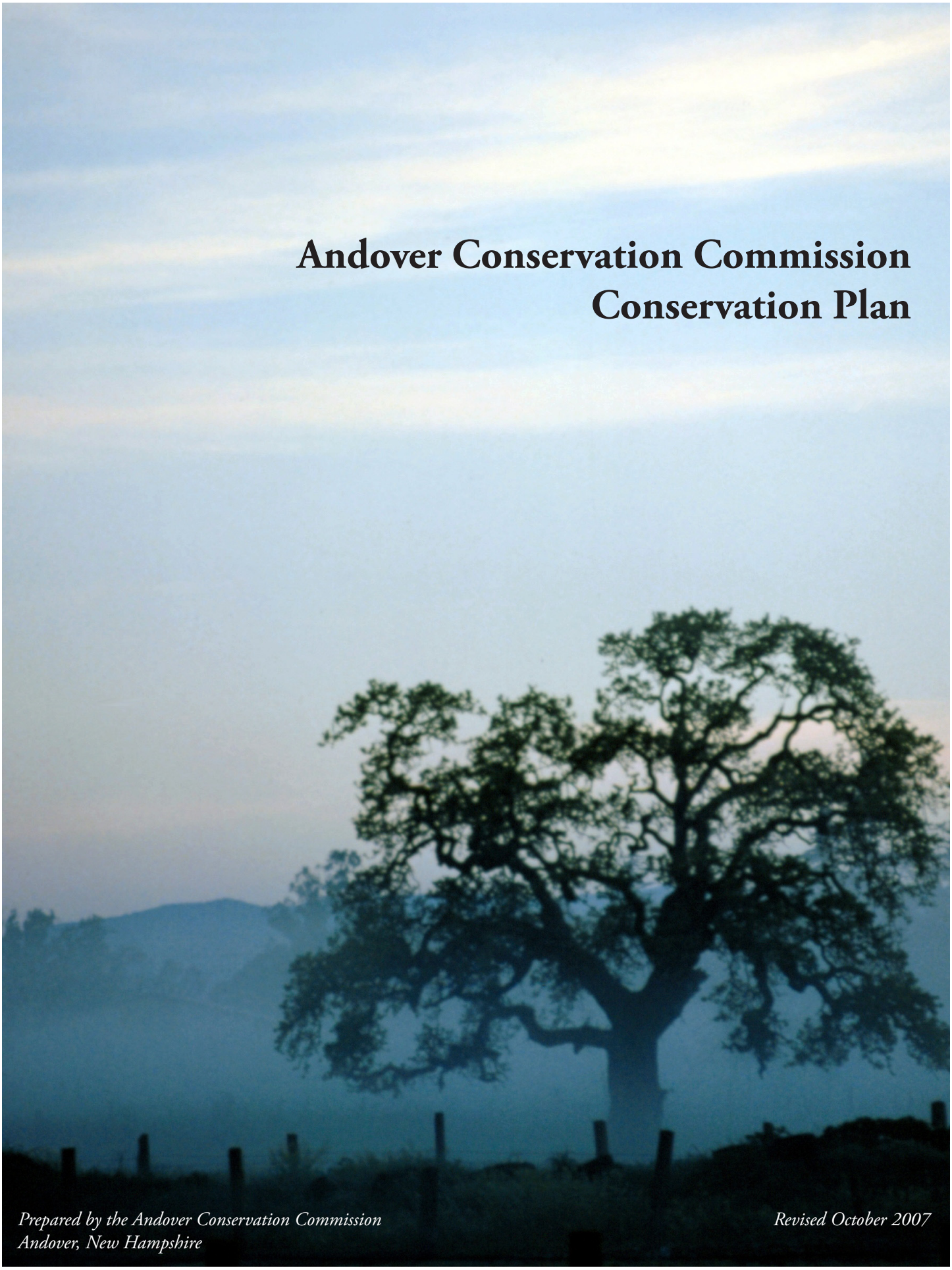


Andover Conservation Commission Conservation Plan

Prepared by the Andover Conservation Commission
Andover, New Hampshire

Revised October 2007

Ensuring The Protection of Andover's Rural Qualities

Andover Conservation Plan and Natural Resources Inventory

The Andover Conservation Commission (ACC) has the important role of ensuring that our Master Plan includes provisions and guidelines for conserving and protecting our land, water and other natural resources in both a town-wide aspect and regional context. If Andover is to retain its rural character—deemed very important in the 1992 Master Plan, as well as in the May 2007 *Overview of Master Plan Survey Findings*—we all need to protect our natural, historic, scenic and agricultural resources. The goal of the ACC is to ensure the future ecological and sustainable health of Andover, as well as its rural character.

With this in mind, the ACC embarked on a project to develop a comprehensive conservation plan and natural resource inventory. The conservation plan is based upon specific natural resources inventory data made available to Andover from a variety of sources, including the U.S. Department of Agriculture, New Hampshire Department of Environmental Services, New Hampshire Fish & Game, NH GRANIT, National Agricultural Imagery Program and several reliable, local sources. With these source materials and the assistance of Laura Alexander, a community and environmental studies consultant and assistant professor at Colby-Sawyer College, the ACC developed criteria and set priorities to facilitate the compilation of data layers in defining areas of potential conservation. The recommendations for preservation are based upon the greatest co-occurrence using geographic information system (GIS) mapping of the following sets of criteria:

- drinking water resources
- ecologically important lands, including wildlife habitats
- working agricultural lands, including lands with soils of statewide importance
- working forests
- scenic resources as identified by Andover residents

Coincidentally, much of this criteria match that set forth by the Society for the Protection of New Hampshire Forests' (SPNHF) *New Hampshire Everlasting* plan, as well as criteria used by the Ausbon Sargent Land Preservation Trust (ASLPT), whose mission is to preserve and protect the rural character of the Mt. Kearsarge/Lake Sunapee region for public benefit.

Once the criteria was defined, the areas representing each specific criteria were overlaid onto a map of Andover in what is referred to as "co-occurrence mapping" utilizing GIS mapping software. The map produced from this procedure illustrates each unique layer as well as the areas representing multiple criteria (darker areas). Using GIS mapping allows the ACC to easily update the information as new data becomes available. In fact, the ACC is currently updating the working forests data to include current use land with forest management plans.

Once areas were identified using the co-occurrence mapping, the ACC established a mechanism to prioritize projects by asking the following questions:

- Can the identified property produce income for the Town?
- What is the development pressure on the property?
- Is there likely to be public support for the project?
- Does the land contribute to the rural character of the community?
- Does the land connect or expand existing conserved lands?
- What is the cost of acquiring an easement? Is the landowner willing to donate an easement?

Andover citizens should note that these land areas identified as areas of higher co-occurrence are not meant to specifically target any landowner. The ACC believes that the Conservation Plan and Natural Resource Inventory should be used as a vehicle to encourage voluntary donation of conservation easements by private individuals, and

that the findings be considered in our planning and zoning regulations in local land use controls—the regulatory component set forth as a guide in the Master Plan.

The ACC presented the Conservation Plan to the Selectmen at their August 6th meeting and to the Andover Master Plan Update Committee on August 27th. Individual data layers and the co-occurrence map are on display at Town Hall. Copies of the Conservation Plan, GIS data layers and co-occurrence maps are available by request.

The ACC encourages everyone interested in preserving Andover's rural character and maintaining open space for the benefit of our citizens to review the maps and supporting materials. This information is extremely important in helping to determine where future development of Andover can best occur. If you have questions concerning the Andover Conservation Plan and Natural Resources Inventory, please feel free to contact a member of the Andover Conservation Commission:

Mary Anne Broshek, Chairman	648-2539
Lorraine Cline	648-6477
Tina Cotton	735-5724
Sandra Graves	735-5697
Gerry Hersey	735-5593
Nan Kaplan	735-5352
Bob Ward	735-5061

What is GIS mapping and how does it benefit Andover?

Geographic information system (GIS) mapping is a system for capturing, storing, analyzing and managing data which are spatially referenced to the earth. GIS is a tool that enabled the Andover Conservation Commission (ACC) to integrate, store, edit, analyze, share, and display geographically-referenced information in individual data layers as well as combinations of layers, also known as co-occurrence maps.

Fortunately, the Andover Conservation Commission did not need to start from square one in developing GIS data layers indigenous to Andover. The New Hampshire Geographically Referenced Analysis and Information Transfer System (NH GRANIT) creates, maintains and make available a statewide geographic database of information. A collaborative effort between UNH and the New Hampshire Office of Energy and Planning, the core GRANIT System is housed at the UNH Institute for the Study of Earth, Oceans, and Space in Durham. In addition, the U.S. Department of Agriculture, the New Hampshire Department of Environmental Services, and several other agencies use GIS mapping and make it available for local, regional and statewide use.

The GRANIT approach to a statewide GIS depends upon the cooperative efforts of a host of agencies, collaborating on various elements of database design and construction as well as application development. The collaboration occurs formally through the NH GIS Advisory Committee, and informally through daily interactions between the growing body of GIS users in the state and the region.

In developing the Conservation Plan and Natural Resources Inventory, the Andover Conservation Commission was fortunate to be able to utilize GIS mapping technology. Using this scientific approach allows the ACC to reference reliable, existing data as well as add, update and maintain spatially-correct information important to Andover's future land use planning.

Conserved Lands

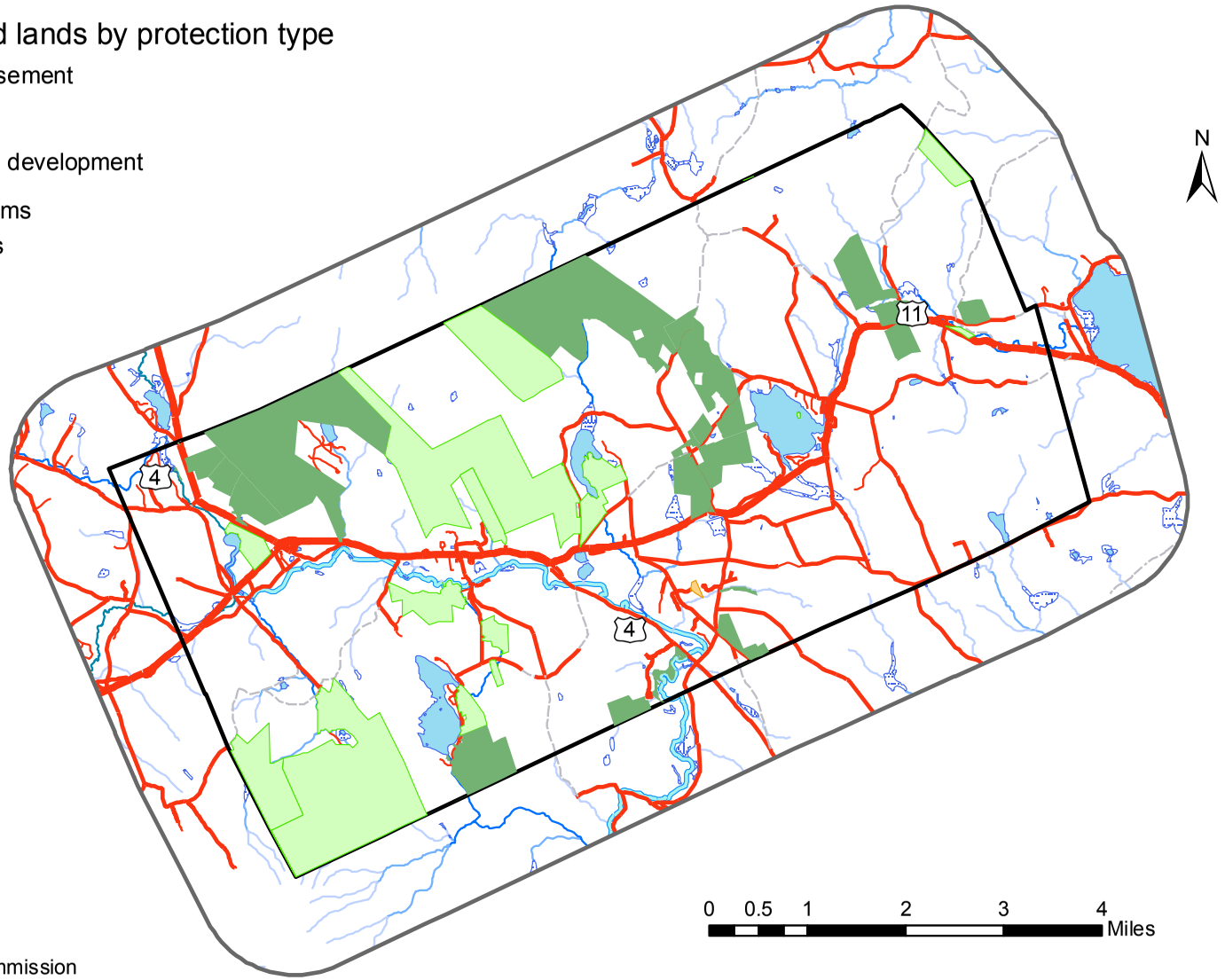
This map illustrates where lands are presently conserved in the town of Andover. It includes lands held in conservation easement, town-owned and state-owned lands.

Currently 22% of land in town is conserved.* The Society for the Protection of New Hampshire Forest's (SPNHF) *NH Everlasting Initiative* recommends a goal of approximately 25% of conserved land in each town.

A detailed listing of the Andover conserved lands is included in this package.

**This figure does not include the Robie Forest conserved by the Society for the Protection of NH Forests, because the parcel is missing from the data layer. NH GRANIT has been notified of the omission and will likely update the layer soon. Additionally, the ACC is in the process of attempting to confirm whether all of the Proctor Academy lands outlined on this data layer are conserved, rather than "protected."*

Conserved lands in Andover, NH



Andover Conservation Commission
Prepared by Laura Alexander
September 5, 2007

TRACT_I.D.	TRACT_NAME	ACRES	TYPE	AGENCY	NOTES
121-005 -	Newman	727	CE	13010	
122-016 -00	Perry Easement	41	CE	50140	
121-022 -	Proctor Academy Lands	338	FO	51625	INCLUDES SKI AREA + “MOUNTAIN CLASSROOM”; 4 TRACTS; VERY APPROX.
121-030 -00	Lebo Easement	39	CE	50140	
121-009 -	Bernhard + Mayman	175	CE	13010	OUTLOTS IN GENERAL AREA; 8 AC. CAN BE EXCLUDED FOR SEPTIC SYSTEMS
122-004 -	McDonough Parcel	7	FO	13010	
121-022 -	Proctor Academy Lands	924	FO	51625	INCLUDES SKI AREA + “MOUNTAIN CLASSROOM”; 4 TRACTS; VERY APPROX.
121-026 -	Ragged Mountain F & G Club	796	CE	51950	
120-009 -	Hall #2	0	CE	51950	
121-029 -00	Graves Easement	52	CE	50140	
121-018 -	Highland Lake Island	1	FO	13010	LESS THAN 2 ACRES, BUT AREA OF SPECIAL CONCERN
121-015 -	Jones	25	CE	13010	
121-016 -	Taunton Hill Realty Trust	8	CE	13010	
121-011 -	Taunton Hill Realty Trust	113	CE	51950	3 TRACTS
121-010 -	Fairall	7	CE	51950	
120-039 -	Wood, B.	53	CE	51950	2 TRACTS
121-011 -	Taunton Hill Realty Trust	101	CE	51950	3 TRACTS
121-022 -	Proctor Academy Lands	125	FO	51625	INCLUDES SKI AREA + “MOUNTAIN CLASSROOM”; 4 TRACTS; VERY APPROX.
121-008 -	Wood, D. #2	49	CE	51950	
120-039 -	Wood, B.	2	CE	51950	2 TRACTS
121-001 -	Ragged Mountain State Fore	74	FO	31000	
121-007 -	Wood, D. #1	97	CE	51950	
121-011 -	Taunton Hill Realty Trust	2	CE	51950	3 TRACTS
121-020 -	Bog Pond Parcel	59	FO	13010	INCLUDES 8+ AC. USED AS TRANSFER STATION; REMAINDER IS CONSERVATION
121-019 -	Gold Leaf Open Space	7	SA	13010	
121-022 -	Proctor Academy Lands	125	FO	51625	INCLUDES SKI AREA + “MOUNTAIN CLASSROOM”; 4 TRACTS; VERY APPROX.
121-017 -	Green Mountain Properties	9	CE	13010	
121-028 -	Broshek Easement	51	CE	50140	BACKUP AGENCY - ANDOVER CONSERVATION COMMISSION.
121-027 -	Andover Village District L	45	FO	40050	EPA ID: 0081010
121-012 -	Fenton	26	CE	13010	2 TRACTS
121-027 -	Andover Village District L	12	FO	40050	EPA ID: 0081010
121-003 -	Kearsarge WMA	1036	FO	32000	
121-027 -	Andover Village District L	55	FO	40050	EPA ID: 0081010
121-012 -	Fenton	52	CE	13010	2 TRACTS
121-002 -	Mount Kearsarge State Fore	236	FO	31000	SPNHF’S “DR” IS ONLY ON PART OF THIS PROPERTY
121-014 -	Reiner Woodland Conservanc	197	CE	51950	
	Total acreage conserved	**5666**			
	Total acres in Andover =	**26272**			
	Conserved acres in Andover =	**22%**			

Key to table

Tract ID = Assigned by Complex Systems Research Center (where data layers are obtained)

Tract name = Name known by protecting entity

Acres = Calculated by Geographic Information Systems (GIS) software and rounded

Type = Primary Protection Type:
- CE = Conservation easement
- FO = Fee ownership
- SA = Set aside open space areas of development

Agency = Primary protecting agency:
- 13010 = Town of Andover
- 50140 = Ausbon Sargent Land Preservation Trust
- 51625 = Proctor Academy
- 51950 = Society for the Protection of NH Forests
- 40050 = Andover Village District
- 32000 = NH Fish & Game
- 31000 = NH DRED

Drinking Water Resources

This data layer illustrates where drinking water resources are located in Andover. It was obtained in 2004 from the NH Department of Environmental Services.

Favorable large capacity gravel well areas were calculated by NHDES as those areas capable of supporting 75 and 150 gpm wells. A good description of the methodology for this can be found on page 436 of the Colby-Sawyer College 2004-2005 Community-Based Research Project Identifying Conservation Priorities in the Kearsarge/Sunapee Region found at this link: *http://www.colby-sawyer.edu/assets/pdf/CES2005RegionalMapsNarratives.pdf*
The link will take you to Chapter 2, Regional Maps & Narratives, and you can scroll to page 436.

Public water supply and facility points are those registered with the State of New Hampshire that provide drinking water to the public, such as schools and municipal water precinct facilities. The public water supply points shown in this data layer, with a 300 ft. buffer, are:

LaMeridiana Restaurant*
Proctor's Mountain Classroom
Potter Place Inn
Andover Village District
Camp Kenwood Evergreen*
Andover Congregational Church
Winslow State Park*
Foodstop, Inc.
Camp Marlyn
Blackwater Ski Area
Inn @ Ragged Edge Farm*
Wilmot Community Center*
*indicates they are within the mile buffer, but outside the Andover boundary.

The public water supply facility indicated is the one located near Bradley Lake.

Drinking water resources

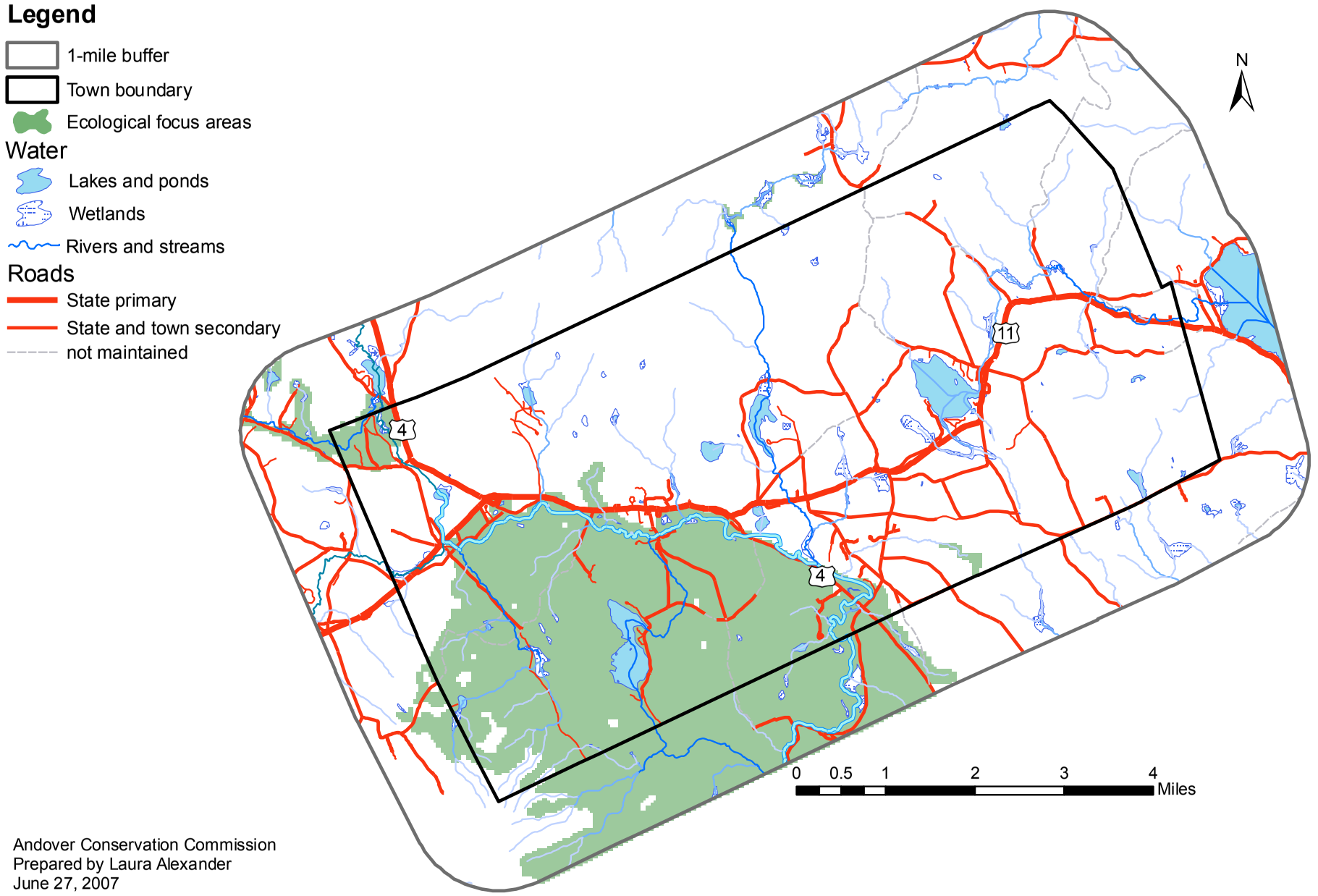
Andover Conservation Commission
Prepared by Laura Alexander
June 27, 2007

Ecologically-Important Lands

Ecologically important focus areas is a data layer produced by NH Fish & Game in February of 2007 in cooperation with several wildlife and diversity groups who worked together to create a Wildlife Action Plan. This data layer identifies those areas that have the highest ranked habitats in one place and therefore could support the greatest number of species.

Citation: NH Fish and Game Department. June 1, 2006. New Hampshire Wildlife Habitat Land Cover – New Hampshire Wildlife Action Plan. New Hampshire Fish & Game Department, Concord, NH.

Ecologically important focus areas in Andover, NH



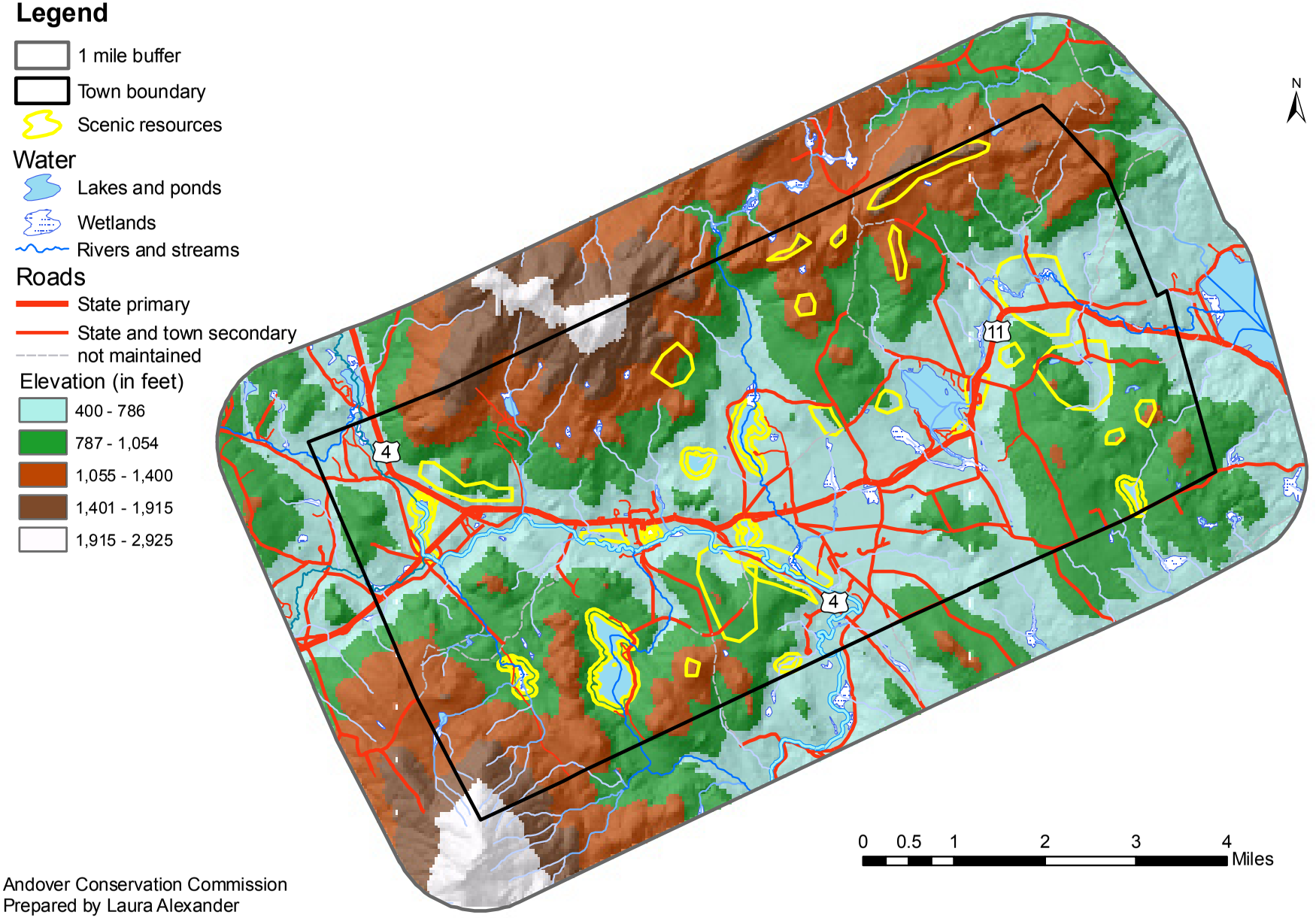
Andover Conservation Commission
Prepared by Laura Alexander
June 27, 2007

Scenic Resources

Scenic resources were identified by Conservation Commission members and by community members through a survey administered at Town Meeting in March, 2005 and published in *The Andover Beacon* in April, 2006.

Additionally, highpoints and ridgelines identified in the elevation area were digitized as scenic, as well as a 300 ft. shoreline boundary around bodies of water. Each of these sources was unioned to create a scenic resources data layer.

Scenic resources in Andover, NH



Andover Conservation Commission
Prepared by Laura Alexander
June 27, 2007

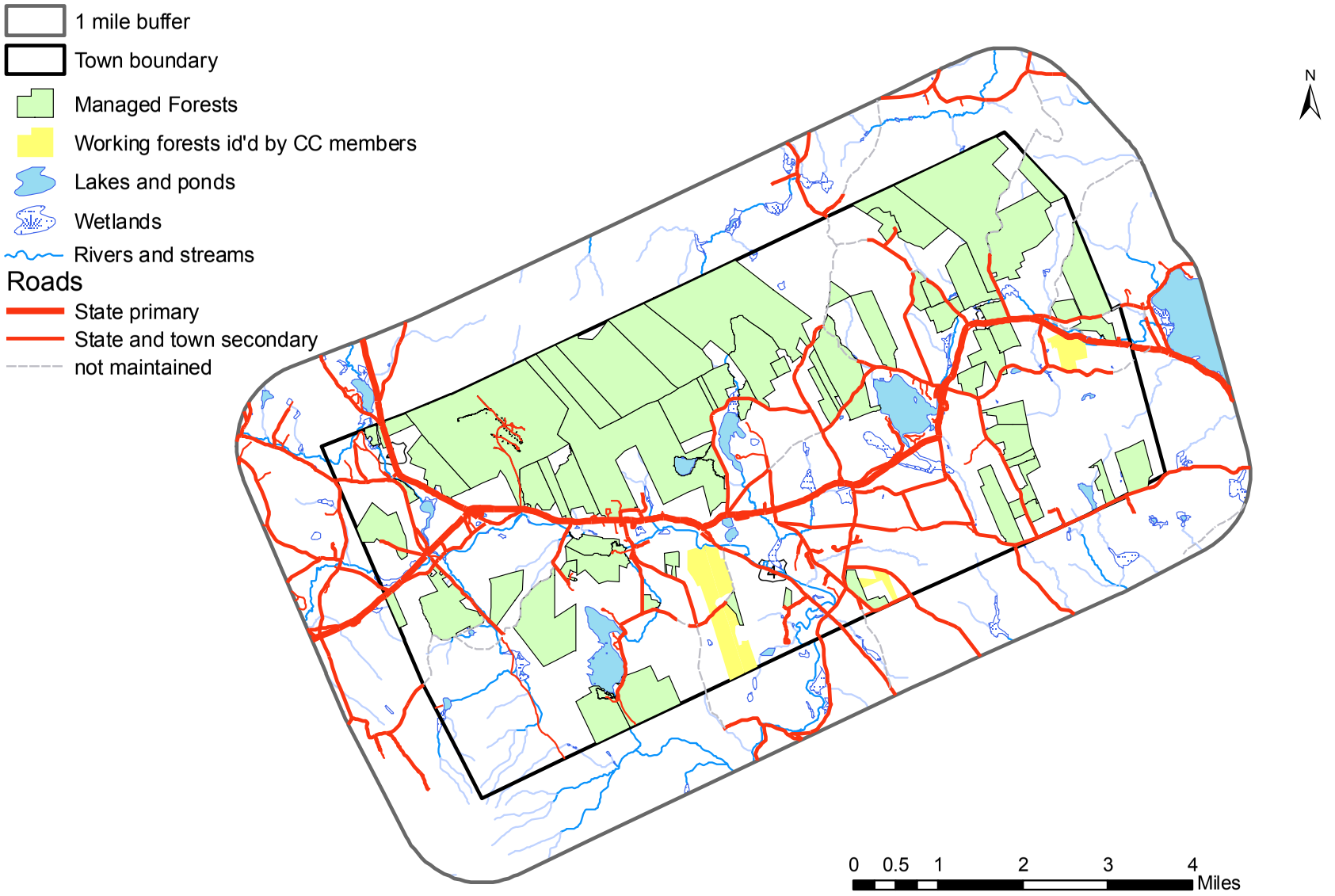
Working Forests

Working forests were identified by Conservation Commission members and with the use of the Current Use lands list identifying managed pine forests, managed hardwood forests and other managed forests. In addition to managed timber, maple sugaring operations were also considered.

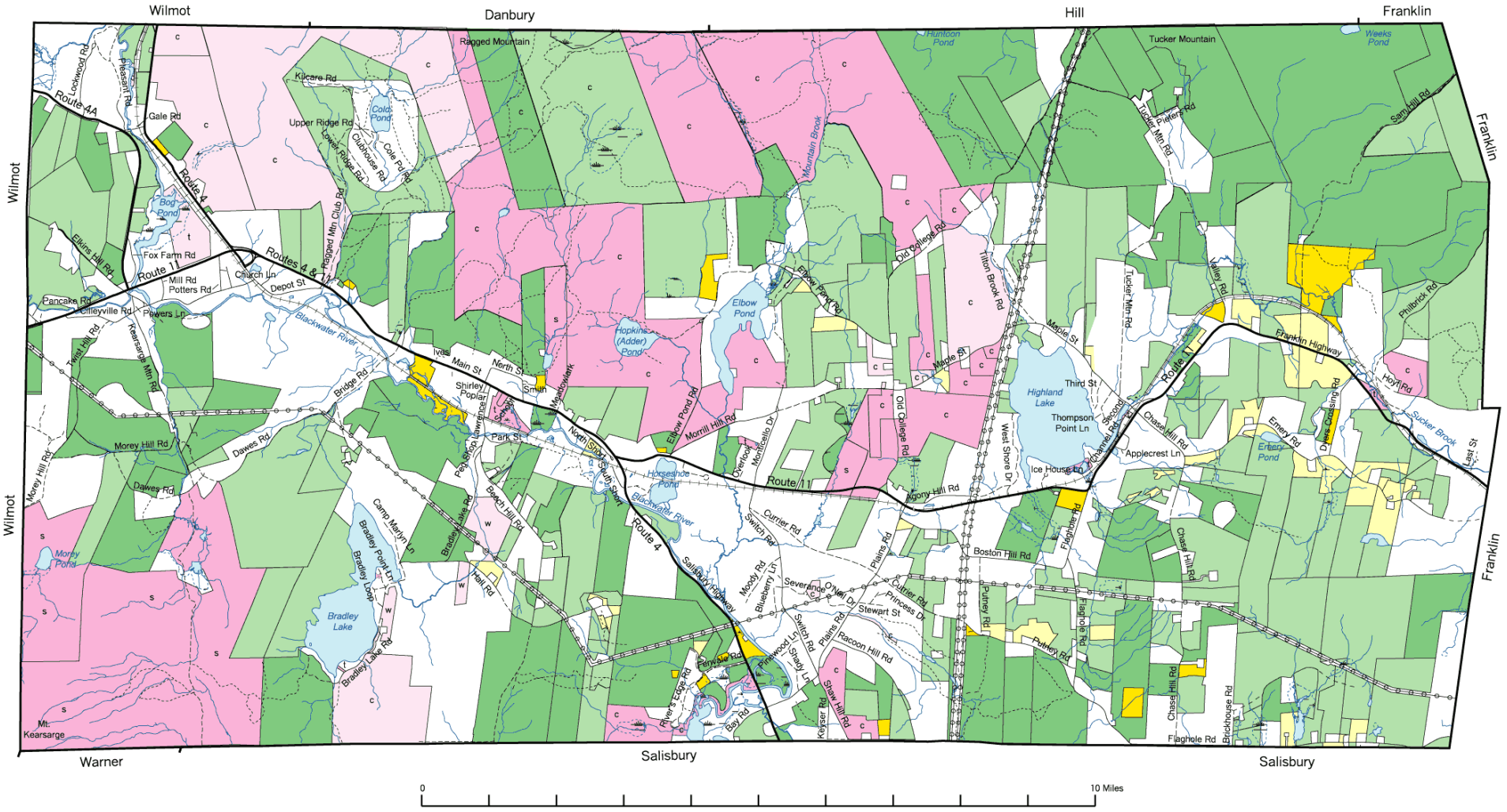
Working forests can be difficult to identify because the interval between harvesting is usually long and forest management plans are not required for all forested parcels. Conservation Commission members identified the parcels on this layer as working forests, but recognize that there are probably several more forests that can be identified as working forests in town.

The commission intends to work with residents to refine this data layer to more accurately reflect the magnitude and location of forest resources.

Working forests in Andover, NH



Andover Conservation Commission
Prepared by Laura Alexander
September 11, 2007

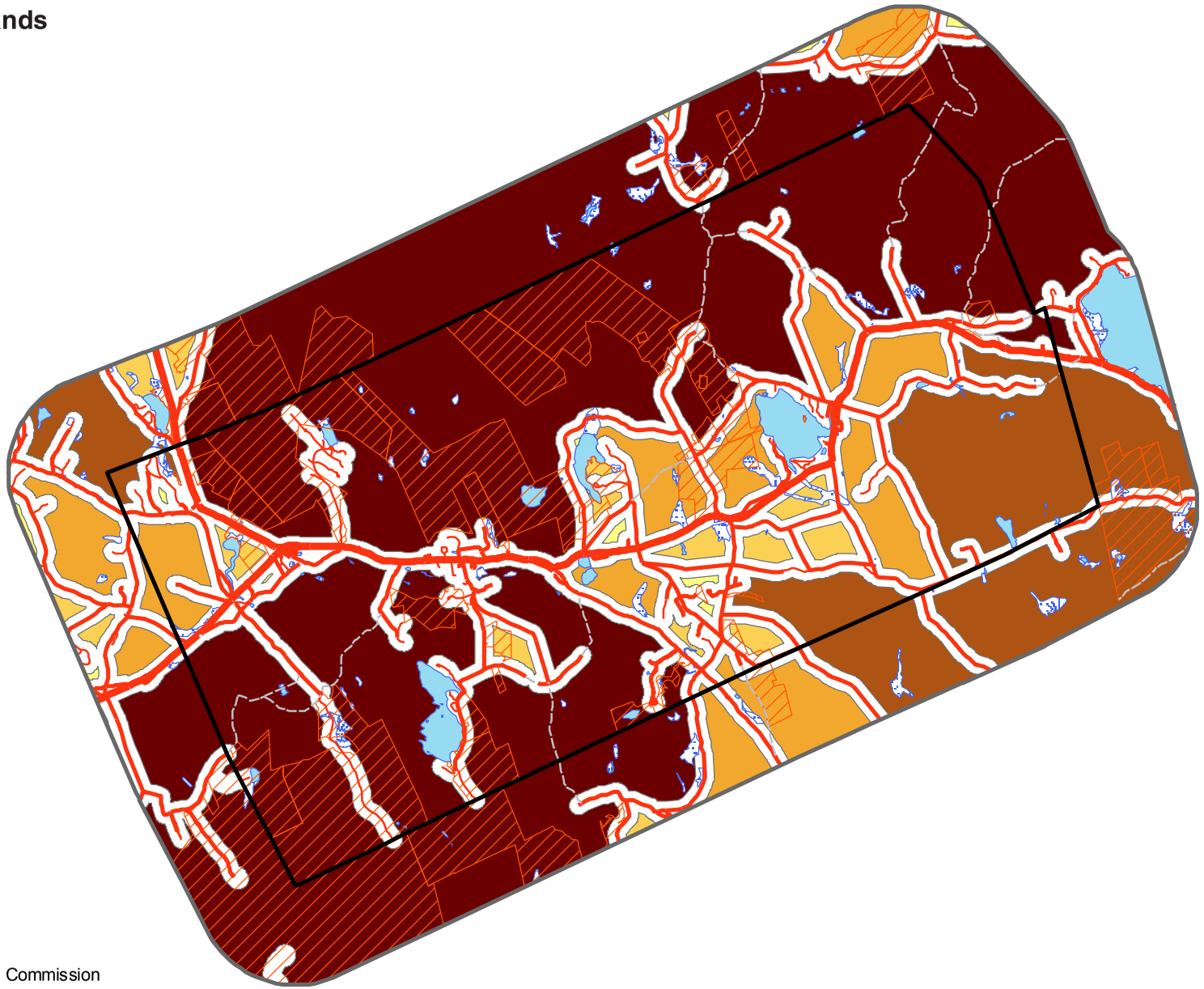


PRELIMINARY!
For correction purposes only

Current Use and Protected Land in Andover, New Hampshire, April, 2002

Compiled by Tom Fletcher, Proctor Academy, 2000;
Drawn, modified, and updated from tax map by Tina Cotton

Unfragmented Lands



Created by Laura Alexander
for the Andover Conservation Commission
May 22, 2007

Agricultural Resources

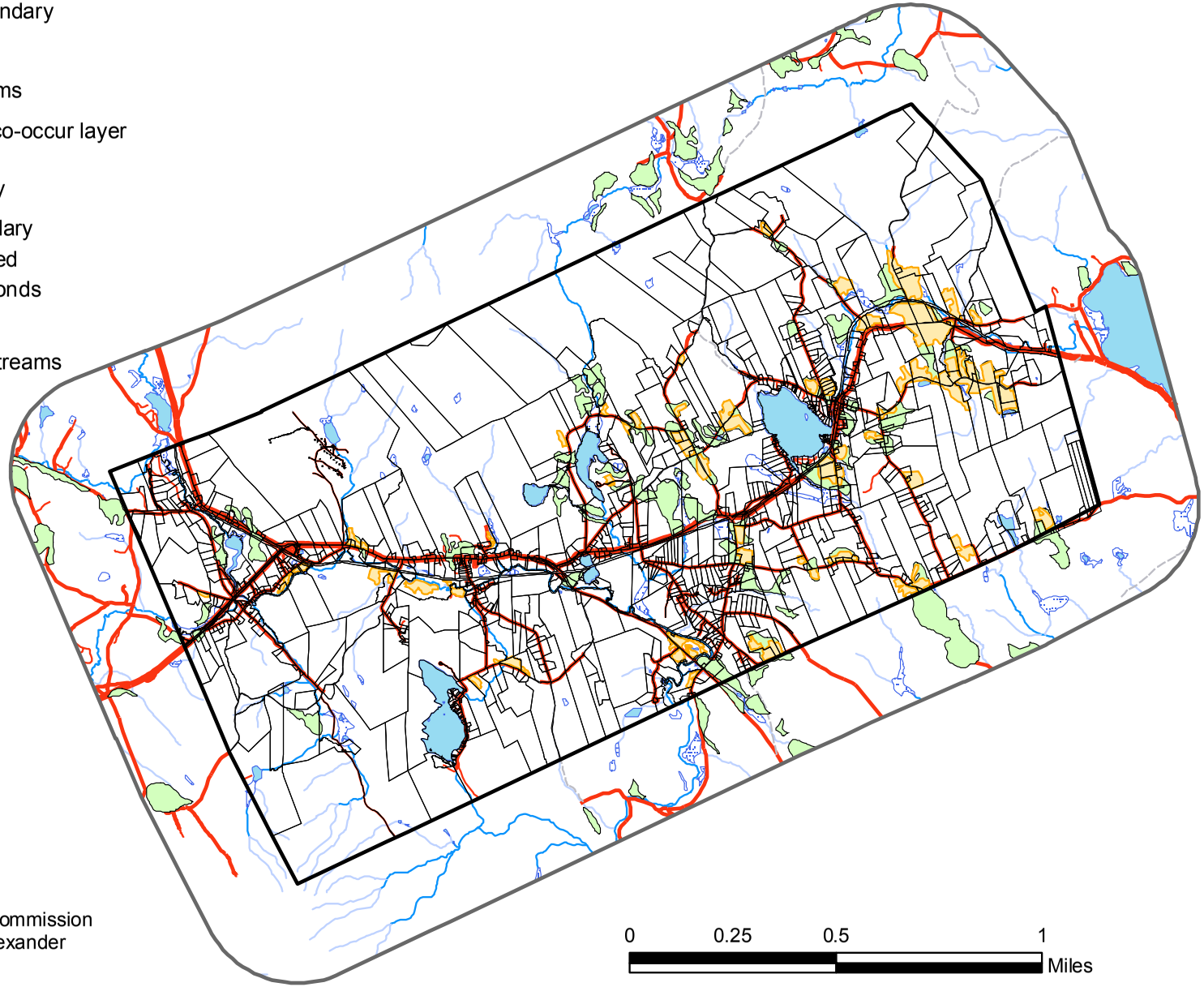
The agricultural lands data layer was created in a multi-step process. First, soils identified as prime agricultural soils and soils of statewide importance were selected for consideration.

Next, using 2003 National Agricultural Imagery Program (NAIP) photos and tax parcel information, areas where important agricultural soils occurred, but lands have been developed or subdivided, were erased.

Lastly, areas currently being used as agricultural land—those grazing animals, selling agricultural products or hay—were digitized to add them to lands identified as important due to their soils.

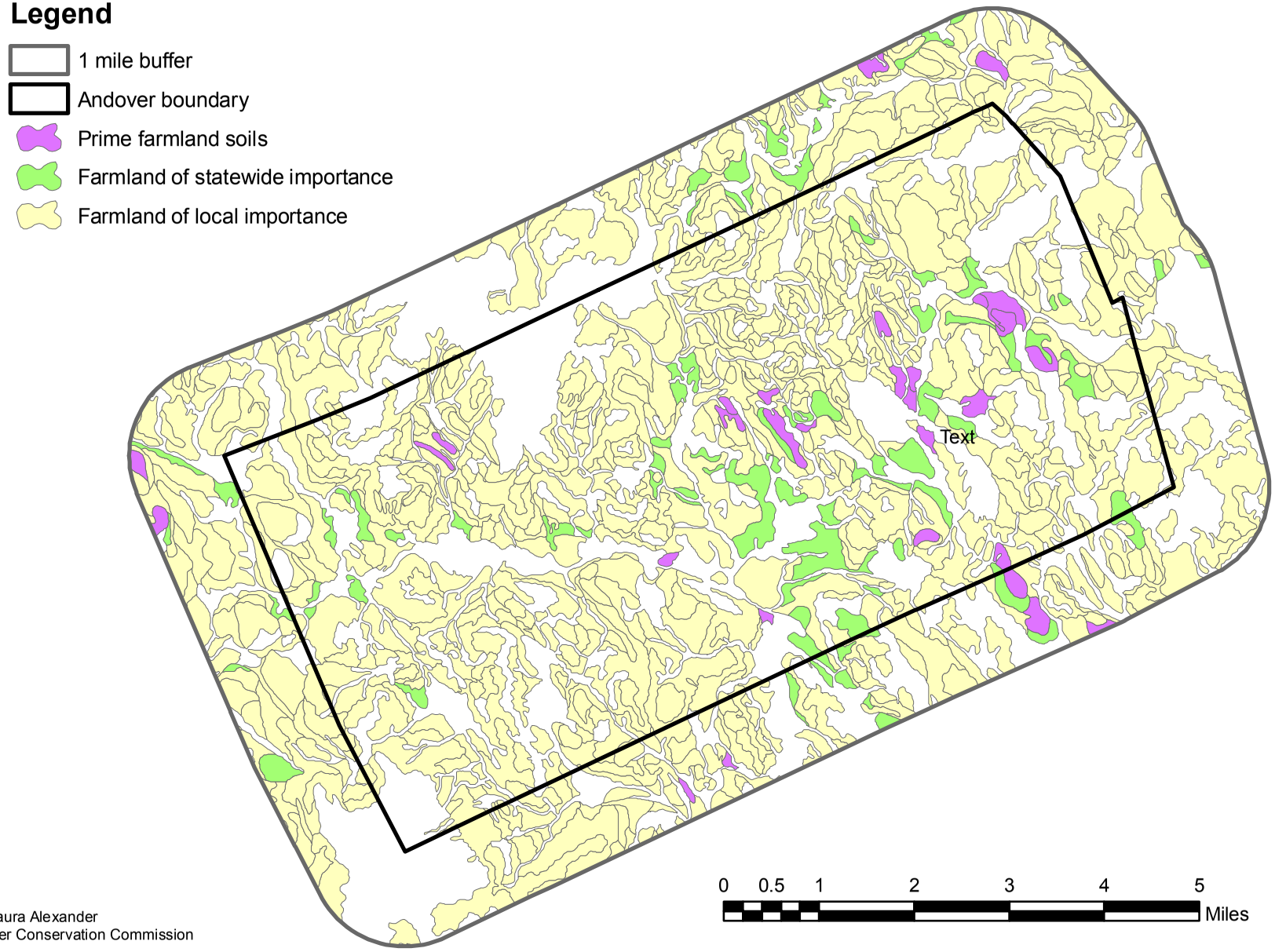
Assistance in determining whether cleared lands were agricultural (or simply lawns) was provided by conservation commission members.

Andover, NH
Agricultural Lands Composite



Andover Conservation Commission
prepared by Laura Alexander
June 7, 2007

Andover, NH
Soils of agricultural importance



Created by Laura Alexander
for the Andover Conservation Commission
May 22, 2007

Co-occurrence Map

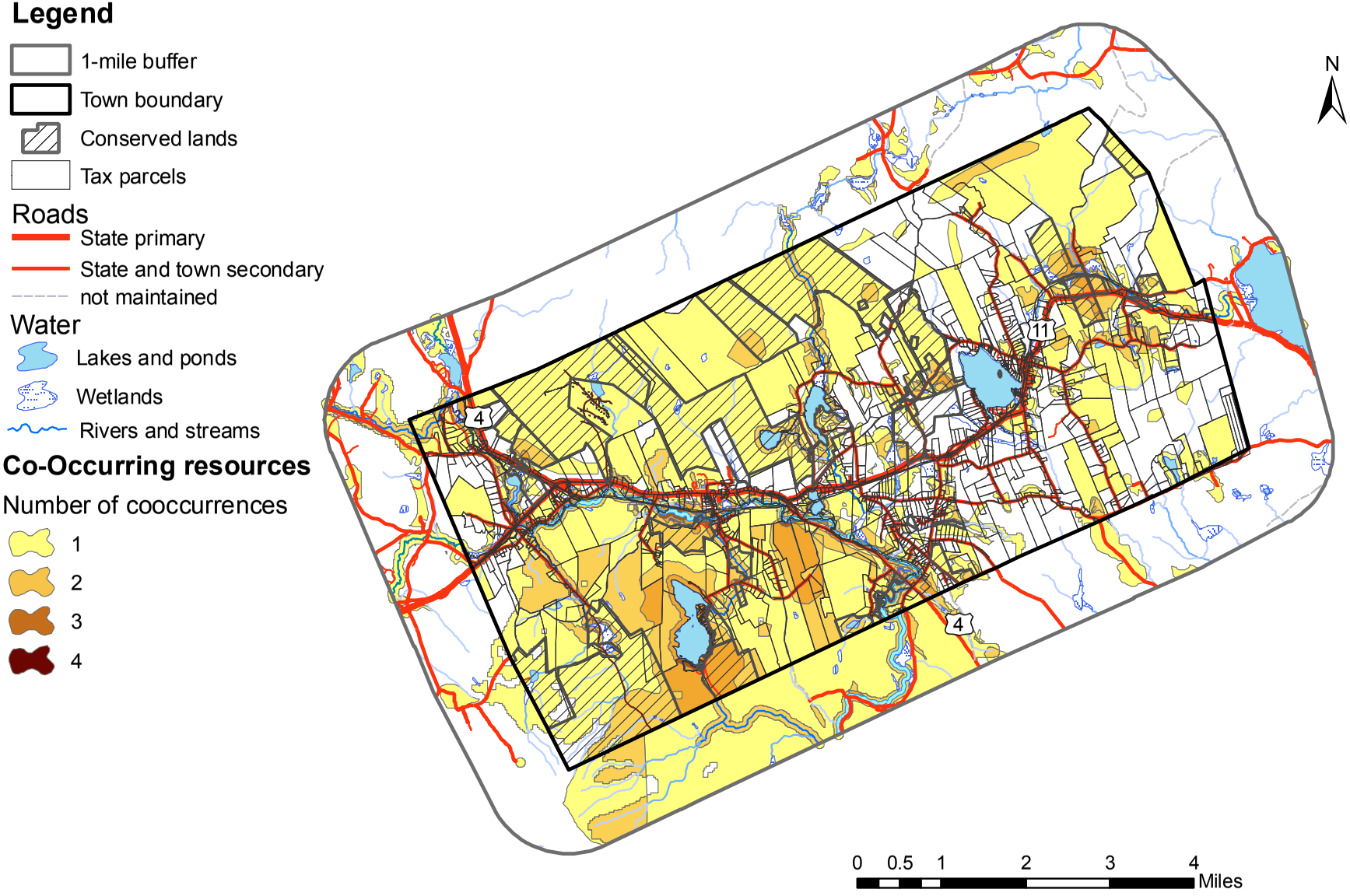
Co-occurrence mapping is useful for identifying those areas where important natural resources overlap, or co-occur. Using the Society for the Protection of New Hampshire Forest's *NH Everlasting Initiative* as a guiding document, Conservation Commission members identified five important resources for the purpose of prioritizing lands for conservation targets:

- drinking water resources
- ecologically important lands, including wildlife habitats
- working agricultural lands, including lands with soils of statewide importance
- working forests
- scenic resources as identified by Andover residents

Each resource identified in the individual data layers was assigned a rank of one (1). Ranked data layers were merged together and their ranks were summed. The resulting polygons were sorted by their summed number of co-occurrences.

The map shows where resources co-occurred, with the lighter shades having fewer overlaps, and the darker shades having the greatest number of occurrences. While there are more factors to consider during the prioritization process, such as parcel availability, the cost to acquire easements or parcels, and how conservation of natural resources fits with other master plan objectives, such as cultural and historical resources, co-occurrence mapping can be a useful way to focus conservation efforts and future land use planning.

Co-Occurring resources in Andover, NH



Andover Conservation Commission
prepared by Laura Alexander
September 11, 2007

Background

Laura Alexander, Assistant Professor of Community & Environmental Studies and Natural Sciences, at Colby-Sawyer College in New London, NH assisted the Andover Conservation Commission in preparing this Conservation Plan & Natural Resources Inventory. In addition, Ms. Alexander developed the co-occurrence map and supporting layers using Geographic Information System (GIS) mapping software.

In 2005, seven students in Colby-Sawyer's Community & Environmental Studies (CES) Program conducted a research project on the Kearsarge-Sunapee Region's conservation priorities. In one of the college's most comprehensive yearlong projects, the students collaborated with Ausbon Sargent Land Preservation Trust (ASLPT) and residents from the 12 towns served by ASLPT—including Andover—to identify the region's most ecologically important lands.

As part of their CES third-year project, the students investigated the region in a town-by-town basis last fall. This approach allowed students to explore each town in depth and to compile a regional investigation. The students created 12 questions for their inquiry, based on the Society for the Protection of New Hampshire's Forests' *New Hampshire Everlasting* initiative, which seeks to ensure the protection of open space. The questions address many different aspects of conservation within the towns, from identifying the extent of the towns' previously conserved lands to locating other ecologically important areas.

To fully answer these questions, students used GIS technology, as well as worked with town officials and residents throughout the region. During the second semester, students used their regional investigation as a tool to identify the 12 towns' conservation priorities. The students implemented a GIS-mapping technique known as co-occurrence mapping to overlay many different layers from the regional investigation that identified areas targeted as ecologically important.