details of the plan. This process is described very well in the original plan as well as in the first draft of the current revision. The recent process was very much in-line with the original process, and that was by design. An appointed steering committee was not necessary in this recent process because in the interim between the 1995 plan and now, the Nash Stream Forest Citizen's Committee (NSFCC) was created in state law. The NSFCC fills the purpose of the original appointed steering committee, and has within law the specific purpose of "Providing advice to the department of resources and economic development and the fish and game department on any proposed revision to the stewardship or management plans required by the conservation easements on the 39,601 acres or the natural areas…" (RSA 12-A:9-c). The technical team in this most recent process almost mirrored the makeup of the original team. In addition to the work of the NSFCC and the Technical Team, this most recent process has been engaging the Council on Resources and Development (CORD) also, which is a requirement of the Land and Community Investment Program that provided much of the funding for the purchase of Nash Stream Forest. *Therefore, it was determined that the process thus far is very much similar to the original process, with significant public input, and there is no need to appoint a new committee nor start the process over. However, due to the number of comments received, and the*

breadth of topics commented upon, the division has decided to go back out to public comment with a second draft, thereby giving the public and stakeholders additional opportunity to comment on the plan.

What we heard: Forest, Wildlife and Natural Heritage Inventories need updating

Response: There were several comments mentioning the need for updated information and data, particularly in regards to forest inventory and natural heritage inventory. While information does exist, much of it is well over two decades old at this point. In regards to the forest inventory, no timber harvesting is conducted in a compartment unless that compartment has an updated inventory, but updated inventories in the other areas will allow better forest management planning into the future. The primary reason the inventories are not updated is due to a lack of resources. This is not exclusive to Nash Stream, but is typical across department properties. It is recognized that in order to implement several of the goals in this new version of the plan, it will require updated information. *To that end, the department requested, and just received, permission from the Joint Legislative Fiscal Committee as well as Governor and Council to increase funding from the Forest Management and Protection Fund (revenue primarily from timber sales) to help pay for this need.* The additional money will be used to hire two seasonal forest technicians who will work on the Forest for the summers of 2018 and 2019 with a specific purpose of conducting forest inventory in the areas suitable for forest management. Additional money will be used to hire a contractor to establish Continuous Forest Inventory (CFI) plots on the Forest to monitor growth, as well as other things. Lastly, funding already in our current budget will be used for staff from the Natural Heritage Bureau to update the natural community typing using remote sensing and ground truthing. This work is also scheduled to begin in 2018. Once this information is collected, other parts of the plan, such as designation of control areas, can begin.

What we heard: Plan needs to mention sustainable harvest levels

Response: The original plan did not establish an allowable harvest level, but recommended the use of area regulation and a range of rotation ages from 80 years for softwoods to 140 years for northern hardwoods. The revised draft plan uses these same desired rotation ages and the acreage identified as suitable for timber management (ASTM) to determine harvest levels. Based upon these numbers, the revised plan identifies the annual amount of acreage that could potentially be regenerated (utilizing the uneven-aged silvicultural technique of group selection), or "tended" with intermediate harvests such as thinnings or improvement cuts, which would reduce stand stocking and allocate growth to the best trees of the desired species composition. In addition, we used Forest Inventory Analysis (FIA) data for the region to estimate annual growth rates to determine the amount of volume that could be sustainably harvested from the ASTM. As a check, the amount of volume that was harvested from all past timber sales since state acquisition was examined, and it was determined that at current harvest levels we are only cutting a quarter of the estimated growth in the ASTM. This amount is well within sustainable harvest levels (see *Growth and Stocking* and *Sustained Yield*; **Table 11** and **Table 15**). *In an effort to more accurately track growth, we have plans within the next few years to locate and establish our own Continuous Forest Inventory (CFI) plots on Nash Stream Forest to provide property-specific data to ensure we are always cutting less than growth.*

What we heard: Designate Control Areas called for in original plan.

Response: There were several comments regarding the designation of control areas that were called for in the original plan. The purpose of the control areas are to serve as an unmanaged baseline to which we could compare our managed areas, and therefore make inferences on how our management is mimicking, or diverging, from the natural progression of the forest. Under the current and draft plans, over 18,000 acres, or nearly half the property, are in natural areas. However, in order to have a true surrogate for us to compare against, the control areas must be similar to the managed areas. It was pointed out that although we have large acreages of unmanaged lands, they aren't necessarily of the same characteristics as the managed lands. Therefore, in order to determine where we need control areas, we need to first conduct an updated inventory of the natural communities as mentioned in a previous section. Once that is completed, we need to ensure we designate control areas that are representative of the managed areas. The size and location of these control areas will vary by natural community type, etc. The current team has researched past designation of control areas, and while a GIS shapefile of control areas was found, there was not conclusive evidence on why, where or how they were designated. Another issue identified was the proposed size of the control areas in the original plan. While the suggested control size of several hundred acres for hardwoods should be easy to accommodate, the original plan called for a softwood control area of approximately 1,500 acres. However, according to a soil analysis, only 374 acres of manageable area are conducive for softwood, with another 1,270 acres of mixed wood, although this is in total and not contiguous, and therefore a softwood control area of this may not feasible within the currently managed area. *This new draft revisits this process and control area designation based on the collection of updated information and GIS analysis.*

What we heard: Don't change the Vision

Response: The issue of the Vision for the property was not only mentioned numerous times, it also had some of the most passionate pleas. While changes were minimal, the change in the first draft that drew the most comments was the addition of a bullet specific to ATV and UTV usage. The intent was to specifically state that this type of use would be limited, in designated areas only, and only where they do not negatively impact traditional uses or conservation values. However, we received several comments that stated ATV's should not have a specific bullet, and that this in effect is highlighting the use above other recreational uses of the property. Some comments specified we should keep the original 1995 vision. It should be noted the current vision was modified during the 2002 update process. The original 1995 vision regarding public access mentioned traditional recreational uses, to include "…hunting, fishing, hiking, and snowmobiling in designated areas." It was during the 2002 update of the plan that ATV's were first allowed, additional language was added to the end of the previous bullet that stated "…as well as offer other limited motorized access." *Because the intent was for all motorized access to be a limited recreational use of the property, we have changed the vision statement back to the 2002 version, and removed any specific mention of ATVs/UTVs.*

What we heard: Increase riparian buffers around all waterbodies

Response: The current conservation easement held on Nash Stream Forest by the U.S. Forest Service already restricts cutting within 150' of Nash Stream itself, as well as all of the ponds. Timber harvesting on this property, as well as other department properties, is conducted in accordance with the publication *Good Forestry in the Granite State*. This 2010 publication includes recommendations for riparian buffers based upon stream order (Strahler method) that were agreed upon by a broad stakeholder group, and these recommendations exceed state basal area laws for cutting along waterbodies. While we meet those recommendations at a minimum, we often exceed these based upon on-the-ground review of topography, soils, wetlands, wildlife needs, etc. In addition to our own foresters laying out a timber harvest, every sale in Nash Stream is individually reviewed by Fish and Game biologists, who make additional recommendations if necessary. The Nash Stream watershed is one of the most closely-monitored cold-water fisheries in the state due to the nationally recognized work being conducted to restore the fishery by Trout Unlimited and Fish and Game, working with Forests and Lands. If current riparian buffers are having a detrimental effect on water temperature, oxygen level, fish populations, etc. it would be discovered by these monitoring efforts. At this time there is no evidence to date that current practices for riparian buffers need to be modified or changed, in fact, the fishery is improving quite well. *Therefore, it was determined that without a scientific basis that current riparian buffers are not adequately protecting the water quality at Nash Stream, it does not necessitate a change in the buffer widths in this next draft.*

What we heard: Concern over shift in forest management emphasis from Uneven-aged to Even-aged.

Response: Several comments received were concerned that the management emphasis would change from uneven-aged forest management to even-aged. Uneven-aged management uses single-tree selection and small group cuts as an example of the natural, small-scale disturbances common in a northern hardwood forest type. This type of management eventually leads to multiple ages classes and favors the later successional species, such as maples, beech, spruce and yellow birch. Even aged management uses larger openings and is meant to replace the stand, mimicking a larger scale disturbance. This type of management allows for early successional species such as aspen and paper birch, which would otherwise phase out over time since they do not readily survive or grow in the shaded understory of a mature canopy. Even aged management, as the name implies, results in a stand of trees all within one or two age classes. Larger openings also allow for greater herbaceous and shrubby habitat due to the exposure of the forest floor to sunlight. The intent of the original plan, and the first draft of the revision, has always been to make uneven-aged management the preferred management. However, it should be noted that there are occasions when even-aged management may be desirable or necessary. Managers felt the language pertaining to even aged management in the original plan was so restrictive as to basically prohibit its use except in the most-rare of circumstances. In the 25+ years of state ownership, only one clearcut has been conducted on the Forest, for the purpose of a salvage. It is always intended that clearcutting will be minimally used, and only when uneven-aged management techniques won't work, but the agency wants to make sure we can use this practice when necessary. It should be noted the easement held by the US. Forest Service already restricts the size of clearcuts. During the revision and comment period, we spoke with several of the authors of the original plan. Based upon those conversations, it was determined we may have been interpreting the language as more restrictive than was originally intended. While the

authors strongly agree that uneven-aged management is the primary management, they felt the original language gave us the ability to use even-aged management for those occasional, yet infrequent, circumstances where uneven-aged management will notachieve the management objectives. *Based upon this information, this revised draft goes back to the language in the original plan.*

What we heard: Concern over re-wording of Forest Management Principles

Response: The Vision for the property, in its entirety, incudes three parts: 1. The Management Vision, 2. The Management Principles, and 3. The Management Goals. All three parts have been restored back to the 2002 version in this latest draft. The intent of rewording the Vision and Principles was to try to add clarity, but *based upon concern that new wording could be construed as a change in management philosophy, we are leaving the wording as it has been for the last 15 years.* The Management Goals were not intended to change, but they were inadvertently left out of the first draft.

What we heard: Add control measures for invasive species

Response: The original draft addressed invasive species to a degree, but did not go into detail of actual control measures that would be undertaken if and when invasive species were located on the property. *Therefore, the new draft adds additional references to where we would seek specific control recommendations, as well as includes information on where we currently know invasives to occur on the property.* Lastly, another comment suggested moving the invasives section into the forest protection chapter, so this switch was made in the new draft.

What we heard: Concern over removal of management guidelines for Natural Preserves

Response: The guidelines were included in the previous draft for the forest management chapter, but not the other chapters. This was simply an editing oversight that the guidelines did not move forward for the other chapters. *Therefore, all of the management guidelines that were in the plan previously are once again included in the revised draft.*

What we heard: Address access for people with disabilities

Response: The department's goal is to provide equal access to all facilities within the agency, and to treat everyone with dignity and respect. The department has an access policy for all lands, not just Nash Stream. This policy addresses Other Power Driven Mobility Devices (OPDMD) in pedestrian areas and is consistent with federal regulations. Part of the policy states that an OPDMD shall not create a substantial risk of serious harm to the immediate environment or natural or cultural resources. ATVs and UTVs are not designated as OPDMD in the policy. Persons with disabilities may use an OPDMD as detailed in the policy in areas open for pedestrian use. OPDMD's that are powered by an internal combustion engine are prohibited on all state reservations. The department also has a practice whereby we

will open gates to vehicle access upon request for someone with mobility disability to retrieve big game, such as a deer or moose. *The new draft attempts to clarify the department policy regarding access for all abilities. The full policy has been added as Appendix H.*

What we heard: Add backcountry skiing proposal into the plan

Response: The department received a request from an entity representing the interests of backcountry skiers. This organization requested a pilot project be implemented on Nash Stream within the next 2 to 5 years. Percy Peaks and Sugarloaf Mountain were specifically mentioned as areas that already see backcountry skiing. While this type of recreation is already an allowable use on the forest, there are not designated areas, and instead the use is dispersed. It was felt a pilot project such as the one proposed (which would require cutting and removing understory trees) would be better suited at a different state property at this time. *Therefore, the department is currently working with this group on a pilot project at Weeks State Park in Lancaster instead.*

What we heard: Add an East-West connector ATV trail along the southern boundary

Response: The department received numerous comments calling for the addition of an east-west ATV/UTV corridor along the southern boundary of the property. In fact, the department received more comments on ATVs than any other topic. In order to properly address this topic, it is helpful to know a little history. This discussion is not new, and goes back to the original plan development. While only a fraction of their current popularity, off road vehicles were discussed during the original plan development 20+ years ago, and the decision at that time was to prohibit them from the property. The purpose and objectives of the state purchasing Nash Stream were clearly laid out, and the intent was traditional uses that were already in existence on the property when the state acquired it. Less than ten years after the plan was completed, there were calls to allow limited ATV riding on the property. Based upon public input, and legislation specifically referring to Nash Stream Forest during the 2002 session, the department decided to open up an existing woods road on the west side of the property as a trial trail. This trail was already in existence, it started and ended off Nash Stream Forest, and skirted the western edge avoiding the core of the property. During the course of the trial, numerous studies were conducted to determine the effects of the trail on the environment. After several years of use and monitoring, then-Commissioner of DRED George Bald approved the West Side Trail as a designated ATV/UTV trail. Around 2010 another request was made of the department to allow an east-west link through Kelsey Notch to connect sections of the "Ride the Wilds" corridor. Once again, after review by multiple entities and the Nash Stream Forest Citizens Committee, the department opened up Kelsey Notch Trail as a pilot. In both cases, the trails were pre-existing roads, and therefore the allowance of ATV's was in addition to a use that was already occurring. The current request for a southern east-west corridor is different. While it would follow an existing (albeit not maintained) woods road for part of the way, it would require brand new trail construction in areas that are currently unfragmented. The trail would enter areas of the forest that are considered prime wildlife habitat, including a beech stand and a lowland spruce-fir stand. In addition, it would require considerable earthwork to modify the topography adjacent to Rowell's Brook in order to avoid erosion into the stream. Unlike previous requests, this is not a request for ATV's as a secondary

use for already-existing road infrastructure, but rather the construction of new trail explicitly for the purpose of ATV expansion on the property. In addition, this proposal was brought before the Council for Resources and Development (CORD), who shares management oversight of the property due to the LCIP funding that was used in its purchase. CORD voted not to approve the proposed trail. While the original plan prohibited ATV use, the department has tried to strike a balance over the years to accommodate all recreational users by allowing limited motorized use in certain areas on the property, such as the West Side and Kelsey Notch Trails, where such use does not detract from traditional uses or conservation values. It should also be noted the department has supported ATV expansion in several other areas of the North Country such the purchase of the 7,800 acre Jericho State Park for the primary purpose as an ATV destination and the complicated land swap with the Umbagog National Wildlife Refuge so we could acquire federal property and thus allow a link for "Ride the Wilds". *In this instance however, it was determined the proposed east-west corridor would adversely impact the resources and conservation values for which the property was purchased and therefore it was not included in the revised draft.*

What we heard: Add a southern connector ATV trail from the West Side Trail to services

Response: This proposal was requested to allow ATV/UTV riders on the West Side Trail to connect to either the main Nash Stream Road or a snowmobile trail that would connect to a town road where they could access fuel. Based upon the history described above, this proposal was considered differently than the southern east-west connector. It uses existing roads, is on the southern margin, and stays out of the core of the property. *To be consistent with the department's past practices on the property, this proposal was included in the revised draft for review.* It should be noted inclusion in the plan only allows for the review, and is not a guarantee that it would be allowed. Any proposal would still need approval by CORD, the Nash Stream Forest Citizen's Committee, passage of the coarse and fine filter criteria, an updated MOU with Fish and Game, and other internal department review processes.

What we heard: Do not allow any additional ATV expansion on Nash Stream

Response: There were several comments that called for a status quo in regards to ATV trails; they were okay with existing trails but opposed any new or additional trails within the life of this next plan. As stated above, we received two primary proposals from the ATV community; an East-West corridor along the southern boundary, and a southern connector trail that would connect West Side Trail to services south of the property. The East-West corridor trail was not included in this current version due to the factors mentioned above, however, the southern connector proposal is considered. It should be noted that inclusion of a trail proposal in the plan only means that it will be evaluated, and does not confer automatic approval. The reason the department chose not to just shut the door on any ATV proposal is multi-fold. It was felt if a proposal closely matched past practices in regards to ATV trail designation on the property, it should at least be considered for further evaluation. The department feels it should remain consistent to the best extent possible on trail designation, rather than have an arbitrary threshold on the number or amount of trails. Whether or not an ATV trail should be allowed should be based upon a known and documented set of reasons and criteria. Criteria such as the fine and coarse filter for OHRV trail location, consistency with the Vision for the property as outlined in the Plan, consistency with the terms of the

Easement held by the U.S. Forest Service, consistency with the statutory requirements of our agency, consistency with the requirements of LCIP funding, and so on. It is no secret that ATV usage has expanded exponentially in Coos County since this plan was last revised. Since these are public lands, purchased with public funding, and recreation is one of the statutory reasons the department owns lands, it must give equal consideration to all users. *While it may be determined, based upon a thorough evaluation of the aforementioned reasons and criteria, that additional ATV trails may not be appropriate for Nash Stream, it is felt this is best determined based upon the evaluation and merits of specific proposals verses an outright prohibition on new trails.*

What we heard: Do not allow any (existing or new) ATV use on Nash Stream

Response: A few of the comments received by the department suggested there should be no ATV usage on the Nash Stream property, including existing trails. Some indicated that the property was never purchased for that type of recreational use. Motorized recreation, specifically ATV use, has been allowed on the Nash Stream Forest since 2002, or for the past 15 years. The original management plan only lasted seven years before it was revised to include ATV usage. Therefore, ATV use is not new to this property in terms of state ownership. It should also be noted that although several comments suggested this was not intended as a use of the Forest, there were no ATV prohibitions enacted upon the purchase of the property. Neither the deed, federal Easement, LCIP funding requirements, nor state law expressly prohibits ATV usage on Nash Stream Forest. Instead, the decision of whether to allow or deny motorized recreation has been left to the management plan, with a requirement of input by the public. While the original plan did not allow ATV's, as stated, they were allowed beginning in 2002, with a statement that future designation of ATV trails would be the decision of the Commissioner. The 2002 revision also set a revision schedule for the plan, which requires the department to review it every 10 years. The management plan has, and will, change over time based upon new information and public feedback. *Therefore, it is the opinion of the department that during a plan revision, ATV usage must be evaluated equally along with any other recreational proposal.*

What we heard: Lack of input by Towns

Response: Per RSA 12-A:9-c, a representative of each of the three incorporated towns are represented on the Nash Stream Forest Citizen's Committee. These appointees are chosen by the selectboards of the represented towns. In addition to the incorporated towns, the Coos County Commissioners' delegate represents the Unincorporated Place of Odell. The statute was specifically set up to ensure the towns have a voice on the committee, and therefore in the management of Nash Stream. In addition to having a specific member on the committee, any other member of a town or public can attend and provide input at Nash Stream meetings. All meetings are posted and advertised in advance pursuant to RSA 541. *Based upon the aforementioned, it is felt the towns are sufficiently represented and have an effective means of providing input into the plan and the ongoing management of the property.*

What we heard: Expand Carbon Market discussion

Response: The department received a few comments regarding carbon markets. *While the original draft did mention carbon markets, the new draft incorporates some additional suggested language to strengthen this topic.* Carbon market discussion is located within the forest products section. The department will continue to monitor and evaluate the potential market for carbon at Nash Stream Forest as an additional forest product and potential source of revenue.

What we heard: Use Nash Stream for more educational purposes

Response: There were several comments received that suggested Nash Stream should be used more for educational purposes. The department welcomes requests for research on any of our properties, Nash Stream included, and annually grants Special Use Permits or Research Licenses for educational purposes. From 2015 to current, the division of forests and lands issued 33 research licenses to entities wanting to perform various studies on department lands across the state. In addition, our properties are used for other educational purposes including such things as outdoor classrooms for local schools, continuing education workshops for foresters, and workshops for municipal officials. In regards to more formal research, the division has its own research forest in the southern part of the state. Fox State Forest in Hillsborough has been associated with forest research since 1933, and conducts research both at Fox Forest as well as elsewhere. For the northern part of the state, the division often looks to research from two well-established and nationally respected research forests on federal property: Hubbard Brook and Bartlett Experimental Forests. The forest types found in the managed portions of Nash Stream Forest are also present in one or both of these experimental forests, and therefore serve as a good proxy. That said, the department feels it would be worthwhile to establish a more formal relationship with an educational institution going into the future. This latest draft once again incorporates designation of unmanaged control areas, which would serve as benchmarks upon which we could measure managed areas. The department does not have the resources necessary to undertake regular monitoring of these control areas, and does not expect additional resources, and therefore a relationship with an educational institution would be very helpful to collaborate with in accomplishing our goals as outlined in the new plan. *The department plans to reach out to Plymouth State University as well as the University of New Hampshire to determine interests and capacity.*

APPENDIX J

IMPORTANT FOREST SOIL GROUPS

GROUP IA	Fertile, deep, loamy texture; moderately well and well-drained; succession toward site demanding and shade tolerant hardwoods (Sm,Yb,Wa); hardwood competition severe; few limitations for forest management. [LOAMY/DEEP SIDE SLOPE -HIGH QUALITY HARDWOODS]
GROUP IB	Less fertile, coarser sandy loam; sandy and loamy over sandy textures; moderately well and well-drained; succession toward less site demanding hardwoods (Rm,Pb,Be,Ro); hardwood competition less severe; few limitations for forest management. [COARSE/SANDY/LOAM SIDE SLOPE -LOW QUALITY HARDWOODS]
GROUP IC	Somewhat draughty, less fertile; sands and gravel derived from glacial outwash; excessively well-drained; succession toward shade tolerant softwoods especially Rs,Bf, (Wp); hardwood competition low; ideally suited for forest management. [VALLEY BOTTOM OUTWASH- SOFTWOODS]
GROUP IIA	Diverse group similar to Groups IA and IB with physical limitations influencing forest management, i.e. steep slopes, erosive textures, surface boulders, excessive surface stones, and bedrock outcrops; good productivity but generally difficult and costly for forest management; includes shallow and deep (hardpan) to ledge; succession toward softwoods greater than or equal to hardwoods (Rm,Pb,Yb). [SHALLOW AND DEEP UPPER SLOPES]
GROUP IIB	Poorly drained, generally gray to mottled mineral soil; seasonal high water; lesser productivity; seasonal and other operating restrictions; suited to Rs and Bf; succession toward softwood more than hardwoods. [POORLY/VERY POORLY DRAINED VALLEY BOTTOM]
NC	Not classified for forest soil purposes; includes muck and peat, borofibrists, dumps, organic material, gravel pits (existing), rock outcrops, steep rubble, etc.

APPENDIX K

ECOLOGICAL LAND GROUP (ELG) DESCRIPTIONS

#1. **MT/CBT/SFB** (Mountain Top/Cryic Bedrock Till/Spruce-Fir-Birch)—this mountain top ELG occurs at 1,700 to 3,622 feet elevation characterized by rock outcrops and complex slopes that correspond with underlying ledge within five feet of the surface. Seasonal high water is generally more than 72 inches, although water may perch on ledges for brief periods. Soils formed from cryic bedrock till and generally do not warm up above 59° F. Forest tendency is red spruce, yellow birch, and mountain paper birch. Total area is approximately 9,209 acres.

#2. **MT/FBT/SF** (Mountain Top/Frigid Bedrock Till/Spruce-Fir)—this ELG occurs on mountain top landforms that range from 2,161to 3,342 feet elevation with strong to extremely steep slopes. Rock outcrops are common with well-drained soils shallow to bedrock derived from frigid bedrock till. Available water for vegetation is low to moderate. On available soil, forest tendency is toward red spruce and balsam fir. Total area is approximately 209 acres.

#3. **USS/CHT/BSF** (Upper Side Slope/Cryic Hardpan Till/Birch- Spruce-Fir)—this ELG is on upper slopes that include long, gently sloping, and smooth to moderately steep slopes. Elevation ranges from 1,661 to 3,642 feet. Soils formed from cryic hardpan tills, generally do not warm up above 59° F. and are loamy or silty with a shallow hardpan and ledge usually more than five feet in depth. This ELG supports yellow birch, mountain paper birch, red spruce, and balsam fir. Total area is approximately 4,012 acres.

#4. **MSS/FBT/SFM** (Middle Side Slope/Frigid Bedrock Till/Spruce-Fir- SMaple)—this ELG occurs on middle mountain side slope from 1,260 feet to 2,321feet in elevation characterized by excessive slope, surface boulders, and ledge within five feet of the surface. Forest tendency is red spruce, balsam fir and sugar maple. Total area is approximately 433 acres.

#5. **MSS/FBT/MBA** (Middle Side Slope/Frigid Bedrock Till/SMaple- Birch-Ash)—this ELG occurs on middle mountain slopes that range from 1,080 feet to 2,800 feet in elevation with soils derived from frigid bedrock till. Ledge is generally within five feet of the soil surface. Sugar maple, yellow birch and white ash tend to grow on the finer, deeper soils in this group. Pockets of red spruce and balsam fir are scattered among the hardwoods where the soil material is coarse and shallow. Total area is approximately 5,371acres.

#6. **MSS/FHT/SFM** (Middle Side Slope/Frigid Hardpan Till/Spruce-Fir- SMaple)—this group occupies exposed middle mountain slopes with higher moisture capabilities than other mountain side slopes. Elevations range from 1,400 to 2,681feet. Soils formed from frigid hardpan till and support combinations of red spruce, balsam fir and sugar maple. Total area is approximately 1,186 acres.

#7. **MSS/FHT/MBA** (Middle Side Slope/Frigid Hardpan Till/SMaple-Birch-Ash)—this ELG is on middle mountain slopes that are smooth and gently sloping to steep at elevations from 1,100 to 3,000 feet. Soils formed from frigid bedrock till and have a sandy or loamy hardpan at about two feet. Surface stones are common and depth to ledge is generally greater than five feet. Pure hardwood occupies this land group in combinations of sugar maple, yellow birch, and white· ash. This ELG covers about 27% of the property totaling approximately 10,735 acres.

#8. **LSS/CNT/SFB** (Lower Side Slope/Cryic Nonhardpan Till/Spruce-Fir-Birch)—this group occupies lower mountain side slopes from 2,241 to 3,362 feet in elevation characterized by steep slopes or a complex pattern of hills and knolls 1/2 to 10 acres in size and 5 to 30 feet higher than the valleys between. Soils in this group derived from cryic nonhardpan tills generally do not warm up above 59° F. Surface stones and boulders are common in gravelly, sandy, and loamy deposits that settled out of the melting glacial ice by the pull of gravity. Varying amounts of silt and clay are mixed with the sand and gravel. Natural forest tendency is mixed-wood communities of red spruce, balsam fir, yellow birch, and mountain paper birch. Two SCS soil units are classified as Group IIA soils. Total area is approximately 294 acres.

#9. **LSS/FNT/SFM** (Lower Side Slope/Frigid Nonhardpan Till/Spruce-Fir-SMaple)—this ELG occupies similar lower mountain side slopes (1,320 to 2,281 feet in elevation) as land groups #10, 11and 12 described below. Natural forest tendency is toward mixedwood combinations of red spruce, balsam fir, and sugar maple. All three SCS soil units in this ELG are classified as Group IA soils. Total area occupied by this ELG is approximately 90 acres.

#10. **LSS/FNT/MBA** (Lower Side Slope/Frigid Nonhardpan Till/SMaple-Birch-Ash)—this ELG occupies lower mountain side slopes at elevations ranging from 1,440 to 2,661 feet. The fine, loamy and fertile soils in this land group are derived from frigid nonhardpan tills and tend to support combinations of sugar maple, yellow birch, and white ash. The three SCS soil units in this group are classified as Group IA soils. Total area is approximately 39 acres.

#11. **LSS/FNT/ERS** (Lower Side Slope/Frigid Nonhardpan Till/Beech- RMaple-Spruce)—this ELG occupies lower mountain side slopes from 1,020 to 2,841 feet in elevation. Soils formed from frigid nonhardpan till parent materials but are coarser in texture and less fertile and tend to support mixedwood combinations of less site-demanding tree species consisting of American beech, red maple, and occasional red spruce and balsam fir. Of nineteen SCS soil units in this ELG, seventeen are classified as Group IB soils and two are classified as Group IIA soils. Total area occupied by this ELG is approximately 4,181acres.

#12. **LSS/FNT/EMS** (Lower Side Slope/Frigid Nonhardpan Till/Beech- SMaple-Spruce)—this ELG occupies lower mountain side slopes from 1,120 to 2,281feet in elevation characterized by a complex pattern of hills and knolls 1/2 to 10 acres in size and 5 to 30 feet higher than the valleys between. Surface stone and boulders are common in gravel and sandy soils derived from frigid nonhardpan till parent materials deposited by the pull of gravity from melting glacial snow. Varying amounts of silt and clay are mixed with the sand and gravel. Natural forest tendency is mixedwood combinations of American beech, sugar maple, and red spruce. Of nine SCS soil units in this ELG, eight are classified as Group IA soils and one is classified as a Group IB soil. Total area is approximately 1,089 acres.

#13. **UP/PDT/SFP** (Upland Plains/Poorly Drained Till/Spruce-Fir-Pine)—this ELG occurs at various locations on mountain side slopes, ranging in elevation from 1,180 to 2,421feet, characterized by poorly drained soil on glaciated upland plains and drainage ways. Areas are generally long and narrow or irregular in shape. A high water table most of the year, stoniness, and severe frost action usually result in high seedling mortality and blowdowns during wind storms. Natural forest tendency is pure softwood combinations of red spruce, balsam fir and sometimes white pine. Twelve SCS soil units are classified as Group IIB soils. Total area is approximately 1,344 acres.

#14. **VB/OAUSFP** (Valley Bottom/Outwash, Alluvial, Lacustrine/Spruce-Fir-Pine)—this ELG is located adjacent to the Nash Stream in the valley bottoms and is characterized by nearly level to gently sloping terrain (very steep in few places). Soils are generally deep, gravelly and sandy and are derived from glacial outwash and floodplain deposits. Lacustrine soils, a normal associate, do not occur. Forest tendency is pure softwood communities of red spruce, balsam fir, white pine, and hemlock. Total area is about 847 acres.

#15. **VB/UPD/UTC** (Valley Bottom/Very Poorly Drained /Black Spruce-Tamarack-Cedar)—this ELG includes the Nash Bog and other flat, very poorly drained sites (1,000 to 1,921feet elevation) totaling 393 acres. Water is typically at or above the surface most of the year. Soils are derived from various combinations of organic matter (muck and peat), floodplain, and glacial tills. Soil characteristics are variable including hardpan under a foot of organic matter, organic layers 52 inches deep and deeper, and poorly drained fine sandy loams. Forest tendency is toward black spruce, tamarack and cedar. (Note: a chunk of white cedar found under the old Nash Bog dam has been carbon dated to be several thousands of years old.) Total area is about 393 acres.

APPENDIX L

Common and scientific names of wildlife referenced in Chapter 6

Amphibians			
Blue spotted salamander	*Ambystoma laterale*	Pickerel frog	*Lithobates palustris*
Bullfrog	*Lithobates catesbeiana*	Redback salamander	*Plethodon cinereus*
American toad	*Anaxyrus americanus*	Red-spotted newt	*Notophthalmus viridescens*
Gray treefrog	*Hyla versicolor*	Spotted salamander	*Ambystoma maculatum*
Green frog	*Lithobates clamitans*	Spring peeper	*Pseudacris crucifer*
Leopard frog	*Lithobates pipiens*	Spring salamander	*Gyrinophilus porphyriticus*
Mink frog	*Lithobates septentrionalis*	Two-lined salamander	*Eurycea bislineata*
Northern dusky salamander	*Desmognathus fuscus*	Wood frog	*Lithobates sylvaticus*
Reptiles			
Garter snake	*Thamnophis sirtalis*	Smooth green snake	*Opheodrys vernalis*
Painted turtle	*Chrysemys picta*	Snapping turtle	*Chelydra serpentina*
Redbelly snake	*Storeria occipitomaculata*	Wood turtle	*Glyptemys insculpta*
Ringneck snake	*Diadophis punctatus*		
Birds			
Alder flycatcher	*Empidonax alnorum*	Bank swallow	*Riparia riparia*
American black duck	*Anas rubripes*	Barn swallow	*Hirundo rustica*
American crow	*Corvus brachyrhynchos*	Barred Owl	*Strix varia*
American goldfinch	*Spinus tristis*	Bay-breasted warbler	*Setophaga castanea*
American redstart	*Setophaga ruticilla*	Belted kingfisher	*Megaceryle alcyon*
American robin	*Turdus migratorius*	Bicknell's thrush	*Catharus bicknelli*
American tree swallow	*Tachycineta bicolor*	Black-and-white warbler	*Mniotilta varia*
American woodcock	*Scolopax minor*	Black-backed woodpecker	*Picoides arcticus*
Black-billed cuckoo	*Coccyzus erythropthalmus*	Dark-eyed junco	*Junco hyemalis*
Blackburnian warbler	*Setophaga fusca*	Downy woodpecker	*Dryobates pubescens*
Black-capped chickadee	*Poecile atricapillus*	Eastern phoebe	*Sayornis phoebe*
Blackpoll warbler	*Setophaga striata*	Eastern wood-pewee	*Contopus virens*
Black-throated blue warbler	*Setophaga caerulescens*	Evening grosbeak	*Coccothraustes vespertinus*
Blue-headed vireo	*Vireo solitarius*	Fox sparrow	*Passerella iliaca*
Blue jay	*Cyanocitta cristata*	Golden eagle	*Aquila chrysaetos*
Bohemian waxwing	*Bombycilla garrulus*	Gray catbird	*Dumetella carolinensis*
Boreal chickadee	*Poecile hudsonicus*	Gray jay	*Perisoreus canadensis*
Broad-winged hawk	*Buteo platypterus*	Great crested flycatcher	*Myiarchus crinitus*
Brown creeper	*Certhia americana*	Great horned owl	*Bubo Virginianus*
Canada warbler	*Cardellina canadensis*	Golden-crowned kinglet	*Regulus satrapa*
Cape May warbler	*Setophaga tigrina*	Hairy woodpecker	*Leuconotopicus villosus*
Cedar waxwing	*Bombycilla cedrorum*	Hermit thrush	*Catharus guttatus*

Chestnut-sided warbler	*Setophaga pensylvanica*	Hooded merganser	*Lophodytes cucullatus*
Birds continued			
Chimney swift	*Chaetura pelagica*	Horned lark	*Eremophila alpestris*
Common goldeneye	*Bucephala clangula*	Killdeer	*Charadrius vociferus*
Common grackle	*Quiscalus quiscula*	Lapland longspur	*Calcarius lapponicus*
Common loon	*Gavia immer*	Least flycatcher	*Empidonax minimus*
Common merganser	*Mergus merganser*	Lincoln's sparrow	*Melospiza lincolnii*
Common nighthawk	*Chordeiles minor*	Mallard	*Anas platyrhynchos*
Common raven	*Corvus corax*	Magnolia warbler	*Setophaga magnolia*
Common redpoll	*Acanthis flammea*	Merlin	*Falco columbarius*
Common yellowthroat	*Geothlypis trichas*	Mourning warbler	*Geothlypis philadelphia*
Cooper's hawk	*Accipiter cooperii*	Nashville warbler	*Oreothlypis ruficapilla*
Northern harrier	*Circus cyaneus*	Rough-legged hawk	*Buteo lagopus*
Northern parula	*Setophaga americana*	Ruby-crowned kinglet	*Regulus calendula*
Northern rough-winged swallow	*Stelgidopteryx serripennis*	Ruby-throated hummingbird	*Archilochus colubris*
Northern saw-whet owl	*Aegolius acadicus*	Ruffed grouse	*Bonasa umbellus*
Northern shrike	*Lanius excubitor*	Rusty blackbird	*Euphagus carolinus*
Northern waterthrush	*Parkesia noveboracensis*	Scarlet tanager	*Piranga olivacea*
Olive-sided flycatcher	*Contopus cooperi*	Sharp-shinned hawk	*Accipiter striatus*
Osprey	*Pandion haliaetus*	Song sparrow	*Melospiza melodia*
Ovenbird	*Seiurus aurocapilla*	Sora	*Porzana carolina*
Palm warbler	*Setophaga palmarum*	Spotted sandpiper	*Actitis macularius*
Peregrine falcon	*Falco peregrinus*	Spruce grouse	*Falcipennis canadensis*
Philadelphia vireo	*Vireo philadelphicus*	Swainson's thrush	*Catharus ustulatus*
Pileated woodpecker	*Hylatomus pileatus*	Swamp sparrow	*Melospiza georgiana*
Pine grosbeak	*Pinicola enucleator*	Tennessee warbler	*Oreothlypis peregrina*
Pine siskin	*Spinus pinus*	Tree swallow	*Tachycineta bicolor*
Purple finch	*Haemorhous purpureus*	Veery	*Catharus fuscescens*
Red-breasted nuthatch	*Sitta canadensis*	Virginia rail	*Rallus limicola*
Red crossbill	*Loxia curvirostra*	White-breasted nuthatch	*Sitta carolinensis*
Red-eyed vireo	*Vireo olivaceus*	White-crowned sparrow	*Zonotrichia leucophrys*
Red-shouldered hawk	*Buteo lineatus*	White-throated sparrow	*Zonotrichia albicollis*
Red-tailed hawk	*Buteo jamaicensis*	Wilson's snipe	*Gallinago delicata*
Red-winged blackbird	*Agelaius phoeniceus*	Wilson's warbler	*Cardellina pusilla*
Ring-necked duck	*Aythya collaris*	Winter wren	*Troglodytes hiemalis*
Rose-breasted grosbeak	*Pheucticus ludovicianus*	Yellow-bellied flycatcher	*Empidonax flaviventris*
Yellow-bellied sapsucker	*Sphyrapicus varius*	Yellow warbler	*Setophaga petechia*
Yellow-rumped warbler	*Setophaga coronata*		

Mammals			
American marten	*Martes americana*	Muskrat	*Ondatra zibethicus*
Beaver	*Castor canadensis*	Northern bog lemming	*Synaptomys borealis*
Big brown bat	*Eptesicus fuscus*	Northern flying squirrel	*Glaucomys sabrinus*
Bobcat	*Lynx rufus*	Northern long-eared bat	*Myotis septentrionalis*
Coyote	*Canis latrans*	Northern short-tailed shrew	*Blarina brevicauda*
Deer mouse	*Peromyscus maniculatus*	Pygmy shrew	*Sorex minutus*
Eastern chipmunk	*Tamias striatus*	Raccoon	*Procyon lotor*
Eastern small-footed bat	*Myotis leibii*	Red bat	*Lasiurus borealis*
Ermine	*Mustela erminea*	Red squirrel	*Sciurus vulgaris*
Fisher	*Martes pennanti*	River otter	*Lontra canadensis*
Gray fox	*Urocyon cinereoargenteus*	Rock vole	*Microtus chrotorrhinus*
Hairy-tailed mole	*Parascalops breweri*	Silver-haired bat	*Lasionycteris noctivagans*
Hoary bat	*Lasiurus cinereus*	Smoky shrew	*Sorex fumeus*
Little brown bat	*Myotis lucifugus*	Snowshoe hare	*Lepus americanus*
Long-tailed shrew	*Sorex dispar*	Southern bog lemming	*Synaptomys cooperi*
Long-tailed weasel	*Mustela frenata*	Southern flying squirrel	*Glaucomys volans*
Lynx	*Lynx canadensis*	Star-nosed mole	*Condylura cristata*
Masked shrew	*Sorex cinereus*	Striped skunk	*Mephitis mephitis*
Meadow vole	*Microtus pennsylvanicus*	Tricolored bat	*Perimyotis subflavus*
Mink	*Neovison vison*	Water shrew	*Sorex palustris*
Moose	*Alces alces*	White-footed mouse	*Peromyscus leucopus*
White-tailed deer	*Odocoileus virginianus*	Woodland jumping mouse	*Napaeozapus insignis*
Woodchuck	*Marmota monax*		

APPENDIX M

GROUP SUMMARIES

[From 1995 Nash Stream Forest Management Plan]

The following are based on verbal presentations by group spokespersons to the general assembly at the end of the small group work sessions. The comments are listed as presented and represent each group's consensus.

Group 1

1. Advisory Committee should be responsive to local input
2. Keep property open to timber cutting
3. Keep leases as they are
4. No wilderness
5. Self-supporting
6. Stewardship, etc.
7. More clarification of Federal rights

Group 2

1. Preserve raw character
   - status quo-limit pond access
   - no new roads or trails
2. Maintain tract health - viable forest
3. NO herbicides/chemicals
4. Multiple uses
5. Provide for natural preserves below 2,700 feet
6. Informational signs at harvesting sites
7. Extend leases
8. Improve logging practices done in the past

Group 3

1. Multiple use management
   - watershed, recreation, silviculture, etc.
2. Concern for environmental damage from gravel excavation
3. Interpretive and educational tours
4. Maintenance of biodiversity

Group 4

1. All recreation should be passive
2. Keep camps in place as they are
3. Keep snowmobile trails open above 2,700 feet
4. No clearcuts - leave oaks and beech for food
5. Keep trails away from deer yards
6. Control use of roads (speed limits?)

***Group 5* & 6**

1. No gravel mining
2. Responsible timber management with multiple uses
3. Local control
4. Keep access to a minimum
5. User fees
6. Important to compensate towns
7. Enforcement of hunting and fishing laws

***Group* 7**

1. Leave property as is
2. Keep property open to snowmobiling, fishing, hunting, etc.
3. Local control of management
4. Little state and Federal control
5. Concern for effect on local tax base
6. Proper timber management
7. Bog should be a natural area
8. Develop cross country ski trails
9. Property should be self-sustaining
10. Review Plan every five years with local input

Group 8

1. No developments or facilities
2. Camp lease fees and restrictions should be kept reasonable
3. Active timber management plan promoting sustained yield and wildlife management

Group 9* & *10

1. Restore deer yards
2. Review lease program and loss of tax revenue
3. Restoration of gravel should be done and properly monitored
4. Local management

APPENDIX N

SUMMARY OF COMMON THEMES

[From 1995 Nash Stream Forest Management Plan]

There were many valuable comments made at both the Groveton and Concord Nash Stream public meetings. Those comments from both meetings (listed alphabetically by subject category) that appear to have a common theme are summarized below:

ACCESS (Roads and trails)

- Maintain and protect existing roads
- No new roads or trails
- Concern with impact of access on wildlife

EASEMENT

- Need clarification of Federal rights

EDUCATION

- Public education be a part of management and use of property

ENFORCEMENT

- Ensure enforcement of reasonable regulations

GRAVEL

- No gravel mining (i.e. Rancourt)
- If gravel mining must occur it should be properly controlled
- Need clarification of Rancourt's gravel rights

HEALTH

- Concern for tract (ecological) health-
  healthy trees/water/ wildlife(native), no chemicals, stewardship

LEASES

- Keep the camp leases the way they are with reasonable fees and terms
- Extend leases beyond 50-year term

LOCAL IMPACT

- More local input into tract management
- Concern with financial impact to towns-
  Clarify yield tax, loss of property taxes, cost of added services such as roads, law enforcement and trash disposal
- Use property revenue to offset town costs

MULTIPLE USE

- Manage under principle of multiple use with consideration for protection, recreation and timber

NASH BOG DAM

- Mixed views on whether to rebuild dam or not

NATURAL PRESERVE

- Survey and identify areas suitable for natural preserves

PLAN

- Base plan on thorough study and review
- Periodic review of plan (every 3-5 years suggested)
- More public (and local) involvement in Plan

PRESERVE

- Leave property as it is
- Minimum development

RECREATION

- Keep property open to traditional recreational uses
- Concern about trail development and who maintains existing trails
- Any recreational development should be low impact

STAFFING

- Hire a manager and on-site staff

TIMBER

- Continue timber management consistent with traditional use
- Good forest management should be used
- Concerned about clearcuts

USE

- Keep property open to public use
- Property should be self-supporting
- Control use to prevent over-use (fisheries, wildlife and trail resources)
- Minimum impact uses
- Respect for property-ethical conduct by users

WILDLIFE

- Link wildlife habitat treatments with timber management
- Softwood management for wildlife

READER'S NOTE:

To help readers navigate through this hefty document, a detailed **Table of Contents** and the following **Highlights** section are provided. A companion document, **Nash Stream News**, which answers commonly asked questions is also available upon request.

If you have comments or questions, or would like a copy of the **Nash Stream News**, please call the Division of Forests and Lands in Concord, NH at (603)271-3456, or write to:

Department of Resources and Economic Development
ATTN: Nash Stream Forest
Box 1856
Concord, NH 03302-1856

HIGHLIGHTS

The following highlights are based on questions and comments from the public listening sessions (see **Appendix 3 – Summary of Common Themes**, page 159) held in the spring of 1990 *(page references in italics are suggested reading)*.

ACCESS

- Traditional public access into the Nash Stream Forest will be continued; the main gate will be opened each spring and closed in December each year *(pages 112 and 116)*.
- No new permanent roads are planned; existing roads and trails will be maintained as multi-use corridors to minimize new construction and impacts *(pages 82, 112, 115 and 116)*.

EASEMENT

- The Conservation Easement allows certain uses of the Nash Stream property, places permanent restriction on certain uses, and establishes long-term enforcement for those restrictions *(page 5)*.
- The U.S. Forest Service will be responsible for administering the Easement on behalf of the United States and will not become actively involved with management *(page 8)*.

Information and Education

- Information and education will be provided primarily through existing state programs and will include interpretation of management activities *(page 85)*.
- Interpretive programming and signage will be low key and carefully applied *(page 116)*.

Law Enforcement

- Law enforcement is currently handled by nine law enforcement agencies under each agency's domain; present patrols have been able to handle enforcement situations that develop *(page 58)*.
- Mutual aid agreements for law enforcement between state and local communities are under consideration *(page 95)*.

Gravel

- Rights to extract gravel on about 936 acres of land area have been reserved until October 27, 1995 *(page 21)*.
- Gravel extraction will be permitted in accordance with DRED gravel excavation, reclamation and operational standards *(page 113)*.

Forest Health

- Management will strive to protect natural qualities and ecological processes *(page 61)*.
- Ecological land groups (ELGs) provide the basis for management decisions such as timber harvests, wildlife habitat improvements, and recreation designs *(page 51)*.
- Notwithstanding state law, chemical pesticides will not be used *(pages 58 and 62)*.
- Water quality will be the highest priority; best management practices (BMPs) will be used to protect quality *(pages 62, 105, 115, 117, 119 and 122)*.

Private Recreation Camps

- The Conservation Easement prohibits residential use of the Forest but allows continuation of the existing recreation camps *(pages 5 and 110)*.
- Ninety-four recreation camp lot leases will continue under 5-year renewable agreements for a period not to exceed 50 years; all camp lot agreements will terminate on June 30, 2039 *(pages 22 and 111)*.

Local Impact

- The towns of Columbia, Stark, Stratford, and the unincorporated place of Odell are entitled to payments from the state in lieu of taxes *(page 58)*.
- Private recreation camps are assessed local property taxes; camp owners also pay annual camp lot license fees to the state, a portion of which is returned to the local economy through forest management projects *(page 60)*.
- Forest fire suppression costs, including training and prevention *(page 59)* and fire and safety equipment purchases *(page 56)*, are shared equally between the state and towns.

Multiple Use

- The Conservation Easement provides for perpetual public use and protection of the Nash Stream Forest with emphasis on traditional uses of the land, including public access and the conservation of natural resource values *(page 5)*.
- The Nash Stream Forest "Vision" places a premium on forest stewardship, ecosystem management, public involvement, and traditional low-impact uses *(page 61)*.
- A Cooperative Land Management Committee and State Land Management Team will consider multiple resource values and user interests *(page 106)*.
- Comprehensive management guidelines are included in the Plan that will sustain ecological processes, provide resources for public use, and integrate management activities *(page 113)*.

Nash Bog Dam

- Although allowed by the Conservation Easement, there are no plans to rebuild the Nash Bog Dam *(page 85)*.

Natural Preserves and Other Protected Areas

- Five areas totaling an estimated 8,113 acres qualify as natural preserves *(page 77)*.
- About 46% (18,339 acres) of the Forest is considered ecologically significant and will be preserved or protected. Protection will be accomplished by several methods: natural preserve designation, natural preserve buffers, selected control areas, no-cut pond buffers, and steep, wet or otherwise fragile land designations *(page 76)*.
- Six exemplary and uncommon natural plant communities have been identified and four of five rare plant species located in the Forest are listed as threatened by the N.H. Native Plant Protection Act *(page 29)*.
- State law requires that all forest and brush fires be extinguished *(pages 93 and 182)* including wildfires in natural preserves *(page 127)*.

Management Plan

- A gubernatorial appointed Advisory Committee and a Technical Team worked on the Management Plan; public input was key to the process *(page 9)*.
- A 5-page Management Vision was developed by the Nash Stream Advisory Committee to guide all management and planning efforts *(page 61)*.
- State-of-the-art, geographic information system (GIS) computer technology was used to map and analyze data *(page 9)*.
- A Citizen Advisory Committee will be established to advise and work in partnership with DRED *(pages 67 and 110)*; a proposed monitoring and evaluation program provides for periodic reviews *(page 130)*.
- There will be public notification of significant proposed land management activities (pages 64, 67 and 118).

Preserve Raw Character

- Emphasis is on maintaining natural features and quality of the Forest with minimal development *(page 61)*.

Recreation

- Public access for traditional, low impact, dispersed recreation will be continued *(pages 61 and 81)*; camping is presently not available *(page 84)*.
- Traditional hunting, fishing and trapping will be permitted in accordance with state law *(page 89)*.
- No new trails are proposed. A Trails Advisory Group is recommended to help with current trail assessments and to make recommendations for improvements *(page 83)*.
- Thirty-seven miles of snowmobile trails will be maintained by local users with support for a statewide grant-in-aid program *(page 49)*.
- The Sugarloaf Mountain and N. Percy Peak hiking trails total more than 5 miles; where consistent with recreation purpose, interior woods roads will be maintained as multi-use recreation trail corridors *(page 83)*.

Staffing

- DRED is charged with management responsibility *(page 9)* with interagency assistance; license fees from camp lots help fund supplemental patrols *(page 60)*.
- Although allowed by the Conservation Easement, there are no plans to charge a fee for public entry and general use of the Forest; there are no plans to build a visitors' center or hire a gate attendant *(page 84)*.

Timber

- More than half (20,492 acres) of the Forest will be managed for timber *(page 100)*, which is about 80% of the total Forest area traditionally harvested *(page 26)*.
- Timber management practices will be modified to protect other resource values *(page 62)*. Public notification will be made of proposed timber harvests *(page 118)*, and harvest plans will be coordinated with an interdisciplinary team *(page 113)*.
- Uneven-aged timber management will be the method of choice; limited even-aged management, including clearcutting, is allowed but with restrictions *(pages 62, 98, 120, 139 and 147)*.
- The immediate potential for sawlog harvests is low, but there are widespread opportunities for commercial thinnings *(page 27)*.

Public Use

- The Management Plan includes guidelines for public use *(page 128)*.
- A carry in/carry out ethic will be promoted *(page 82)*.

Wildlife

- Management will integrate wildlife habitat concerns into long-term timber harvest and silviculture schedules *(pages 118 and 123)*.
- Management guidelines include softwood communities and their value to wildlife *(page 124)*.
- The Nash Stream Forest provides a wide variety of wildlife habitats for an estimated 180 different species of mammals, birds, reptiles and amphibians *(page 34)*.
- Fish and wildlife habitat management will strive to sustain populations that naturally occur on the property *(pages 64, 70, 71, 75 and 86)*.

Other

- Numerous reserved rights came with the property deed; some have long-term management implications *(page 21)*.
- The Mount Prospect fire tower in Lancaster has the best view of the Nash Stream Forest; 42 miles of gravel roads provide access to 60% or more of the property by conventional vehicles for fire suppression purposes *(page 56)*.
- Annual aerial detection flights will be carried out to check for potential insect and disease infestations as part of a statewide surveillance program *(page 94)*.

Department of Resources and Economic Development
RSA 215-A:42 &A:43
ATV and Trail Bike Operation on State Land
Coarse and Fine Filter Worksheet

Project Name: Kelsey Notch ATV/UTV Trail

Coarse Filter Criteria (RSA 215-A:43I(a-f))

Deed Restrictions	Comments
Are there any deed restrictions, laws, or purchase funding source restrictions that prohibit the use of ATVs on the property? **RSA 215-A:43I(a)**	Nash Stream Forest was acquired through the Land Conservation Investment Program and is therefore subject to oversight by the Council on Resources and Development (CORD) under RSA 162-C:6. The Council met on 12/8/2016 and issued detailed findings regarding ATV/UTV use in Nash Stream **(Appendix A)** There is a conservation easement held by the US Forest Service. An interpretation of the conservation easement deed was made in 2001 by the USFS regarding use of ATV's on the property (**Appendix B**)

Environmental	Comments
A property is not suited for ATV use if 90% or more of the entire property consists of any of the following: **RSA 215-A:43I(b)**	
Has the New Hampshire Natural Heritage program identified the area as an "exemplary natural community?" **RSA 215-A:43I(b)(1)**	Based upon NHB reviews there are no documented exemplary natural communities near the trail location. Reviews done for State Lands Management Team (SLMT) #13-01-04 (**Appendix C**); in July 1, 2015 (NHB ID #15-2129) **(Appendix D)**; and November 4, 2015 Nash Stream Field Tour Notes (**Appendix E**)
Is it significant habitat for a federally or state listed endangered or threatened species? (Significant habitat = habitat necessary for successful breeding or survival at a given time of the year). **RSA 215-A:43I(b)(2)**	Based upon the work of F&G Wildlife Biologist (Jill Kilborn) and researchers (Alexej Siren), it is known that American marten are found throughout this area. The area is considered high quality marten habitat. However, it is the opinion of F&G Biologist Will Staats, that this one trail currently would not adversely impact the overall marten population in the greater landscape. No Northern Long Ear Bat (NLEB) hibernaculum known within a half mile (see NHB review **Appendix D**).

Is it a forested wetland consisting of Group IIB Forest Soils as defined and mapped by NRCS, or is it a non-forested wetland as defined by DES, USFWS and others? RSA 215-A:43I(b)(3)	The trail location is not located within wetlands, or sensitive soil types. The trail minimizes new disturbance to the area by utilizing an existing gravel road and a snowmobile trail built the season before the introduction of ATVs.

Property Size and Configuration	Comments
If being considered for a trail network, is it a single state ownership of 700 acres or more, or a combination of abutting state ownerships totally 700 acres or more?	Overall property is greater than 40,000 acres and this trail is a pass through route and not intended to be a self-contained trail network
If being considered for a trail corridor link; are the trails which are being connected existing or in the planning phase?	Trails on all sides of the property are in existence with abutting landowner permissions, pursuant to RSA 215-A:29.

Purpose of Acquisition (POA)/ Existing Management Plan	Comments
A) If no plan exists: If there is no conflict with criteria 1, 2 & 3 **[RSA 215-A:43 I (e)-(f)]** and no conflict with the purpose of acquisition (POA) then the proposal passes the coarse filter (CF). If there is a conflict with the documented POA, then the proposal does not pass CF. Proposal would not move forward through the fine filter (FF) unless POA is revised through due process** or mgmt. plan is written and ATVs are allowed. *Valid documentation would include letters from the grantors stating the purposes for granting the gift of land, department memos specifying the POA, historic records. ** Due process = formal review and decision made by the administrator responsible for the land.	The current Nash Stream Management Plan was revised in 2002 lifting the prohibition of recreational of ATV's. As a result of this plan revision, a 3-5 year ATV pilot trail for riders to use the 5 mile long West Side road and connector trails to private property to the west was established. In 2013, Department of Resources and Economic Development (DRED)'s Acting Commissioner Philip Bryce allowed for the Kelsey Notch ATV trail as an additional pilot trail at Nash Stream. ATV use not addressed in POA documents. The United States Forest Service (USFS) and CORD have helped clarify this issue.

Department of Resources and Economic Development
RSA 215-A:42 &A:43
ATV and Trail Bike Operation on State Land
Coarse and Fine Filter Worksheet

Purpose of Acquisition (POA)/ Existing Management Plan	Comments
B) If plan exists but ATV use is not addressed: If there is no conflict with criteria 1, 2 & 3 and no conflict with the POA, the proposal moves forward through a revised FF process leading toward plan amendment. This process would include revisiting the plan with the individuals and organizations that helped to create the original plan. The decision to amend a plan is made at the agency administrative level.	2002 reviews through US Attorney Office for USFS notes no deed or easement restrictions for ATV trails.
C) If plan exists and ATV use is allowed: If there is no conflict with criteria 1, 2 & 3 and no conflict with the POA, then the proposal passes the coarse filter (CF).	ATV use is addressed in current plan, however it does not currently include allowing ATVs on the Kelsey Notch Trail specifically. DRED is in the process of updating the plan and has been working with CORD and the Nash Stream Citizen's Advisory Committee in this regard.
D) If plan exists and ATV use is not allowed: The proposal does not pass CF until the property goes through a plan revision process, which includes public input. Plan revision process is different from the project proposal fine filter process. The decision to enter into plan revision is made at the agency administrative level.	There is a management plan for the property which allows limited trail riding on the West Side of Nash Stream. The Kelsey Notch Trail was started as a pilot project by DRED's Acting Commissioner Philip Bryce after a review by CORD in 2013. DRED continues to work with CORD and the Nash Stream Citizen's Committee in this regard.

<u>Fine Filter Criteria (RSA 215-A:43 II (a)-(y))</u>

Compatibility, Local Ordinances/Deed Restrictions	Comments
The trail is supported by an organized trail club.	There is an MOA with F&G (**Appendix F**) and an MOA with the Metallak ATV Club that is renewed every 3 years **(Appendix G).**
The proposal is designed to ensure that ATVs on the trail will comply with the maximum decibel limit established by law.	NH RSA 215-A:12 sets requirements for vehicle decibel limits. All vehicles legally operating on the trail must comply with this section. Nash stream ATV trail Baseline Noise Testing Results July 3, 2002 (**Appendix H).**

Department of Resources and Economic Development
RSA 215-A:42 &A:43
ATV and Trail Bike Operation on State Land
Coarse and Fine Filter Worksheet

Compatibility, Local Ordinances/Deed Restrictions	Comments
Adequate parking exists or will be developed ("adequate" matches # of expected riders, may be a design criterion.)	There are no direct parking areas specific to this trail segment. Sufficient parking exists off of the property, further east in Millsfield, Southwest in N Stratford and North in Colebrook.
The proposal is compatible with local planning and zoning ordinances.	Town of Columbia has limited planning and zoning ordinances; most are specific to dwellings, wind turbines and similar topics. No ordinances exist relative to trails or recreational facilities or noise.
The proposed trail does not pass through a parcel with deed restrictions.	The USFS and CORD have helped clarify this issue (**Appendix B**).
The proposal is compatible with noise and obnoxious use ordinances.	There are no local or state noise ordinances that would apply to this trail. NH RSA 215-A:12, RSA 259:66, RSA 266:59-a and RSA 270:25 establishes noise limits for vehicles.
The proposal is reasonably compatible with existing uses. **RSA 215-A:43, II(g)**	The primary use of this trail is for snowmobile traffic in the winter which is outside of the ATV season. Additional summer use on this trail is limited. Conflict during hunting season is anticipated to be limited as ATV use decreases after Labor Day.

Environment/Habitat	Comments
Trail would not violate federal, state, or local laws.	Trail reviews were done to ensure compliance. No law violations known.
The trail proposal includes a monitoring and response system designed to detect and correct adverse environmental impacts.	Trail is reviewed annually by Trails staff and Regional Forester, for erosion issues and maintenance plan development per standards set in the MOA with F&G (**Appendix F)**. After on-site review by Tech Team in spring 2016 additional culverts were installed in the forest road and ditch lines improved to address erosion issues. MOA with the Metallak ATV club (**Appendix G)** and the MOA with F&G (**Appendix F)**.
Trail layout incorporates existing motorized travel corridors whenever possible, excluding Class I through Class V highways.	The trail is located on an existing gravel woods road as well as a snowmobile trail that was built the season before ATV's started utilizing the trail.

Department of Resources and Economic Development
RSA 215-A:42 &A:43
ATV and Trail Bike Operation on State Land
Coarse and Fine Filter Worksheet

Environment/Habitat	Comments
Trail tries to avoid further fragmenting blocks of forestland by locating trails on areas with existing development whenever possible.	The trail utilizes an existing gravel road and a newly constructed snowmobile trail. At the time of review due to the presence of the preexisting road and snowmobile trail, it was determined that the trail as proposed would not be a significant fragmenting feature. However, it is the opinion of Fish and Game wildlife biologist Will Staats that should traffic become heavier on the trail in the future, it might preclude some animals from crossing or denning near the trail and could potentially cause avoidance by some wildlife species in the area. The condition before the trail opened was a locked gate with little to no traffic.
Trail does not pass through the "Sanitary Protective Area" (Env-Ws 378.06) of a community groundwater supply.	There are no public wells or sanitary protective areas within jurisdiction of this trail
Trails are not located on earthen dams, dikes, and spillways.	No dams, dikes or spillways used.
Trail avoids areas which contain soil that have been classed Important Forest Soil Group IIA and IIB unless there is an existing soil condition or surface roadway that can be used to reduce adverse environmental impacts.	To minimize impacts to undisturbed forest soils, the ATV trail was located on an existing gravel road as well as a snowmobile trail that was built the season prior. ATV Analysis map (**Appendix I**)
New trail would not be constructed within 100' of the ordinary high water mark of 1st and 2nd order streams, 330' of 3rd order streams and 660' of 4th order and higher streams, unless surface roads can be used. Stream crossing exemption.	To minimize impacts to undisturbed forest soils, the ATV trail was located on existing roadways as well as a snowmobile trail that was built the season prior. ATV Analysis map (**Appendix I**)
All stream-crossing structures meet 5-year flood design criteria.	Stream crossings built to DES permit specifications and current version of Best Management Practices (BMP).
Trail avoids construction within 200 feet of any water body, forested or non-forested wetland, or vernal pool. Existing roads or surface condition may be used if within buffer	To minimize impacts to undisturbed forest soils, the ATV trail was located on an existing gravel road as well as a snowmobile trail that was built the season prior. ATV Analysis map (**Appendix I**)
Trail avoids elevations over 2700 feet.	Trail does not travel above 2700 feet in elevation, per GIS analysis**.** ATV Analysis map (**Appendix I**)
Trail avoids important wildlife habitat features for species of concern, per F&G review	The trail passes through an area that is considered high quality American marten habitat. However, it is the opinion of F&G Biologist Will Staats, that this one trail currently would not adversely impact the overall marten population in the greater landscape.

Department of Resources and Economic Development
RSA 215-A:42 &A:43
ATV and Trail Bike Operation on State Land
Coarse and Fine Filter Worksheet

Environment/Habitat	Comments
Trail avoids known locations of Federally or State listed endangered or threatened species, or their habitat; per the site-specific direction of the NH Fish & Game Department.	The trail passes through an area that is considered high quality American marten habitat. However, it is the opinion of F&G Biologist Will Staats, that this one trail currently would not adversely impact the overall marten population in the greater landscape. No known Northern Long Eared bat (NLEB) hibernaculum in the area. See NHB review (**Appendix D**).
Trail avoids known locations of rare plants and exemplary natural communities per the site-specific direction of the Natural Heritage Bureau.	The trail minimizes new disturbance to the area by utilizing an existing gravel road and a snowmobile trail built the season before the introduction of ATVs. An extensive inventory has not been completed; however there are no known locations of rare plants, per NHB reviews--NHB ID 15-2129 dated July 1, 2015 (**Appendix D)** and NHB ID 16-2712 dated Sept. 1, 2016 (**Appendix J)**. Nothing noted on November 4, 2015 Nash Stream Field Tour Notes (**Appendix E**.)
Trail avoids alteration or disturbance of unique geologic features, formations, and designated state geologic waysides (or per site-specific recommendations of state geologist).	There are no known geologic features in the area. The trail minimizes new disturbance to the area by utilizing an existing gravel road and a snowmobile trail built the season before the introduction of ATVs.
Trail avoids alteration, disturbance and adverse impacts to cultural and historic resources.	There are no known historic resources in the area. The trail minimizes new disturbance to the area by utilizing an existing gravel road and a snowmobile trail built the season before the introduction of ATVs.
The trail will not be constructed within 330 feet of known raptor nest tress, or pass within 650 feet of trees with eagle or osprey nests.	There are no known raptor, eagle or osprey nests within the vicinity. NHB review (**Appendix D)**. Nothing noted on November 4, 2015 Nash Stream Field Tour Notes (**Appendix E.)**
The trail is more than 650 feet from eagle winter roosting areas.	There are no known eagle winter roosting areas in vicinity. NHB review (**Appendix D)**. Nothing noted on November 4, 2015 Nash Stream Field Tour Notes (**Appendix E.)**
The trail is more than 330 feet from the edge of wetlands containing heron rookeries.	There are no known heron rookeries.

Safety (RSA 215-A:43, II, (z)-(cc))	Comments
The ATV trail can be constructed in the desired area of the property so that it provides safe and appropriate trail design.	The trail utilizes an existing gravel road and a snowmobile trail built the season before the introduction of ATVs. Trails Bureau staff are

Safety (RSA 215-A:43, II, (z)-(cc))	Comments
	professional trail builders and the new construction meets BMP manuals and trail design recommendations.
Safety standards for highway crossings can be met.	There are no highway crossings directly abutting the trail. Any highway crossings outside of the property comply with NH DOT policy guidelines.
ATV use on existing trails can be safely incorporated.	Additional summer use on this trail is limited. Uses on abutting lands are similar and compatible and no conflicts are anticipated.
New trails will be constructed to safely accommodate multiple uses.	The trail is sufficiently wide enough to accommodate ATVs passing by each other and is also wide enough for motorized and non-motorized users to pass safely by each other. The snowmobile trail was built as a new route for Corridor Trail 7. During construction, the potential for future ATV use was taken into consideration. The trail was built with ditch lines on both sides, a gravel surface 10' wide. It was built to existing BMP standards and could accommodate wheeled traffic. The trail was built with a gravel base to allow for continued future maintenance.
Local enforcement officers have been contacted to review and provide input regarding enforcement issues.	NH Fish & Game and DRED Forest Rangers provided input on trail location and enforcement. F&G MOA (**Appendix F)**

<u>Public Meeting (RSA 215-A:43, III)</u>

Trail proposal was advertised and publicly presented at Nash Stream Citizens Committee on November 13, 2012. Meeting was held at North Region Headquarters Building in Lancaster at 4pm.

Department of Resources and Economic Development
RSA 215-A:42 &A:43
ATV and Trail Bike Operation on State Land
Coarse and Fine Filter Worksheet

STATEMENT OF CONFORMANCE TO COARSE AND FINE FILTER CRITERIA

At the date of signing, the following representatives hereby have determined that the proposed trail titled Kelsey Notch Pilot ATV Trail meets the coarse and fine filter requirements as set forth in RSA 215-A:43:

Date	Jeffrey J. Rose Commissioner Department of Resources and Economic Development
Date	Glenn Normandeau Executive Director New Hampshire Fish and Game Department
Date	Brad W. Simpkins Director DRED – Division of Forests and Lands
Date	Philip A. Bryce Director DRED – Division of Parks and Recreation
Date	Chris Gamache Chief, Bureau of Trails DRED – Division of Parks and Recreation
Date	William Guinn Administrator, Forest Management Bureau DRED – Division of Forests and Lands

New Hampshire Council on Resources and Development

NH Office of Energy and Planning
107 Pleasant Street, Johnson Hall
Concord, NH 03301
Phone: 603-271-2155
Fax: 603-271-2615

APPENDIX A

TDD Access: Relay NH
1-800-735-2964

December 14, 2016

Brad W. Simpkins, Director
New Hampshire Division of Forests and Lands
NH Department of Resources and Economic Development
Brad.Simpkins@dred.nh.gov

Chris Gamache, Chief
NH Trails Bureau
Department of Resources and Economic Development
Division of Parks and Recreation
Christopher.Gamache@dred.nh.gov

Dear Director Simpkins and Chief Gamache:

On December 8, 2016 the Council on Resources and Development made several decisions regarding ATV trail use in Nash Stream Forest and whether such use is consistent with the principles set forth in RSA 162-C:6 for management of LCIP lands.

Concerns about the establishment of the two existing Nash Stream ATV trails – West Side Trail and Kelsey Notch Trail – were brought to the Council's attention by the Appalachian Mountain Club, the Society for the Protection of New Hampshire Forests and The Nature Conservancy in a letter dated May 5, 2016.

In response, the Council adopted the enclosed Findings, which includes General Findings for any ATV use in Nash Stream Forest, as well as Findings specific to West Side Trail and to Kelsey Notch Trail.

In addition, the Division of Forest and Lands submitted a Nash Stream Forest OHRV Briefing Paper and requested guidance from the Council on three proposed ATV trail options for

inclusion in the 2016 revision of the Nash Stream Management Plan. The Council's guidance is based on consistency with the principles of RSA 162-C:6 for the management of LCIP lands.

The Council determined that both Options 1 and 2, as proposed in the Briefing Paper, are consistent with the principles set forth in RSA 162-C:6, with West Side Trail and Kelsey Notch Trail each subject to the specific conditions outlined in the Council's December 8, 2016 Findings. The Council further determined that Option 3, as proposed in the Briefing Paper, is not consistent with the management vision for Nash Stream Forest nor with the principles set forth in RSA 162-C:6.

The Council's motion regarding the proposed options for the Nash Stream Management Plan is enclosed at the end of this document.

Please be in touch with questions or concerns.

Best wishes,

Amanda A. Merrill
Director, Office of Energy and Planning
Chair, Council on Resources and Development

cc: CORD Members
Jeffrey Rose, Commissioner, Department of Resources and Economic Development
Phil Bryce, Director, Division of Parks and Recreation, DRED
Christopher G. Aslin, Assistant Attorney General, Department of Justice
Susan Arnold, Vice President for Conservation, Appalachian Mountain Club
Matt Leahy, Public Policy Manager, Society for the Protection of New Hampshire Forests
Jim O'Brien, Director of External Affairs, The Nature Conservancy
Will Abbott, Vice President for Policy and Reservation Stewardship, Society for the Protection of New Hampshire Forests
Larry Gomes, Nash Stream OHRV Task Force

New Hampshire Council on Resources and Development

NH Office of Energy and Planning
107 Pleasant Street, Johnson Hall
Concord, NH 03301
Phone: 603-271-2155
Fax: 603-271-2615

TDD Access: Relay NH
1-800-735-2964

FINDINGS REGARDING ATV/UTV USE IN NASH STREAM FOREST
ADOPTED BY CORD ON DECEMBER 8, 2016 (8-0)

General Findings:

The Council finds that in order to perform its statutory duty to manage LCIP lands, members must review and find that any use of ATV/UTVs, as currently defined by statute, within Nash Stream Forest is consistent with the principles set forth in RSA 162-C:6 prior to implementation.

CORD further finds that any ATV/UTV use in Nash Stream Forest must be limited to specific ATV/UTV trails approved by CORD in advance. In order to be consistent with the principles set forth in RSA 162-C:6, CORD finds that each proposed ATV/UTV trail must meet the following conditions: (1) the trail must be designed, sited, and used so that it preserves and does not adversely impact natural resources and conservation attributes of the property and does not interfere with or detract from the other uses of Nash Stream Forest; (2) the trail must be authorized in a current management plan, which has been reviewed by CORD for consistency with RSA 162-C:6 and has had appropriate public and state agency input; (3) the trail must comply with the requirements of RSA 215-A and all other applicable ATV/UTV and environmental regulations and standards, and the state's most recently adopted best management practices for trail construction and erosion control; (4) after construction, the trail must be continually managed to protect natural resources and conservation attributes and to limit interference with other uses of Nash Stream Forest; (5) CORD must be adequately informed on an ongoing basis of the status of management, maintenance, and enforcement efforts related to ATV/UTV use, as well as impacts of ATV/UTV trails on the Nash Stream Forest; and (6) CORD reserves the right to periodically reassess whether ATV/UTV use in the Nash Stream Forest, or on any of the trails therein, remains consistent with RSA 162-C:6 and reserves the right to temporarily or permanently close trails if necessary as circumstances change over time.

West Side Trail:

The Council finds that the use of ATV/UTVs on the West Side Trail, as currently managed, is consistent with its management obligations under RSA 162-C:6 as long as: (1) the memoranda of agreement required by RSA 215-A:42 relating to monitoring, maintenance, and enforcement

remain up-to-date and contain sufficient detail and safeguards to ensure that the trail is maintained in a safe and environmentally appropriate manner; and (2) conditions and use of the trail do not change in such a way that makes continued use of ATV/UTVs on the West Side Trail inconsistent with the requirements of RSA 162-C:6 as determined by CORD.

Kelsey Notch Trail:

The Council finds that, based on current available information, it is not able to determine at this time whether continued use of ATV/UTVs on the Kelsey Notch Trail is consistent with CORD's management obligations under RSA 162-C:6. In order to assist in this determination, CORD requests the following additional information regarding the use, maintenance, and impacts of ATV/UTVs at this location:

1. By the January 12, 2017 CORD meeting, DRED shall submit to CORD for review the following:

    a. An updated coarse and fine filter analysis of the Kelsey Notch Trail, pursuant to RSA 215-A:43;
    b. An interagency memorandum of understanding, pursuant to RSA 215-A:42; and
    c. Written agreements between DRED and a local ATV/UTV club, pursuant to RSA 215-A:42.

2. At such time that CORD has reviewed the information above and determined that it is sufficient for the Kelsey Notch Trail to provisionally re-open for ATV/UTV use, DRED shall then submit the following to CORD for review as they become available:

    a. The annual reports required pursuant to the interagency memorandum of understanding; and
    b. Such additional reasonable and appropriate studies, data, and information as CORD may require to adequately assess whether the continued use of ATV/UTVs on the Kelsey Notch Trail is consistent with RSA 162-C:6.

3. CORD will assess this additional information for three years (beginning in 2017) and at the end of this time period, or at any other time as circumstances dictate, CORD shall determine, based on available information:

    a. That additional information and assessment is necessary to determine whether the use of ATV/UTVs on the Kelsey Notch Trail is consistent with RSA 162-C:6; or
    b. That use of ATV/UTVs on the Kelsey Notch Trail is consistent with RSA 162-C:6, subject to the general conditions for any ATV/UTV use in Nash Stream Forest; or
    c. That ATV/UTV use on the Kelsey Notch Trail is not consistent with RSA 162-C:6 and the trail shall cease to be open for ATV/UTV use.

4. During the pendency of CORD's review of the Kelsey Notch Trail no expansion of the area of disturbance for ATV/UTV use shall be permitted without prior CORD approval.

MOTION ON GUIDANCE TO DRED REGARDING ATV TRAIL OPTIONS FOR 2016 REVISED NASH STREAM FOREST MANAGEMENT PLAN

"In looking at the three options presented to CORD from DRED, and given the preliminary findings of the Technical Team, Option 3 would not be consistent with both the management vision as well as RSA 162-C:6. Both Option 1, keeping the status quo, and Option 2, keeping OHRV use consistent with the 2002 Management Plan amendment, would be consistent with both the management vision and CORD's LCIP responsibilities. However, Option 1 needs to reflect CORD's determination earlier in today's meeting."

Adopted by Council on Resources and Development (7-0)
December 8, 2016

APPENDIX B

United States Department of Agriculture
Forest Service
White Mountain National Forest
719 N. Main Street
Laconia, NH 03246
Comm (603) 528-8721
TDD (603) 528-8722

File Code: 1560

Date: December 11, 2001

RECEIVED
DEC 13 2001
D.R.E.D.

Phil Bryce
DRED
172 Pembroke Road
Concord, NH 03302

Tom - your copy
per Phil

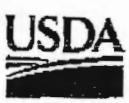
Dear Phil,

Attached is the advice from our Office of General Counsel pertaining to ATV's on Nash Stream Forest. This advice is similar to what I communicated to you over the phone.

Please feel free to contact me if you have any questions or concerns.

THOMAS G. WAGNER
Forest Supervisor

Enc.



United States
Department of
Agriculture

Office of the
General
Counsel

Southern Region-Milwaukee Office
310 W. Wisconsin Avenue, Suite200W
Milwaukee WI. 53203-2240
Telephone: (414) 297-3774
FAX: (414) 297-3763

TO: Paul Stockinger
Director, Lands and Minerals
Eastern Region, Forest Service

FILE: F&L 15 (GEN)

FROM: Gene Alan Erl
Deputy Associate Regional Attorney

SUBJECT: Nash Stream Easement

This is in response to your request for an opinion on whether the State of New Hampshire may permit the use of all terrain vehicles (ATV'S) on the Nash Stream Forest. The United States holds a conservation easement over the property by virtue of a deed from the State, dated August 4, 1989. We understand the State is in the process of revising its management plan for the area. In response to public requests, it is considering such use.

The Nash Stream Conservation Easement Deed is a so-called reserved interest deed. This means all interests in the property were conveyed, except for those expressly reserved by the grantor. As pertinent here, the State, as grantor, reserved " public recreation" uses, including trails and specifically the..."construction, operation and maintenance of...snowmobile trails...." (deed, para. II. C and II. C. 1) The mention of snowmobile trails as a subset of trails indicates that motorized use of trails is permitted. Thus, because both accommodate motorized vehicles, a reasonable interpretation would be that snowmobile trails being of the same kind, class or nature as ATV trails could be regulated by the State.

The public access provision of the deed, paragraph II. F, also gives to the State the discretion to"reasonably restrict and regulate access and use." This seems directly relevant as to whether the State may regulate ATV recreational use of trails on the easement area. Finally, the multiple use provision of the deed, paragraph II. C. 4, seems broad enough to give the State discretionary regulatory authority over determining how the public may use the trail and road system.

Accordingly, for the foregoing reasons, we are of the opinion that the State may

ban/allow/regulate public ATV use of trails and roads for recreational purposes. However, we think it would be more difficult to conclude that off-trail or off-road (i.e., dispersed) ATV use by the public has been reserved by the State.

cc: James Snow
Deputy Assistant General Counsel
Natural Resources Division, OGC

Thomas G. Wagner
Supervisor, White Mountain NF

Tom

STATE OF NEW HAMPSHIRE
DEPARTMENT of RESOURCES and ECONOMIC DEVELOPMENT
DIVISION of FORESTS and LANDS
172 Pembroke Road P.O. Box 1856 Concord, New Hampshire 03302-1856

603-271-2214
FAX: 603-271-2629

GEORGE M. BALD
Commissioner

PHILIP A. BRYCE
Director

September 10, 2001

Thomas Wagner
Acting Forest Supervisor
USDA Forest Service
White Mountain National Forest
719 Main Street
Laconia, New Hampshire 03246

Dear Mr. Wagner:

As a follow up to public requests for recreational use of all terrain vehicles (ATV's) in the 39,601 acre Nash Stream Forest we request a Forest Service legal interpretation of the Nash Stream Forest Conservation Easement held by the United States of America relative to this use. Since the Nash Stream Forest property is subject to the Easement and since it is administered through your office we request your assistance with this matter.

The 1995 Nash Stream Forest Management Plan currently prohibits public recreational use of ATV's. Should a decision be made to revise the current Plan to allow public ATV use, we plan to complete a 7-step plan revision process, including public comments, assessments, and final plan approval by August 2002. In order for us to complete this ambitious schedule, a timely response would be appreciated.

We intend to keep you informed of our progress and welcome oversight of the Conservation Easement terms by you and your staff. Thank you for your assistance.

Sincerely,

Philip A. Bryce
Director

Cc: Wayne Millen, Assistant Ranger, USFS, WMNF
George Bald, Commissioner, DRED
Rich McLeod, Director, Division of Parks and Recreation, DRED
Anne Edwards, Assistant Attorney General

TCM/PB

United States Department of Agriculture
Forest Service
White Mountain National Forest
719 N. Main Street
Laconia, NH 03246
Comm (603) 528-8721
TDD (603) 528-8722

File Code: 5440
Route To:

Date: September 25, 2001

Subject: Nash Stream Easement

To: Paul Stockinger

Enclosed is a request from the State of New Hampshire for a Forest Service legal interpretation of the Nash Stream Forest Conservation Easement relative to the recreational use of all terrain vehicles (ATV's) in the Nash Stream Forest. The State is currently looking at the possibility of revising their management plan and wants to be able to consider the possibility of this use in the update of their plan in response to public requests.

I have reviewed the easement, which was signed on August 4, 1989, and would like to have you and the Office of General Counsel review my findings prior to me providing the State with a Forest Service position on this matter. My review noted the following items, which appear to pertain to the issue of recreation use and access:

Introductory Statements (Whereas)

I found nothing in the introductory statements that indicated to me that the State's consideration of ATV use through their management plan would be inconsistent with the purposes of the easement.

II. Use of the Easement Area

Under C.1, the State has expressly reserved public recreation uses in order to construct, operate and maintain campsites, trails, internal access roads, picnic roads, boat launches, trailhead parking areas, visitors center and ranger station. The reserved right specifically highlights cross-country ski trails and snowmobile trails, but based on the way it is written it does not appear to preclude other kind of trails such as hiking and ATV trails or internal access roads.

Under C.2, the conservation easement discusses public roads and public utilities and requires prior written approval of the Forest Service for the installation, operation, and maintenance of these facilities. In the case of this instrument, "public roads" does not include internal access roads and Forest Service involvement would only be required on roads that provide "through travel." I see nothing in this provision that would preclude the State from considering internal access roads for ATV use.

Under C.4, the State is required to manage the property for multiple uses consistent with the purposes and provisions of the easement. The instrument goes on to define multiple use as the harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output. The State redeems their responsibility for this provision

through the preparation and administration of the Nash Stream Forest Management Plan and subsequent revisions of this plan.

Under Section E.1, I find no prohibited or unreserved uses that apply to the possible management of ATV's on the Nash Stream Forest relative to trail and internal road use.

Under Section F.1 and F.2, I believe the State is considering a public access and use request and has the authority under the easement to reasonably restrict and regulate access.

III. General Provisions

Under Section D, it would be my opinion as the Forest Supervisor that the State has the discretion to consider ATV use on the Nash Stream Forest during the revision of their Forest Management Plan. The decisions on use of ATV's in the plan would need to consider the purposes of the easement (public use and protection), Natural Resource Management (Section II.4) and the New Hampshire Forest Management Initiatives Act (III.E).

I would appreciate a review of my conclusions, so I can get back to Director Phil Bryce with a Forest Service position on his request for a legal interpretation. Please give me a call if you have any questions.

THOMAS G. WAGNER
Forest Supervisor

Enclosure

Cc: George Pozzuto, District Ranger

APPENDIX C

STATE OF NEW HAMPSHIRE
Inter-Department Communication

DATE: December 26, 2012

FROM: Kenneth M. Desmarais
Administrator

AT (OFFICE) Forests and Lands
E-mail: kdesmarais@dred.state.nh.us
Tel. 603-271-2215 x 317

SUBJECT: State Land Management Team Meeting

TO: Land Management Team

Ed Robinson	Dan DeHart	Bob Hardy	Denyce Gagne
Chris Gamache	Jonathan Horton	Pete Bowman	Shaun Bresnahan
Howie Lewis	Bob Spoerl	Seth Prescott	Bryan Comeau
Inge Seaboyer	Brian Lemire	Kyle Lombard	Scott Rolfe
Bryan Nowell	Will Guinn	Chris Roberts	Tom Natale
Edna Feighner	Jim Oehler	Collis Adams	John Magee
Jen Weimer	Mark Stevens	Johanna Lyons	Maggie Machinist
A.J. Dupere	Linda Magoon	Mike Marchand	Heidi Holman
Ken Desmarais	Kim Tuttle		

The following agenda items will be discussed at the meeting scheduled for Tuesday, **January 8**, 2013:

SLMT #13-01-01 - Prescribed Fire - Bryan Nowell.
SLMT #13-01-02 - Hoit Marsh WMA TS – Bryan Comeau.
SLMT #13-01-03 – Nash Stream Forest Stark OHRV Road Use – Chris Gamache.
SLMT #13-01-04 – Nash Stream Forest Columbia OHRV Road – Chris Gamache.

NOTE CHANGE OF DATE DUE TO NEW YEAR'S DAY!!!!!

PLEASE SUBMIT PROJECT REVIEW RESPONSE FORMS TO ROBIN TROMBLEY.

PLEASE NOTE that this meeting will begin at **9:00 a.m., Tuesday, January 8th** at the West Conference Room at **NH Fish and Game** in Concord, NH.

KMD/rt
cc: Karen Bennett, Tom Mansfield, Bill Gegas, Bill Carpenter, Forest Rangers, Phil Bryce, Mike Pelchat, Sandy Young, John DeVivo, Kevin Donovan

State of New Hampshire

Department of Resources and Economic Development
Division of Forests and Lands

State Lands Management Team - Request for Review

Date: December 26, 2012

Comments- If your agency does not attend the State Lands Management Team meeting we will need this form mailed back to us by the deadline date.

SLMT meeting date: 1-8-13
Deadline to comment: 1-24-13

Item #: SLMT 13-01-03 & 13-01-04
Project: Stark OHRV Connector Trail (13-01-03) & Columbia OHRV Connector Trail (13-01-04)
Property: Nash Stream Forest
Project Presenter: Chris Gamache

Agency Commenting: NH Fish & Game Department including Wildlife, Fisheries, and Law Enforcement Divisions

Please check one:

_____ Concur with no conditions.

____XX___ Concur with the following conditions: (Indicate major reservations about the project and the specific substantive changes or modifications desired.)

_____ Do Not Concur (Summarize the major legitimate reasons for not concurring including documentation or references to plans, statutes, etc.)

_____ No Comment

Non-Receipt of this review by the deadline implies consent.

Technical Comments:

Fish & Wildlife Concerns

Wildlife Division staff walked the proposed Columbia OHRV connector trail several times and agrees that the proposed location is the logical place to put the trail. It minimizes wetlands impacts and tree removal. However, the proposed trail will cross over streams in some locations.

There are several rare species in the vicinity that use streams and wetlands (e.g., wood turtle, Northern red belly dace) but none documented in the project area. Using existing snowmobile trails and access roads greatly reduces potential impacts to these and other wetland species, but winter use may not impact wetland habitats and associated fish and wildlife the same way as summer use (i.e., reptiles and amphibians not active during winter). Intensity of use is hard to predict but an important factor in determining habitat and wildlife impacts. Intense use of snowmobile trails by ATVs can cause significant trail erosion (as expressed by some foresters at SLMT who have had previous experience) which could lead to wetland sedimentation and damage to stream crossings that would render them impassable to fish and wildlife.

The Nash Stream Restoration Project, whose partners are DRED Division of Forests and Lands, NH Fish and Game Department and Trout Unlimited, has secured more than one million dollars to restore Nash Stream and its tributaries for the benefit of wild brook trout and anglers. This is the largest stream restoration project in the northeast and has received national attention. One aspect of this project is to restore connectivity of fish populations, and the focus of this is at road-stream crossings. To date, the project has restored connectivity at eight stream crossings (one of which is on the West Side Road where ATVs are currently allowed), and connectivity at several more crossings are planned to be done by 2016, including several on the Columbia Brook Road. Given the importance of the restoration project, both at the state and national level, it is imperative that connectivity of fish populations not be negatively impacted in the Nash Stream State Forest or watershed.

Stream connectivity is not only a concern within the Nash Stream State Forest, but also the entire proposed North Country ATV trail system. Yet, there didn't seem to be a clear plan for maintaining the Nash Stream SF or other proposed ATV trails. Also, summer use could have a negative impact on breeding birds, although admittedly there is no known research that can provide insight on this currently.

Potential wetland impacts including stream connectivity is of less concern with the proposed Stark OHRV Connector Trail because it would use a portion of Nash Stream Road, an existing gravel road that is open to vehicles. However, the Fish & Game Department questions the need

for ATVs to use Nash Stream Road. There appears to be another potential route for the Stark connector trail that would preclude the need to expand ATV use to the east side of Nash Stream. The alternative route would use existing trails on private land on the west side of Nash Stream. These trails are owned by the same person that owns the gas pumps that the proposed Stark connector trail would lead ATV riders to. This was brought up at SLMT and it was stated that the landowner does not want ATVs on his property, although it was not clear why. A concern about ATVs using an old gravel pit along the alternative route was mentioned, but that pit has been reclaimed. Additionally, the gas pumps are located in a large active gravel pit owned by the same person, so it's still unclear why using the alternative route is an issue.

Law Enforcement Concerns

The continued expansion of North Country ATV trail riding opportunities has increased the demand on law enforcement substantially. ATV registration sales continue to trend downward despite the increased riding opportunities. This demands that the NHFG Law Enforcement Division stretch existing funds and manpower thinner and thinner. Additional enforcement efforts on the Nash Stream SF or other new trails in the North Country will be marginal at best. There doesn't seem to be a clear plan for meeting law enforcement needs on the expanded Nash Stream SF ATV trail system or other proposed North Country ATV trails.

Moving Forward at Nash Stream SF

Nash Stream SF was protected through substantial efforts of multiple agencies and organizations with interests in the property's timber, wildlife, ecological, and recreational values. This was followed by another substantial effort of these same entities to develop a management plan that strived to balance these and other values. ATVs were not a part of the original management plan. Their use on Nash Stream was added to the plan in 2002 only after going through an amendment process. Based on this precedence and due to the concerns expressed here and by others at SLMT, the NH Fish & Game Department will concur with the proposed trail expansions at Nash Stream SF only under the condition that the planned expansions go through an amendment process that effectively gains input from a broad array of Nash Stream stakeholders. The plan amendment should adequately address potential impacts to fish, wildlife, and their habitats, especially wetland and stream connectivity issues, an assessment of law

enforcement and trail maintenance needs and how those needs will be met, and an assessment of alternative routes. Not following an amendment process that provides opportunity for all stakeholders to voice their opinions will likely lead to intense criticism by individuals and groups who are interested in the State Forest's other uses for which the property was originally acquired.

North Country ATV Plan

Additionally, due to the potential cumulative impacts to fish and wildlife from an expanded North Country ATV system, and the need for increased law enforcement to regulate use of that system, the NH Fish & Game Department requests that the NH Trails Bureau develop a North Country ATV plan that includes maps that clearly indicate the location of proposed trails, their proximity to state and other conserved lands (including easement lands), and locations of stream crossings. Plan text should also discuss potential impacts to fish, wildlife, and their habitats and how those impacts will be mitigated, an assessment of law enforcement and trail maintenance needs and how those needs will be met, and an assessment of potential impacts to other types of outdoor recreation including hunting, fishing, and wildlife watching that also contribute significant dollars to local and state economies.

This plan should be completed prior to moving forward with additional North Country trail expansions. Not doing so will surely lead to negative unintended consequences, some of which may be irreversible. Others of which will take substantially more time and effort to address compared to dealing with them up front.

Reviewer's Signature: _____ Date: 1/28/13

Name: Jim Oehler Title: State Lands Habitat Biologist

State of New Hampshire

Department of Resources and Economic Development
Division of Forests and Lands

State Lands Management Team - Request for Review

Date: December 26, 2012

Comments- If your agency does not attend the State Lands Management Team meeting we will need this form mailed back to us by the deadline date.

SLMT meeting date: 1-8-13
Deadline to comment: 1-24-13

Item #: SLMT #13-01-04
Project: Columbia OHRV Connector Trail
Property: Nash Stream Forest
Project Presenter: Chris Gamache

Agency Commenting:__NH- Division of Forests and Lands

Please check one:

_____ Concur with no conditions.

_____X___ Concur with the following conditions: (Indicate major reservations about the project and the specific substantive changes or modifications desired.)

_____ Do Not Concur (Summarize the major legitimate reasons for not concurring including documentation or references to plans, statutes, etc.)

_____ No Comment

Non-Receipt of this review by the deadline implies consent.

Technical Comments: _This trail location has been reviewed by Forests and Lands as well as Fish and Game and DES. The trail was re-located from the original proposed location to better accommodate ATVs due to wet soils. There are two locations that are being presented; either the newly built trail or the existing gravel road, known as Kelsey Notch Road. Forests and Lands would like to see that only one of these trail locations be utilized. The location using the main road may have some neighbor issues. There is an outlot within Nash Stream and currently the landowner is less than receptive to public traffic. Either location is acceptable but one may

need some negotiating with the neighbor as well as the town. Adding more ATV trail within Nash Stream will require a revision of the management plan. Currently the language describes the West Side Trail and clearly states that "No other Roads or Trails are open to ATVs on the property." This new trail would have to be added as another designated trail.

Reviewer's Signature: Margaret Machinist Date: 1/22/13

Name: Margaret Machinist Title: Regional Forester

State of New Hampshire

Department of Resources and Economic Development
Division of Forests and Lands

State Lands Management Team - Request for Review

Date: December 26, 2012

Comments- If your agency does not attend the State Lands Management Team meeting we will need this form mailed back to us by the deadline date.

SLMT meeting date: 1-8-13
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Project: Columbia OHRV Connector Trail
Property: Nash Stream Forest
Project Presenter: Chris Gamache

Agency Commenting: _____

Please check one:

_____ Concur with no conditions.

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_____ Do Not Concur (Summarize the major legitimate reasons for not concurring including documentation or references to plans, statutes, etc.)

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Reviewer's Signature: Margaret Machinist Date: 1/22/13

Name: Margaret Machinist Title: Regional Forester

COPY FOR YOUR INFORMATION

State of New Hampshire

Department of Resources and Economic Development
Division of Forests and Lands

State Lands Management Team - Request for Review

Date: December 26, 2012

Comments- If your agency does not attend the State Lands Management Team meeting we will need this form mailed back to us by the deadline date.

SLMT meeting date: 1-8-13
Deadline to comment: 1-24-13

Item #: SLMT #13-01-04
Project: Columbia OHRV Connector Trail
Property: Nash Stream Forest
Project Presenter: Chris Gamache

Agency Commenting: ___Natural Heritage_____

Please check one:

___X_____ Concur with no conditions.

_____ Concur with the following conditions: (Indicate major reservations about the project and the specific substantive changes or modifications desired.)

_____ Do Not Concur (Summarize the major legitimate reasons for not concurring including documentation or references to plans, statutes, etc.)

_____ No Comment

Non-Receipt of this review by the deadline implies consent.

Technical Comments:

_____

_____

_____

Reviewer's Signature: _____ Date: __1/17/13_____

Name: ___Peter Bowman_____ Title: __Ecologist_____

APPENDIX D

To: Lawrence Gomes, Milan Trail Huggers
PO Box 45
Milan, NH 03588

From: NH Natural Heritage Bureau

Date: 7/1/2015 (valid for one year from this date)

Re: Review by NH Natural Heritage Bureau of request submitted 6/24/2015

VALID ONLY FOR NOTIFICATION OR MINIMUM EXPEDITED APPLICATIONS SUBMITTED TO THE NHDES WETLANDS BUREAU

NHB File ID: NHB15-2129 **Applicant:** Lawrence Gomes

Location: Columbia
Northern section of Nash Stream State Forest

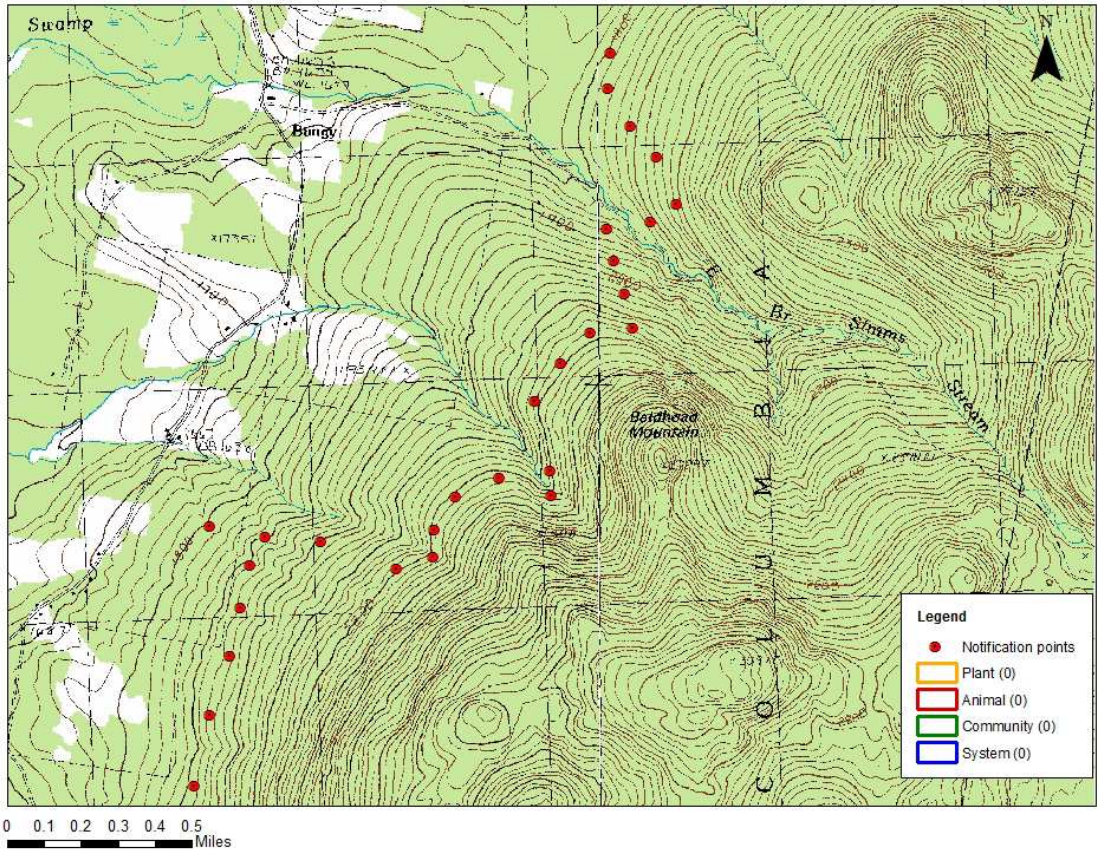
Project Description: Upgrade snowmobile Trail Corridor 5 to OHRV standards. Install culverts for cross drainage. Install switchbacks on steep sections. Relocate part of trail to better terrain.

The NH Natural Heritage database has been checked by staff of the NH Natural Heritage Bureau and/or the NH Nongame and Endangered Species Program for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government.

It was determined that, although there was a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity, we do not expect that it will be impacted by the proposed project. This determination was made based on the project information submitted via the NHB Datacheck Tool on 6/24/2015, and cannot be used for any other project.

MAP OF PROJECT BOUNDARIES FOR: **NHB15-2129**

NHB15-2129



Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DRED/NHB
172 Pembroke Rd.
Concord, NH 03301

APPENDIX E

Notes from field tour to Nash stream to review of Mt. Kelsey ATV trail on November 4 2105:

Prepared by Will Staats

The day included a walk of completed trail, including the spur that serves both snowmobiles and ATVs and plenty of lively discussion.

Early on: Much discussion regarding the class 6 road and where it ends and begins

Maggie read to the group course and fine filter criteria and the group looked at the completed trail under these guidelines.

Ken: felt road surface was good and soils were not big problem now that trail is built

Todd: Liked the forest stand type that trail runs through-would not cut it

Jim and others: Discussion about monitoring requirement-what does this mean and how should it be accomplished

Todd: trail could use more culverts and some broad based dips

The following is a brief synopsis of what we summarized at days end in our "talk circle".

1. What is the status and likely hood of a signed MOA?
2. Need geologist input
3. Will expressed concerns regarding fragmentation of habitat due to more trails.
4. Pete expressed concerns regarding distance to wetlands.
5. **And the big issue: Do ATVs meet the original intent and purchase of the formulation of Nash Stream State forest?**

Further random thoughts that came out of the round Circle:

Steve: We need to make sure Cord what is happening ahead of time

Clint: we will have to go before Cord but not sure they have final yeah or nay

Bill: Feels Cord does in fact have that say and power to say No

Maggie: Cord really were not properly appraised of what we did on this trail

Steve: Cord is gaining a greater interest and understanding due to other issues around the State of New Hampshire

Bill: We will update cord in two weeks.

Ken: We should not rush this very important decision

Clint and Maggie: Had some discussion on what has been put in Recreation section and the interpretation of this section as is-Clint feels the section asked that we do look for a route in then south

Will: This decision will set the bar and precedent for other actions on Nash if not other State lands – would hate to go against what original architects envisioned for purposes of purchase of Nash Stream after all the hard work and money

Ken and all: DRED needs to forward a position if ATVs are appropriate for Nash-the tech team will help to inform this-we don't make the call

Ken and others: Invite original architects of purchase to meeting for short "testimony" on intent of purposed upon purchase

Ken: Will share 51 page document with group pending Brad's approval

Will: East /west trail review-we will unlikely get to this prior to snow fall

Other needs: The current trail needs appropriate remediation efforts **now**-more culverts, broad based dips to prevent further erosion

Bill: will research what he can find on original intent of purchase

Jim: Can't make 19th meeting, nor can Will-going to send Rich Cook in our absence(**suggestion: If wildlife input critical meeting should be postponed until week of December 7-for the record Dianne also would like to see date changed so at least she and Jim could show up)**

APPENDIX F

MEMORANDUM OF UNDERSTANDING

between
NH Fish and Game Department
and
NH Department of Resources and Economic Development, Bureau of Trails
and
NH Department of Resources and Economic Development, Division of Forests and Lands
for the purposes of
Monitoring, Maintaining and Enforcing Public OHRV Use
on
"West Side Trail" and "Kelsey Notch Pilot Trail"
in
Nash Stream Forest

Pursuant to RSA 215-A:42, I (b), this interagency agreement (the MOA) is entered into, by and between, the New Hampshire Fish and Game Department, (NHF&G), and the New Hampshire Department of Resources and Economic Development (DRED) through the Bureau of Trails and the Division of Forests and Lands, for the purpose of managing public OHRV trails to be known as "Kelsey Notch Pilot Trail" and "West Side Trail", as depicted on a map here attached as Exhibit A, upon state-owned land under the management of DRED, known as Nash Stream Forest.

Whereas, Nash Stream Forest was acquired by the State through the Land Conservation Investment Program and pursuant to RSA 162-C:6, the Council on Resources and Development is responsible for management and administration of lands acquired under the LCIP so as to preserve the natural beauty, landscape, rural character, natural resources, and high quality of life in New Hampshire, and

Whereas, Off Highway Recreational Vehicles to include All Terrain Vehicles (ATVs) and Utility Terrain Vehicles (UTVs) are rapidly becoming an outdoor recreational activity popular to the North Country economy of the State of New Hampshire, by adding much needed revenue opportunities to some North Country businesses, and

Whereas, pursuant to RSA 215-A:3, DRED - Bureau of Trails is responsible for the coordination between DRED - Division of Forests and Lands, NHF&G, and the Department of Transportation (NHDOT) with respect to matters pertaining to OHRVs and snowmobiles; including ATVs and UTV's, and

Whereas, pursuant to RSA 227-G:3(I)(c), the Director of Forests and Lands is responsible for the execution of all matters pertaining to the use of state reservations, except matters pertaining to the recreational development, administration, and maintenance, which shall be done in cooperation with the director of the DRED - Division of Parks and Recreation, with the approval of the Governor and Executive Council as required, and

Whereas, pursuant to RSA 215-A:16 and RSA 227-G:7, DRED Forest Rangers are recognized law enforcement officers with authority to enforce OHRV laws on public lands; and

Whereas, pursuant to RSA 215-A:32, the Executive Director of NHF&G is responsible for the adoption and implementation of rules and administrative procedures for public OHRV riding, necessary for the safety of riders and passengers and the protection of property, and

Whereas, pursuant to RSA 215:16, NHF&G is authorized to enforce OHRV laws within the state of NH;

Therefore, NHF&G and DRED (together the Parties), agree as follows:

1. NHF&G will enforce state laws, primarily RSA 215-A, and DRED rules as they pertain to the operation of OHRVs.

2. DRED - Bureau of Forest Management, in collaboration with NHF&G, will enforce state laws, primarily RSA 215-A, and DRED rules as they pertain to the condition and maintenance of the trail per the agreement between DRED and the locally organized OHRV club (RSA 215-A.c), to ensure water quality laws are not violated. Such required agreement for West Side Trail between the DRED and North Country ATV Club being here attached as Exhibit B, and such required agreement for the Kelsey Notch Pilot Trail between DRED and Metallak ATV Club being here attached as Exhibit C.

3. DRED enforcement staff will enforce state laws, primarily RSA 215-A, and DRED rules as they pertain to operation of OHRVs, and protection of the property.

4. Once a year, by October 15th, the Parties will provide an enforcement report to the Nash Stream Forest Citizens Committee and to the Council on Resources and Development. The report shall include the number and type of violations and warnings, OHRV accidents, a statement of enforcement related concerns and successes, and any input on ways to promote better safety and education to the riders.

5. DRED Bureau of Trails, in concert with the local club noted in the MOA for the specific trail, will monitor and maintain the approved trails in a safe and environmentally responsible manner using best management practices as described in "Best Management Practices for Erosion Control during Trail Maintenance and Construction," or any successor publication.

6. Once a year, by October 15th, the following staff representing the Parties will provide an environmental compliance report (the Report) to the Nash Stream Forest Citizens Committee and to the Council on Resources and Development:

   - DRED Trails Bureau District #1 Supervisor, or designee
   - DRED Division of Forests and Lands North Region Forester, or designee
   - F&G Region 1 Wildlife Biologist, or designee

   The Report shall include the dates of each inspection, photographs (particularly of stream crossings), a narrative of trail conditions as they relate to environmental resources, any water quality violations, and recommendations including a timeline for remediations or repair work necessary to bring the trails into compliance with water quality regulations.

7. The Parties will work with the local recognized clubs to provide safety education to the public, and the Parties will also provide technical guidance to the clubs on proper OHRV trail maintenance.

8. The Parties agree that each will work cooperatively to provide safe and environmentally responsible riding opportunities to these OHRV trails, and recognize that failing to properly maintain these trails to avoid water quality violations and/or damages to aquatic

resources and wildlife habitat could lead DRED and/or NHF&G to suspend the MOA in writing by 30 day notification to the other party until appropriate maintenance has been performed, or suspend indefinitely, depending on the severity of the damage.

1-3-17
Date

Jeffrey J. Rose
Commissioner
Department of Resources and Economic Development

1/5/2017
Date

Glenn Normandeau
Executive Director
New Hampshire Fish and Game Department

1/3/17
Date

Brad W. Simpkins
Director
DRED – Division of Forests and Lands

1-3-17
Date

Philip A. Bryce
Director
DRED – Division of Parks and Recreation

1/5/17
Date

Kevin Jordan
Colonel
New Hampshire Fish and Game Department

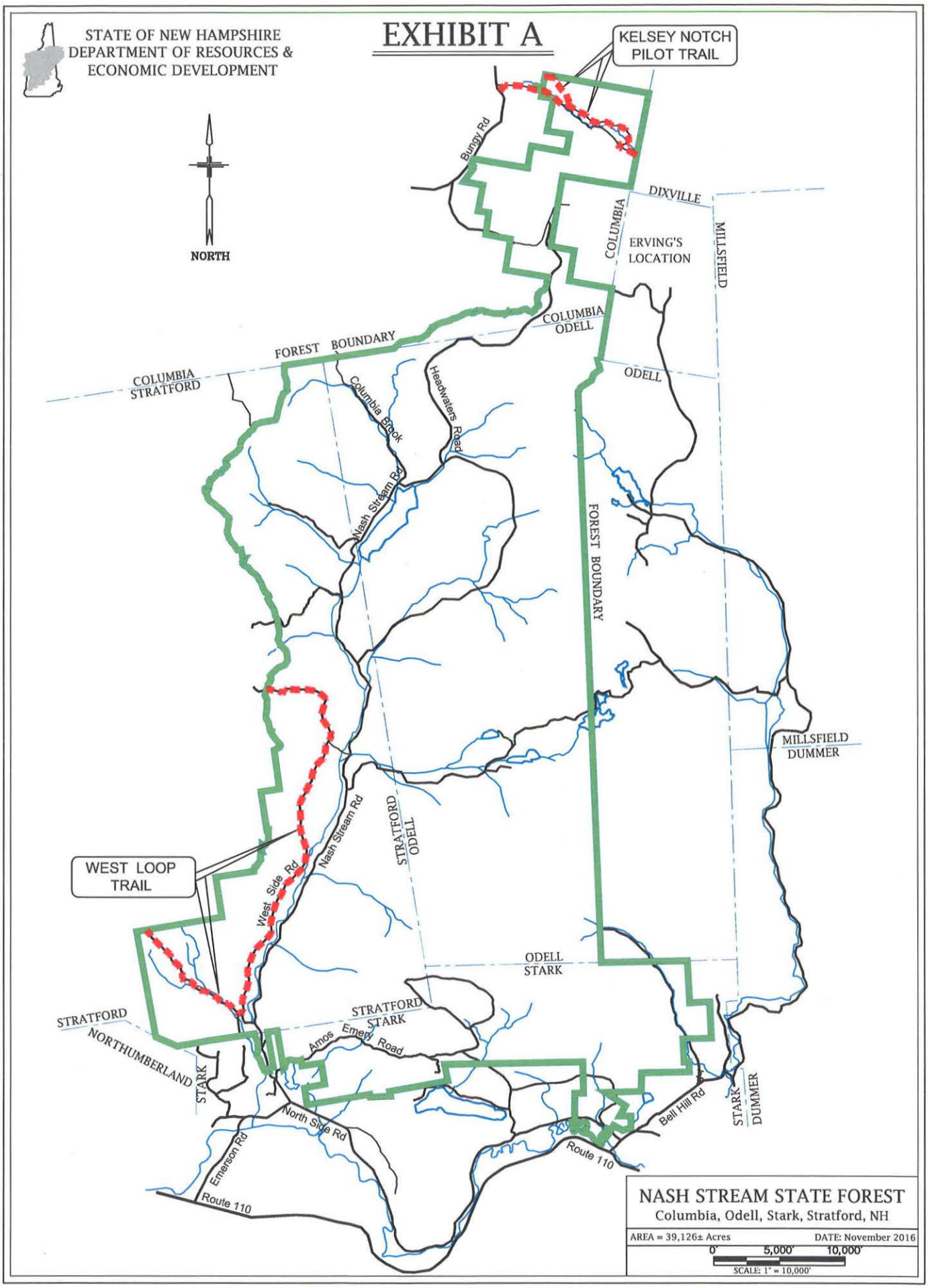

STATE OF NEW HAMPSHIRE
DEPARTMENT OF RESOURCES &
ECONOMIC DEVELOPMENT
EXHIBIT A
KELSEY NOTCH
PILOT TRAIL
NORTH
Bungy Rd
DIXVILLE
COLUMBIA
ERVING'S
LOCATION
MILLSFIELD
COLUMBIA
ODELL
FOREST BOUNDARY
COLUMBIA
STRATFORD
ODELL
Columbia Brook
Headwaters Road
Nash Stream Rd
FOREST BOUNDARY
MILLSFIELD
DUMMER
STRATFORD
ODELL
Nash Stream Rd
WEST LOOP
TRAIL
West Side Rd
ODELL
STARK
STRATFORD
STARK
STRATFORD
NORTHUMBERLAND
STARK
Amos Emery Road
North Side Rd
Emerson Rd
Route 110
Route 110
Bell Hill Rd
STARK
DUMMER
NASH STREAM STATE FOREST
Columbia, Odell, Stark, Stratford, NH
AREA = 39,126± Acres
DATE: November 2016
0'
5,000'
10,000'
SCALE: 1" = 10,000'

EXHIBIT B

MEMORANDUM OF AGREEMENT
For
ATV Trail
AT
NASH STREAM FOREST

Pursuant to New Hampshire RSA Chapter 215-A:3 "Off Highway Recreational Vehicles and Trails", and under the provisions of Res 8500 "Bureau Trail Use Rules", this Memorandum of Agreement ("MOA") is entered into this 11 day of July, 2016, between the **New Hampshire Department of Resources and Economic Development**, (the "STATE"), with a principle mailing address of P.O. Box 1856, Concord, NH 03302-1856 and the **North Country ATV Club**, (the "CLUB"), P.O. Box 161, Stratford, NH 03032, for the purpose of providing the opportunity for the public to operate all-terrain vehicles (ATVs) on state-owned property known as "Nash Stream Forest" (the "PROPERTY") in Stratford, NH, as prescribed below.

WHEREAS, Nash Stream Forest is the largest state-owned forestland in New Hampshire at 39,601 acres, and pursuant to the "Nash Stream Management Plan", is open to public use and managed for multiple uses and resource values including off-highway recreation vehicles (OHRVs);

WHEREAS, the Nash Stream Management Plan provided for an "ATV Use – West Side Connector Pilot Program" and the five (5) year trial period was successful and the advisory committee voted on January 25, 2007 to issue a 3 year agreement;

WHEREAS, Chapter 233-20 of the NH Laws of 2002 directs the Commissioner of the Department of Resources and Economic Development to move forward toward the establishment of an ATV connecting trail in Nash Stream Forest;

WHEREAS, the Division of Forests and Lands, pursuant to RSA 227-G, has the responsibility for the management of all state-owned forestlands, and to cooperate with the Division of Parks and Recreation in promoting recreational use of state-owned forestlands,;

WHEREAS, the Division of Parks and Recreation, pursuant to RSA 216-A:3, has the responsibility for recreation, development and management of state-owned parks and forests, and to cooperate with the Division of Forests and Lands in the joint promotion of forest recreation and forest management of state-owned forestlands;

WHEREAS, the United States of America holds a Conservation Easement on the Nash Stream Forest that assures perpetual public use and protection of the forest and provides for OHRV use on its roads and trails;

WHEREAS, the Division of Parks and Recreation, Bureau of Trails, pursuant to RSA 215-A, is responsible for establishing and administering ATV trails in cooperation with state and private interests for public benefit, administering funds for the development and maintenance of OHRV trails, and working with organized trail clubs in support of the activity; and

WHEREAS, the CLUB is a recognized non-profit group by the State of New Hampshire that provides designated ATV trails for its members and the public, and has a policy of closely watching and maintaining its trails to protect and preserve the landscape.

NOW THEREFORE, the parties hereto agree as follows:

1) The parties agree to work cooperatively in providing and maintaining, through environmentally sound action, a safe, functional, attractive and user-friendly ATV trail system (the "TRAIL") over existing ways known as "West Side Road", "Bordeau Trail" and "Andritz Trail", or relocated portions thereof, on the PROPERTY, as depicted on a plan entitled "Proposed ATV Trail – Nash Stream Forest" (the "PLAN"), attached as ATTACHMENT A.

2) The STATE hereby grants to the CLUB, in cooperation and coordination with the STATE, the exclusive rights to operate, manage and maintain, and to promote responsible public use of the TRAIL under a three (3) year term commencing from the effective date of this Agreement thru December 15, 2019, for the seasonal period of May 23rd, after continuous snow cover has melted, until December 15th.

3) Throughout the PROGRAM, the CLUB agrees to work with the STATE to mitigate the impact of the TRAIL on natural resources and other uses of the PROPERTY.

4) Throughout the PROGRAM, the CLUB agrees to maintain the TRAIL in a litter-free condition and shall promptly dispose of all litter, trash and manmade debris in a proper manner.

5) The CLUB agrees to assist the STATE in the maintenance of the TRAIL for all matters relating to ATV use, including sign replacement and maintenance, routine structure inspection and repairs and may apply for Grant In Aid funds for other projects, as requested by the STATE. The CLUB agrees to conduct ATV use related maintenance using best management practices as described in "Best Management Practices for Erosion Control During Trail Maintenance and Construction" (State of New Hampshire, Department of Resources and Economic Development, Division of Parks and Recreation, Trails Bureau) or any successor standard. The STATE, and its agents, reserves the right to enter the PROPERTY with persons and equipment for purposes of maintaining the TRAIL. Through the Grant-In-Aid PROGRAM, maintenance activities by the CLUB shall include, but not be limited to, installation and replacement of bridges and culverts, rocks and stump removal, smoothing the trail surface, placement of gravel and natural fill, installation of broad based dips, water bars and ditches, removal of fallen trees and cutting back encroaching vegetation. All maintenance activities must be approved through a Trail Maintenance Work Plan (the "PLAN"), or the Grant-in-Aid projects. The TRAIL and any and all improvements shall remain the property of the STATE.

   a. The CLUB and the STATE recognize that a portion of the TRAIL known as "West Side Road" is maintained by the STATE as a Class B Gravel Summer Road, under the Nash Stream Forest Management Plan. The CLUB shall not be responsible for the maintenance of West Side Road associated with the normal wear and tear of the Road due to non-ATV use.

   b. The STATE agrees that the CLUB shall not be responsible for repairs to the TRAIL resulting from unexpected catastrophic events, natural or otherwise.

6) The STATE maintains the right to close the TRAIL when any of the following occur:

- weather conditions make the TRAIL unsuitable for ATV use;
- public safety is endangered due to TRAIL conditions;
- use of the TRAIL is resulting in degradation of surface waters;
- damage to the TRAIL may occur due to heavy rain, mud, or other condition;
- use of the Trail is resulting in unauthorized ATV use on the PROPERTY;
- any other reason that is insurmountable by the STATE and the CLUB, which would cause public safety or environmental concerns sufficient enough to close the TRAIL to ATV use; and
- loss of permission from abutters to cross their lands.
- no reasonable alternatives are available when trail use and forest management activities can not safely be accommodated on the developed roads .

8) If the STATE closes the TRAIL, the STATE shall meet with the CLUB immediately, in no case to exceed one (1) week, to discuss the reasons for closing the TRAIL and corrective action to be taken, provided such action is acceptable to the STATE.

9) The CLUB shall obtain all necessary federal, state and local permits and approvals for projects done by the CLUB, and remain in compliance with and abide by the terms of said permits and approvals, and all federal, state, and local laws and regulations regarding new construction, maintenance and supervision of use upon the Trail.

MONITORING TRAIL USE :

In cooperation and consultation with the STATE, the CLUB agrees to monitor ATV usage on the TRAIL, and communicate with other users of the TRAIL, to ensure that the special ecological conditions, as identified in the baseline documentation collected for the PROGRAM on file with the STATE, are not substantially diminished or degraded by ATV use and that ATV use is limited to the designated TRAIL and is done in compliance with then existing state laws, administrative rules and this Agreement. The STATE and the CLUB agree to meet at least twice annually, before May 23 and within one month of the annual closing date, and more often at the request of either party, to discuss ATV use issues that may develop and to consider management options.

The STATE, and its agents, reserves the right to access the TRAIL with persons and equipment to establish and maintain monitoring stations and study plots.

LIMITATION OF LIABILITY :

Nothing in the Memorandum of Agreement (MOA) shall be a basis for any liability on the part of the STATE with respect to personal injury or property damage sustained by any person. The STATE is entitled to the protections of RSA 508:14, RSA 212:34 and sovereign immunity. The club shall defend and indemnify and save the State of New Hampshire harmless for any liability, damage, loss, cost or expense caused by the Club for injury to persons or property arising out of, or incidental to, the use of the TRAIL as herein permitted.

COMPLIANCE WITH DEPARTMENTAL REGULATIONS AND POLICIES:

The use of ATVs on the PROPERTY shall be in accordance with New Hampshire laws and the STATE'S rules and regulations pertaining to such use. The term "ATV" is defined in section 215-A: 1.

NON-EXCLUSIVE USE:

The TRAIL shall be open to the public for ATV use as defined in RSA 215-A:1 and shall not be limited to use by members of the CLUB.

RESPONSIBILITIES OF THE CLUB:

Annually the PLAN shall be prepared with the assistance of the Trails Bureau and submitted by December 1st, to the STATE. The PLAN shall include, but not be limited, to the following:

- TRAIL monitoring reports (completed through the "Volunteer Trail Patrol Program" – see ATV Education Section below);
- TRAIL maintenance reports (completed through the "Volunteer Trail Patrol Program" – see ATV Education Section below);
- Record of the previous year's maintenance activities to include hours of volunteer work and maintenance costs – both state-grant funded and other funding source activities;
- Annual "Pilot Program Summary Report" summarizing the status of the PROGRAM to date; and
- Routine maintenance activities

The PLAN shall be reviewed and approved by the Division of Forests and Lands and the Bureau of Trails within thirty (30) days of submission. Issues, if any, rendering the PLAN unacceptable, shall be resolved by the STATE and the CLUB before the TRAIL may be opened for the approaching season. The CLUB shall work cooperatively with the STATE to do such things as are reasonably necessary and practicable (including the use of gates, barriers and appropriate official signs) to keep ATV use on the TRAIL and to restrict access by vehicles other than ATVs. Any proposed work to the TRAIL by the CLUB shall not be permitted until all environmental permits are secure and copies are submitted to the Trails Bureau.

RESPONSIBILITIES OF THE STATE :

Prior to the commencement of the PROGRAM, the TRAIL shall be adequately marked by the STATE in accordance with the "Trail Signing Handbook: Guidelines for Signing Snowmobile Trails" (State of New Hampshire, Department of Resources and Economic Development, Division of Parks and Recreation, Trails Bureau), or any successor standard, to indicate location of the TRAIL, to restrict ATV use to within the designated TRAIL corridor, and to restrict access by vehicles other than ATVs. All spur, side or connecting trails will be posted to indicate that ATV access and use thereon is prohibited.

ATV-USER EDUCATION:

The CLUB shall conduct ATV use education prescribed by the STATE known as the Volunteer Trail Patrol Program ("PATROL") on the TRAIL. The PATROL shall include continued monitoring of TRAIL use, abuse and interaction with users to assure compliance with the terms of the MOA and recording of routine TRAIL maintenance. The CLUB shall submit copies of "Trail Patrol Reports" to the Bureau of Trails. The CLUB shall provide the users with information regarding authorized riding areas and post necessary signs pertaining to protection of water quality and other environmental issues as the PROGRAM progresses.

AMMENDMENTS:

This AGREEMENT may be amended only in writing through mutual agreement by the STATE and the CLUB.

TRANSFERABLITY:

The CLUB, upon written approval from the STATE, may transfer its rights and responsibilities under this MOA to another qualified non-profit group if it is determined that the CLUB is no longer able or willing to abide by the terms and conditions of this MOA. In the event that this MOA is not transferred, the Commissioner of DRED shall make an assessment to determine whether to continue or not continue ATV use and TRAIL designation on the PROPERTY.

TERMINATION:

The STATE or the CLUB may terminate this agreement with a 30 day written notice to the other party, for any reason deemed appropriate by either party.

ATTACHMENTS:

Attachment A – Trail Plan

SIGNATURES:

"STATE" – New Hampshire Department of Resources and Economic Development

B.C.

By: _____ 7/12/16
Brad W. Simpkins, Director — Date
Division of Forests and Lands

By: _____ 7/12/16
Philip A. Bryce, Director — Date
Division of Parks and Recreation

By: _____ 7/13/16
Jeffrey J. Rose, Commissioner — Date

"CLUB" – North Country ATV Club

By: _____ 7-11-16
Duly Authorized — Date
THEODORE L BURNS
TRAIL ADMINISTRATOR NCATV

Approved as to form, substance and execution by the Office of the Attorney General:

7/14/16
Date

Brian W. Buonamono
~~Senior~~ Assistant Attorney General

Notices

All notices pursuant to this MOA should be sent to the following parties;

Brad Simpkins, Interim Director Forests and Lands 172 Pembroke Road Concord, NH 03301	Margaret Machinist, North Region Forester Forests and Lands - North Region Headquarters 629B Main Street Lancaster, NH 03584-3612
Christopher Gamache, Chief Supervisor NH Bureau of Trails 172 Pembroke RoadConcord, NH 03301	Ted Burns, Trails Administrator North Country ATV Club PO BOX 161 Stratford, NH 03032
Nash Stream Forest Citizen Advisory Committee C/O Forests and Lands PO BOX 1856 Concord, NH 03302-1856	

EXHIBIT C

PILOT
MEMORANDUM OF AGREEMENT
For
ATV Trails
AT
NASH STREAM FOREST

Pursuant to New Hampshire RSA Chapter 215-A:3 "Off Highway Recreational Vehicles and Trails", and under the provisions of Res 8500 "Bureau Trail Use Rules", this Memorandum of Agreement ("the MOA") is entered into this _____day of _____, 2017, between the **New Hampshire Department of Resources and Economic Development**, (the "STATE"), with a principle mailing address of P.O. Box 1856, Concord, NH 03302-1856 and the **Metallak ATV Club**, (the "CLUB"), P.O. Box 318, Colebrook, NH, 03576, for the purpose of providing the opportunity for the public to operate all-terrain vehicles (ATVs and UTV's for purposes of this agreement) on a portion of state-owned property known as "Nash Stream Forest" (the "PROPERTY") in Columbia NH, as prescribed below.

WHEREAS, Nash Stream Forest is the largest state-owned forestland in New Hampshire at 39,601 acres, and pursuant to the "Nash Stream Management Plan", is open to public use and managed for multiple uses and resource values including off-highway recreation vehicles (OHRVs) where approved; and

WHEREAS, on November 13, 2012 the Nash Stream Citizen Advisory Committee considered a proposal for ATV connector trails in the Kelsey Notch area of Nash Stream Forest and recommended approval of a "pilot" trail and agreement; and

WHEREAS, the Division of Forests and Lands, pursuant to RSA 227-G, has the responsibility for the management of all state-owned forestlands, and to cooperate with the Division of Parks and Recreation in promoting recreational use of state-owned forestlands; and

WHEREAS, the Division of Parks and Recreation, pursuant to RSA 216-A:3, has the responsibility for recreation, development and management of state-owned parks and forests, and to cooperate with the Division of Forests and Lands in the joint promotion of forest recreation and forest management of state-owned forestlands; and

WHEREAS, the United States of America holds a Conservation Easement on the Nash Stream Forest that provides for State-managed public use on its roads and trails; and

WHEREAS, the Division of Parks and Recreation, Bureau of Trails, pursuant to RSA 215-A, is responsible for establishing and administering ATV trails in cooperation with state and private interests for public benefit, administering funds for the development and maintenance of OHRV trails, and working with organized trail clubs in support of the activity; and

WHEREAS, the CLUB is a recognized non-profit group by the State of New Hampshire that secures rights to designated ATV trails for its members and the public, and has a policy of closely patrolling and maintaining its trails to protect and preserve the landscape;

NOW THEREFORE, the parties hereto agree as follows:

1) The parties agree to work cooperatively in providing and maintaining, through environmentally sound action, a safe, functional, attractive and user-friendly ATV trail corridors (the "TRAIL") over existing ways known as "Kelsey Notch Road Trail" and "Kelsey Notch Connection Trail ", on the PROPERTY, as depicted on an attached plan.

2) The STATE hereby grants to the CLUB, in cooperation and coordination with the STATE, the exclusive rights to operate, manage and maintain, and to promote responsible public use of the TRAIL under a "pilot" three (3) year term commencing from the effective date of the MOA, thru December 15, 2020, for the seasonal period of May 23rd after continuous snow cover has melted, until December 15th. If abutting lands close earlier the trail shall close on that date.

3) Throughout the 3-year pilot term, the CLUB agrees to work with the STATE to mitigate the impact of the TRAIL on natural resources and other uses of the PROPERTY.

4) Throughout the 3-year pilot term, the CLUB agrees to maintain the TRAIL in a litter-free condition and shall promptly dispose of all litter, trash and manmade debris in a proper manner.

5) The CLUB agrees to assist the STATE in the maintenance of the TRAIL for all matters relating to ATV use, including sign replacement and maintenance, routine structure inspection and repairs and may apply for Grant-In-Aid funds for other projects, as requested by the STATE. The CLUB agrees to conduct ATV use related maintenance using best management practices as described in "Best Management Practices for Erosion Control During Trail Maintenance and Construction" (State of New Hampshire, Department of Resources and Economic Development, Division of Parks and Recreation, Trails Bureau) or any successor standard. The STATE, and its agents, reserves the right to enter the PROPERTY with persons and equipment for purposes of maintaining the TRAIL. Through the Grant-In-Aid PROGRAM, maintenance activities by the CLUB shall include, but not be limited to, installation and replacement of bridges and culverts, rocks and stump removal, smoothing the trail surface, placement of gravel and natural fill, installation of broad based dips, water bars and ditches, removal of fallen trees and cutting back encroaching vegetation. All maintenance activities must be approved through a Trail Maintenance Work Plan (the "PLAN"), or the Grant-in-Aid projects. The TRAIL and any and all improvements shall remain the property of the STATE.

   The STATE agrees that the CLUB shall not be responsible for repairs to Kelsey Notch Road Trail or Kelsey Notch Connection Trail resulting from unexpected catastrophic events, natural or otherwise, but hereby agrees to work with the STATE to complete any such repairs.

6) The STATE reserves the right to close the TRAIL when any of the following occur:

   - weather conditions make the TRAIL unsuitable for ATV use;
   - public safety is endangered due to TRAIL conditions;
   - use of the TRAIL is resulting in degradation of surface waters;
   - damage to the TRAIL may occur due to heavy rain, mud, or other condition;
   - use of the Trail is resulting in unauthorized ATV use on the PROPERTY;
   - any other reason that is not immediately resolvable by the STATE and the CLUB;
   - loss of permission from abutters to cross their lands, thereby rendering the TRAIL inaccessible, and.
   - no reasonable alternatives are available when forest management activities require direct use of the TRAIL

8) In the event that the STATE must effect a planned closure of the TRAIL, the STATE shall give the CLUB no less than one (1) week notice prior to closure.

9) The CLUB shall obtain all necessary federal, state and local permits and approvals for projects done by the CLUB, and remain in compliance with and abide by the terms of said permits and approvals, and all federal, state, and local laws and regulations regarding new construction, maintenance and supervision of use upon the TRAIL.

MONITORING TRAIL USE :

In cooperation and consultation with the STATE, the CLUB agrees to monitor ATV usage on the TRAIL, and communicate with other users of the TRAIL, to promote public safety and reduce any possible negative environmental impact. The STATE and the CLUB agree to meet at least twice annually, before May 23 and within one month of the annual closing date, and more often at the request of either party, to discuss ATV use issues that may develop and to consider management options. The STATE, and its agents, reserves the right to access the TRAIL with persons and equipment at any time.

LIMITATION OF LIABILITY :

Nothing in the Memorandum of Agreement (MOA) shall be a basis for any liability on the part of the STATE with respect to personal injury or property damage sustained by any person. The STATE is entitled to the protections of RSA 508:14, RSA 212:34 and sovereign immunity. The Club shall defend and indemnify and save the State of New Hampshire harmless for any liability, damage, loss, cost or expense caused by the Club for injury to persons or property arising out of, or incidental to, the use of the TRAIL as herein permitted.

COMPLIANCE WITH DEPARTMENTAL REGULATIONS AND POLICIES:

The use of ATVs on the PROPERTY shall be in accordance with New Hampshire laws and the STATE'S rules and regulations pertaining to such use. For the purposes of this agreement the term ATV also includes UTVs. The term "ATV" and "UTV" are defined in RSA 215-A: 1.

NON-EXCLUSIVE USE:

The TRAIL shall be open to the public for ATV use as defined in RSA 215-A:1 and shall not be limited to use by members of the CLUB.

RESPONSIBILITIES OF THE CLUB:

Annually the PLAN shall be prepared with the assistance of the Trails Bureau and submitted by December 1st, to the STATE. The PLAN shall include, but not be limited, to the following:

- TRAIL monitoring reports
- TRAIL maintenance reports
- Record of the previous year's maintenance activities to include hours of volunteer work and maintenance costs – both state-grant funded and other funding source activities;
- Routine maintenance activities

The PLAN shall be reviewed and approved by the Division of Forests and Lands and the Bureau of Trails within thirty (30) days of submission. Issues, if any, rendering the PLAN unacceptable, shall be resolved by the STATE and the CLUB before the TRAIL may be opened for the approaching season. The CLUB shall work cooperatively with the STATE to do such things as are reasonably necessary and practicable (including the use of gates, barriers and appropriate official signs) to keep ATV use on the TRAIL and to restrict access by vehicles other than ATVs. Any proposed work to the TRAIL by the CLUB shall not be permitted until all environmental permits are secure and copies are submitted to the Trails Bureau.

RESPONSIBILITIES OF THE STATE :

In cooperation with the CLUB, the TRAIL shall be adequately marked by the STATE in accordance with the "Trail Signing Handbook: Guidelines for Signing OHRV Trails" (State of New Hampshire, Department of Resources and Economic Development, Division of Parks and Recreation, Trails Bureau), or any successor standard, to indicate location of the TRAIL, to restrict ATV use to within the designated TRAIL corridor, and to restrict access by vehicles other than ATVs. All spur, side or connecting trails will be posted to indicate that ATV access and use thereon is prohibited.

AMMENDMENTS:

The MOA may be amended only in writing through mutual agreement by the STATE and the CLUB.

TRANSFERABLITY:

The CLUB, upon written approval from the STATE, may transfer its rights and responsibilities under the MOA to another qualified non-profit group if it is determined that the CLUB is no longer able or willing to abide by the terms and conditions of this MOA. In the event that this MOA is not transferred, the Commissioner of DRED shall make an assessment to determine whether to continue or not continue ATV use and TRAIL designation on the PROPERTY.

TERMINATION:

The STATE or the CLUB may terminate the MOA with a 30-day written notice to the other party, for any reason deemed appropriate by either party.

DISPUTES:

Prior to the filing of any formal proceedings with respect to a dispute, the party believing itself aggrieved shall call for progressive management involvement in the dispute negotiation by written notice to the other party. The parties shall use all reasonable efforts to arrange personal meetings and/or telephone conferences as needed.

If the dispute is not resolved informally, disputes may be resolved by filing an action in the Merrimack County Superior Court.

This AGREEMENT is to be construed according to the Laws of the State of New Hampshire.

SIGNATURES:

"STATE" – New Hampshire Department of Resources and Economic Development

By: _____ 1/9/17
Brad W. Simpkins, Director — Date
Division of Forests and Lands

By: _____ 1-9-17
Philip A. Bryce, Director — Date
Division of Parks and Recreation /

By: _____ 1/9/17
Jeffrey J. Rose, Commissioner — Date

"CLUB" – Metallak ATV Club

By: Craig Washburn 1-5-17
Craig Washburn – President — Date
Duly Authorized

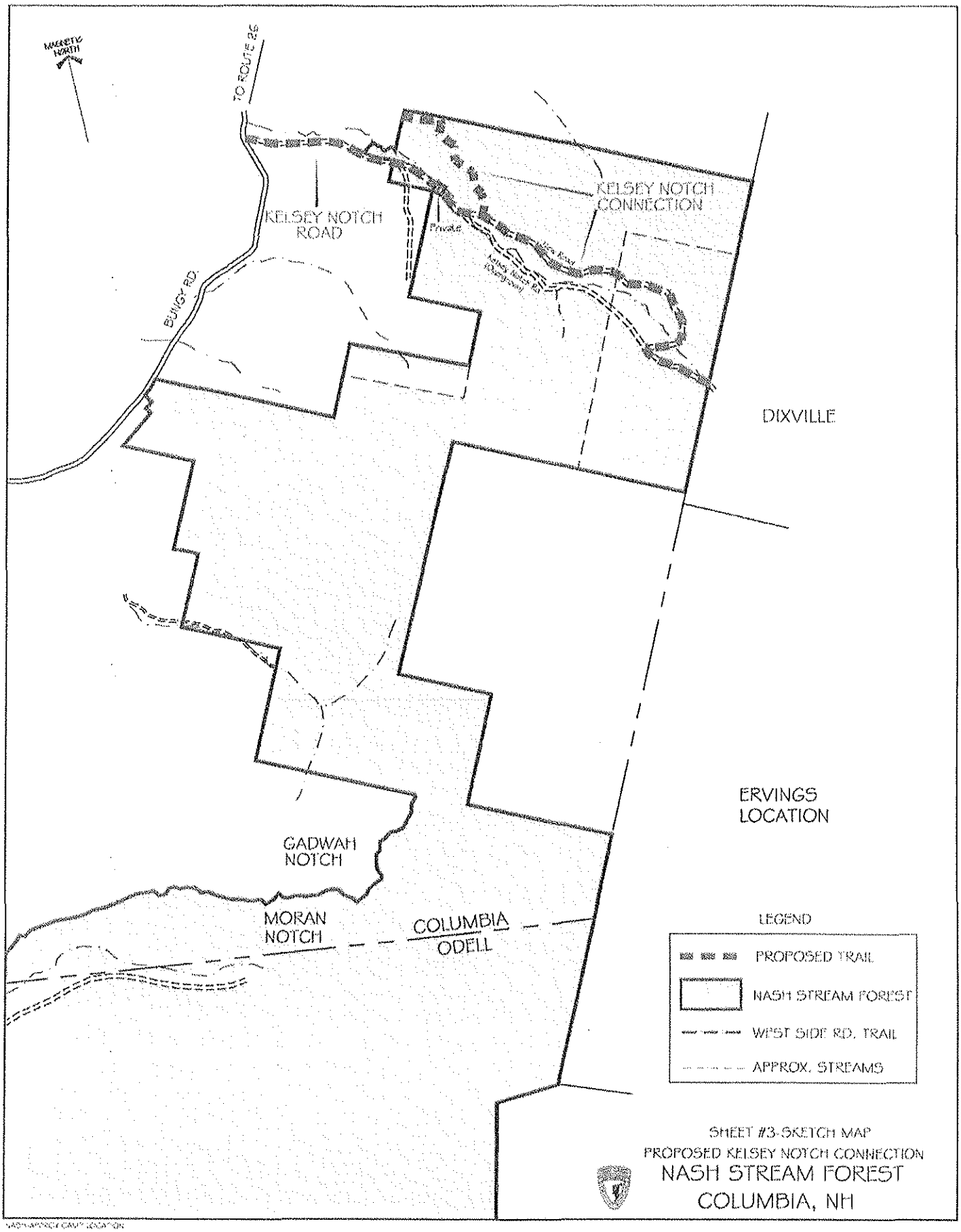
Approved as to form, substance and execution by the Office of the Attorney General:

_____ _____
Date — Jeanine Girgenti
Assistant Attorney General

Notices

All notices pursuant to this MOA should be sent to the following parties;

Brad Simpkins, Director Forests and Lands 172 Pembroke Road Concord, NH 03302-1856	Margaret Machinist, North Region Forester Forests and Lands - North Region Headquarters 629B Main Street Lancaster, NH 03584-3612
Chris Gamache, Chief Supervisor NH Bureau of Trails 172 Pembroke Road Concord, NH 03302-1856	Craig Washburn, President Metallak ATV Club P.O. Box 318 Colebrook, NH, 03576
Nash Stream Forest Citizen Advisory Committee C/O Forests and Lands 172 Pembroke Road Concord, NH 03302-1856	Clint Savage, District 1 Supervisor NH Bureau of Trails 629B Main Street Lancaster, NH 03584-3612


MAGNETIC NORTH
TO ROUTE 26
KELSEY NOTCH ROAD
KELSEY NOTCH CONNECTION
Private
BUNGY RD.
DIXVILLE
ERVINGS LOCATION
GADWAH NOTCH
MORAN NOTCH
COLUMBIA
ODELL
LEGEND
PROPOSED TRAIL
NASH STREAM FOREST
WEST SIDE RD. TRAIL
APPROX. STREAMS
SHEET #3-SKETCH MAP
PROPOSED KELSEY NOTCH CONNECTION
NASH STREAM FOREST
COLUMBIA, NH

RECEIVED

JAN 09 2017

D.R.E.D.

APPENDIX G

PILOT
MEMORANDUM OF AGREEMENT
For
ATV Trails
AT
NASH STREAM FOREST

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WHEREAS, on November 13, 2012 the Nash Stream Citizen Advisory Committee considered a proposal for ATV connector trails in the Kelsey Notch area of Nash Stream Forest and recommended approval of a "pilot" trail and agreement; and

WHEREAS, the Division of Forests and Lands, pursuant to RSA 227-G, has the responsibility for the management of all state-owned forestlands, and to cooperate with the Division of Parks and Recreation in promoting recreational use of state-owned forestlands; and

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WHEREAS, the CLUB is a recognized non-profit group by the State of New Hampshire that secures rights to designated ATV trails for its members and the public, and has a policy of closely patrolling and maintaining its trails to protect and preserve the landscape;

NOW THEREFORE, the parties hereto agree as follows:

1) The parties agree to work cooperatively in providing and maintaining, through environmentally sound action, a safe, functional, attractive and user-friendly ATV trail corridors (the "TRAIL") over existing ways known as "Kelsey Notch Road Trail" and "Kelsey Notch Connection Trail ", on the PROPERTY, as depicted on an attached plan.

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SIGNATURES:

"STATE" – New Hampshire Department of Resources and Economic Development

By: _____ 1/9/17
Brad W. Simpkins, Director — Date
Division of Forests and Lands

By: _____ 1-9-17
Philip A. Bryce, Director — Date
Division of Parks and Recreation /

By: _____ 1/9/17
Jeffrey J. Rose, Commissioner — Date

"CLUB" – Metallak ATV Club

By: Craig Washburn 1-5-17
Craig Washburn – President — Date
Duly Authorized

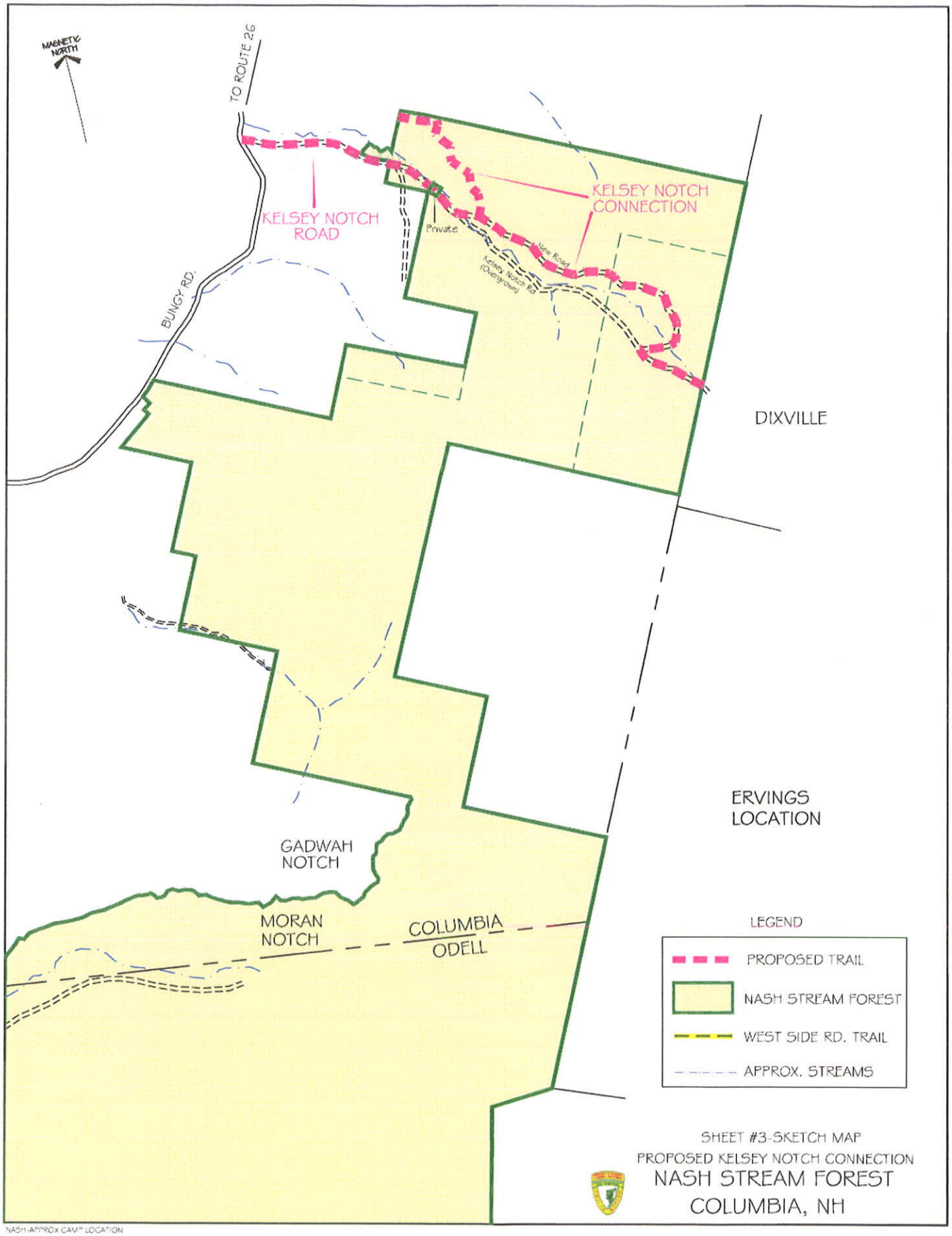
Approved as to form, substance and execution by the Office of the Attorney General:

_____ _____
Date — Jeanine Girgenti
Assistant Attorney General

Notices

All notices pursuant to this MOA should be sent to the following parties;

Brad Simpkins, Director Forests and Lands 172 Pembroke Road Concord, NH 03302-1856	Margaret Machinist, North Region Forester Forests and Lands - North Region Headquarters 629B Main Street Lancaster, NH 03584-3612
Chris Gamache, Chief Supervisor NH Bureau of Trails 172 Pembroke Road Concord, NH 03302-1856	Craig Washburn, President Metallak ATV Club P.O. Box 318 Colebrook, NH, 03576
Nash Stream Forest Citizen Advisory Committee C/O Forests and Lands 172 Pembroke Road Concord, NH 03302-1856	Clint Savage, District 1 Supervisor NH Bureau of Trails 629B Main Street Lancaster, NH 03584-3612


MAGNETIC NORTH
TO ROUTE 26
KELSEY NOTCH ROAD
KELSEY NOTCH CONNECTION
Private
New Road
Kelsey Notch Rd. (Overgrown)
BUNGY RD.
DIXVILLE
ERVINGS LOCATION
GADWAH NOTCH
MORAN NOTCH
COLUMBIA
ODELL
LEGEND
PROPOSED TRAIL
NASH STREAM FOREST
WEST SIDE RD. TRAIL
APPROX. STREAMS
SHEET #3-SKETCH MAP
PROPOSED KELSEY NOTCH CONNECTION
NASH STREAM FOREST
COLUMBIA, NH
NASH-APPROx CAMP LOCATION

RECEIVED

JAN 09 2017

D.R.E.D.

APPENDIX H

STATE OF NEW HAMPSHIRE
DEPARTMENT OF RESOURCES AND ECONOMIC DEVELOPMENT
DIVISION OF PARKS AND RECREATION
BUREAU OF TRAILS

NASH STREAM ATV TRAIL BASELINE NOISE TESTING RESULTS

July 3, 2002

By
Chris Gamache
Program Specialist

20" TEST

Field N end of West Side Rd. - looking South

Introduction:

The baseline noise testing was performed to be able to answer noise issue questions, in regards to ATV use, on trails on DRED lands, specifically the Nash Stream Forest.

Many of the complaints against development of ATV trails on Public lands are the noise level associated with the All Terrain Vehicle. The intent of the testing is to establish a baseline decibel level for ATV use, compared with decibel levels of other vehicles and sources of noise on the Nash Stream Forest property.

Methods & Equipment used:

The sound testing was done using a Quest Electronics 208 Sound Level Meter. The sound meter was calibrated on July 1, 2002 using a Quest Model CA-12B Sound Calibrator, and calibration was reconfirmed on July 3, 2002.

The two tests performed for the baseline data were the 20" Tailpipe Test, which tests the Decibel level of the vehicles exhaust system when running at a predetermined RPM; and the Scale A Test which is a Decibel level test conducted from a distance of 50' from the vehicle.

Vehicles used for the 20" Exhaust test were: Polaris Sportsman 500 ATV, Polaris 6x6 500, Honda 350 ES ATV, Artic Cat 500 ATV and a 2002 Ford F350 Pick up truck.

Vehicles tested from a distance of 50' included all of the above, except for the Artic Cat ATV (it had a backhoe attachment on it). We also tested the decibel level of the Nash Stream itself, from a distance of 25', a locomotive with one freight car, from a distance of 100' and a car and tractor trailer on Route 3 in N. Stratford, NH.

All of the test results are on the attached graph, showing date, time, weather, vehicle used and the decibel readings at the above-mentioned distances and certain speeds (in MPH).

Environment:

The field tests were performed on Tuesday, July 2, 2002 between 11:00 AM and 2:00 PM. The Polaris ATVs and the Ford P/U were tested in the field at the north end of the West Side Road, in Nash Stream. The Nash Stream decibel reading was taken from the bridge over Nash Stream at the south entrance to West Side Road and the readings from the Honda and Artic Cat ATVs, locomotive, car and tractor-trailer were all taken at Burns Truck Stop on Route 3, in N. Stratford, NH.

The weather on July 2, 2002 was hazy, hot and humid with the temperature over 85 degrees F, humidity over 70% and a 0-10 mph wind out of the south.

Testers:

Paul Gray, Chief, NH Bureau of Trails and Chris Gamache, Program Specialist, NH Bureau of Trails, performed all of the noise data collection and testing.

Nash Stream ATV Trail Sound Tests

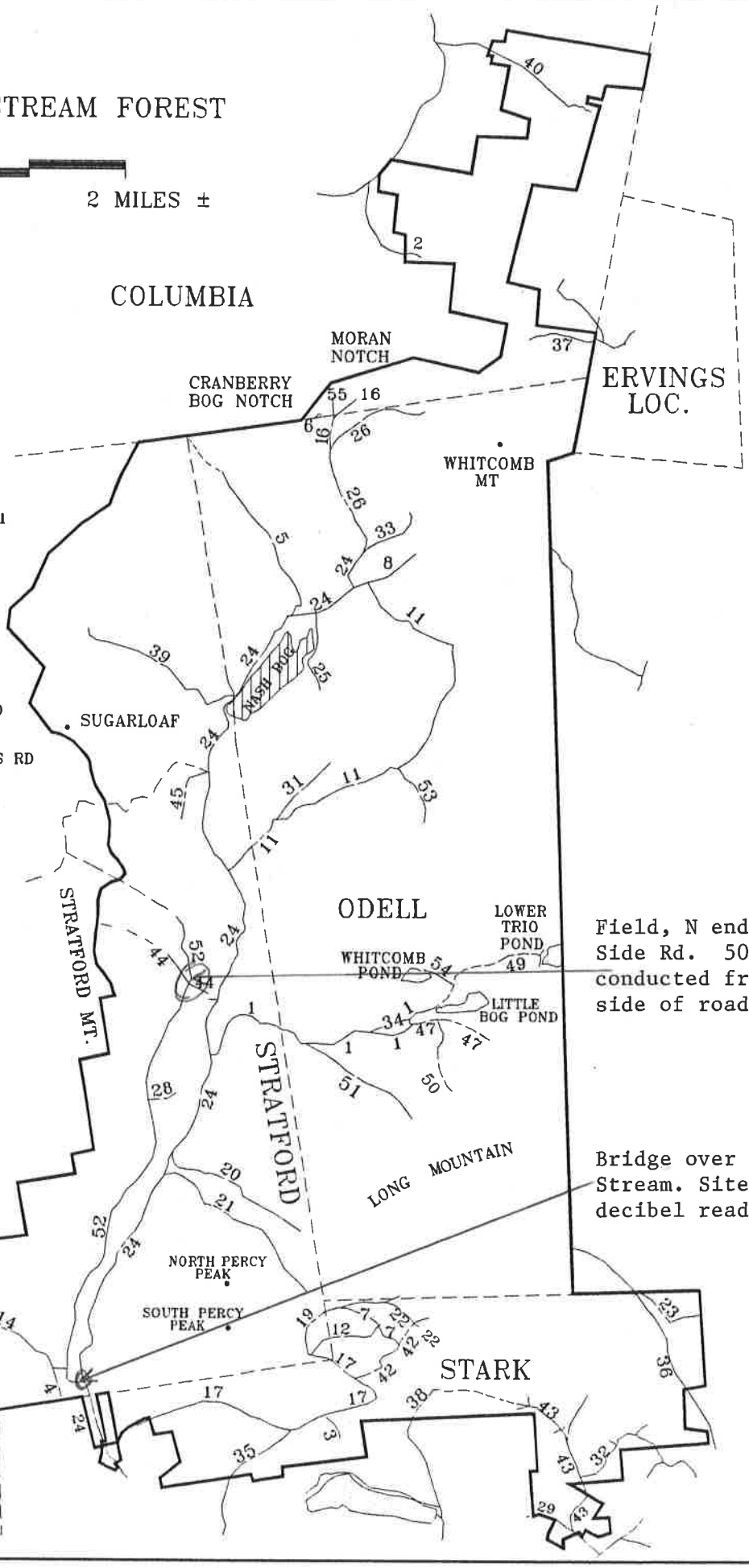
Date & Time	ATV/Auto or other	Engine RPMs	Dcb Level 20"	Dcb Level 50'	speed mph	Direction of travel	Location	Temp	Humidity	Wind Speed/Dir	Other
July 2, 02- 1100 hours	Polaris Sportsman 500	3150	86	<70	15mph	N to S	West Side Rd-Open field N end	>85	>70%	5-10 from S	
	"			<70	25mph	"	"				
	"			72	35mph	"	"				
	"			<70	15mph	S to N	"				
	"			<70	25mph	"	"				
	"			72	35mph	"	"				
	Ford F350 P/U	2200	78	<70	15mph	N to S	"				
	"			<70	25mph	"	"				
	"			<70	35mph	"	"				
	Polaris 6x6	3000	82	<70	15mph	N to S	"				
	"			<70	25mph	"	"				
	"			<70	35mph	"	"				
July 2, 02- 1300 hours	Nash Stream River			72 (25')			Bridge S end of West Side Rd	>85	>70%	5-10 from S	
July 2, 02- 1400 hours	Honda 350 ES	3250	86	<70	15mph		Burns Truck Stop, Rte 3-N.Stratfrord	92	>70%	0-5 from S	
	"			<70	25mph		"				
	"			<70	35mph		"				
	Artic Cat 500	3000	88				"				
	Car			76	55mph		"				
	Tractor Trailer			88	55mph		"				
	Train w/ 1 car			76 (100')	35mph		"				

NASH STREAM FOREST

0 — 2 MILES ±

ROADS AND ACCESS

ID	MILES	NAME
1	3.3	14 1/2 ROAD
2	0.3	BUNGY SPUR RD
3	0.4	CHRISTINE SPUR
4	0.3	CLOUTIER SPUR
5	1.7	COLUMBIA BROOK RD
6	0.2	CRANBERRY BOG SPUR
7	0.7	CROSS RD
8	0.6	EAST BRANCH EXTENSION 1
9	—	NO LONGER EXISTS
10	—	NO LONGER EXISTS
11	4.8	EAST BRANCH RD
12	0.9	JIMMY COLE NORTH
14	1.6	FARRER BROOK RD
16	0.7	HEADWATERS WEST FORK
17	4.2	JIMMY COLE BROOK RD
19	1.2	JIMMY COLE EXTENSION
20	1.7	LONG MT NORTH RD
21	2.0	LONG MT SOUTH RD
22	0.9	LOW RD
23	0.6	LOWER PHILLIPS BROOK RD
24	11.1	MAIN RD
25	0.9	NASH BOG SPUR
26	2.3	NASH STREAM HEADWATERS RD
[illegible]	0.4	NASH STREAM SPUR
[illegible]	0.5	NORTH RD
[illegible]	0.8	OLD EAST BRANCH RD
32	1.0	PIKE POND RD
33	0.7	PIKE'S WORK
34	0.4	POND BROOK SPUR
35	0.9	ROARING BROOK TRAIL
36	1.2	ROBERTS BROOK RD
37	0.8	ROCKY BROOK RD
38	0.6	ROWELLS BROOK RD
39	2.0	SILVER BROOK SPUR
40	1.3	SIMMS BROOK RD
42	1.1	SOUTH RD
43	1.6	STARK DUMP RD
44	0.9	STRATFORD MT RD
45	0.7	WEST SIDE NORTH
47	0.9	TRACY'S CAMP RD
49	1.4	TRIO PONDS TRAIL
50	0.8	UPSOUTH RD
51	1.3	WATERHOLE BROOK RD
52	5.3	WEST SIDE RD
53	0.6	WHITCOMB MT SPUR
54	0.4	WHITCOMB POND TRAIL
55	0.2	MORAN NOTCH TRAIL



Field, N end of W. Side Rd. 50' test conducted from west side of road

Bridge over Nash Stream. Site of River decibel reading.

THIS PLAN HAS BEEN UPDATED BY THE STATE OF NEW HAMPSHIRE DEPT. OF RESOURCES AND ECONOMIC DEV. 1996

Model Off-Highway Sound Test RPM Data Update

Supplement to MIC Stationary Sound Test Manual for Off-Highway Motorcycles and ATVs

ARCTIC CAT ATVs

Engine Size (in cc)	Model	Engine Prefix	Test RPM Model Year 2001	Test RPM Model Year 2002
90	90 2x4	JA90		3500
250	250 2x4	J432	3750	3750
	250 4x4	J433	3750	3750
300	300 2x4	K411	3500	3500
	300 4x4	K412	3500	3500
375	375A 2x4	K424		3250
	375A 4x4	K425		3250
400	400 2x4	K408	3500	3500
	400 4x4	K413	3500	3500
500	500A 4x4	M408	3000	3000
	500M 4x4	M406	3000	3000

BOMBARDIER ATVs

Engine Size (in cc)	Model	Engine Prefix	Test RPM Model Year 2001	Test RPM Model Year 2002
500	Traxter Models - All	Rotax 511	3125	3125
500	Quest 500	Rotax 514		3700
650	DS Model - All	Rotax 654	3250	3250
650	Quest 650, XT	Rotax 610		3525

HONDA MOTORCYCLES

Engine Size (in cc)	Model	Engine Prefix	Test RPM Model Year 2001	Test RPM Model Year 2002
50	XR50R	AE03E	4250	4250
70	XR70R	DE02E	4000	4000
80	CR80R*	HE04E	6250	6250
	CR80RB*	HE04E	6250	6250
	XR80R	HE01E	5000	5000
100	XR100R	HE03E	4750	4750
125	CR125R*	JE01E	5750	5750
200	XR200R	ME04E	4000	4000
250	CR250R*	ME03E	4000	4000
	XR250R 49S	ME06E	3500	3500
	XR250R CA	ME06E	4000	4000
400	XR400R	NE03E	3750	3750
450	CRF450R*	PE053		4500
650	XR650L	RD06E	3000	3000
	XR650R	RE01E	3250	3250

HONDA ATVs

Engine Size (in cc)	Model	Engine Prefix	Test RPM Model Year 2001	Test RPM Model Year 2002
90	TRX90	TE18E	3750	3750
250	TRX250	TE06E	3250	
	TRX250EX	TE27E		3500
	TRX250TM/TE	TE21E		3250
300	TRX300EX	TE19E	3500	3500
350	TRX350FM/FE	TE25E	3250	3250
	TRX350TE/TM	TE24E	3250	3250
400	TRX400EX	TE23E	3500	3500
	TRX400FW	TE20E	3000	3000
450	TRX450ES	TE22E	3125	
	TRX450FM/FE	TE22E		3125
	TRX450S	TE22E	3125	
500	TRX500FA	TE26E	3250	3250

*Denotes closed course competition.

May 31, 2002

***** Cut on line above and fold in half. Attach to back of Sound Test Manual. *****

KAWASAKI MOTORCYCLES

Engine Size (in cc)	Model	Engine Prefix	Test RPM Model Year 2001	2002
60	KX60-B16, B18*	KX060BE	6000	6000
65	KX65-A2, A3*	KX065AE	6000	6250
85	KX85-A1, A2*	KX085AE	6000	6000
100	KE100-B20	G5E21	3750	
	KX100-D1, D2*	KX100CE	5750	5750
110	KLX110-A1	LX110AE		3500
125	KX125-L3, L4*	KX125LE	5750	5625
200	KDX200-H7, H8	DX200HE	4000	4000
220	KDX220-A8, A9	DX220AE	3750	3750
250	KL250-D18/L, D19/L	KL250DE	4250	4250
	KL250-G5, G6	KL250GE	4000	4000
	KX250-L3, L4*	KX250LE	4250	4250
300	KLX300-A6/L, A7/L	LX300AE	3500	3500
500	KX500-E13, E14*	KX500BE	3500	3500
650	KL650-A15/L, A16/L	KL650AE	3250	3250

KTM ATVs

Engine Size (in cc)	Model	Engine Prefix	Test RPM Model Year 2001	2002
50	50 Mini Adventure*	450	4800	4800
	50 Jr/Sr Adventure*	450	4800	4800
	50 SX Pro Junior*	450	4800	5100
	50 SX Pro Senior*	451	5100	5100
65	65 SX*	460	4750	4750
125	125 SX*	503	5600	5600
	125 EXC*	503	5200	
200	200 EXC*/MXC*	523	4000	4000
250	250 SX*/EXC*	546	3750	3750
	250 MXC*	546	3750	
300	300 EXC*/MXC*	547	3550	3550
380	380 SX*/MXC*	547	3550	3550
	380 EXC*	547	3550	
400	400 SX*/EXC* Racing	595	4625	4625
	400 MXC* Racing	595	4625	4625
	400 LC4	575	3500	
520	520 SX*/EXC*/MXC*	590	4600	4600
640	LC4/LC4 ADV R	584	3450	3450
	LC4 Supermoto*	584	3450	3450

KAWASAKI ATVs

Engine Size (in cc)	Model	Engine Prefix	Test RPM Model Year 2001	2002
220	KLF220-A14/L, A15/L	LF220AE	3750	3750
250	KSF250-A15/L, A16/L	SF250AE	4000	4000
	KLF250-A1/L	LF250AE		3500
300	KEF300-B1, B2	EF300AE	3500	3500
	KLF300-B14/L, B15/L	LF300AE	3250	3250
	KLF300-C13/L, C14/L	LF300AE	3250	3250
	KVF300-A3, A4	VF300AE	3500	3500
	KVF300-B3, B4	VF300AE	3500	3500
360	KVF360-A1	VF360AE		3500
400	KVF400-C3, C4	VF400AE	3250	3250
	KVF400-D3, D4	VF400AE	3250	3250
650	KVF650-A1	VF650AE		3250

POLARIS ATVs

Engine Size (in cc)	Model	Engine Prefix	Test RPM Model Year 2001	2002
50	Scrambler 50	AR03-01	3750	3750
90	Scrambler 90	AR07-01	3750	3750
	Sportsman 90	AR07-01	3750	3750
250	Trail Blazer	EC25PFE15	3000	3000
	Xplorer 4x4	EC25PFE15	3000	3000
325	Magnum 325 2x4	ES32PFE08	3000	3000
	Magnum 325 4x4	ES32PFE08	3000	3000
	Trail Boss	ES32PFE09	3000	3000
	Xpedition 325	ES32PFE03	3000	3000
400	Xplorer 400	EC38PLE10	2750	2750
	Scrambler 400 2x4	EC38PLE09	3000	3000
	Scrambler 400 4x4	EC38PLE09		3000
425	Sportsman 400	EH42PLE05	3000	3000
	Xpedition 425	EH42PLE04	3000	3000
500	Magnum 500	EH50PLE08	3000	3000
	Magnum 500 RMK	EH50PLE08	3000	3000
	Scrambler 500 2x4	EH50PLE12	3250	3250
	Scrambler 500 4x4	EH50PLE12	3250	3250
	Sportsman 500 HO	EH50PLE13	3150	3150
	Sportsman 6x6	EH50PLE10	3000	3000
	Diesel	DW46PLE02	2000	2000
700	Sportsman 700	EH68ALOE1		3000

*Denotes closed course competition.

May 31, 2002

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SUZUKI MOTORCYCLES

Engine Size (In cc)	Model	Engine Prefix	Test RPM Model Year 2001	2002
50	JR50	A102	2500	2500
80	DS80/JR80	C106	3750	3750
	RM80*	D106	6125	
85	RM85*	D107		6000
125	RM125*	F113/F114/F134	5750	5750
200	DR200/DR200SE	H401/H402	4250	4250
250	DR-Z250K	J428	4000	4000
	RM250*	J115/J119	4000	4000
400	DRZ400/E	K416/K417	4000	4000
	DRZ400S/E	K419	3750	3750
650	DR650SE	P403/P407/P409	3250	3250

SUZUKI ATVs

Size (In cc)	Model	Engine Prefix	Test RPM Model Year 2001	2002
50	LT-A50	A110		2500
80	LT80	C113		3500
160	LTF160	G402	4000	
250	LT-F250F	J413	3750	3750
	LT-F250	J417/J434	3500	3500
300	LT-F300F KING QUAD	K403	3500	3500
400	LT-A400/F EIGER	K420/K421		3250
	LT-F400/F EIGER	K422/K423		3500
500	LT-F500F	M405/M407	3000	3000
	LT-A500F VINSON	M409		3000

YAMAHA MOTORCYCLES

Engine Size (In cc)	Model	Engine Prefix	Test RPM Model Year 2001	2002
50	PW50	3PT	3750	3750
80	PW80	3RV	3750	3750
	YZ80*	4ES	6000	6000
85	YZ85*	B111E	6000	6000
90	TTR90	B301E	3500	3500
125	TTR125	E309E	4000	4000
	YZ125*	E112E	5750	5750
200	TW200	3AW	3500	3500
225	TTR225	G304E	3750	3750
	XT225	4BE	4000	4000
250	TTR250	G307E	3750	3750
	WR250F	G322E	6500	6500
	YZ250*	G106E	4250	4250
	YZ250F*	G321E	5250	5250
426	WR426F	H309E	4250	4250
	YZ426F*	J308E	4500	4500

YAMAHA ATVs

Engine Size (In cc)	Model	Engine Prefix	Test RPM Model Year 2001	2002
80	YFM80	4EM/B302E	3750	3750
125	YFA1	3FA/E307E	3750	3750
200	YFS200	3JM	3500	3500
250	YFB250FW	4KD	3500	3500
	YFM250	G302E	3500	3500
350	YFM350FX	H306E	3500	3500
	YFM350X	3GD	3500	3500
	YFZ350	3GG	3750	3750
400	YFM400FWA	J304E	3500	3500
	YFM400A	J305E	3500	3500
	YFM400N	H312E	3500	3500
	YFM400FWN	H310E	3500	3500
600	YFM600FWA	J303E	3500	3500
660	YFM660R	M301E	3250	3250
	YFM660FWA	M302E	3125	3125

*Denotes closed course competition.

May 31, 2002

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Nash Stream Forest Management Plan

APPENDIX I

Columbia
Lewis
Tillotson Corporation
Dixville
Hedgehog Brook WMA
Ervings Location
Mount Kelsey WMA
Bunnel Mountain Easement
Bean
Millsfield
Odell
Marceau
Stratford
Dummer
Aspnes Easement
Bag Hill Town Forest
Northumberland
Stark
Lamphere Tract
Yankee Forest Tract
Kauffmann Tract
Percy State Forest

Kelsey Notch Tr.
Kelsea Notch Road
Columbia Road
Headwaters Road
Nash Stream Road
Sugarloaf Mountain Trail
Corridor Trail
Picnic Loop Road
Trio Ponds Road
Trio Ponds Trail
Westside Loop Trail
Peaks Trail

Muise Mountain
Whitcomb Mountain
Stratford Mountain
Long Mountain
North Percy Peak
South Percy Peak
Victor Head
Bald Mountain

New Hampshire Locator

Coos
Grafton
Carroll
Belknap
Sullivan
Merrimack
Strafford
Hillsborough
Rockingham
Cheshire

Westside Loop Trail
Kelsey Notch Trail
The Cohos Trail
Trail
Woods Road

ATV Analysis
Rivers and Streams Buffer
Waterbodies Buffer
Wetlands Buffer
IIA and IIB Soils
Elevations above 2,700 ft

Nash Stream Forest Property Boundary
Department of Resources and Economic Development (DRED) Lands
DRED Conservation Easement Lands
New Hampshire Fish and Game Lands
Other Conserved Lands

Town Boundaries
Rivers and Streams
Waterbodies
Wetlands (National Wetland Inventory)
Peaks
Local Roads
Main Access Road
State Routes

0 0.5 1 2 Miles

ATV Analysis

Notes: All Buffers and Areas filtered based on the 215-A:43 Evaluation Process.

Waterbodies and Wetlands: Buffers include a 200 foot buffer around all waterbodies (National Hydrogolic Dataset), a 200 foot buffer around all wetlands (National Wetland Inventory).

Soils: Both IIA and IIB soils were included from the NRCS SSURGO dataset.

Elevation: Areas above 2,700 feet calculated using the statewide 10M DEMs.

Rivers and Streams: Includes a 100 foot buffer around 1st and 2nd Order streams, a 330 foot buffer around 3rd Order streams, and a 600 foot buffer around 4th Order streams or higher. Data taken from the National Hydrologic Dataset.

N W E S

Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
DRED Forests & Lands

DRED makes no representations or guarantees to the accuracy of the features and designations of this map.

Map Produced by GIS Service
DRED Forests & Lands.
Contact: Derek.Serach@dred.nh.gov;
Ph: (603) 227-8741

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

APPENDIX J

New Hampshire Natural Heritage Bureau

To: Clinton Savage, NH Trails Bureau
629B Main Street
Lancaster, NH 03584

Date: 9/1/2016

From: NH Natural Heritage Bureau

Re: Review by NH Natural Heritage Bureau of request dated 9/1/2016

VALID ONLY FOR NOTIFICTION OR MINIMUM EXPEDITED APPLICATIONS SUBMITTED TO THE NHDES WETLANDS BUREAU

NHB File ID: NHB16-2712

Applicant: Clinton Savage

Location: Tax Map(s)/Lot(s): Site 1: Map 425 Lot 0002 Site 2: Map 421 Lot 0020
Columbia

Project Description: Site 1 (easterly): Installing an 18"x30' culvert. Site 2: Replacing 24"x30' culvert in kind.

The NH Natural Heritage database has been checked for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government. We currently have no recorded occurrences for sensitive species near this project area.

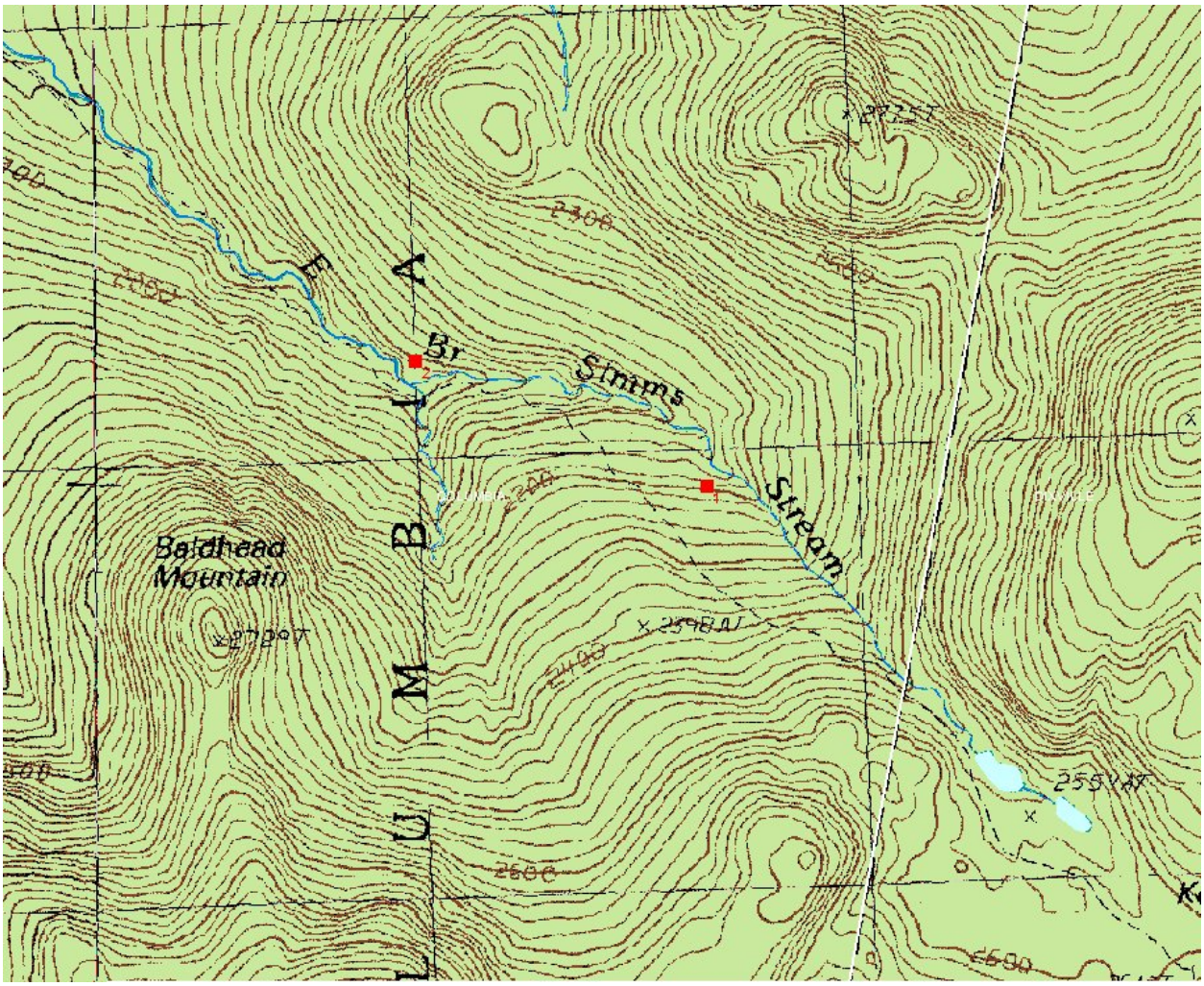
A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

This report is valid through 8/31/2017.

Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DRED/NHB
172 Pembroke Road
Concord NH 03301

MAP OF PROJECT BOUNDARIES FOR NHB FILE ID: NHB16-2712



Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DRED/NHB
172 Pembroke Road
Concord NH 03301