Upper Saco Valley Land Trust
Resource Inventory

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Cover Photo: Top: Saco River in Conway, with River Channel and Floodplain Forests. Bottom: Pitch Pine (*Pinus rigida*) at the top of Jockey Cap, a Rocky Ridge in Fryeburg, Maine, with Lovewell Pond in the background.

Above: Silver Lake, Jackman Ridge (light green foreground), and surrounding Pitch/Mixed Pine Plains between Silver and Ossipee Lakes (darker surrounding area). This illustrates the effects of soils on tree composition: hardwoods dominate on fine glacial till soils on Jackman Ridge whereas pine trees dominate on the coarse, sandy outwash soils elsewhere. The former are productive hardwood soils, whereas the latter are productive softwood soils.

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Executive Summary

The Resource Inventory presented in this report is Phase I of a Strategic Conservation Planning effort by the Upper Saco Valley Land Trust (USVLT). Future phases will build on the foundation of the Resource Inventory by soliciting input and engagement from local conservation partners and stakeholders, considering additional resource values not explicitly incorporated into the Resource Inventory, and prioritizing among conservation opportunities.

The mission of USVLT is to preserve the ecological systems and cultural values of the Upper Saco River Valley, including the continued well-being and availability of land for farming, forestry, recreation, education, as well as land remaining in its natural state for the benefit of natural and human communities. The main goals of the Resource Inventory were to consolidate geographic information on the natural and cultural features of the landscape, and identify areas that contain critical or high resource values.

We began by combining separate Geographic Information System (GIS) data layers from the respective states to obtain a set of seamless GIS maps covering the entire service area for each particular feature pertinent to the USVLT mission. Differences in data availability, coverage, or content limited the number of resources that could be incorporated into the analysis during Phase I. Ultimately, we included twelve layers in the subsequent analyses (alphabetical order): Aquifers; Brook Trout Headwaters; Farmland and Other Openings; Great Pond Shorelines; Important Bird Areas; Natural Communities and Wildlife Habitats; Open Wetlands; Prime Farmland Soils; Productive Forest Soils; Riparian Zones; Rare Plants, Animals, and Exemplary Natural Communities; and Unfragmented Forest Blocks. The USVLT Resource

Inventory Committee was instrumental in selecting and assigning score values to features within each of these layers relevant to the USVLT mission.

Eleven of these layers were based on or interpolated from existing data layers. The Natural Community and Wildlife Habitat map is a novel data layer derived during this project through an analysis and interpretation of nine data sources. This map allowed us to distill and integrate key physical and biological attributes of the landscape from many independent sources into a single GIS layer. In so doing, we avoided some potential redundancy, coverage gaps, and methodological differences among data layers if they had been used individually. Natural communities and wildlife habitats can be interpreted and compared on the basis of factors such as rarity, geographic distribution, biological importance, and the ecological integrity or health of individual examples at multiple geographic scales (global, state, and local). These attributes were useful in assigning values in the second stage of the Resource Inventory.

The next stage involved constructing a Resource Data Model (RDM) to identify areas where many features of value co-occur in the landscape, or occur in close proximity. The "co-occurrence" analysis involves assigning numerical scores to features within each of the twelve resource layers and overlaying and summing the feature scores to obtain a single map depicting areas of high to low score values. For example, a high score would result where multiple features of conservation interest overlap in a particular area, such as a riparian zone, an aquifer, habitat for a rare bird, and an outstanding example of a globally rare natural community.

Prior to the final integration of layers and scores in this co-occurrence analysis, we adjusted scores of certain features according to the size of the example and the predicted "ecological integrity" of the surrounding area. For example, scores of resources that are particularly vulnerable to negative impacts of human habitation (wetland natural communities and wildlife habitats, riparian zones, rare species, etc) were "down-ranked" when in close proximity to roads and development, and "up-ranked" when embedded in large un-fragmented forest blocks. This helped differentiate more viable or healthy examples of ecological features score-wise within the RDM from those with diminished biological prospects.

The final step involved interpreting the combined RDM map to delineate draft conservation focus areas. Large areas and concentration zones of moderate to high scores in the RDM map were a key consideration. The draft focus areas also include "supporting landscapes" around focal features that help buffer and sustain them within larger, functional ecological systems. We also were cognizant to include features not fully reflected by the RDM scores alone, such as large unfragmented forest blocks, connectivity to existing conservation lands, and local considerations relevant to the specific kind of resources present.

Although the focus areas do not represent the full spectrum of USVLT mission values, including local input, they do highlight some of the incredible assets of the Upper Saco River Valley. Phase I of the Resource Inventory validates what many already know intuitively: the Saco Valley is a special landscape. It contains a unique combination of ecological systems not replicated anywhere else in New England,

3containing types ranging from alpine areas to coastal plain wetlands. The enormous elevation range, great variety of landforms, and network of free-flowing rivers and streams produce a stunning diversity of ecological systems and rural landscapes: beautiful, productive farmland set among extensive blocks of productive forests on the slopes of mountains and hills; rocky summits; pine barrens, bogs, and coastal plain ponds on the flat sandplains; undeveloped ponds and lakes; intact and globally or regionally rare floodplain forests, riverwash gravel barrens, and giant open wetlands along the winding course of the Saco River.

Introduction

The mission of the Upper Saco Valley Land Trust (USVLT) is to preserve the ecological systems and cultural values of the Upper Saco River Valley, including the continued well-being and availability of land for farming, forestry, recreation, and education, as well as land remaining in its natural state for the benefit of natural and human communities. USVLT seeks to achieve this mission through forging and fostering partnerships for land conservation and through respectful stewardship, while being mindful of heritage and responsibility for the future.

The USVLT service area includes Hart's Location, Bartlett, Chatham, Jackson, Conway, Hale's Location, Albany, Eaton, and Madison in New Hampshire; and Fryeburg, Brownfield, and Denmark in Maine. Approximately 1/3 of the area is contained within the White Mountain National Forest (WMNF); the remainder is largely private land, with a small percentage in state ownership.

The Resource Inventory presented in this report is Phase I of a Strategic Conservation Planning effort by USVLT. Future phases will build on the foundation of the Resource Inventory by soliciting input and engagement from local conservation partners and stakeholders, considering additional resource values not explicitly incorporated into the Resource Inventory, and prioritizing among conservation opportunities.

The Resource Inventory includes a Geographic Information System (GIS)-based compilation of existing and novel resource data. These include a broad spectrum of natural and cultural features, including base political features and roads; water resources such as aquifers, wetlands, and riparian zones; physical features such as soil types, productive farmland and forest soils, and ecological land units; biological features such as exemplary natural communities, rare plant and animal species, and wildlife habitats; and recreation and historical cultural features.

The Resource Inventory was a sequential, multi-step process, involving three major stages: 1) data compilation and development; 2) construction of a "co-occurrence" model that depicts areas with multiple or high resource values; and 3) definition of draft conservation focus areas.

In the first phase, we combined separate GIS data layers from the respective states to obtain a set of seamless GIS maps covering the entire service area for each particular feature pertinent to the USVLT mission. Differences in data availability, coverage, or content limited the number of resource layers that could be incorporated into subsequent analyses. We also developed a seamless map of natural

communities and wildlife habitats across the service area. The second stage, constructing a co-occurrence map, involved assigning scores to features within each of twelve resource layers and summing the individual scores to derive composite scores. The resulting map depicts a range of high to low scores across the landscape; geographic areas with high scores typically indicate locations where multiple valued resources overlap. For example, a high score would result if an area contained a large, outstanding bog with a rare bird and rare plant along the undeveloped shore of a lake, embedded in a large unfragmented forest block, and underlain by an aquifer. The final phase involved definition of draft focus areas that contain areas of high resource value. The draft focus areas are a first iteration, and will be refined as USVLT incorporates input from local communities and information on recreation and cultural features that was not explicitly included in Phase I of the Resource Inventory.

1.Methods

1.1 Natural Community & Wildlife Habitat Model

MAP UNITS

Natural communities are recurring assemblages of plants and animals found in particular physical environments. Each natural community type occurs in a specific setting in the landscape, such as a rocky wind-exposed ridge, or wet area along a stream and pond. They are the natural habitats in which plants and animals live. Some plant and animal species, like white pine trees and white-tailed deer, are generalists and occur in many types of communities. Other species are more restrictive, and occur in or utilize only one or a particular group of communities. Examples are silver maple trees, which only occur on river floodplains, and spruce grouse, which only occur in spruce – fir forests. More detailed descriptions of natural communities of the USVLT Service Area and their correspondence to wildlife habitats and other features is provided in the Results section.

The New Hampshire Natural Heritage Bureau (NNNHB) and Maine Natural Areas Program (MENAP) both maintain classifications of natural communities in their respective states (Sperduto and Kimball, 2011, and Sperduto and Nichols, 2004 in New Hampshire; and Gawler and Cutko 2010 in Maine). In the USVLT service area available GIS and field data are insufficient in detail and coverage to construct a map of individual natural communities as described in these classifications. Available data are sufficient, however, to construct a model of broader *groups* of natural communities, which are coincident or slightly finer in scale and concept to the wildlife habitats defined in the NH Fish and Game (NHF&G) and Maine Department of Inland Fisheries and Wildlife (MEDIFW) Wildlife Action Plan habitat units (WAP).

Therefore, in our analysis of the habitats within the USVLT service area we targeted set of broad **natural community groups** to model, which correspond to higher levels of the NHNHB and MENAP classifications above individual communities (approximates the table of contents in Sperduto and Kimball, 2011). These groups were refined when possible to reflect important, finer-scale biological patterns in the local USVLT landscape. In other cases, groups were broadened to reflect the scale or accuracy limitations of the source GIS data each map units was based on. For simplicity's sake in this

report we refer to the map units as “natural community groups” (in addition, we define and match these groups to other natural resource layers at a detailed level using individual natural communities). However, functionally – on the ground - they are both plant and wildlife habitats.

The natural community groups can be aggregated into the following broad categories (#s of natural community group map units given in parentheses):

- Rocky Ground (3)
- Forests (7)
- Swamps (Forested Wetlands) (2)
- Open Wetlands (6)
- Floodplain Forests and River Channels (4)
- Aquatic (1)
- Development (1)
- Farmland and Other Openings (3)

The final individual 27 map units are listed and described in the results section.

Each of the natural community polygons for a given map unit (for example, Bogs) are cross-referenced to as many as three natural community types in the natural community map GIS attribute table. The cross-references for individual polygons of a map unit are often slightly different. For example, we might expect two distinct soil types to support two different floodplain forest natural community types, although both would be mapped as “Floodplain Forest.”

Vernal pools are important wildlife habitat. Unfortunately, their small size and coincident complete or partial tree cover hinder identification from remote sources. Consequently, comprehensive maps of vernal pools across large areas are generally not available in either state, including within the service area. Detailed analysis of high-resolution air photos taken in spring in leaf-off condition is the best way to identify potential vernal pools remotely. Validation of vernal pools requires field work, including identification of vernal pool obligate species such as spotted salamanders, wood frogs, and fairy shrimp.

Why Map Natural Communities and Wildlife Habitat Units?

Preserving ecological systems is one of the key components of the USVLT mission. Ecological systems include physical landscapes and the biodiversity contained within them.

> **“Biodiversity** is the variety and variability of all living organisms. It includes whole organisms, their genes, the natural communities in which they live, and the complex interactions among and between organisms and their physical environment” (Sperduto and Kimball, 2011).

We mapped natural communities and wildlife habitats because they are practical-scale biological units that incorporate many aspects of biodiversity and physical landforms into a single layer. Unlike most of the individual layer inputs (soils, NWI wetland types, ecological land units etc) used to construct the

map, the natural community groups can be interpreted in terms of the rarity, abundance, distribution, and significance in local, state, and global contexts. These were useful attributes for assigning score values in the co-occurrence model, and expect that they may be useful for more detailed analyses and evaluation of potential conservation areas in Phase II. In addition, the natural community groups correspond closely with the NH and Maine WAP wildlife habitat types and therefore are useful for both plant and animal conservation.

DERIVATION: INPUTS & INTERPRETATION OF LAYERS

The natural community/habitat map is a model derived from known and predicted associations between natural communities and various landscape features already mapped and available in GIS. Each of these features, or GIS input layers, (e.g., soil types, wildlife habitats, topographic settings, landcover, wetland structure, hydrology), were mapped using a unique set of data inputs and methods. We used NRCS soil types as a foundational coverage in this process because of the generally good correspondence between soils and natural communities; its universal inclusion of terrestrial, palustrine, and aquatic systems; and the complete coverage across the service area (excepting the White Mountain National Forest).

We improved upon the soil-based natural community group assignments by overlaying select features from other GIS layers. This allowed us to improve the scale and/or accuracy in the map unit typing in cases where we had higher confidence in the other GIS layers for a particular group or set of instances. Subsequent desktop scanning of aerial photos in concert with field ground-truthing served to verify or modify the model type assignments.

The stepwise derivation of the model is discussed below by reviewing each of the inputs in the order that they were incorporated into the model (summarized in Table 1). The sequence of incorporation was important because we produced a seamless map of the entire service area: any changes to a polygon superseded the previous boundaries.

Limitations: The coarse scale of soil maps and other source data, the effects of land use history, and the relatively small number of detailed research sites impose certain limits on our ability to establish links between soil types and other source data and natural communities. First, some communities correspond to specific conditions not distinguished or mapped by NRCS (or reflected by other source data). Examples include rich mesic forests associated with concavities or particular bedrock characteristics; and seepage swamps, which occur where groundwater seepage emerges from the ground. These features are generally not picked up by soil mapping. Second, land use history has affected community composition, in many areas homogenizing vegetation in a way that obscures original relationships to the site conditions. For example, repeated forest cutting can shift compositions towards higher proportions of early successional species or towards a specific desired species. Another example is fire suppression, which has led to elimination of fire-maintained species such as pitch pine and scrub oak in many areas over the past hundred years. Third, there are a limited number of field sites with specific, well-controlled linkages between individual soil types and natural communities upon which to base relationships (Bartlett Experimental Station may be the only large example). These limitations are

mitigated to some degree by working with broad groups of natural communities instead of individual ones, and by incorporating multiple data layers into the model.

Table 1. Natural Community Model Inputs. Summary of the input layers in order of incorporation to the map, and the primary natural community groups affected by each layer.

Input Layer Name (Numbered by "Trump Order")	Applicable Natural Community Groups and Affected Areas
1.NRCS soil series	Uplands, wetlands, and aquatic groups.
2. NH WAP habitat maps	Used on the WMNF (no soils data available here); interpreted and adapted to USVLT map units, and revised to eliminate overlapping habitat polygons. WAP habitats also used selectively outside the WMNF in NH to confirm or modify Swamp, Marsh, Fen, and Bog natural community group assignments from soils.
3. National Wetlands Inventory (NWI)	Used to identify wetlands not picked up by NRCS wetland soils (e.g., NWI wetlands mapped on NRCS upland soil types).
4. TNC Ecological Land Units	Used to derive cliff locations, as well as coves that may correspond to Semi-rich to Rich Woods.
5. Landcover	Used to delineate the location of human development ("Developed" map unit).
6. Direct field observations	Direct field observations by Sperduto, MENAP, and NHNHB were used to confirm or alter natural community group assignments based on other layers (includes exemplary natural communities & other Heritage data).
7. Missing Water Bodies	Added in all water bodies as identified by National Hydrography dataset not already included in the Natural Community map.
8. Desktop Scan	Detailed review of map units at 1;24,000 using orthophotos and other GIS layers. Map units were added for River Channel and Bog communities in particular, or modified per air photo signatures for numerous other communities.
9. Ground Truthing	250 field observations were made across the service area. These were used to validate map units, calibrate interpretations of air photo signatures, refine the list of constituent communities associated with map units, and adjust map unit names and combinations.

NRCS Soil Maps: NRCS soil type maps formed the foundation for the natural community model in the service area outside of the WMNF. Approximately 440 different types of soil units (tens of thousands of polygons) occur within the service area, divided more or less equally between NH and ME. Some of the soil types are mapped in both states, but many are mapped in only one state or the other. This means that similar or equivalent soils can have different names, or that different concepts or features were emphasized in soil mapping, or both. In addition, the map units vary in complexity and detail. Some map units consist of a single soil type (called a consociation), whereas others are combinations of 2 or more soil types (associations, complexes, or undifferentiated groups). In general, soil map units are delineated at a scale of 5 to 100 acres. Ultimately, the scale and level of detail of the soil types (and the combinations of soil types that correspond to the soil map units) dictate the detail and combinations of communities attributed to them.

Soil descriptions (http://soils.usda.gov/technical/classification/osd/index.html) and soil catenas (available from NRCS County offices in each state) were consulted and cross-referenced to groups of natural communities, and to the extent possible, individual natural communities. Primary characteristics considered include soil parent material and depositional environment, texture, drainage, and presence or absence of a pan layer. Sperduto and Kimball (2011), Sperduto and Nichols (2004), and Gawler and Cutko (2010) describe field-based observations of soil conditions, which were useful in making the soil-natural community links. Other resources that were particularly valuable were Leak's (1982) habitat types, Leak and Homer's (2002) habitat groups-to-soil series cross-reference for Coos County, and soil-natural community type relationships for Coos County (Sperduto, 2005). Maps of natural communities, previous field observations by Sperduto, data from NHNHB and MENAP, and new field work during the project were all useful collateral data in helping establish or validate relationships.

NH Wildlife Action Plan Habitat Maps: These habitat maps apply only to NH. They were used for the WMNF portion of the Service Area where NRCS soil types were not mapped, and selectively for certain wetland and upland patch communities.

On the WMNF: The matrix forest types used in the WAP correspond closely to the upland natural community groups used in this study. We modified the mapped extent of certain WAP types in the service area to better reflect local variation in the landscape. For example, lowland spruce – fir forest habitat type in the WAP appears to be over-predicted in the service area: mapped occurrences on steep mountain slopes above 2,000 feet elevation are more likely high-elevation spruce fir and therefore more applicable to our Spruce-Fir map unit. Also, WAP lowland spruce – fir forests at low elevation (below 2,000 feet) are better classified as Hemlock – Spruce & Lowland Spruce – Fir due abundance of hemlock. Most of the WAP Hemlock – Hardwood – Pine forest habitat units were a good fit for the USVLT "Hemlock – Hardwood – Pine & Northern Hardwoods" type. WAP Northern hardwood – conifer forests on the WMNF were generally hardwood dominated. We concluded that most of these areas are a good fit for a Northern Hardwoods category (rather than the mixed "Hemlock – Hardwood – Pine and Northern Hardwoods type) due to the low abundance of white pine and red oak in most WMNF locations beyond the large lowland valleys.

On and Off the WMNF: We adapted WAP Peatland and Marsh categories to appropriate USVLT Bog, Fen>Marsh, or Swamp categories. See National Wetlands Inventory (NWI) inset box below for code key.

- WAP Peatlands category prevailed when they overlapped with WAP Marsh polygons.
- WAP Peatlands with FO4 in the NWI code were reassigned to Poor Swamp type (WAP Peatlands do not include FO1 codes).
- WAP Peatlands with EM, SS, Ba, or no NWI codes were assigned to Fen > Marsh type. Many of these were examined manually using air photos and when appropriate changed to Fen or Bog categories (see desktop scanning).
- WAP Marshes that did not overlap with WAP Peatland polygons were assigned to the Drainage Marsh type when they contained the following codes: EM, SS, UB, FO5 and combinations of those codes.

WAP Rocky Ridges were used to fill in the location of Rocky Ridges in the WMNF where no soils data exists. WAP rocky ridge predictions were based in part on Heritage data and certain TNC ELU categories.

WAP Grasslands habitats were used to derive locations of Farmland and Other Openings in NH. Many of these clearings were added to the WAP model through the NH Landcover assessment. These were extensively refined manually via air photo interpretation (see "Refinement" below).

Landcover: State landcover assessments were used to derive locations of developed land in New Hampshire (2001 NH Landcover Assessment) and in Maine (2004 MELCD). In Maine, where WAP data on Grassland habitat were not available, landcover data were used to identify the location of farmland and other openings. Both development and farmland and other opening coverages derived from landcover assessments were comprehensively augmented and refined based on a thorough manual review of the most recent aerial photography available (see "Refinement" below).

National Wetlands Inventory: NWI delineations reveal relatively small wetlands not picked up by NRCS soil mapping, and open wetlands and swamps not delineated within the WAP habitat mapping scheme. We identified all NWI wetlands that did not intersect with a wetland natural community group polygon derived from NRCS data (Fen, Bog, Poor Swamp, etc) and assigned them to a wetland type based on the NWI attributes.

Major NWI Codes

FO (forested); EM (emergent); SS (scrub-shrub); UB (open water with unconsolidated bottom); B (saturated); a (acidic); 1 (deciduous); 3 (evergreen); 4 (coniferous); 5 (dead trees).

A full listing of NWI codes is available on-line at http://137.227.242.85/Data/interpreters/wetlands.aspx.

- Wetlands with Ba codes were categorized as Bogs.
- Small, isolated wetlands (i.e., not connected to other wetlands by an apparent stream): SS or EM codes were categorized as "Undifferentiated Isolated Basin Wetlands". Many of these are very small and may variously be vernal pools, Fens, Bogs, Marshes, and shrub swamps, or combinations of these types. Isolated FO1 and FO4 wetlands were typed as Poor Swamps.
- Connected wetlands (with an outlet stream), semi-isolated (no inlet stream), with SS codes were typed as Fens (if air photo signatures were consistent with fens).
- Connected wetlands (with inlet and outlet streams) were assigned to the following categories: FO1 and FO1/4 = Semi-rich to Rich Swamps; FO4 and FO4/1 = Poor Swamp; EM and semi-forested (e.g., FO1/EM) were typed as Drainage Marshes.
- Wetlands with PUB codes were categorized as Aquatic.
- R3 codes were typed as River Channels.

TNC Ecological Land Units: TNC Ecological Land Units (ELUs) classify the landscape according to physical landscape position and topography, such as slope crests, steep side slopes, toe slopes, and dry or wet flats. In most landscapes, these settings are often important physical factors affecting biological patterns. Integrating the predictive power of ELUs with NRCS soil mapping and other data would be a worthy endeavor, but was beyond the scope of this project. There are pros and cons to both units, but ultimately we felt that the level of mapping detail and data on texture and drainage class embedded in soils maps were most appropriate for mapping community patterns, given the local scale that we are working with. However, ELUs do pick up some fine-scale features usually missed by soil maps that are of potential conservation significance. We selected two ELUs in particular: cliffs and coves. Cliff ELUs are very steep slopes that support or potentially support cliffs (steep rock outcrops). Coves (or draws) are concave landscape settings where sediments and organic matter tend to accumulate over time, such as the bases of steep slopes, ravines, or sloped drainage-ways. These conditions can support nutrient-enriched, productive hardwood forests (Semi-rich to Rich Woods).

Direct Field Observations: Natural community group boundaries based on soil and other data were confirmed or modified based on map data from NHNHB and MENAP, Engstrom (1998), and personal observation by the lead author. In general, predictions made based on soils and other primary model data were consistent with the types indicated by Heritage data. We made individual decisions concerning which boundaries to adopt: some are based on the Heritage delineations, others on soil map units, and still others based on interpretation of air photos in concert with one or both of the other layers. The objective was not to revise the extent of an exemplary community (when present), but to map the full extent of a community or system to be consistent with the USVLT natural community group map units, regardless of its status as exemplary or not.

Refinement: We scanned the initial natural community map of the entire service area using 2009 NAIP color and 1990s USGS B&W aerial photographs. This was done at a scale of 1:24k or finer. We looked for gross mismatches and disagreements in terms of expected air photo signatures, and correspondence with expected types as depicted in collateral layers (NWI, WAP habitat maps, Heritage data, etc). For example, a wetland mapped as Poor Swamp that exhibited extensive areas of non-forested wetland was retyped to an appropriate open wetland group (i.e., Bog or Fen, depending on signature and zonation pattern). As mentioned above, special care was taken to capture development and/or small scale maintained openings not captured by landcover and WAP. Sand and gravel bars (typed as River Channels) were individually delineated along the course of the Saco and lower Swift Rivers. Those along the Saco are considered of conservation significance because of their potential to contain the globally rare hudsonia - silverling river channel community, whose entire global distribution occurs within the service area. River channel bars and shelves are dynamic and can be expected to shift location over time.

Following the initial desktop scan of the natural community map, we made two-hundred fifty field observations within the service area to check correspondence with natural community group map units. The main focus of this work were the patch types: swamps, bogs, fens, marshes, floodplain forests and patch forest types, such as Pitch/Mixed Pine Plains and Semi-rich to Rich Woods. Many incidental observations of matrix forest areas were also noted

A final round of desktop scanning was performed to make local and service area-wide adjustments indicated by field observations. These observations provided a good basis to confirm initial interpretations of air photo signatures to natural community group; refining the list of probable communities associated with a map unit; adjusting the final map unit names to reflect on the ground patterns; and combining or segregating some of the categories based on similarities or differences seen in the landscape.

Despite these efforts, the natural community map is a first iteration and mismatches between map units and observations on the ground can be expected. There are inherent scale and accuracy limitations based on the source accuracy and scale, and the strength of and confidence in the relationships.

1.2 Co-occurrence Analysis and Resource Data Model

Selected Input layers and Their Scoring Schemes

The USVLT Resource Inventory committee drafted a list of resource categories and layers to consider for inclusion in the co-occurrence analysis. We gathered all possible data related to these categories from existing sources, and where necessary, processed data layers to derive novel input layers (e.g. natural community groups, riparian buffers, undeveloped shores, etc). The full list of resource layers were narrowed based on considerations such as geographic coverage, redundancy with other layers, and degree of comprehensiveness or evenness of data. The Resource Committee met numerous times (with and without the consultants) to derive a scoring scheme for each input layer to be used (Table 2). Input

was collected from the consultants and other natural resource professionals that advised the Resource Committee, including Dave Publicover and Tony Federer.

Table 2. USVLT NRI Data Model Resource Input Layer Scoring Scheme

INPUT LAYER	INTRA-LAYER SCORING SCALE	BUFFER	SCORE
Water Resources			
Aquifers	None	None	**6**
Riparian Zones	Stream Order Order 1-2 Order 3-4 Order 5+	 100 feet 300 feet 600 feet	 **10** **7** **7**
Non-forested Wetlands	None	100 feet	**10**
Great Ponds (>10 acres)	None	300 feet	**10**
Forest Resources			
Unfragmented Forest Blocks	Size 100 - 200 acres 200 - 500 acres 500 - 1000 acres 1,000 – 2,500 acres 2,500 - 5,000 acres >5,000 acres	None	 **4** **5** **7** **8** **9** **10**
Productive Forest Soils	Based on productivity ranking of natural community groups	None	See details in Table 4
Natural Communities, Wildlife Habitat, and Rare Species			
Natural Community & Wildlife Habitat Map	Community Type *27 Natural Community Groups*		See Table 3
Exemplary Natural Communities	Biodiversity Prioritization Scheme Globally Rare Regionally Rare/Restricted State High Priority State Other Priority		 **10** **10** **8** **6**
Rare Plants and Animals	Biodiversity Prioritization Scheme Globally Rare Regionally Rare/Restricted	300 feet	 **10** **10**

	State High Priority State Other Priority		**8** **6**
Important Bird Areas	None	None	**6**
Eastern Brook Trout Habitat (headwater stream order 1&2 riparian zones)	none	100 feet	**5**
Agriculture			
Farmland Soils	Prime Farmland Soils	None	**10**
Farmland and Other Openings	None	None	**6**

Natural Community Group Scores

Natural community groups were scored based on a composite rank for each group, considering approximate average state and global rarity of component communities (as ranked by NHNHB and MENAP programs), and modified by distribution patterns in the Saco Valley. Precise ranking is not possible because the distribution and abundance of individual communities is not known, and because ranks of communities vary somewhat between states. Instead, we considered the approximate average state rarity ranks (state "S" ranks) for component communities know to occur within the natural community groups, global rarity ranks, and the distribution/abundance patterns within the service area. It is important to acknowledge that individual examples of communities in a map unit vary considerably in ecological condition from one location to another. To an extent this is considered in the Ecological Integrity Score adjustments in the next section, but ultimately field surveys are needed to confirm both type and condition.

Table 3. Scoring Scheme for Natural Community Groups. Scores range from 2 to 18 at even number intervals. Each major rank differed by 4 points: S5 (demonstrably secure) = 2 points; S4 (apparently secure) = 6 points; S3 (uncommon) = 10 points; S2 (rare/imperiled) = 14 points; and S1 (very rare/critically imperiled) = 18 points. Intermediate ranks represent intermediate values (for example, S2S3 = 12 points). When some to many of the communities in the group are globally rare (ranked between G1-G3, and indicated by an * on the name below), the rank of the group was boosted by 2-4 units. For example, scores for Subalpine and Floodplain Forests groups were boosted from 18 and 16, respectively, to a max score of 20.

Natural Community Group *indicates groups with regionally to globally rare communities	**Composite Rank for Group**	**Score**
ROCKY GROUND		
• **Subalpine***	S1	20
• **Rocky Ridge**	S3	10
• **Cliff**	S3S4	8
• **Talus**	S3	10
FORESTS		

Forests mostly on WMNF:		
• **Spruce – Fir**	S3S4	8
• **Northern Hardwoods**	S4S5	6
• **Hemlock – Spruce & Lowland Spruce – Fir**	S3	10
• **Semi-rich to Rich Woods**	S3	10
Forests mostly outside WMNF/low elev mtn valleys:		
• **Hemlock - Hardwood - Pine & Northern Hardwood Forests**	S5	2
• **Rocky Oak – Hardwood - Spruce**	S3S4	8
• **Pitch/Mixed Pine Plains***	S2 or S2S3	16
SWAMPS		
• **Poor Swamps**	S2S3	12
• **Semi-Rich to Rich Swamp**	S4	6
FLOODPLAINS and RIVER CHANNELS		
• **River Channel***	S2S3	16
• **Floodplain Forest***	S1S2	20
• **Threaded River Floodplain & Terrace***	S1S2	20
• **Minor River Floodplain or Swamp**	S3	10
OPEN WETLANDS		
• **Fen > Marsh**	S4 (S3S4)	8
• **Fen**	S3S4	8
• **Bog**	S2S3	12
• **Drainage Marsh**	S4S5	4
• **Sand Plain Basin/Pond Shore Marsh**	S1S2	20
• **Isolated Basin Wetland - Undifferentiated**	S4S5	4
AQUATIC		
Aquatic	S4S5	4

Exemplary Natural Community and Rare Species Scores

Data were provided by the NHNHB, MENAP, and MEDIFW. Exemplary natural communities (including systems or ecosystems of natural communities) represent the best or only known examples of natural communities documented in each state. These include most examples of rare types, and the largest or most intact examples of common types.

Each community and rare species is ranked according to global and state rarity [G and S ranks, one (very rare) through five (very common). Combination ranks are possible. Many occurrences ("element occurrences" or EOs) are also ranked according to quality. Quality is a combined measure of natural community or population size, ecological condition, and ecological integrity of the surrounding area, ranging from Excellent quality (A-ranked) to Poor quality (D-ranked). The spectrum of rarity and quality rank combinations is large, particularly since intermediate ranks are common. To make the variety of

rank combinations more interpretable and manageable, we devised a relatively straightforward scheme to group the occurrences ("element occurrences" or EOs) into one of five categories, four of which were scored within the model.

Priority 1 (Global Priorities) – 10 points

- A+B ranked G1 to G3 EOs

Priority 2 (Regional Priorities) – 10 points

- C ranked G1 to G3s and unranked G1 to G3 animals; BC + unranked G3G4
- New England Rare Species (Division 2 and 3 species as listed in the New England Plant Conservation Program List of Species in Need of Conservation
- A+B ranked G4s (including BC ranks) and other regionally restricted natural communities (those with narrow continental-scale distributions, such as subalpine, mixed pine – red oak forests, and sugar maple and silver maple floodplain forests)
- Unranked G4S1s

Priority 3 (State High Priority) – 8 points

- All other A ranked EOs (AB G4 to G5s, A+B ranked S1 and S2 NCs)
- D-ranked G1 to G3s or regionally restricted
- Unranked G4s (S2 to S5); C/CD/D ranked G4s or G3G4s (or regionally restricted)
- B ranked G5 S1s and S2s; unranked G5S1s

Priority 4 (State Other Priority) – 6 points

- B, C, or CD ranked S2s
- Any tracked, extant G4G5 or G5 species (including special concern wildlife)
- Any exemplary NC (including historic EOs)
- Best two examples in Service Area of each community type or species not represented in a higher category were bumped to Priority 3 (only a few occurrences fell into this category)

Priority 5 – Did not include

- General precision (town-level), minutes precision EOs
- Historic EOs

Special Cases: Element occurrences identified as "Sensitive Species" in New Hampshire were handled differently, as we only received randomly shifted locations buffered by a large area, obscuring precise locations. We decided to multiply the appropriate score for the occurrence (based on priorities above) by 1/4, and applied this score across the buffered area.

Forest Productivity Scores

Forest productivity refers to the rate at which biomass is produced on a site. As applied in Important Forest Soil Groups (IFSGs) in soil mapping in New Hampshire, it refers to the capacity of a soil to produce quality timber. Forest productivity was incorporated into the model based on relationships between natural community groups and IFSGs in NH. This allowed us to apply score adjustments across the service area into Maine where IFSGs are not available (Table 4). IFSGs are described in the section following Table 4.

The main limitation to our work-around to the issue of not having IFSGs in Maine is that some natural community groups associated with productive forest soils also include minority-area inclusions of soils with steep slope, rockiness, or erosion potential (category IIA, see below). As such, we valued these inclusions similarly to areas without these limitations. The IIA inclusions (generally <10% of certain natural community groups) are often just as productive as IA or IB soils, but they impose cost or time-of-year harvesting limitations. That said, forest productivity is important for reasons other than economic: productive forests, regardless of slope or access limitations, contribute to forest health, biological productivity and diversity of constituent species, and carbon sequestration important in mitigating climate change. Thus, from an ecological perspective, the valuation of IIA soils similarly to other productive soils in a natural community group is acceptable.

Scoring Rationale

Both IA and IB are the two most productive soil groups for hardwoods, the former being on average only slightly more productive than the latter. Since they are so similar, we used a single combined ranking of 10 for natural communities groups dominated by one or both of these types (Hemlock – Hardwood – Pine & Northern Hardwood Forests, and Floodplain Forests). Group IC soils are the most productive for softwoods, which correspond closely to the Pitch/Mixed Pine Plains type. Group IIA soils (which are generally productive soils with harvesting limitations such as rockiness or steep slopes), are scattered among various forest natural community groups (generally <10%). Not surprisingly, group IIA soils correspond to 54% of the Rocky Oak – Hardwood – Spruce areas, and this group was down-weighted accordingly.

Only small score increases were recommended for forested swamps and minor river floodplain and swamp natural communities. Other groups have low or no value as productive forest soils.

Table 4. Forest Productivity Scores by Natural Community Group and their corresponding rationale.

NatComGroup	Assigned points	Dominant Important Forest Soil Group	Notes (Percents refer to % of the natural community group that corresponds to the various Important Forest Soil groups (*in non-WMNF NH portions of the service area only*)
Forests/Wooded Uplands			
Hemlock - Hardwood - Pine & Northern Hardwood Forests	10	IA & IB	89% of this natural community group corresponds to types IA or IB soils; 9% to IIA. This NC covers half of the service area in NH outside the WMNF.
Semi-rich to Rich Woods	10	IA	95% is type IA
Northern Hardwoods	10	IA & IB	Only on WMNF, although this type should correspond well to type 1A & 1B soils.
Pitch/Mixed Pine Plains	6	IC	85% are type IC; 15% in type IIA (steep slopes)
Rocky Oak – Hardwood - Spruce	5	IB & IIA	45% are IB soils, 54% are IIA. Score is intermediate between Dave Publicover's suggested scores for these two types.
Hemlock – Spruce & Lowland Spruce – Fir	4	Probably mostly IC and IIB	Only small areas of this type are mapped outside the WMNF in NH. However, based on soil-natural community relationships in Coos County (Sperduto, in 2005 NHB CT Lakes report) these communities are generally reasonably productive softwood sites in lowland landscapes consisting of complex mosaics of IC soils and IIB soils.
Spruce – Fir	2	Probably mostly IIA	Most of these areas are on slopes and at higher elevations in the WMNF, where access, slope, and soil erosion limitations are common.
Rocky Ridge	1	IIA & NC	44% IIA, 56% NC
Forested Floodplains and Wetlands			
Floodplain Forest	8	IA & IB	67% IA & IB; 33% IIB (poorly drained). Poorly drained floodplain soils are probably more productive than most swamps.
Threaded River Floodplain & Terrace	8	IA & IB	86% IA & IB; 14% IIB (poorly drained)
Minor River Floodplain or Swamp	2	IIB	87% IIB (poorly drained); 13% IA or IB
Semi-Rich to Rich Swamp	2	IIB	98% IIB
Poor Swamps	2	IIB	90% IIB; 9% NC
Non-Forested types			
Aquatic, Fen, Bog, Drainage Marsh, Fen > Marsh, Isolated Basin Wetland – Undifferentiated, Sandplain Basin/Pond Shore Marsh, Gravel Pit/Sand Pit, Farmland and Other Openings, Subalpine, Cliff/Talus, River Channel, Early Successional Thicket, Developed, Gravel Pit/Sand Pit	0	NC, various soils, or embedded in various soils	All of these types are not wooded or are only sparsely wooded

Important Forest Soil Groups in New Hampshire

The following descriptions draw from NRCS descriptions available in Good Forestry in the Granite State (http://extension.unh.edu/goodforestry/html/app-soils.htm) and descriptions specific to Coos County (http://www.wildlife.state.nh.us/Wildlife/CT_Lakes/Appendix_F_IFSG.pdf).

IA: Deep, loamy textured, moderately well and well drained soils. Successional stands with beech, sugar maple, red maple, birches, aspen, white ash, red oak, spruce, white pine, and hemlock. Successional trends towards tolerant hardwoods, i.e. sugar maple and beech.

IB: Sandy or loamy over sandy textures and slightly less fertile than IA. Similar composition in successional stands to IA, with successional trends towards tolerant hardwoods, particularly beech.

IC: Outwash sands and gravels, excessively to moderately well drained, somewhat draughty and less fertile soils. More suited to softwoods, such as pine, spruce, and fir. Because these soils are highly responsive to softwood production, especially white pine, and occur in accessible, mostly flat lowland landscape positions, they are ideally suited to forest management.

IIA: Contain many of the same soils as in IA and IB. Although soils are still productive, they are separated in the IFSG classification scheme because forest management activities (planting, thinning, harvesting) may be more difficult or costly due to steep slopes, outcrops, erosive textures, surface boulders, or extreme rockiness.

IIB: Poorly drained soils, with generally lower productivity than other groups, with successional trends toward shade tolerant softwoods or red maple. Forest management somewhat limited due to factors such as windthrow hazard, and harvesting generally restricted to frozen ground conditions.

SCORING ADJUSTMENTS BASED ON ECOLOGICAL INTEGRITY ANALYSIS

Ecological integrity can be thought of as the quality or health of an ecosystem. It is a combined measure of the health, diversity, and viability of a natural community (or larger system of communities) and the degree to which its structure, composition, and function compare with reference examples.

We constructed an Ecological Integrity Analysis (EIA) of the service area as a means to adjust scores of certain biological resource data layers. The first step of EIA involved constructing an ecological integrity map of the service area. Since we lack detailed field based assessments of ecological integrity across the service area, we calculated estimated integrity remotely using GIS as a surrogate. We divided the area into a series of zones based on location and buffer distances from roads, development, and maintained openings, and size of un-fragmented blocks. We used these zones to approximate ecological integrity and to scale appropriate adjustments to scores of features in several input layers, including natural communities, rare species, great pond shorelines, and riparian zones.

In short, we reduced polygon scores for the selected input layer features when they occurred in or near development, made no adjustments if they occurred in relatively small unfragmented blocks, and

boosted their scores when they occurred in medium to large un-fragmented blocks (Table 5). We also increased the scores for the large or very large examples of natural communities and long stretches of great pond shorelines, and reduced the scores for small or short examples (no adjustments for medium sized examples).

EIA Methodology

The approach we use here draws heavily on the core elements of the EIA methodology produced by NatureServe (Faber-Langendoen et. al., 2009, available upon request). This methodology was funded by the EPA, and evolved from similar approaches applied by Natural Heritage programs internationally to rank the quality of natural communities and ecological systems.

The EIA methodology can be applied at three different scales, depending on purpose and level of information available. The two most detailed levels of the EIA methods (Level 2 and Level 3) are field-based methods, and are not appropriate to a desktop exercise. We approximated a Level 1 EIA by using GIS layers and data attributes compiled during the project.

We used two primary inputs to assess natural community quality and adjust scores correspondingly: the **size** of each community group polygon, and the surrounding **landscape context**. These are discussed in more detail below. **Ecological condition** is a third aspect used in ranking the overall quality of a community, however, on-the-ground field surveys are generally required to assess condition. Condition refers to the development or maturity of communities, degree of integrity of ecological processes, species composition compared to reference conditions, biological and physical structures present, and abiotic physical factors within the occurrence. For example, old growth forests represent an intact ecological condition. Since this information is not available across the service area from remote GIS sources, we leaned on characteristics of the immediate and larger surrounding landscape as a combined surrogate for both landscape context and condition.

Size

Size is a straightforward but extremely useful predictor of biological function and diversity of a natural community (or any habitat or ecological system). Size is a quantitative measure of area occupied by a natural community (or group or system of natural communities). All else being equal, the larger a natural community or habitat is, the more diverse and viable it will be. Large size is correlated with increased heterogeneity of internal environmental conditions, integrity of ecological processes, species richness, and increased resistance to and resilience in response to disturbance and other perturbations. It is also associated with population size and area of constituent species, and their respective fluctuation, density, and viability.

Landscape context

Landscape context refers to the characteristics of the area in and around each community (or larger system of communities and habitats) which affect its long-term condition and function. Landscape context is a combined measure of (a) the quality and extent of landscape structure (including genetic connectivity of populations), and (b) the condition of the surrounding landscape that influences the occurrence's condition and viability. Thus, a community surrounded by a large intact landscape will tend

to be more viable because it is buffered from ecosystem stressors, is likely to be more diverse, and will contain more dynamic ecosystem processes that sustain diversity. As habitats or landscapes become smaller and more fragmented, they become more vulnerable to changes and influences from beyond their borders, such as pollution, invasive species, altered wildlife movement patterns, isolation from patches of similar types and populations of constituent species, trampling by humans, or harassment of wildlife by domestic animals.

The importance of landscape context can be illustrated by the following example. Consider a population of a rare orchid growing in a bog that has a highway running along one border. The population may be large and apparently healthy (large *size* and intact *condition*), but the long-term threats posed by disturbance at the bog's edge – its low-quality *landscape context* (pollution from cars and roads, road-fill, garbage, altered hydrology, invasive species, reduced seed dispersal, etc.) – may diminish the population's long-term viability. Such a population of orchids would receive a lower rank than a population of equal *size* and *condition* in a bog completely surrounded by a forest (i.e., with a higher quality *landscape context*).We inferred landscape context based on proximity to development and agriculture, un-fragmented block size, and broad type of natural community (e.g., wetland, floodplain, upland). The stressors known to degrade natural systems (pollution, invasive plants, modified hydrology, agriculture, etc) are largely associated with developed and fragmented areas, or proximity to these features. As such, landscape condition is weighted towards the immediate 30-300 m (100-1000') buffer area around the natural community where direct impacts of land use may be most significant. The adjacent area beyond this buffer area is also considered. The current NatureServe EIA methodology uses two broad scales: a 1km2 and 10 km2 area around the natural community or system.

EIA Map Zones and Buffers

The following layers and buffer zones were used to infer a range of ecological integrity across the landscape. These layers represent independent (non-overlapping) zones. The first four zones represent relatively close proximity to stressors and exert proportionally more negative influence on ecological integrity in the NatureServe EIA and Natural Heritage ranking methodologies, as well as deductions applied in this exercise.

1. Core development: This development layer is based on satellite derived development as depicted in the landcover datasets available for Maine and New Hampshire. It was modified using the most recent aerial photography available (NAIP 2009) to reflect more accurate boundary delineations, capture areas missed by satellite detection, and include more recent development. Natural communities and all model input layers in this zone receive a 100% score deduction (score reduced to zero).

2. Secondary development: This includes 3 types of components, which for the purposes of the EIA are treated and scored the same, receiving a significant score deduction:

    a. Buffers were placed around most roads open to regular traffic with apparent signs of human habitation. In order to provide the best available information, a variety of data sources were compiled and compared to aerial photography. Sources included State

Department of Transportation Agencies, the USGS roads layer, Emergency 911 road networks, and a classified road layer custom built by Larry Garland over the last 12 years, based partly on first-hand knowledge. Peter Ellis also improved the road layer considerably with hand delineations of roads apparent from aerial photography. Most roads are buffered 500 feet to best capture the distribution of human habitation along the road corridor. Some smaller roads are buffered 250 feet.

b. 250-foot buffers were placed around core development.

c. Independently hand-delineated areas of "low-intensity development" not captured by satellite because of more scattered distribution of habitation interspersed with vegetation.

3. Maintained opening buffers (farmland and other openings): A 250 foot buffer was generated around maintained openings, including farmland (agricultural fields) and other openings, and gravel pits. For the purpose of the EIA, clearings and clearing buffers coincident with road or development buffers were excluded from the scoring process (counted as road and development buffers). Although agriculture has intrinsic value in the co-occurrence model as an independent feature, it is also represents a stressor to ecological systems (e.g. as source of invasive species, fertilizer runoff, etc). The degree of impact to surrounding natural areas depends considerably on the type of management practiced. We used a uniform, modest score deduction for all areas (assumed an intermediate value based on deductions used in NatureServe EIA methods).

4. 500 to 1000 foot road buffer and unfragmented blocks less than 100 acres: This buffer zone represents largely undeveloped areas around development and agriculture, but still within a zone of influence emphasized by Natural Heritage program ranking methods. It received no negative scoring influence.

5. Un-fragmented blocks: NatureServe EIA evaluates ecological integrity at two broad scales – a 1km2 "core" area and a 10km2 "supporting landscape" area. Most natural community polygons in a medium sized block will be surrounded by at least a 1km2 area, and most in large or extra large blocks will be surrounded by at least 10km2. These areas also correspond to 1,000 and 5,000 acre cutoffs used in various evaluations of forest system functionality and priorities. In this study, we use the following unfragmented block size classes, which roughly approximate the ones used by NatureServe and other conservation groups (i.e. TNC) and agencies (NH F&G, NHNHB):

a. Small - 100 – 200 acres (~0.5 – 1km2)

b. Medium - 200-1000 acres (~1-5km2)

c. Large 1000 – 5000 acres (~5-20km2)

d. Extra large > 5000 acres (>20km2)

We allowed size and landscape context (presence in an unfragmented block) to each exert up to 25-40% influence on the score of the community, which is consistent with ranges typically applied by NatureServe/Heritage programs.

Input Layer Adjustments

Ecological integrity score adjustments are summarized in Table 5. Specific size range breakdowns for A, B, C, and D ranked sizes are provided in Table 6. Size is used in a relative sense with respect to the range of sizes exhibited by the particular natural community group. Four broad size classes are determined for each group (A through D) based on the statewide and service area distributions of sizes for the natural community group. A-rank sizes are the largest and most viable, typically constituting about 5-10% of known occurrences. D-ranked sizes are the smallest and potentially least viable, often corresponding to 20-50% of the occurrences in the landscape. The size rank cutoffs for each natural community group are provided in Table 6.

The cutoffs we devised considered natural heritage size rank cutoffs for corresponding communities and systems, but they were adjusted to reflect several USVLT project-level considerations. For example, the natural community groups are typically combinations (or systems) of several natural community types. In addition, the sizes of polygons in some cases are artifacts of the methods or sources used. Finally, the tendency for polygons to occur independently or as clusters was considered. For example, certain types such as Floodplain Forests and Pitch/Mixed Pine Plains are highly clustered along riparian corridors. In these cases, the cutoffs for smaller size classes were adjusted to avoid penalizing relatively small but proximal patches of communities in an undesirable way.

Natural Communities were adjusted independently within three broad categories based on similarities in ecological function and vulnerability to stressors:

1) Wetlands, including aquatic, floodplains, and river channels

2) Patch upland natural community groups, which typically range from tens to hundreds or thousands of acres in size

3) Matrix upland forest natural community groups, which collectively cover tens to hundreds of thousands of acres

Wetlands are more vulnerable to stressors associated with development or agriculture than upland groups, and were therefore adjusted proportionally more in buffer zones proximal to development and agriculture.

No direct size adjustments were made to matrix natural community group polygons (such as “Hemlock – Hardwood – Pine & Northern Hardwood Forest”) for several reasons. There is an extreme range of sizes among matrix type polygons, ranging from 0.1 acres to more than 10,000 acres, largely an artifact of the original mapping methods. Also, there is more overlap of specific communities among the matrix type groups than among other groups. Finally, type of buffer zone or collective size of the un-fragmented block seemed to be an appropriate and more meaningful way of evaluating functionality of upland

matrix forest systems collectively. As such, we adjusted matrix forest scores according to the corresponding landscape context category.

Other Co-occurrence Input Layers: Scores for **great pond shorelines** and **riparian zones** were also adjusted based on location. Size was not used for riparian zones as they are continuous, linear features with essentially negligible area (without their buffers). Shorelines are also linear, but they are discontinuous and independent of one another, unlike riparian zones. As such, we prioritized longer shorelines (=larger polygons) over shorter ones. We decided not to adjust **non-forested wetland** scores because these areas are already adjusted for by means of the natural community group they overlapped with. We didn't make adjustments to **aquifers** because they are a continuous underground feature with essentially equal value everywhere, even though stressors can vary from place to place.

Rare Species and Exemplary Natural Communities: Size, condition, and landscape context are already factored into the EO scores via the ranks applied by the Heritage programs. We considered the adjustments to natural community group boundaries adequate for the exemplary natural communities, since they generally correspond to these boundaries. However, we did adjust landscape context scores for rare species because they do not always correspond to community boundaries. The magnitude of adjustment is lower than other layers to reflect partial integration of quality into the scores (generally affects the beginning scores by up to 2 points).

Table 5. Summary of Ecological Integrity Score Adjustments to Input Layers. Numbers indicate the percent change to beginning base score. This results in proportional rather than absolute changes to scores. For example, a+20% adjustment would result in adding 1 point to a beginning score of 5 and 2 pts to a beginning score of 10. Each natural community group or other input layer receives only one adjustment for size and one for Landscape Context, depending on which zone or category it falls in. In cases where a polygon crosses a zone line, the scores of the two segments were adjusted independently.

OTHER INPUT LAYERS				**NATURAL COMMUNITY GROUP LAYER**		
Buffer or Unfragmented Block Size Category	**Great Pond Shorelines**	**Riparian Zones**	**Rare species**	**Wetlands (including Aquatic, Floodplain Forests, and River Channels)**	**Patch Uplands (i.e., Rocky Ridges)**	**Matrix Forest Uplands**
SIZE						
A	+40%	0	0	+40%	+40%	0
B	+20	0	0	+20	+20	0
C	0	0	0	0	0	0
D	-25	0	0	-25	-25	0
LANDSCAPE CONTEXT						
Core Development	-100	-100	-100	-100	-100	-100
Secondary Development	-50	-50	-20	-50	-25	-25
Core clearing/gravel pit areas	-40	-40	0	0	Not Applicable	Not Applicable
250’ Farmland and Other Openings/gravel pit buffer	-25	-25	-10	-25	-15	-15
500-1000 ft. buffer	-10	-10	0	-10	-10	-10
Unfrag – 100-200ac	0	0	0	0	0	0
Unfrag – 200-1000ac	+20	+20	+10	+20	+20	+20
Unfrag – 1000-5000	+30	+30	+20	+30	+30	+40
Unfrag > 5000ac	+40	+40	+20	+40	+40	+60

Table 6. Summary of Size Class Ranges for Relevant Model Input Layers.

Model Input Layers		Size Class Ranges (Acres)	Size Class
Non-Forested Wetlands		>150	A
		100-150	B
		10-100	C
		<10	D
Great Pond Shorelines		>200	A
		50-200	B
		30-50	C
		<30	D
Natural Community Groups			
	Subalpine	>25	A
	Subalpine	5-25	B
	Subalpine	1-5	C
	Subalpine	<1	D
	Rocky Ridge	>100	A
	Rocky Ridge	20-100	B
	Rocky Ridge	1-20	C
	Rocky Ridge	<1	D
	Cliff	>20	A
	Cliff	5-20	B
	Cliff	1-5	C
	Cliff	<1	D
	Talus	No adjustment for size	C
	Spruce – Fir	No adjustment	
	Hemlock – Spruce & Lowland Spruce – Fir	No adjustment	
	Hemlock - Hardwood - Pine & Northern Hardwood Forests	No adjustment	
	Northern Hardwoods	No adjustment	
	Rocky Oak – Hardwood - Spruce	No adjustment	
	Pitch/Mixed Pine Plains	>100	A
	Pitch/Mixed Pine Plains	25-100	B
	Pitch/Mixed Pine Plains	5-25	C
	Pitch/Mixed Pine Plains	<5	D
	Semi-rich to Rich Woods	>100	A
	Semi-rich to Rich Woods	10-100	B
	Semi-rich to Rich Woods	1-10	C
	Semi-rich to Rich Woods	<1	D
	Fen > Marsh	>50	A
	Fen > Marsh	10-50	B
	Fen > Marsh	5-10	C
	Fen > Marsh	<5	D
	Bog	>15	A
	Bog	5-15	B
	Bog	1-5 acres	C
	Bog	<1	D

Fen	>50	A
Fen	10-50	B
Fen	5-10	C
Fen	<5	D
Semi-Rich to Rich Swamp	>50	A
Semi-Rich to Rich Swamp	20-50	B
Semi-Rich to Rich Swamp	1-20	C
Semi-Rich to Rich Swamp	<1	D
Poor Swamps	>50	A
Poor Swamps	10-50	B
Poor Swamps	1-10	C
Poor Swamps	<1	D
Isolated Basin Wetland - Undifferentiated	No adjustment for size	C
Drainage Marsh	>100	A
Drainage Marsh	20-100	B
Drainage Marsh	5-20	C
Drainage Marsh	<5	D
Sand Plain Basin/Pond Shore Marsh	>10	A
Sand Plain Basin/Pond Shore Marsh	6-10	B
Sand Plain Basin/Pond Shore Marsh	1-6	C
Sand Plain Basin/Pond Shore Marsh	<1	D
Floodplain Forest	>30	A
Floodplain Forest	5-30	B
Floodplain Forest	0.5-5	C
Floodplain Forest	<0.5	D
Threaded River Floodplain & Terrace	>25	A
Threaded River Floodplain & Terrace	10-25	B
Threaded River Floodplain & Terrace	1-10	C
Threaded River Floodplain & Terrace	<1	D
Minor River Floodplain or Swamp	>30	A
Minor River Floodplain or Swamp	15-30	B
Minor River Floodplain or Swamp	1-15	C
Minor River Floodplain or Swamp	<1	D
River Channel	>10	A
River Channel	2-10	B
River Channel	0.5-2	C
River Channel	<0.5	D
Aquatic	>50	A
Aquatic	10-50	B
Aquatic	5-10	C
Aquatic	<5	D
Farmland and Other Openings	*No adjustment; scored separately*	
Early Successional Thicket	All polygons - no adjustment for size	
Developed	*"blacked out" - always score of zero*	
Gravel Pit/Sand Pit	All polygons - no adjustment for size	

Construction and Interpretation of the Co-occurrence Model in GIS

Once scoring was completed for all model input layers and ecological integrity map layers, layer scores were combined into a single USVLT Resource Data Model GIS layer (RDM) by using a succession of "unions." A union is an established geoprocessing tool in ArcGIS that effectively sums input layers by computing their geometric intersection. Care was taken during this union process to ensure that all scores and score adjustments for any input layer were preserved as a column in the resulting data model. EIA map layer score adjustments themselves could not yet be determined at this point (since the score adjustment is dependent on the coincidence of the EIA map element and the influenced input layer), but the location of EIA map elements is identified simply by a non-null attribute in the attribute table.

Once the unions were completed, EIA score adjustments could be made by using a series of selections to the RDM attribute table and creating new columns with relevant score adjustments. For example, to downgrade the scores of wetlands in the secondary development buffer, a selection was made to identify all the polygons where wetland scores were greater than zero, and secondary development is non-null. For these selected records, a score adjustment is calculated in a new column as -0.5 times the existing wetland score value (see -50% score adjustment as identified in Table 5 above). Once all score adjustments were calculated in their own columns, all input layer score columns and score adjustment columns were simply summed to generate a final model score.

Limitations and Future Adaptations of the Resource Data Model

The outcomes of the RDM are necessarily limited and constrained by a) the spectrum of data included and 2) the assignment of score values within the twelve input layers. The score assignments were based on an interpretation of how the data layers related to the USVLT mission using the collective professional judgment of both the consultants and the USVLT Resource Inventory Committee. The values do not represent the only possible quantification of or adaptation to USVLT's mission.

The model could be adapted and re-run by including new data layers, or by adjusting the score attributions within the original twelve data layers. Either of these possibilities would require technical familiarity with: a) working with ArcMap geodatabases in version 9.3 or higher; b) the structure of the geodatabase upon which this model was built (feature classes and sequence of calculations necessary); and c) various geoprocessing tools and GIS functions described in "Construction and Interpretation of the Co-occurrence Model in GIS" section (above), such as unions, selections, and formula calculations.

1.3 Focus Areas

The draft focus areas delineations were based on the outcomes of the Resource Data Model, as well as other conservation considerations relevant to the USVLT mission. They do not reflect input and priorities from local communities and other partners, which are a critical aspect of USVLT's mission. Furthermore, USVLT has not factored recreation or other cultural assets into the consideration of these

preliminary areas, which should reflect local values. Thus, the focus areas are a first step in a more comprehensive process, and do not represent the strategic priorities of the USVLT.

The intent of and hope for delineating preliminary focus areas here were two-fold: 1) to define and describe areas critical to the ecological and cultural features valued by USVLT and contained in this analysis; and 2) to serve as an starting point and catalyst for future dialogue between USVLT and its local partners.

APPROACH TO DELINEATION

The locations of focus areas were based on concentrations and proximity of high and medium Resource Data Model scores, unfragmented block size, and consideration of the individual resources present and their conservation requirements. Most of the focus areas contain high or higher value "core" areas as well as additional "supporting landscape" areas of potentially lower value. Supporting landscapes contribute to a more functional landscape of whole ecosystems, rather than just high value features isolated from their more integrated contexts. Supporting landscapes are needed to fully protect the included resources; for example, an upland buffer around aquifers and wetlands ensures protection from pollution, invasive species, or other perturbations. Any of the focus areas could be trimmed to include a tighter configuration around areas of specific value, or to include a smaller amount of supporting landscape. It is important to acknowledge that while drafting focus areas incorporates principles of conservation biology, there is also an unavoidable interpretive aspect to the process.

Delineations included three broad categories of focus areas, not necessarily in order of priority.

Type 1. The first type of draft focus areas consists of large areas or concentration zones of medium-high to high data model scores (the darkest orange categories in the map – see Appendix 2, Resource Data model map). Adjacent medium score areas are also included, and boundaries often extend to the bounding roads of the unfragmented block, including some lower value areas.

Type 2. The second type consists of large, unfragmented blocks outside WMNF, some of which contain relatively small or no high score areas, but often contain large medium data model score areas.

Type 3. The third type of area are generally smaller (often medium sized blocks), with smaller, isolated high-score areas or extensive medium to medium-high score areas. They reflect smaller, local landscapes surrounded by roads or development, and include some large agriculture areas or mixes of agriculture and natural areas. They contain relatively little supporting landscape compared the other two types.

Some areas are probably intermediate between two types. However, the main point of considering these categories is to reflect the different scales and driving inputs behind their delineation.

Acre-weighted average scores provide another means of comparing focus areas. These scores account for the acreage extent of component individual scores within a focus area (see results section 2.4 and Appendix 2 focus area map). We also identified the three input layers (referred to as Drivers 1, 2, and 3 in Table 10 in Section 2.3) that contributed the most to the average score of any given Focus Area

(accounting for area *and* score). They were generated by compiling all the model input scores for all polygons within any given focus area, multiplying those scores by acres, summing by input layer across polygons, and identifying those input layers with the three highest sums.

Some of the smaller focus areas actually have relatively high average scores, in part because there is less supporting landscape buffer, which might otherwise lower the average score.

The following considerations and caveats are useful to understanding what the draft focus areas do and do not represent.

- The delineation of draft focus areas did not presume an acreage cap or percentage limit of the service area. It simply reflects areas of high conservation value depicted in the resource inventory, and the supporting landscapes required to ensure their long term protection.

- Most areas were extended to bounding, major secondary roads; a few are bisected by relatively undeveloped or smaller dirt roads. In some cases, the boundaries extend across roads to ensure inclusion of farms or rural landscapes that characterize these areas. No attempt was made to delineate focus areas within the WMNF, although connections to the WMNF represent important linkages for species movements and large scale functional ecosystems spanning broad topographic and landscape gradients. Large, diverse conservation areas help maintain ecosystem resiliency in the face of climate change.

- Watershed and drainage patterns were considered in drawing buffers, as well as shape and configuration of the focus area, and connectivity to existing conservation lands.

- No direct prioritization scheme is presented for the full list of focus areas. The focus areas are, however, displayed on maps (see Appendix 2) according to their average acre-weighted scores to help grasp some of the differences. Prioritization and refinement of draft focus areas is anticipated based on the outcome of meetings with local communities and other partners, consideration of resource data not directly incorporated into the model, and other factors.

- Although rooted initially in the patterns of the resource data model, we believe the essence of "wild areas" is captured in many of these draft focus areas, particularly the large and diverse un-fragmented blocks with both hills and lowlands, as well as the pristine riverine areas.

- The delineation of draft focus areas did not consider other conservation priority schemes available within the service area, such as the NH F&G WAP priority areas, Maine's "Beginning With Habitat" maps, and Nature Conservancy eco-regional conservation plans. These efforts have varying degrees of geographic, data, and methodological overlap with the USVLT mission and this resource inventory. Ultimately, the USVLT Resource Inventory analysis is more specific to USVLT's mission, applicable across the entire service area, contains certain data and interpretations not available within these other efforts. That said, we strongly encourage USVLT

to consult these other studies as collateral and complimentary information. The independent derivation of the USVLT Resource Inventory should limit circularity and help USVLT identify and interpret differences and similarities among the conservation plans.

2.Results

2.1 Ecological Overview of Service Area

SETTING

The USVLT service area sits at the intersection of two major ecoregions: the White Mountain subsection of the New England-Adirondack Province of northern New England and New York; and the Sebago-Ossipee Hills and Plains subsection of the Eastern Broadleaf Forest Province (Keys and Carpenter 1995). The USVLT service area forms the headwater region of the Saco River, containing rivers and streams that drain the southern and eastern portions of the White Mountains. The elevation range of the greater USVLT region are the most dramatic in northeastern North America, topping out at 6,288 feet at the summit of Mount Washington to less than 1,000 feet on the Saco River just miles below, and eventually dropping to less than 400 feet along the Saco River in Denmark. This is a region of steep physical and ecological gradients and tremendous physical and biological diversity.

Bedrock consists mainly of erosion resistant granitic and metamorphic rocks (including schists), exposed on summits and ridges of both high and low peaks where glaciers scoured the landscape severely. Bedrock controls the shape of the land in the White Mountains and adjacent hills. **Surficial deposits**, or parent materials, cover bedrock in most areas and are the raw material that soils developed from. These parent materials consist of different combinations of rock, gravel, sand, and silt that were deposited by glaciers or accumulated in various meltwater environments.

Glacial till, or simply till, consists of an unruly mix of boulders, stones, gravel, sand, silt, and clay once trapped within or beneath a glacier. A thick to thin veneer of glacial till covers much of the USVLT landscape, averaging more than 20 feet in depth in most areas. Hills and small mountains line the sinuous course of the Saco River, some consisting of thick deposits of loose glacial till draped over bedrock cores; others are comprised of compact mounds of glacial till called drumlins. Drumlins and other drumlinoid hills and ridgelines comprised of compact till often trend in a northwest-southeast direction, indicating the prevailing direction of glacier movement. Many have gentle north slopes and a steep drop on their south or southeast side. These mostly small- to medium-sized hills are common in the southern and eastern portions of the service area. Most of the bedrock and glacial till in the service area is low in calcium, and weathers to yield acidic soils of relatively low nutrient content.

Vast quantities of water-deposited sediments fill the valley bottoms, creating a flat or terraced landscape along the margins of the Saco and major tributary valleys. Most of this material is **alluvium,** consisting of fine materials, typically sands or silts, deposited by moving water in former or current riverine environments. Two main types of alluvium occur in the Saco Valley. **Outwash** consists of coarse sand and gravel deposited beyond the terminus of melting glaciers (the term **sandplain** as used in this report refers to outwash or other relatively flat sandy soil areas). **Floodplains** are flat valley bottomland features along rivers that flood periodically. They consist of fine sands and silts deposited along major rivers during flood events. There are also some small areas of **lacustrine** deposits, consisting of fine silts and clays laid down in quite-water environments of small former glacial lakes formed by temporary ice-

dams during glacial meltdown. Floodplains and former floodplain terraces along the Saco River are among the most productive farmland soils in either state. Most outwash soils are coarser and more well drained than floodplain soils, and tend to be less fertile and prone to wildfire.

ECOLOGICAL DIVERSITY

The Saco Valley contains a tremendous diversity of ecological systems – arguably as high or higher than any other region of equivalent size in Maine or New Hampshire. This diversity relates to the region's geographic location on the continent and to physical diversity, including the variety of landforms, surface deposits, and hydrology. The Saco Valley straddles the transition of two major ecoregions, containing great elevational gradients, free-flowing rivers, extensive wet and dry outwash sandplains, broad floodplains, and a large variety of other surface deposits and bedrock outcroppings. Globally and regionally rare ecosystems associated with the mountains (including alpine and subalpine areas, sugar maple floodplain forests, jack and red pine rocky ridges, and Hudsonia – silverling riverwash gravel barrens) occur within miles of ecosystems otherwise restricted to the Atlantic coastal plain region (such as pitch pine barrens, coastal plain pondshores, and fens with Long's bulrush, a globally rare coastal plain species). This combination is absolutely unique to the Saco Valley in North America.

The upper Saco, Swift, Ellis, and Wildcat Rivers are free-flowing rivers in New Hampshire, beginning as high- to moderate-gradient streams and joining the Saco mainstem, which meanders through extensive floodplains and terraces along the lower Saco. The belt-width of the valley bottom is in excess of one mile in most places. River channel sand and gravel bar features are well developed in and downstream from Bartlett. Some of these correspond to Hudsonia - silverling river channel communities, a globally rare community found only in the Saco Valley. The Saco is minimally impounded on its lower reaches in Maine. Outwash sand plains support pine forests and barrens in dry areas, poor swamps and bogs in stagnant wet areas, and sandy pond shores along the margins of ponds and lakes and in small isolated basins with fluctuating water levels. All of these riparian and sandplain systems are uncommon to rare in both states, and more abundant in the service area than in most areas of New Hampshire and Maine.

Hardwood and mixed forests dominate hillsides at middle and low elevations, whereas conifer forests of spruce and fir fill the cold mountain valleys and cap the higher summits. Pine forests and pine barrens occupy the flat sandplain areas away from the mountains, especially where fire has burned the landscape periodically. Like much of New Hampshire and Maine, the species composition of forests and woodlands indicate generally acidic soils of low to moderate nutrient content. Small areas of rock containing higher calcium levels, however, are associated with several cliff and talus areas, and also occur in a few cove-like settings. The high floodplains and terraces of the Saco River also support more fertile growing conditions. These environments occupy a very small portion of the landscape, but support a variety of rare plants restricted to these habitats within the service area.

Table 7 summarizes some broad categories of resources in the service area. Many of these features are quantified in greater detail in sections 2.2, 2.3, and 2.4.

Table 7. Features and Conserved Land in the Upper Saco Valley Land Trust Service Area.

A. General Features & Conserved Land	Acres*	% of Service Area
Total Service Area	381,288	100.0%
Open Water (Aquatic)	11,835	3.1%
Rivers	2,169	0.6%
White Mountain National Forest	138,265	36.2%
Other Conservation Land	35,275	9.3%
Development	12,306	3.2%
Everything Else (land open for conservation)	183,992	48.3%

*Note: acreages do not sum due to overlap (e.g., conserved land and open water and rivers and open water)

B. Major Ecological and Human Features	Acres	% of Service Area
Rocky Ground (Ridge, Cliff, Talus, Subalpine)	10,089	2.6%
Forests	288,107	75.6%
Swamps	15,273	4.0%
Floodplains and River Channels	12,014	3.2%
Open Wetlands	11,224	2.9%
Aquatic	11,835	3.1%
Farmland and Other Openings	16,664	4.4%
Other Human (Developed, Early Successional Thicket, & Gravel/Sand Pit)	16,081	4.2%

2.2 Natural Communities & Wildlife Habitats

DEFINITION

As stated in Section 1.1, **natural communities** are recurring assemblages of plants and animals found in particular physical environments. Each natural community type occurs in a specific setting in the landscape, such as a rocky wind-exposed ridge, or wet area along a stream and pond. They are the natural habitats in which plants and animals live. Some plant and animal species, like white pine trees and white-tailed deer, are generalists and occur in many types of communities. Other species are more restrictive, and occur in or utilize only one or a particular group of communities. Examples are silver maple trees, which only occur on river floodplains, and spruce grouse, which only occur in spruce – fir forests. More detailed descriptions of natural communities of the USVLT Service Area and their correspondence to wildlife habitats and other features is provided in the Results section.

In this project, we have modeled and mapped broader groups of natural communities rather than individual types. For simplicity's sake in this report we refer to these units as "natural community groups" because of the way we define them and match them to other natural resource layers at a detailed level, but functionally – that is, on the ground - they are both plant and wildlife habitats. They are equivalent or slightly-finer in scale and concept to the NH Fish and Game Wildlife Action Plan (WAP) habitat types.

Similar to the natural community groups derived for this report, each WAP habitat type consists of one or more natural community types. As such, WAP types also represent a broader range of vegetative and structural conditions on the ground than natural communities, which typically correspond to more specific plant species composition and physical conditions. Some natural communities (or natural community systems) correspond directly to WAP habitats, while others are embedded features within a WAP habitat type. A specific cross-reference between the Maine and New Hampshire natural communities is provided in Appendix 1.

DESCRIPTIONS

The 27 natural community group map units derived in this report and described below can be broken into two broad categories based on their size distribution in the landscape – *matrix* forests and *patch* communities. *Matrix forest* groups are comprised of common forest types that tend to cover thousands of acres and a majority of the landscape. Indeed, the four major matrix forest groups cover 65 percent of the USVLT region (first four types in Table 8 and in descriptions); adding in *patch* forest types brings the total cover of forests to 75% (Table 8). *Patch* community groups cover a minority of the landscape (26 percent of the USVLT region)[1], but contribute a proportionally much greater amount of biological diversity and critical wildlife habitat conditions. Patch types include wetlands as well as forest types that occupy relatively small but specific settings within the landscape, such as Rocky Ridges,

[1] The remaining 9 percent of the USVLT region is covered by open water or areas of human influence.

Table 8. Acreage and Conservation Land Status of Natural Community/Wildlife Habitat Map Units in the Upper Saco Valley Land Trust Service Area.

Map Unit Name	Acres	% of Service Area	Acres of Cons. Land	% Cons. Land	% not Cons. Land
Subalpine	224	0.1%	224	100.0%	0.0%
Rocky Ridge	9,082	2.4%	5,529	60.9%	39.1%
Cliff / Talus	783	0.2%	701	89.6%	10.4%
Spruce – Fir	34,136	9.0%	33,952	99.5%	0.5%
Hemlock – Spruce & Lowland Spruce – Fir	24,240	6.4%	23,336	96.3%	3.7%
Hemlock - Hardwood - Pine & North. Hdwds	131,282	34.4%	42,620	32.5%	67.5%
Northern Hardwoods	39,460	10.3%	38,987	98.8%	1.2%
Rocky Oak – Hardwood – Spruce	24,508	6.4%	5,754	23.5%	76.5%
Pitch/Mixed Pine Plains	25,243	6.6%	3,227	12.8%	87.2%
Semi-rich to Rich Woods	9,239	2.4%	7,814	84.6%	15.4%
Fen > Marsh	2,513	0.7%	405	16.1%	83.9%
Bog	424	0.1%	106	24.9%	75.1%
Fen	7,705	2.0%	1,856	24.1%	75.9%
Semi-rich to Rich Swamp	6,899	1.8%	987	14.3%	85.7%
Poor Swamps	8,375	2.2%	1,597	19.1%	80.9%
Isolated Basin Wetland - Undifferentiated	42	0.0%	3	7.8%	92.2%
Drainage Marsh	393	0.1%	234	59.4%	40.6%
Sand Plain Basin / Pond Shore Marsh	147	0.0%	37	24.9%	75.1%
Floodplain Forest	9,258	2.4%	1,370	14.8%	85.2%
Threaded River Floodplain & Terrace	917	0.2%	296	32.3%	67.7%
Minor River Floodplain or Swamp	1,222	0.3%	158	12.9%	87.1%
River Channel	617	0.2%	123	19.9%	80.1%
Aquatic	11,835	3.1%	497	4.2%	95.8%
Farmland and Other Openings	16,664	4.4%	673	4.0%	96.0%
Early Successional Thicket	3,347	0.9%	1,658	49.5%	50.5%
Developed	12,306	3.2%	1,378	11.2%	88.8%
Gravel / Sand Pit	428	0.1%	21	4.8%	95.2%

Floodplain Forests, and Rich Woods.

There are up to five bulleted items that accompany each map unit description:

Constituent natural communities: A list of natural communities known to occur within the map unit in the service area (referenced to the NH natural community classification). A cross reference to the MENAP classification is provided in Appendix 1.

Rare plants: Plants listed as rare by NHNHB, MENAP, or both that occur within the service area. A few types include references to species with the potential to occur based on proximity of known occurrences in areas proximal to the service area. NHNHB and MENAP data sets can be consulted for complete lists of tracked species in the service area.

Wildlife: Rare and common wildlife species associated with the group or constituent communities. Species include known and probable types for the service area. NHNHB and MENAP data sets can be consulted for complete lists of tracked species in the service area.

Soils: Primary NRCS soil types associated with the map unit.

Map unit inclusions: Most map units have inclusions of other natural community groups due to the scale and accuracy of source data (NRCS soil map units often include 10-20% inclusions of other soil types) or strength of relationship between source data and natural community group. Natural community groups listed in this section may be expected to occur along with those expected for the group.

We used the NH natural community classification (Sperduto and Kimball, 2011) in the constituent natural community sections below to avoid the confusion of referring to two or more classification systems and because 2/3 of the Service Area is in NH. A cross-reference between the NH and ME classifications and NH Fish & Game WAP habitat types is provided separately. In addition, Engstrom (1998) conducted an inventory and classification of the riparian corridor in New Hampshire. Although many of the patterns and observations in this report are reflected in the New Hampshire classification, Engstrom's report provides additional details and insights into vegetation patterns along the course of the Saco River.

ROCKY GROUND

Four main types of rocky ground - areas with small to large extents of exposed bare rock - occur in the Saco Valley: Subalpine areas, Rocky Ridges, Cliffs, and Talus. Alpine/subalpine areas occur on wind-exposed, high-elevation summits. Rocky ridges occupy ridges, summits, knobs, and slopes with thin soils, lots of outcrops, and a broken canopy of trees. Cliffs are steep rock outcrops. Talus slopes are large collections of boulders that accumulate beneath cliffs. Collectively, rocky ground communities are popular hiking destinations in the service area and contain unique environments with diverse plant and animal life.

Subalpine

Alpine and subalpine areas occupy high summits and ridges, mostly 3,500 feet in the Upper Saco valley and the immediate surrounding peaks. These are wind-exposed summits with extreme climate, and shallow rocky soils. Many of the plants in alpine and subalpine natural communities are rare in New Hampshire. Dwarf shrubs, sedges, mosses, and lichens with arctic-alpine distributions predominate in alpine areas, which generally occur above 4,000 feet elevation. Peaks with subalpine communities occur at lower elevations, generally between 3,500 and 4,000 feet, contain many of the more common alpine species, but few of the rarest ones.

There are no true alpine areas within the service area. The alpine and subalpine summits of the Mt. Washington, the Southern Presidential Range, and Carter-Moriah Range mark the limits of the Saco River headwaters, but lie just outside the Service Area. Mt. Chocorua and South Baldface Mtn. support some large subalpine areas and are found within the service area.

> ***Constituent natural communities:*** subalpine heath - krummholz/rocky bald system (dwarf shrub - bilberry - rush barren, black spruce - balsam fir krummholz, Labrador tea heath – krummholz, sheep laurel - Labrador tea heath – krummholz, subalpine rocky bald).
>
> ***Rare plants:*** Subalpine areas harbor such rarities such as silverling (*Paronychia argyrocoma*), Canadian mountain rice (*Piptatherum canadense*), and New England northern reedgrass (*Calamagrostis stricta* ssp. *inexpansa*), species that are absent from higher alpine summits. *Diphasiastrum sitchense* (Sitka clubmoss) occurs in one subalpine location.
>
> ***Wildlife:*** Juncos, gray jays, and boreal chickadees are occasional in subalpine areas; Bicknell's thrush occurs in Spruce-Fir forest at edges of Subalpine near or possibly in the service area.
>
> ***Soils:*** Soils are not mapped on the WMNF where most subalpine areas are located (map units based on WAP and Heritage data).
>
> ***Map unit inclusions***: May include patches of Spruce – Fir forest or red spruce - heath - cinquefoil rocky ridge.

Subalpine area on summit of Mt. Chocorua.

Rocky Ridge

Rocky ridge is a collective term for ridges, summits, knobs, and slopes with abundant rock outcrops and a broken canopy of trees. These openings areas are interspersed among patches of dry forest. Red spruce, red pine, and red oak are the primary dominant trees. Each can dominate and form their own woodland community, or can occur in mixes with the other trees. The trees are often gnarled or short due to the poor growing conditions and exposure to the elements. Red pine rocky ridges are restricted regionally to the mountainous regions of northern New England. Jack pine is rare in New Hampshire and the service area, occurring only on Carter Ledge on Mount Chocorua and on Mount Webster. Many rocky ridges have had a history of fire, of either natural or human origin, or both. Fire contributes to maintenance of open conditions and an abundance of heath shrubs, lichens and certain herbaceous plants, all of which thrive under the open seasonally dry conditions. Rocky Ridges are also familiar destinations as day hikes and provide fantastic views of portions of the Saco Valley. Some examples include Peaked Mountain, Moat Mountains, Mount Stanton, Iron Mountain, White Ledge, Jockey Cap, Mount Tom, Burnt Meadow Mountain, Pleasant Mountain, and the Boston Hills.

Constituent natural communities: red oak - white pine forest, montane rocky ridge system (red pine rocky ridge, red oak - pine rocky ridge, red spruce - heath - cinquefoil rocky ridge, jack pine rocky ridge), high-elevation spruce - fir forest.

Rare plants: Rare plants of Maine and New Hampshire restricted to rocky ridge habitats mostly below 4,000 feet elevation include fern-leaved false foxglove (*Aureolaria pedicularia* var. *intercedens*), rock sandwort (*Minuartia stricta*), silverling (*Paronychia argyrocoma*), and *Polygonum douglasii* (Douglas' knotweed), and *Pinus banksiana* (jack pine).

Wildlife: Bobcat, black bear, black racer, and common nighthawks.

Soils: Shallow to bedrock soils including Rock outcrop, Rock outcrop-Lyman association, Abram-Rock outcrop-Lyman complex, Canaan-Redstone-Rock outcrop association.

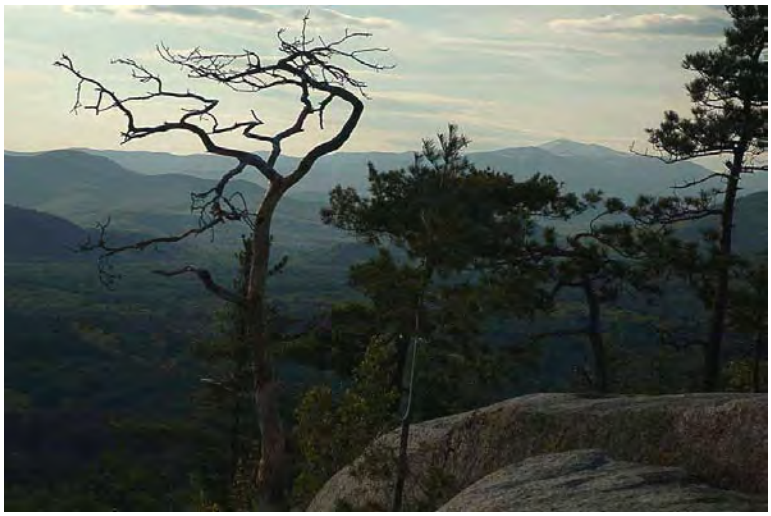
Map unit inclusions: Some map units may be dominated by dry forest (such as dry red oak – white pine forest) with closed canopies rather than by open woodland rocky ridge communities.

Cliff/Talus

Cliffs are steep rock outcrops; talus slopes are jumbles of rock that collect at the base of cliffs. Cliffs and talus are severe but surprisingly diverse environments, inhabited by small forms of life due to the scarcity of soil resources. Mosses and lichens prevail, the latter forming an often ubiquitous but almost imperceptible patina on the rock. Cryptic fungi, algae and cyanobacteria are also common, often showing up as black streaks along water tracks. Vascular plants are more conspicuous, but less abundant. They cling to cracks offering a small amount of soil. Micro-site variation in moisture, nutrients, exposure to wind and sun dictate the distribution of particular plants.

Talus slopes are also diverse rocky environments, but in different ways: talus boulders vary in size and level of stability; soil accumulation is patchy among boulders; and plants must endure or be adapted to rockfall.

Many rare plants are found cliffs or talus slopes, especially those influenced by calcium-bearing bedrock (including wooded talus slopes included in Semi-rich to Rich Woods communities). The Saco Valley, particularly the New Hampshire portion, contains numerous cliffs and several talus slopes. Examples include those in Crawford Notch; White's Ledge (Bartlett and Albany); Humphries', Cathedral, and White Horse Ledges; and Jockey's Cap (Fryeburg).



Constituent natural communities: temperate acidic cliff, temperate circumneutral cliff, temperate lichen talus barren, montane cliff system, montane - subalpine acidic cliff.

Rare plants: *Dryopteris fragrans* (fragrant fern) occurs under overhangs on two circumneutral cliffs in the service area; the only location for *Pellaea atropurpurea* (purple cliffbrake) in New Hampshire is in the service area; *Pinguicula vulgaris* (common butterwort) is known from Crawford Notch. *Chenopodium foggii* (Fogg's goosefoot) is a regionally rare plant know historically from talus slopes in Bartlett.

Wildlife: Cliffs: bobcat, peregrine falcon, Eastern small-footed bat, raven, turkey vulture, and golden eagles. Talus: bobcat, black bear, black racer, and common nighthawks.

Soils: Embedded in Rock outcrop and other Rocky Ridge soils; also predicted by TNC cliff ELUs.

Map unit inclusions: only a few talus slopes are mapped individually, although small to medium sized examples are often associated with cliff and semi-rich to rich forest areas.

Top: White Horse Ledge. Bottom: View from the Peaked Mtn. Rocky Ridge (red pine rocky ridge)

FORESTS

Forests comprise most of the Upper Saco Valley landscape, covering upland slopes and flats with relatively tall, dense canopies of trees above a variable shrub and herb layer. Forests cover more than 80 percent of both states; the Saco Valley service area contains 65% forest. Forests vary considerably within the service area with changes in elevation, soils, topography, soils, and the presence or absence of historic fire. In this report forest natural community groups are broken into Matrix Forest and Patch Forest categories based on extent and patch size.

Matrix Forest Groups

Hemlock – Hardwood – Pine & Northern Hardwoods

At a regional scale, these two groups of forests are fairly distinct. Hemlock – hardwood – pine forests are more typical of central New England, containing hemlock, red oak, and white pine in abundance. Northern Hardwood Forests are more typical of northern New England and higher elevations (extending southward in isolated patches), and are characterized by sugar maple, yellow birch, and American beech. The Saco Valley is a convergence zone and place of rapid transition between the two forest groups (described separately below, but combined in the Natural Community Map). A very common forest natural community in the Saco Valley, hemlock – oak – northern hardwoods (named red oak – northern hardwood forest in Maine), embodies the "tension zone" nature of forests in the Saco Valley, combining species typical of both groups of forests. Hemlock – Hardwood – Pine Forests are described separately below, although they are not mapped separately within the service area.

Hemlock – Hardwood – Pine

This upland forest group comprises several natural community types characterized by combinations of hemlock, American beech, white pine, birches, red maple, and red oak. These forests dominate central New Hampshire, southern Maine, and central New England more generally. There are two very common natural community types in this group in the service area: 1) hemlock – beech – oak – pine forest, which contains combinations of the above listed trees but lacks yellow birch and sugar maple in any abundance; and 2) hemlock - oak - northern hardwood forest (red oak – northern hardwood forest in Maine), which is similar, but marked by an abundance of sugar maple among the other species, and often yellow birch. The second type represents a true transitional type between classic northern hardwoods (sugar maple, beech, yellow birch) of the mountains and the more mixed forests abundant in central New England. Both of these are common in the service area, with the latter probably being most common.

> ***Constituent natural communities:*** hemlock - beech - oak - pine forest; hemlock forest; hemlock - oak - northern hardwood forest and beech forests
>
> ***Rare plants***: Few rare plants occur exclusively in these forest types in either state. Probably the most notable ones are the federally endangered *Isotria medeoloides* (small whorled pogonia) which occurs in several locations in the service area in mixed forests with pan soils. *Triphora trianthophora* (three-birds orchid) occurs in several beech forests in the service area, and *Corallorhiza odontorhiza* (autumn coralroot) occurs in one location.

Wildlife: Large, unfragmented tracks of forest are important to wide-ranging species such as moose, black bear, fisher, bobcat, and northern goshawk. Interior forest birds such a veery, wood thrush, scarlet tanager, and ovenbird are more successful breeders in larger forested areas. Cerulaean warbler, Eastern pipistrelle, eastern red bat, northern myotis, silver haired bat may also be expected. Patches of small openings, powerline corridors, and wetlands further diversify the forest habitat, offering potential habitat to black racer, American woodcock, migrating birds, turtles and amphibians.

Soils: Various well to moderately well drained fine sandy loams (with and without pan layers): Becket, Berkshire, Monadnock, Waumbeck, Colonel, Tundbridge-Lyman, and Hermon; also on northern hardwood-leaning soils such as Skerry, Peru, Sunapee, Woodbridge.

Map unit inclusions: Hemlock – Hardwood – Pine & Northern Hardwood forests as groups separate out well at coarse, regional scales, but were difficult to separate reliably at a site scale within the service area. The service area is in a zone of rapid transition and mixing of the two groups, and communities of both types can be expected in this map unit. The most common individual community in the service area (hemlock - oak - northern hardwood forest) is transitional between and occurs in both broad types regionally.

Left: A hemlock – oak – northern hardwood forest with red oak and sugar maple. Right: Northern Hardwoods Forest (sugar maple – beech – yellow birch forest) with yellow birch in foreground.

Northern Hardwoods

Sugar maple, beech, and yellow birch dominate in Northern Hardwood Forests, which are extensive on fine till soils of the lower slopes in the WMNF, especially between 1,500 and 2,500 feet elevation. The main community, sugar maple – beech – yellow birch forest, contains little or no red oak or white pine. At higher elevations and on coarser soils, red spruce increases in abundance; at lower elevations on coarse or shallower soils, hemlock and sometimes spruce mix with the hardwoods. Northern wood sorrel, shining clubmoss, blue-bead lily, twisted stalk, hobblebush, and striped maple are common in the understory.

> ***Natural communities***: sugar maple - beech - yellow birch forest; northern hardwood - spruce - fir forest; hemlock - oak - northern hardwood forest and beech forest.
>
> ***Rare plants***: Few if any rare plants occur exclusively in classic northern hardwoods, although many occur in enriched northern hardwoods (i.e., rich mesic forests – see Semi-rich to Rich Forests below). *Triphora trianthophora* (three-birds orchid) occurs in several beech forests in the service area.
>
> ***Wildlife***: Large, unfragmented tracks of forest are important to wide-ranging species such as moose, black bear, fisher, bobcat, and northern goshawk. Interior forest birds such a veery, wood thrush, scarlet tanager, and ovenbird are more successful breeders in larger forested areas. Cerulaean Warbler, Eastern Pipistrelle, Eastern red bat, northern long-eared bat, and hoary bat may also be expected. Patches of small openings, powerline corridors, and wetlands further diversify the forest habitat, offering potential habitat to black racer, American woodcock, migrating birds, turtles and amphibians.
>
> ***Soils***: Most are mapped on WMNF based on the NH WAP, but likely soil series include well to moderately well drained fine sandy loams such as Skerry, Peru, Sunapee, Berkshire, Marlow, and Tunbridge.
>
> ***Map unit inclusions***: Patches of hemlock - oak - northern hardwood forest are likely near valley bottoms. Conifer patches are occasional in this map unit (hemlock – spruce or spruce – fir).

Spruce – Fir

Forests of red spruce and balsam fir cap the high slopes and fill the low valleys of the White Mountains. Smaller patches are scattered on the thin-soiled rocky slopes of adjacent outlying hills. These settings contrast with the hardwood forests that have: finer, more productive soils, a warmer micro-climate, and longer growing seasons. Spruce – Fir forests occur more extensively across the region, covering the higher elevations of northern New England, New York, and the Canadian Maritime Provinces. Similar conifer forests extend across boreal Canada to Alaska.

This natural community group corresponds primarily to the high-elevation spruce – fir forest natural community. These are dark green forests with needle or moss covered hummocky ground, patches of wood fern and wood sorrel, and gap-filling deciduous shrubs and trees such as yellow and paper birches, hobblebush, mountain ash, and striped maple. Hemlock joins the mix below 2,000 feet in abundance, valley bottoms and rocky stream drainages (see hemlock – spruce and lowland spruce – fir forest below).

Constituent natural communities: high-elevation spruce - fir forest system (high-elevation spruce - fir forest, high-elevation balsam fir forest, northern hardwood - spruce - fir forest)

Rare plants: Few if any rare plants occur exclusively in this type in the Saco Valley watershed. Most are just outside the service area, including *Listera convallarioides* (lily-leaved twayblade), *Galium kamtschaticum* (northern wild licorice), and *Geocaulon lividum* (northern comandra).

Wildlife: Potential wildlife includes Bicknell's Thrush, Spruce Grouse, Bay Breasted Warbler, American Marten, Canada Lynx, Northern Bog Lemming, gray jays, fisher, red breasted nuthatch, ruby-crowned kinglet, and dark eyed juncos.

Soils: Soils are not mapped on the WMNF where most Spruce – Fir forests are located, although probable types include cryic, high-elevation soils such as Saddleback, Glebe, Surplus, and Ricker.

Map unit inclusions: Patches hemlock – spruce – northern hardwoods can be expected below 2,000 feet elevation, especially along rocky slopes and drainageways.

Hemlock – Spruce & Lowland Spruce – Fir

Conifer forests of White Mountain valleys, river terraces, low side-slopes, and rocky stream drainages support hemlock and northern conifers, primarily red spruce and balsam fir. These forests contain some classic lowland spruce – fir forests on flats and somewhat poorly drained areas, but they are not nearly as extensive and pure as in North Country, north of the White Mountains. More typically, there is an abundance of hemlock, and scattered white pine and red pine along with the spruce and fir. These are primarily conifer forests, although in places northern hardwoods join the mix on finer terrace soils and

at transitions to northern hardwoods on lower slopes. The oldest known hemlock in New Hampshire, some 525 years old, recently fell in an old-growth hemlock-spruce grove along the Swift River.

Constituent natural communities: hemlock - spruce - northern hardwood forest, lowland spruce - fir forest/swamp system (lowland spruce - fir forest, red spruce swamp), northern hardwood - spruce - fir forest.

Rare plants: Few if rare plants occur in lowland conifer forests, although *Listera convallarioides* (lily-leaved twayblade) might be expected in included seeps.

Wildlife: Potential species include spruce grouse, northern goshawk, bay-breasted warbler, rusty blackbird, Canada lynx, American marten, northern bog lemming, gray jays, fisher, red breasted nuthatch, ruby-crowned kinglet, and dark eyed juncos.

Soils: soils are not mapped on the WMNF where most Hemlock – Spruce and Lowland Spruce – Fir forests occur; some outside the WMNF are mapped on Roundabout, Colton, Croghan soils. Soils range from somewhat excessively drained sand soils to somewhat poorly drained sandy loams.

Map unit inclusions: Some of this map unit occurs on mountain side slopes that may be a closer match to high-elevation spruce-fir forest.

Patch Forest Groups

Rocky Oak – Hardwood – Spruce

This group of communities is associated with rocky, middle and upper slopes above the Saco River in New Hampshire, and on many of the hills beyond the interior core of the White Mountains in both states. Soils tend to be combinations of shallow, rocky areas with lots of oak, pine, or spruce, interspersed with patches of deeper, "washed till" soils (Leak 1980) and populated with hardwoods (particularly beech and oak, and sometimes sugar maple). Surface stones and outcrops are common. Good examples of this type occur on many of the steep hills and mountains in the service area with rocky ridges.

Constituent natural communities: dry red oak - white pine forest, sugar maple - beech - yellow birch forest, beech forest, high-elevation spruce - fir forest, hemlock - oak - northern hardwood forest.

Rare plants: Similar to matrix forests of the region; rocky ridge rare plants might be expected on small rocky openings within this type. *Triphora trianthophora* (three-birds orchid) may be found in included beech forests.

Wildlife: See matrix forests and rocky ridge types.

Soils: Shallow-to-bedrock soil complexes (Lyman complexes with various other soils including Rock outcrop, Berkshire, Hermon, Tundbridge, and Monadnock).

Map unit inclusions: Rocky Ridge communities can be expected in this map unit, as well as small talus or cliff areas.

Pitch/Mixed Pine Plains

As glaciers retreated from New England 12,000 years ago, glacial meltwater carried and deposited vast amounts of sand and gravel in the valley bottoms of the present-day Saco River. Many of these areas are now dry and excessively well drained on the flats beyond the active Saco River floodplain, and have a history of wildfire. These "sandplains" contain the northern limits of classic New England pitch pine – scrub oak barrens, a globally rare ecosystem. While devastating to local towns such as Brownfield, the fires of the 1940's helped regenerate pitch pine and other pines, as well as other fire-dependent species such as scrub oak in many parts of the service area. White and red pine are also in abundance, as well as successional hardwoods, indicating local settings where fire return intervals have been less frequent than required for pure pitch pine stands, or where the cutting regime has influenced the mix of trees.

Red pine is a tree of primarily northern climates, reaching its southern limit of abundance on the mountains, hills, and sand plains of northern New England. The Saco and Ossipee River valleys are one of the few places in the world where red and pitch pine mix in abundance. Pine Barrens also support a tremendous diversity of Lepidoptera (butterflies and moths) as well as certain vertebrate species. Few if any surveys of Lepidoptera have been done north of the Silver Lake and Fryeburg pine barren areas. Numerous patches of this map unit occur in the lowland flats of the service area, many of which have been fragmented by development. Larger patches outside the Fryeburg and Silver Lake areas warrant evaluation of composition and ecological condition.

Constituent natural communities: mixed pine - red oak woodland, pitch pine sand plain system (pitch pine - scrub oak woodland, dry river bluff, dry red oak - white pine forest.

Rare plants: Few if rare plants occur in lowland conifer forests, although *Listera convallarioides* (lily-leaved twayblade) might be expected in included seeps.

Wildlife: Numerous rare, pine barrens-obligate moth species, including *Zanclognatha martha* (pine barrens Zanclognatha moth), *Zale submediana*, *Xylena thoracica* (pinion moth),

Lithophane lepida lepida (pine pinion moth), and *Lithophane thaxteri*, among others. Other possible species include black racer, smooth green snake, eastern box turtle, common nighthawk, and eastern towhee.

Soils: Excessively and somewhat excessively drained sand soils including Adams, Colton, Croghan, and Deerfield.

Map unit inclusions: More frequently burned areas tend to have more pitch and red pines; successional hardwoods and white pine can be more abundant in absence of fire over time, and in areas where pitch and red pine are cut selectively. Sandplains in mountain valleys and other narrow or peripheral sand plain areas are probably historically more isolated from fire. Sandplains in mountain valleys tend to have mixes of red and white pine with northern conifers and hardwoods and little or no pitch pine.

Semi-rich to Rich Woods

These are nutrient-enriched hardwood forest communities with a more diverse species composition compared to matrix forests. They form where certain combinations of bedrock, soils, topography, and moisture coincide to yield productive, nutrient-rich conditions. Sugar maple, white ash, and a species-rich herbaceous layer set semi-rich and rich woods apart from more common forest types. Rich woods are the most nutrient-rich and species diverse of this group, and collectively contain most of the rare forest plants in Maine and New Hampshire. They are relatively rare in the state and service area compared to semi-rich woods, which are less nutrient- and species-rich, and considerably more common. Most sugarbushes are semi-rich or rich woods areas. In both semi-rich and rich woods, shrubs are relatively sparse, but ferns, perennial forbs, and sedges are abundant, including many species that flower in early spring.

Semi-rich mesic forests usually only contain a handful of common rich-site species, such as white ash, baneberries, foamflower, Jack-in-the-pulpit, trilliums, Christmas fern, zig-zag goldenrod, and red-berried elder. These areas are common in concave landscape positions, such as bases of steep slopes, coves, and drainageways where the downslope movement of leaf litter and water flowing through soils and bedrock accumulate to form natural “compost bins”. Many of the map units of this type are predicted coves, or concave landscape positions, which have high potential to contain semi-rich forests. They also occur on fine sandy or silty soils of high floodplains and river terraces along the Saco, and may be included within Floodplain Forest map units. Many of the present day agricultural fields along the Saco were probably some type of semi-rich to rich woods community.

Rich woods can be further divided into two broad sub-types: *Rich mesic forests*, which are perennially moist, contain a diverse and lush herbaceous layer that includes such species as maidenhair and ostrich ferns, blue cohosh, Goldie’s fern, and Dutchman’s breeches. They are quite rare in the service area. *Rich red oak rocky woods* occur on steep, rocky, relatively warm and dry south-facing slopes. Sugar maple and white ash are still present, but dry, rocky-site species absent in rich mesic forests help distinguish them, including red oak, ironwood, and a somewhat sparser herbaceous layer with early saxifrage, blue-stemmed goldenrod, blackseed mountain rice, ebony spleenwort, rusty woodsia, rock cresses,

Pennsylvania sedge, and herb-Robert. Several excellent examples can be found on the high hills and low mountains that line the Saco River valley.

Constituent natural communities: semi-rich mesic sugar maple forest, semi-rich oak - sugar maple forest, rich mesic forest, rich red oak rocky woods.

Rare plants: *Woodsia obtusa* (blunt-lobed woodsia), *Arabis laevigata* (smooth rock cress), *Dicentra canadensis* (squirrel corn), *Panax quinquefolius* (ginseng), *Dryopteris goldiana* (Goldie's fern).

Wildlife: Similar to matrix forests of the region; herbivores may be attracted to the early spring availability of palatable forbs; ants are important for the dispersal of several spring-ephemeral plants. Land snails may be more prevalent in these habitats than most matrix forests due to the availability of environmental calcium.

Soils: Most polygons of this type are based on ELU-predicted coves or concave landscape positions (not based on NRCS soil types). Some will support a mull surface layer (a non-acid, nutrient-rich humus layer). NRCS fine terrace and lake sediment soils include Salmon, and some Limerick and Ondawa units.

A semi-rich mesic sugar maple forest, a type of Semi-Rich to Rich Woods community. White ash (foreground) usually indicates semi-rich conditions.

Map unit inclusions: These forests also occur as inclusions within Floodplain Forest map units, particularly on river terraces and high, infrequently flooded floodplains. Some of these occur on Ondowa series, particularly on the typical, finer textured variant of this soil type.

SWAMPS

Swamps are wooded wetlands with at least 25% cover of trees. The higher tree cover distinguishes swamps from more open wetlands, including shrub thickets, bogs, fens, and marshes. Swamps are divided into two broad types based on relative nutrient levels: poor swamps and semi-rich to rich swamps.

Poor Swamp

Poor swamps are very acidic and relatively nutrient-poor. They occur in isolated, poorly-drained basins, with limited water inflow and outflow from the basin. They may be small basins perched on upland slopes, set within flat forested uplands, or spread across broad low areas on outwash sandplains. The limited through-flow of water and perennially saturated conditions in these landscape settings inhibit the decomposition of organic matter, and results in the accumulation of organic soils on top of the underlying outwash or till. Conifers, tall and short heath shrubs, ferns, and mosses are common life forms in poor swamps, which have an undulating surface of moss-covered hummocks and hollows. Trees and shrubs perch on the hummocks, while more flood-tolerant herbs and mosses fill the hollows. As a group, poor swamps are less extensive than semi-rich to rich swamps regionally, but relatively more abundant in the Saco Valley due to the extent of poorly drained outwash areas.

A pitch pine – heath swamp, a rare type of Poor Swamp found in the Saco Valley.

Boreal conifers such as red and black spruce and balsam fir are common. Other common species in poor swamps of the Saco Valley include red maple, high-bush blueberry, maleberry, three-seeded sedge, and cinnamon fern. Pitch pine is also abundant in some of these swamps. Pitch pine swamps are rare in New Hampshire and uncommon to rare in Maine. Despite the saturated to seasonally saturated conditions, most examples have a history of fire, which can carry readily through these swamps in dry conditions when water is well below the surface. They are one of the unusual signature communities of the Saco Valley that give it a unique flavor compared to adjacent parts of northern New England. Black gum is also at its northern-most terminus in the Valley, where it occurs in perched, rocky basins in the vicinity of Conway Lake.

Constituent natural communities: red spruce swamp, pitch pine – heath swamp, temperate peat swamp system (red maple – Sphagnum basin swamp, hemlock – cinnamon fern forest)

Rare plants: Several orchids are possible in Poor Swamps, including *Listera convallarioides* (lily-leaved twayblade), *Listera cordata* (heart-leaved twayblade), and *Malaxis unifolia* (green adder's mouth); also *Sphagnum wulfianum* (peat moss) and *Rhododendron maximum* (giant rhododendron).

Wildlife: Surface water in swamps is important for breeding reptiles and amphibians, and can function as vernal pools. Both birds and small mammals are abundant in swamps, particularly when there is lots of structural diversity. Berries and seeds on many shrubs and trees provide good forage for birds and small mammals. Racoons hunt for salamanders and frogs. Dense shrub layers in swamps provide good nesting habitat for birds including common yellowthroat, black-capped chickadees, black-and-white warblers, and gray catbirds. Northern waterthrush is one of the few bird species restricted to swamp habitat. Many species of warblers and other migratory birds use swamps en route to breeding grounds. Spruce grouse, olive-sided flycatcher, boreal chickadee, black-backed woodpecker, wood frog, four-toed salamander, and green frogs are possible in poor swamps in the service area.

Soils: Poorly drained Naumberg sand is the most common soil unit; others include Naumberg-Croghan, Scarboro, and some Wonsquet & Searsport and Au Gres units.

Map unit inclusions: Poor Swamp map units often include patches of fen, bog, or shrub thickets where relatively more saturated conditions reduce tree cover. In more well-drained areas, semi-rich swamps may be expected, as well as hemlock – cinnamon fern forests. Beaver inundation can transform any swamp, at least temporarily, into an herbaceous or shrubby fen or marsh, or aquatic bed community. When beavers abandon these wetlands, water levels typically drop and stabilize, and there is a slow progression back to shrub thicket and swamp as the basin fills back with the accumulation of plant matter.

Semi-Rich to Rich Swamp

Semi-rich to Rich Swamps occur in wet areas with better drainage than poor swamps. There is greater through-flow of nutrient-bearing water, as well as greater seasonal fluctuations in water level. These circumstances result in less acidic and more nutrient-enriched conditions compared to poor swamps. Mineral soils are typical (the organic soil surface layer is relatively thin compared to many poor swamps). Most of the swamps mapped as this group are only weakly to moderately enriched with nutrients (thus termed “semi-rich”); rich swamps enhanced with more nutrients and groundwater seepage are less common. Semi-rich to rich swamps typically occur around the margins of marshes or in drained basins embedded within upland forests.

Red maple and a diverse combination of shrubs, herbs and non-peat mosses typify many semi-rich and rich swamps. Sensitive fern, foamflower, violets, false-hellabore, dogwoods, and speckled alder are a few of the plants that differentiate semi-rich to rich swamps from poor swamps. Black ash and northern white cedar can be found in some examples, usually indicating rich swamps. Northern white cedar is rare in and south of the White Mountains, but it does occur in a few disjunct localities in the Saco Valley.

Hemlock – cinnamon fern forest is a common natural community transitional between upland forests and wet swamps. Although similar to poor swamps in the dominance of conifers and low diversity of understory species (as in poor swamps), we placed it here among semi-rich swamps because of the ypically mineral soil and un-saturated, relatively better drained condition compared to most poor swamps.

Constituent natural communities:
temperate minerotrophic swamp system (hemlock - cinnamon fern forest, red maple - sensitive fern, red maple - black ash swamp), northern white cedar - hemlock swamp, larch - mixed conifer swamp, highbush blueberry - winterberry shrub thicket.

A Semi-Rich swamp in the Saco Valley.

Rare plants: *Petasites frigidus* var. *palmatus* (sweet coltsfoot) occurs in one swamp. *Listera convallarioides* (lily-leaved twayblade), *Malaxis unifolia* (green adder's mouth) also occur within the service area.

Wildlife: The wildlife description in Poor Swamps largely applies to this group as well. Semi-rich to Rich Swamps will tend to lack conifer-dependent species (such as spruce grouse). In addition, browse quality is generally better in this group compared to Poor Swamps due to better growing conditions and greater predominance of deciduous species and palatable forbs. Seeps within rich swamps provide feeding and breeding grounds for amphibians and small mammals, and often remain open throughout the winter, providing fresh forage in for wild turkey and other species.

Soils: poorly drained mineral soils, including stony fine sandy loams such as Pillsbury, Brayton-Peacham, Ridgebury, Liecester (combinations with Moosilauke and Pillsbury), Raynham, Searsport, and some Limericks.

Map unit inclusions: Some map units include probable somewhat poorly drained forests in them, including hemlock – spruce – northern hardwoods and hemlock – cinnamon fern forests. Map units often include patches of fen, bog, or shrub thickets where relatively more saturated conditions reduce tree cover, or poor swamps in relatively poorly drained areas. Beaver inundation can transform entire swamp units, at least temporarily, into an herbaceous or shrubby fen or marsh, or aquatic bed community. When beavers abandon these wetlands, water levels typically drop and stabilize, and there is a slow progression back to swamp as the basin fills back with the accumulation of plant matter.

FLOODPLAIN FORESTS and RIVER CHANNELS

River Channel

River channels are the frequently-flooded corridors between two riverbanks through which a river flows. Channels contain the river itself, sloped riverbanks on eitherside, and sometimes relatively flat bar or shelf features comprised of loose sediments. Plants that survive here must be both flood- and scour-tolerant, and are usually inundated at least once if not many times a year. During flood events, rivers swell and overtop their banks, spilling onto an adjacent floodplain. Flowing water erodes and deposits sediments in the river channel, creating a dynamic environment.

The steeper, higher-gradient sections of the Saco River above Bartlett, and along tributaries such as the Wildcat, Ellis, and Swift Rivers, have frequent, high-energy, and short duration floods at any time of year. They are choked with boulders and cobble, as finer sediments are washed downstream. Moderate gradients prevail downriver, where sand and gravel bars are frequent, and the channel splits into multiple paths that flood at high water. Floodplains are moderate in size, and cobble and gravel bars are more common than sandy ones. As the gradient lessens towards and into Conway and Fryeburg, the relative abundance of gravel versus sand bars flip, and low floodplains are more extensive. Lower

gradient sections of river on the Saco and elsewhere flood less intensely and frequently, and for longer periods.

Low channel settings are inundated for substantial portions of the year, regardless of gradient. Low channels include sand or cobble bars and shelves, and adjacent sloped riverbanks. High channels (including high riverbanks), by contrast, flood less frequently, but the flood intensity can be high, particularly if regularly scoured by ice. Hudsonia - silverling river channels are a globally rare community that occurs only on the Saco River between Bartlett and Denmark. They are indicated by two rare species, *Hudsonia tomentosa* var. *intermedia* (hairy hudsonia), which is most abundant on the sandy bars on lower sections of the river, and *Paronychia argyrocoma* (silverling), which is more abundant on the more gravelly bars higher in the watershed.

Channel vegetation varies greatly with sediment type, flood frequency and duration, and other factors. Plants must not only endure flood and scour, but those on channels may experience drought during the summer. Some plants are perennials with deep roots, but many are weedy perennial or annual herbs. Willows, alder, goldenrods, and grasses are common in many river channel communities.

> ***Constituent natural communities:*** moderate-gradient sandy-cobbly riverbank and high-gradient rocky riverbank systems (hudsonia - silverling river channel, cobble - sand river channel, boulder - cobble river channel, willow low riverbank, twisted sedge low riverbank).
>
> ***Rare plants***: *Hudsonia tomentosa* var. *intermedia* (hairy hudsonia), *Paronychia argyrocoma* (silverling), *Calamagrostis stricta* ssp. *inexpansa* (New England northern reedgrass), *Agrostis mertensii* (boreal bentgrass).

A Hudsonia – Silverling river channel community along the Saco River in Conway. Those in NH tend to be on coarse gravel bars. Tufts of the rare plant *Paronychia argyrocoma* (silverling) seen in the foreground allow sand deposits to form on their downstream side.

Wildlife: River channels, and riparian zones in general, are important for seasonal movement and migration of birds, reptiles, amphibians, and mammals, as well as a great diversity of invertebrates (in part due to the variety of habitats ranging from aquatic to terrestrial in a narrow zone). Invertebrates include a variety of tiger beetles, stonefly, and dragonfly species. Tiger beetles occupy cobble bars, and stoneflies and dragonflies lay eggs in sandy or muddy banks. Exposed banks offer nest sites for bank swallows and belted kingfisher. Turtles use mosaics of floodplains, river channels, adjacent wetlands, and the river itself. See also Floodplain Forest wildlife.

Soils: Mostly hand-delineated from air photos; some Riverwash soils. These are generally cobble, gravel, and sand bars and shelves.

Map unit inclusions: Some river channels are completely unvegetated due to inundation and scour intensity.

Floodplain Forest

Floodplain Forests occupy regularly flooded, flat terraces along the margins of streams and rivers. Many have tall, arching canopies of maple trees, few if any shrubs, and a dense, tall, and diverse herbaceous layer comprised of ferns, forbs, and vines. The cathedral-like structure of many Floodplain Forests distinguish them from swamps and uplands forests. The lowest Floodplain Forests flood every 1-2 years. Terraces at higher elevations flood less frequently. Low Floodplain Forests are generally better drained than swamps, but generally more poorly drained than upland forests. Floodplain forests, and the broader riparian settings they occur in, are natural corridors for the dispersal and seasonal movement of wildlife. These areas are important habitats for amphibians, reptiles, insects, mammals, and migrating birds, and a great diversity of plants. Non-native plants are abundant in many Floodplain Forests and along adjacent open edges.

The low silver maple floodplain forests on the Maine portion of the Saco are probably the largest and best examples in Maine (MENAP, pers. Comm. 2010). These are generally within 3-6 ft. elevation above average low water. Although the extent of silver maple floodplain forests diminishes further upstream in New Hampshire, there is a transition to and corresponding increase in sugar maple – ironwood floodplain forests (i.e., in Bartlett and Conway). This community type is unique to the Saco Valley and a few other mountain rivers in northern New England. It occurs at higher elevations, generally 5-12 ft. above average low water. These sections of river have “flashy” flood regimes - those with intense, short-duration floods and extreme annual variation in flow driven by rain and melt-water runoff from the mountains. The sugar maple – ironwood floodplains also occur as part of the Threaded River Floodplain & Terrace map units. Infrequently or un-flooded floodplains may support rich or semi-rich mesic sugar maple forests, although most of these areas have long since been converted to agriculture. Excellent examples of Floodplain Forests can be found along the coarse of the Saco from Bartlett south.

Constituent natural communities: major river silver maple floodplain system (silver maple - false nettle - sensitive fern floodplain forest, sugar maple - silver maple - white ash floodplain forest); montane/near-boreal floodplain system (sugar maple - ironwood - short husk floodplain forest, balsam fir floodplain/silt plain); red maple floodplain forest, semi-rich mesic sugar maple forest, rich mesic forest.

Rare plants: *Teucrium canadense* (Canadian germander) occurs in some NH examples, an interesting inland location for this generally coastal plant (formerly tracked as threatened in NH).

Wildlife: Floodplain Forests are ritical wildlife habitat for spring and fall migrants and for aquatic-dependent species, including turtles and many amphibians. The complex of backwaters, oxbows, vernal pools, flooded forests, marshes and fens, shrub wetlands, and nearby meadows and fields form suitable habitat for frogs, wood turtle, and dozens of species of migrating species including ducks, geese, red shouldered hawks, eastern red bats, silverhaired bats, Cerulaean warblers, and numerous other songbirds.

Soils: Occasionally to frequently flooded and well to poorly drained fine sands, fine & very fine sandy loams, and silt loams. Series include Ondawa, Sunday, Rumney, Podunk, Cornish, Limerick series, Charles, and Lovewell.

Map unit inclusions: Oxbow marshes, river floodplain fens and shrub thickets can be expected within these map units, as well as inclusions of un-flooded terraces that support upland forests.

Silver maple floodplain forest at Walkers Falls, Maine.

Threaded River Floodplain & Terrace

These floodplains are an interesting variation on typical floodplain forests of major rivers. They occur on the higher, more moderate-gradient sections of the Saco River and its tributaries. The terraces vary in elevation, forming a mosaic of rarely to occasionally flooded zones. Overflow channels fill during peak floods, cutting across river terraces in a braided fashion. There is an over-burden of sediments on these terraces relative to the volume of water available, producing a flashy, temporary flood regime along the immediate floodplain. The frequently flooded overflow channels migrate in location over time as the river seeks the paths of least resistance through the sediments. These map units are a combination of high floodplain and upland forest communities.

Constituent natural communities: montane/near-boreal floodplain system (sugar maple - ironwood - short husk floodplain forest, balsam fir floodplain/silt plain forest), semi-rich mesic sugar maple forest, hemlock - oak - northern hardwood forest.

Rare plants: Unknown.

Wildlife: Uncertain how wildlife differs in these floodplains.

Soils: Mostly occasionally flooded Sunday loamy sands and Ondowa sandy loam floodplain soils; some Limerick and Podunks soils.

Map unit inclusions: These map units appear to be combinations of flooded and unflooded terrace forests within the long-term active river channel.

A sugar maple – ironwood – short husk floodplain forest, a regionally rare type of Floodplain Forest largely restricted to montane floodplains in the mountains of New England.

Minor River Floodplain or Swamp

These floodplains occur on smaller tributary rivers and streams feeding into the Saco River. Some support temporarily flooded red maple floodplain forests, whereas others contain wetter, seasonally flooded swamps interspersed with mosaics of marsh and fen. These areas contrast with both the definitive and extensive floodplain forests of the middle and lower Saco main-stem in the service area, and the threaded, flashy floodplains and terraces of the upper reaches of the river.

> ***Constituent natural communities:*** temperate minor river floodplain system (red maple floodplain forest, alder - dogwood - arrowwood alluvial thicket); temperate minerotrophic swamp system (red maple - sensitive fern swamp, seasonally flooded red maple swamp, red maple - lake sedge swamp).
>
> ***Rare plants***: See Semi-Rich to Rich Swamp and Floodplain Forest types.
>
> ***Wildlife:*** See Semi-Rich to Rich Swamp and Floodplain Forest types.
>
> ***Soils***: Mostly Limerick, Rumney, and Podunk soils on tributaries to the Saco River.
>
> ***Map unit inclusions***: Marsh and possibly fen communities may be expected.

OPEN WETLANDS

Open wetlands include un-wooded or sparsely wooded wetlands with<25% tree cover. Each of the following types can include several zones with different dominant life forms related to varying water levels (such as tall shrub thickets, sedge or grass meadows, emergent vegetation, dwarf shrubs, and moss lawns).

Bog

Bogs and fens are types of peatlands. Peatlands are very poorly drained wetlands that occur in depressions or along sluggish drainage ways, where soils remain saturated throughout the year. As a result, organic matter decomposes slowly, eventually accumulating into thick deposits of organic soil called peat. Bogs are more acidic and nutrient-poor compared to fens. Heath shrubs (members of the Heath family) and peat mosses dominate in open bogs. Sedges and non-heath shrubs are more abundant in fens (medium and rich fens as treated and mapped here). Bogs are fascinating wetlands: they contain many plants adapted to the acidic and saturated growing conditions, including carnivorous plants pitcher plants and sundews, as well as several showy orchids.

Kettleholes are the classic landform in which bogs form. Kettles form where a large block of ice was stranded during the retreat of the last glaciation 10,000 – 14,000 years ago and partially buried by outwash sand and gravel. When the ice melted, a lake formed in the resulting deep pocket in the outwash. Over tens of thousands of years, kettles fill in with peat, completely displacing the lake in some kettleholes. Bogs form in other isolated basins with little or not outflow of water.

Constituent natural communities: poor level fen/bog system and kettle hole bog system (leatherleaf - black spruce bog, mountain holly - black spruce wooded fen, Sphagnum rubellum - small cranberry moss carpet)

Rare plants: *Carex wiegandii* (Wiegand's sedge) occurs in mountain bogs in the service area. Several other rare plants are known from bogs outside the service area and have potential to occur in these habitats.

Wildlife: Potential for palm warbler, mink frog, northern bog lemming, rusty blackbird, various flycatchers, spruce grouse, pitcher plant mosquito and other pitcher plant-dependent insects, and common dragonflies such as blue dashers, dot-tailed whitefaces, and spotted skimmers. Bog elfin butterfly larvae feed on black spruce, and bog copper butterfly larvae feed on cranberry.

A Bog in Conway with pitch pine in the foreground, black spruce at left, and leatherleaf and Sphagnum moss dominating the ground cover.

Soils: Many delineated from air photos, but usually correspond to Vassalboro and Chocorua mucky peats.

Map unit inclusions: "Poor fens" (meaning poor in nutrients) have very similar plants to bogs, and are mapped and considered here along with bogs rather than with fens. Some bog map units may include patches of medium fen vegetation, and poor swamps.

Fen

A more diverse mix of plants occurs in fens compared to bogs, including non-heath shrubs, sedges, and other herbaceous plants. Fens are less acidic than bogs, but most are more acidic than marshes. Superficially, fens look similar to marshes, but they are more nutrient-poor and have less pronounced water level fluctuations. Large wetland complexes often contain both marsh and fen communities, with fens occurring in portions of a wetland with less overbank flow from streams and with limited upland runoff. The broad open wetland floodplains of the Saco contain some large sedge-dominated fens, as well as marshes.

Constituent natural communities: medium level fen system (sweet gale - meadowsweet - tussock sedge fen, wire sedge - sweet gale fen, large cranberry - short sedge moss lawn, bog rosemary - sedge fen, and various tall shrub wooded fens.

Rare plants: The Saco River within the service area contains several plants restricted to the Atlantic Coastal plain, most notably the globally rare plant Long's bulrush (*Scirpus longii*), which grows in fens and graminoid floodplain meadows. This sedge is restricted to the coastal plain of northeastern North America. Some of the best populations in New England occur in the service area.

Wildlife: Rare species include Sedge Wren, Banded Bog-Skimmer (*Williamsonia lintneri*), several other Odonates (dragonflies), turtles, Ribbon Snake, and potentially species also found in bogs, such as palm warbler, mink frog, rusty blackbird, various flycatchers, and common dragonflies such as blue dashers, dot-tailed whitefaces, and spotted skimmers.

Soils: Vassalboro, Wonsqueak (and combinations), Sebago, and Medomak & Wonsqueak

Map unit inclusions: Marshes and wooded swamps can be expected as inclusions in this map unit.

A Fen, with the globally rare *Scirpus longii* (Long's bulrush) in the foreground, which forms massive crowns of leaves.

Fen > Marsh

This map unit contains either fen or marsh vegetation, or both. Most are mapped in New Hampshire as Chocorua or Ossipee mucky peats, which were not a reliable basis to distinguish between fen and marsh without the aid of field work or air photos. Fens appeared to be more common than marshes based on field observations, hence the name of the group. The fen and drainage marsh descriptions should be consulted as reference for this map unit.

> ***Soils***: Mostly Chocorua and Ossipee mucky peat in NH, Bucksport in Maine
>
> ***Map unit inclusions***: It is unclear if the presence of either fen or marsh is due to differences in landscape setting and beaver activity in NH vs. Maine, actual differences in soils, or different concepts and approach behind soil mapping. We suspect a combination of these factors.

Marshes

Marshes occupy basins with more broadly fluctuating seasonal water levels than found in peatlands, and generally more through-flow of water. They are better drained and more productive environments than peatlands. Two broad types of Marshes are described below: drainage marshes, which occur along drainageways, and sand plain basin marshes and sandy pond shores, which occur in isolated basins or along the sandy shores of lakes and ponds.

Drainage Marsh

Marshes are wetter than swamps, and better drained and more nutrient-rich than bogs and fens. They occupy drained wetland basins bordering streams, rivers, lakes, ponds, and other flat areas drained by a stream. They have broadly fluctuating seasonal water levels, but water remains near or above the surface for substantial portions of the growing season.

A Drainage Marsh along Black Brook, Conway.

Herbaceous plants and shrubs dominate Drainage Marshes. Trees are sparse or absent, but flood-tolerant shrubs, grasses, sedges, forbs, and aquatic plants are common, depending on the range of hydrologic conditions within the wetland. Overall, Drainage Marshes are more common than peatlands in New England, but appear to be less common than fens in the service area. This is probably because of the extensive outwash and wet floodplain settings conducive to fen formation. It is not uncommon to see large wetland complexes with both marsh and fen vegetation.

Constituent natural communities: emergent marsh - shrub swamp system (tall graminoid meadow marsh, cattail marsh, emergent marsh, aquatic bed, highbush blueberry - winterberry shrub thicket, alder - dogwood - arrowwood alluvial thicket)

Rare plants: *Scirpus longii* (Long's bulrush), a globablly rare species, occurs primarily in Fens, although some occurrences occur in Drainage Marshes on the Saco floodplain. *Ophioglossum pusillum* (northern adder's tongue) occurs in meadow marshes on the Saco River floodplain. A variety of rare plant species have the potential to occur in Drainage Marshes in the service area, but have yet to be documented.

Wildlife: Larger wetlands with areas of open water mixed with emergent vegetation can support marsh birds such as Common Moorhen, Ribbon Snake, herons, and rails, several Odonates (dragonflies), American black duck, American bittern, eastern red bat, great blue heron, least bittern, osprey, and sedge wren.

Soils: Mostly Chocorua and Ossipee mucky peat in NH, Bucksport in Maine

Map unit inclusions: Patches of Fen may occur within this map unit.

Sand Plain Basin and Sandy Pond Shore Marsh

Sand plain basin marshes occur in isolated basins without inlet and outlet streams. Sandy pond shore marshes occupy wave and ice-disturbed sandy shores of shallow ponds and lakes. Both have a regionally restricted distribution and are globally rare along the Atlantic coastal plain, often supporting many rare species. Those on the Maine side in particular tend to contain more rare species. This group of communities is more abundant in the greater USVLT region than probably any other portion of northern New England. These wetland are not only of great conservation significance regionally and globally for their rarity and diversity of rare plants, but are of heightened conservation concern due to threats from lake shore development, recreation, and control of water fluctuations via dams.

In basin marshes, the sandy porous soils allow water levels to fluctuate dramatically both seasonally and annually. Periodic water drawdown periods allow organic matter to decompose rather than accumulate. The wet-to-dry fluctuations produce stressful, low nutrient conditions compared to Drainage Marshes. In Sandy Pond Shore Marshes, the combination of wave action, ice-push, seasonal water fluctuations, and sterile, sandy soils limit the growth of plants. Both of these environments share many of the same species. Many tall, robust plants of Drainage Marshes cannot tolerate these conditions, whereas shorter, more stress-tolerant pondshore species thrive.

Basin marshes in or adjacent to the White Mountains tend not to contain rare coastal plain plants, whereas those on the outwash plains and flats along the Saco contain more.

Constituent natural communities: sand plain basin marsh system (meadowsweet – robust graminoid sand plain marsh; three-way sedge - mannagrass mud flat marsh); sandy pond shore system (twig rush sandy turf pond shore, water lobelia aquatic sandy pond shore, bulblet umbrella sedge open sandy pond shore).

Rare plants: *Euthamia caroliniana* (grassleaf goldenrod), *Lipocarpha micrantha* (dwarf bulrush), *Fimbristylis autumnalis* (autumn sedge),

Wildlife: Probably similar to some drainage marshes and vernal pools.

Soils: These wetlands do not correspond well to NRCS soils series due to their small size, although they may be expected in soils typical of Drainage Marshes and Floodplain Forests, as well as open wetland soils in isolated basins within outwash soils.

Map unit inclusions: Not applicable due to fine scale of these habitats.

A Sandy Pond Shore Marsh on Ossipee Lake, similar to some examples in the Maine portion of the service area.

Isolated Basin Wetland – Undifferentiated:

This map unit consists of wetlands too small to reliably identify from remote sources, and not distinguished by soils mapping. They correspond to one or more of the other types of wetlands mapped here, including as Drainage Marsh, Sand Plain Basin Marsh, Fen, Bog, Poor Swamp, Aquatic. Some are vernal pools, which are generally too small and not mapped reliably enough to break out as their own map unit. Although these wetlands are small, they can contribute substantially to the local diversity of upland landscapes and wildlife and plants in them. See the other map units for information on communities, rare plants, and wildlife.

AQUATIC

Aquatic

Aquatic communities include the deep water environments of rivers, stream, lakes, and ponds that lack rooted vegetation. These communities are not classified by NHNHB or MENAP formally, but they are clearly important ecosystem components within the service area. Some of the important physical variables that influence biota in riverine aquatic systems include stream gradient, temperature, chemistry, and substrate; important variables in lacustrine aquatic systems include temperature gradients, depth, substrate, chemistry, and presence of adjacent wetlands.

> ***Constituent natural communities:*** Riverine and lacustrine systems (deep water environments of rivers, streams, lakes, and ponds). Not classified by NHNHB or MENAP.
>
> ***Rare plants***: Numerous rare plants occur in aquatic bed communities that occur at the shallow margins of aquatic systems.
>
> ***Wildlife***: common loon, cobra clubtail along the Saco River in Maine, brook trout, lake trout, rainbow smelt, slimy sculpin, ribbon snake, ducks and geese, and many other species of wildlife reliant on wetlands and adjacent bodies of water.
>
> ***Soils***: Not classified.
>
> ***Map unit inclusions***: Aquatic bed natural community, which contains floating and rooted vascular plants, may frequently occur in the shallow margins of aquatic systems.

HUMAN

Human landscapes were divided into four categories, each described below: Developed, Farmland and Other Openings, Early Successional Thicket, and Sand/Gravel Pits.

Developed

Developed areas include roads, bridges, buildings, residential homes, driveways, parking lots, and embedded openings and intervening small patches of vegetation among or immediately adjacent to these features. Major refinements of this layer were based on air photo interpretation to obtain a more

accurate depiction of development in the service area. See also the Ecological Integrity Assessment section for descriptions of derived buffer zones around development.

Farmland and Other Openings

This category includes openings created and maintained by human activity. They include agricultural fields that are mowed, hayed, pastured, or used as cropland (typically tilled fields used for forage or food crops, such as corn or vegetables); and other maintained openings such as airport runways, ski slopes, and capped landfills. In the NH WAP, these areas are referred to as grasslands. Grasslands are important habitat for many wildlife species. Species known to or potentially occurring in the service area on grasslands include bobolinks, American bittern, Blandings turtle, migrating/wintering birds, northern harrier, smooth green snake, white-tailed deer, and wood turtle. A few natural communities contain small patches of native grasslands, such as riverwash gravel bars or rock outcrops, but these are mapped separately. Two other types of openings were mapped separately: Gravel/Sand Pit and Early Successional Thicket.

The valley bottom soils along the Saco River are prime agricultural soils (East Conway).

Early Successional Thickets

Early successional thickets correspond to recently cut areas that are apparently not maintained by mowing or other regular disturbance. As such, they are in various stages of regrowth to forest, consisting of various combinations of shrubs, saplings, and herbaceous cover. In the NH WAP, these areas would correspond to Shrubland habitat, although they were not mapped separately from grasslands. Shrublands also include natural shrub thickets maintained by high water, fire regime, river flooding, or other disturbance. These naturally occurring shrub habitats are mapped in different appropriate natural community groups and are not included in the early successional thicket map unit. Shrublands more generally are used by a variety of wildlife including American woodcock, bobcat, black bear, moose, white-tailed deer, migrating/wintering birds, Northern harrier, ruffed grouse, Eastern box turtle, wood turtle, Canada lynx, eastern towhee, and smooth green snakes.

Gravel/Sand Pits

Gravel and sand pits were mapped separately whenever possible. They contain little or no vegetation if the pit is actively used, but may be in various stages of slow re-vegetation if gravel and sand removal operations have ceased or are intermittent. Gravel/Sand Pits have no value as natural communities, but can support habitat for a variety of plant and wildlife species. Some of the wildlife mentioned under Farmland and Other Openings and Early Successional Thickets can be found in Gravel/Sand Pits.

2.3 Other Resource Data Model Input Layer Maps

Concise descriptions of the Resource Data Model (RDM) input layers and maps (Appendix 2) appear below. Most input layer resources occupy relatively small portions (<10%) of the service area (Table 9). Only common forest types and productive forest soils, which cover large areas, occupy more than 20% of the service area. Next in a abundance are aquifers (20%) and riparian zones (12%). All other input layer features scored in the Resource Data Model collectively occupy smaller percentages of the landscape. Farmland and Other Openings and Swamps each occupy about 4% of the service area, and Rocky Ridges, Floodplain Forests/River Channels, Open Wetlands, and Aquatic map units each occupy about 3% each.

Many of these resources that occupy a small portion of the landscape are concentrated in lowland areas outside the WMNF. Most also have less than 25% on conservation land within the service area based on total acreage (Rocky Ridge is the exception). Five percent or less of Farmland and Other Openings, Prime Farmland, and Aquatic map units occur on conservation lands. Resource abundance and protection status patterns vary considerably at a finer-scale across the service area (see descriptions and tables in section 2.4 and Appendix 3).

Aquifers

Aquifers are groundwater-containing geologic formations, including those in fractured bedrock, glacial till, and stratified-drift (coarse sand and gravel deposits). Stratified drift makes the best aquifers because the coarse sediments hold an abundance of water per unit space and can transmit the water rapidly. Most of the groundwater used in the Saco Valley (commercial and domestic) comes from stratified drift aquifers, making them a critical natural resource in the service area. The aquifer map depicts stratified drift aquifers. Most of these areas are deep sand and gravel deposits laid down by glacial meltwater streams in bottomland areas, including the present-day valley bottom along the main-stem of the Saco River and its tributaries. Productive softwood forest soils and Pitch/Mixed Pine Plain natural communities are common where the aquifer is overlain by well drained soils, and various types of wetlands occur where the water table of the aquifer intercepts the ground surface. Aquifers underlie 20% of the service area.

Riparian Zones

Riparian zones are narrow corridors along rivers and streams. They include the aquatic environment of a stream or river itself, as well as adjacent wetland and upland areas. In headwater areas, streams tend to be small, frequent, narrow, steep, cold, and entrenched, with little or no true floodplain development. The small headwater streams converge in lower watershed positions to form relatively broad, low-gradient, and warmer streams and rivers, sometimes with attendant floodplains (flat areas beyond riverbanks that flood during high-water periods). Riparian zones can include nearly any type of wildlife habitat or natural community. They are inherently diverse biologically because they represent a rapid transition area between aquatic, wetland, and terrestrial habitats, and include biota associated with each or that utilize multiple habitats. They harbor critical fish, wildlife, and plant habitats, and provide

Table 9. Acreage and Conservation Land Status of Input Layer Features and Resource Data Model (RDM) Score Ranges. Note that acres and percents do not sum to totals for service area because input layers are independent and overlap in many areas.

Feature	Acres	% of Service Area	Acres of Cons. Land	% Cons. Land	% not Cons.
Total Area	381,288	100.0%	173,540	45.5%	54.5%
Aquifer	77,600	20.4%	14,714	19.0%	81.0%
Riparian Zones	45,345	11.9%	15,652	34.5%	65.5%
Non-forested wetlands	20,437	5.4%	4,950	24.2%	75.8%
Great Ponds Shorelines	5,428	1.4%	720	13.3%	86.7%
Great Ponds	9,104	2.4%	181	2.0%	98.0%
Unfragmented Blocks	296,771	77.8%	153,993	51.9%	48.1%
Productive Forest Soils - High	190,138	49.9%	91,085	47.9%	52.1%
Productive Forest Soils - Med	73,984	19.4%	32,317	43.7%	56.3%
Productive Forest Soils - Low	59,710	15.7%	42,222	70.7%	29.3%
Important Bird Areas	17,832	4.7%	16,371	91.8%	8.2%
Brook Trout headwaters	32,947	8.6%	9,246	28.1%	71.9%
Prime Farmland Soils	25,317	6.6%	1,257	5.0%	95.0%
Farmland and Other Openings	15,257	4.0%	622	4.1%	95.9%
Exemplary Natural Communities	14,842	3.9%	7,973	53.7%	46.3%
RDM - High (70-132)	3,148	0.8%	1,201	38.1%	61.9%
RDM - Mod. High (55-70)	6,954	1.8%	2,568	36.9%	63.1%
RDM 40-55	29,143	7.6%	12,220	41.9%	58.1%
RDM 25-40	133,895	35.1%	84,907	63.4%	36.6%
RDM 1-25	195,608	51.3%	71,301	36.5%	63.5%
RDM 0	680	0.2%	84	12.3%	87.7%

many ecological services, such as water sources for aquifers, water quality improvement, recreation, and flood control. Riparian zones depicted in the service area map are line features buffered by a certain distance (dependent on stream-order, see Table 2). These buffered zones occupy 12% of the service area.

Non-forested Wetlands

Non-forested wetlands, also called open wetlands, occur where water remains at or near the ground surface for a substantial portion of the growing season. This prevents or limits the establishment of trees, which require drier conditions. Non-forested wetlands are common along the margins of streams, rivers, and ponds. They correspond to various types of marshes, as well as Fens and Bogs. Non-forested wetlands are important as wildlife and plant habitats, flood control, water-supply storage, pollution filtration, and water quality maintenance. The zone immediately around non-forested wetlands is critical for maintaining these ecosystem functions. For this reason, non-forested wetlands depicted in

the service area map include a 100 foot buffer. They are most abundant and large on broad, low-elevation bottomlands of Maine and southern portions of the service area in New Hampshire. They occupy a total of 5.4% of the service area.

Great Ponds

Great Ponds are water bodies greater than ten acres in size. There are 56 within the service area, concentrated in the southern third of the New Hampshire portion and northern half of the Maine portion. The aquatic and shoreline environments of Great Ponds provide key habitat for fish and wildlife, including ducks, geese, Common Loon, and Lake Trout, as well as many species associated with adjacent wetlands and forests. Great Ponds are tremendous recreational and scenic assets, and attractive for residential and camp development for the same reasons. The shoreline and near-shore environment is critical to preserving many attributes of Great Ponds. Thus, a 300 foot buffer was added to the pond borders. Great Ponds occupy 2.4% of the service area, and buffered Great Pond shorelines an additional 1.4%.

Unfragmented Blocks

Areas dominated by natural features – those that are free from development and bisecting roads – are referred to as unfragmented blocks. Forests dominate most of the area of unfragmented blocks, although all contain other types of embedded features as well, such as wetlands, riparian zones, ponds, or aquifers. Unfragmented blocks are categorized by size class of areas beyond buffered roads, ranging from 100 to more than 5,000 acres. Large unfragmented blocks contain the best opportunities for conserving diverse and intact landscapes, including contiguous areas of productive forest land and functional ecosystems. Large blocks are considered more functional because they have increased resistance and resilience to both human and natural disturbances, and by virtue of the geographic continuity, can maintain ecological connections and dynamics among the diverse constituent communities and habitats. Smaller blocks are more vulnerable to impacts from humans and diminished biological function associated with small or fragmented patches (see also Ecological Integrity below for related discussion). Unfragmented blocks are also relatively wild areas, unfettered by development or overt signs of human habitation. For this reason, many often contain excellent passive recreational opportunities (known or potential). Seventy-eight percent of the service area is comprised of unfragmented blocks 100 acres in size or greater. This means that 22% of the service area is either developed, included in road buffer zones, or contained within blocks less than 100 acres in size.

Productive Forest Soils

Forest productivity refers to the rate at which forest biomass is produced on a site. Productive forest soils grow quality timber (biomass) rapidly. Productive forests also perform ecological services, such as contributing to forest health and diversity, and carbon sequestration, which aids in mitigation of climate change. The Natural Resource Conservation Service in New Hampshire devised a classification of Important Forest Soil Groups (IFSGs) to identify productive forest soils. Although IFSGs have not been identified or mapped in Maine or on the White Mountain National Forest, we used the close relationship between IFSGs and natural community groups in NH as a basis to extend mapping of productive forest

soil categories across the service area into Maine and the WMNF (see Forest Productivity Scores in Methods section 1.2 for additional discussion). The Productive Forest Soils map depicts three broad categories of soils (see Table 4 for scoring scheme). High productivity soils correspond to forested natural communities with soils that are productive for hardwoods such as sugar maple and beech. These include certain glacial till soils on upland slopes, and floodplain and river terrace soils in bottomlands. High productivity soils occupy 50% of the service area. Medium productivity soils occur mostly on sand and gravel soils, which are productive for softwoods such as white pine (but less so for hardwoods). They occupy 19% of the service area. Low productivity soils include many wetlands, and rocky or high-elevation soils. They occupy 16% of the service area. Remainder areas, such as ponds, lakes, and urban land, are excluded.

Important Bird Areas

Important Bird Areas (IBAs) are part of an international program that identifies critical bird habitats. Partnerships of various organizations and agencies operate IBA programs within individual states. There are 22 IBAs in the state of Maine and 18 in New Hampshire. IBAs contain one or more of the following attributes: breeding, migratory, or wintering habitat for endangered or threatened species; species indicative of unique habitats; high species diversity; significant congregation areas; or areas important for long-term bird research. There are two IBAs in the service area, both in NH. The first corresponds to high-elevation areas that provide key habitat for Bicknell's Thrush and Peregrine Falcons. The other, the Ossipee Pine Barrens (including areas around Silver Lake), contains rare species such as nighthawks, and high densities of uncommon species such as Whip-poor-wills, Eastern Towhee, and Prairie Warbler.

Brook Trout Headwaters

Eastern Brook Trout were once more widespread in New Hampshire and Maine streams, but have declined due to changes in habitat. Presently, they are most abundant in northern parts of New Hampshire and Maine. They are considered an indicator species for healthy aquatic systems and for a variety of other organisms. Comprehensive and accurate maps of Brook Trout distribution are not available. However, based on input from John Magee, Fish Biologist with NH Fish and Game Department, we used first- and second-order streams as a surrogate for potential Brook Trout habitat.

Prime Farmland Soils

Prime farmland soils are the most productive soil types for farming; they have the best combination of physical and chemical attributes for producing food, feed, forage, or fiber. Characteristics of prime farmland soils include fine particle texture, good aeration, infrequent flooding, moderate pH, minor stone content, gentle slopes, and a depth greater than 40 inches to bedrock. Prime farmland in the service area is primarily associated with fine alluvial soils along the Saco River floodplain in both states. These soils are defined and mapped using a common definition in Maine, New Hampshire and most other states. In contrast, definitions of soils of local or statewide importance vary from state to state and are not directly comparable. Prime Farmland Soils also correspond to the high productivity forest soil category. Some Prime Farmland soil areas are not currently used for agriculture; some support or have the potential to support Semi-rich to Rich Woods or high Floodplain Forest natural communities.

Examples of Prime Farmland Soils include well drained variants of Ondawa, Salmon, and Fryeburg soil series, all of which occur on floodplains or bottomlands. Prime Farmland Soils occupy 6.6% of the service area.

Farmland and Other Openings

This category includes openings created and maintained by human activity, such as agricultural fields that are mowed, hayed, pastured, or used as cropland, as well as other maintained openings such as airport runways and ski slopes. Cropland refers to usually tilled fields that are used for food or forage crops, such as corn or vegetables. Farmland and Other Openings are not only critical resources for agricultural, recreation, and scenery that many associate with the Saco Valley, but are important habitat for many grassland and opening-dependent wildlife species (see map unit description in Natural Community type descriptions, section 2.2). Two other types of openings were mapped separately: Gravel/Sand Pit and Early Successional Thicket, which are depicted within the Natural Community/Wildlife Habitat map. Farmland and Other Openings occupy 4% of the service area, and only 4% of that occurs on conservation land. The Farmland and Other Openings map layer was derived initially from NH WAP Grassland habitat locations in New Hampshire, and from landcover data in Maine (where WAP maps are not available). These coverages were comprehensively augmented and refined based on a thorough manual review of the most recent aerial photography available to produce the final data layer depicted in the Farmland and Other Openings map.

Ecological Integrity

Ecological integrity refers to the quality or health of an ecosystem. It is a combined measure of the health, diversity, and viability of an ecosystem (for example, a natural community, habitat, or more complex system of multiple features), and the degree to which its structure, composition, and function compare with reference examples. The map depicts a series of zones that represent a predicted gradient of ecological integrity. The zones are based on location and buffer distances from roads, development, and maintained openings, and the size of un-fragmented blocks. In general, ecological integrity and functioning are greatest in large, unfragmented, natural landscapes distant from the stresses and impacts associated with development and human activity, and lowest in small, fragmented areas proximal to human impacts (pollution, invasive species, hydrologic alterations, and vegetation management that changes the structure and composition of species). We used these zones to approximate ecological integrity and to scale appropriate adjustments to scores of features in several input layers in the Resource Data Model, including natural communities, rare species, Great Pond shorelines, and riparian zones. The series of mapped zones, from lowest to highest predicted ecological integrity, are 1) core development (roads, buildings, parking lots etc); 2) secondary development (low-moderate density development and 250-500 ft. buffer zones around core development); 3) 250 ft. buffer around Farmland and Other Openings; 4) 500-1000 ft. road buffer and blocks less than 100 acres; and 5) unfragmented blocks in four size ranges (from >100 acres to > 5,000 acres). The Ecological Integrity map may also be useful for evaluating specific opportunities for conservation that arise, including predicted levels of long term ecological integrity.

Resource Data Model

The Resource Data Model (RDM) integrates the resource values assigned to features within each of the twelve individual resource input layers. This "co-occurrence" analysis involved overlaying and summing the feature scores within each layer to obtain a single map depicting areas of high to low resource score values. For example, a high score would result where multiple features of conservation interest overlap in a particular area, such as a riparian zone, an aquifer, habitat for a rare bird, an outstanding example of a globally rare natural community, and predicted high ecological integrity. The RDM scores were grouped into five score-range categories. The ranges and their abundance in the service area are provided in Table 9. Overall, areas with the highest RDM (co-occurrence) scores occupy a relatively small percentage of the landscape. For example, the top two categories occupy only 2.4% of the service area, and the top three categories (representing scores above 40), occupy about 10% of the landscape. See Methods section 1.2 for additional details on the co-occurrence analysis and Resource Data Model process and methods.

Rare Species and Exemplary Natural Communities

The scores of the RDM reflect the biodiversity values associated with specific locations of rare species and exemplary natural community locations in both states. However, the data release policy maintained by the New Hampshire Natural Heritage Bureau prohibits the display of specific locations in map or tabular form. For this reason, we are unable to include a service area-wide map of the locations of rare plants, animals, and natural communities that would complement the scale of this analysis and accompanying maps. We do, however, include a map of these resources for the Maine side of the service area (see Appendix 2). Rare and uncommon plants and animals in both states within the service area are listed in the descriptions of the natural community/habitat types they occur in. We encourage USVLT to submit a request to the Maine Natural Areas Program to obtain an updated version of the detailed dataset for the Maine portion of the service area. New Hampshire Natural Heritage Bureau will release specific locations on public lands and with landowner permission on private lands. In addition, lists of rare species and exemplary natural communities at a town level can be obtained from the NHB website.

2.4 Focus Areas

As stated in Section 1.3, the draft focus area delineations were based on the outcomes of the Resource Data Model (RDM), as well as other conservation considerations relevant to the USVLT mission. They do not reflect input and priorities from local communities and other partners, which are a critical aspect of USVLT's mission. Furthermore, USVLT has not factored recreation or other cultural assets into the consideration of these preliminary areas, which should reflect local values. Thus, the focus areas are a first step in a more comprehensive process, and do not represent the strategic priorities of the USVLT.

The intent of and hope for delineating preliminary focus areas here were two-fold: 1) to define and describe areas critical to the ecological and cultural features valued by USVLT and contained in this analysis; and 2) to serve as an starting point and catalyst for future dialogue between USVLT and its local partners.

Description of Focus Areas

The focus areas are arranged according to approximate watershed position within three broad areas: New Hampshire North, New Hampshire South, and Maine. Concise descriptions of each focus area are provided below along with an accompanying summary table of key input layer and natural community map features. Additional tabular information on draft focus areas, including acre-weighted average scores and driving inputs, appear in Table 10, and unabridged input layer data tables appear in Appendix 3. The data release policy of New Hampshire Natural Heritage Bureau prevents reference to specific rare species and exemplary natural communities at the scale of focus areas (although these locations did affect RDM scores and delineations of focus areas in many cases).

Notations for Focus Area Description Tables

Acreage of primary input layer features in the focus areas and conservation land status are provided in an accompanying table for each focus area description. The following notes apply to these abbreviated tables:

- The tables include only the input layers or natural community map units within the focus area that occupy a higher percent of the focus area than the average percent for the entire service area. Therefore, they represent the dominant and primary characteristic input layer features of the focus area. Unabridged focus area data tables appear in Appendix 3.
- The summarized data refer only to portions of focus areas within the service area boundaries.
- Natural community map units form a seamless coverage of the service area and total to service area acreage. Other input layers are independent and therefore acreages do not sum to total service area acreages, including Resource Data Model (RDM) score ranges (an "RDM Developed" category not included).
- Subalpine is excluded from the tables; although it occurs on the WMNF, it does not occur within any of the focus areas.

New Hampshire North

1. **Thorn Mountain:** This area connects the WMNF uplands to the Saco Intervale. It is one of the larger relatively unfragmented blocks in the Saco drainage on private land on the New Hampshire side of the service area. Thorn Mountain forms the heart of the area, with its subsidiary neighbors Tin Mtn., Middle Mtn and Thorn Hill. Hemlock – Hardwood – Pine & Northern Hardwood Forests dominate the lower elevations and Rocky Oak – Hardwood – Spruce dominates the upper slopes. Productive hardwood forest soils occur over much of the area. The East Branch of the Saco River drops through the steep walled valley between Thorn Mtn. and Kearsarge North on the southeast side of the focus area. This area may provide wildlife corridor connectivity between the Saco River and large forested areas to the north and east of the Saco. The dense development of North Conway to the south presents significant resistance to wildlife movement with few apparent corridors.

1) Thorn Mtn.	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	4674.8	100.0%	877.6	18.8%	81.2%
Unfragmented Blocks	3781.3	80.9%	793.0	21.0%	79.0%
Productive Forest Soils - High	2820.6	60.3%	431.7	15.3%	84.7%
Productive Forest Soils - Med	1547.0	33.1%	415.3	26.8%	73.2%
RDM (1-25)	3228.1	69.1%	520.5	16.1%	83.9%
Natural Community Map Units					
Hemlock - Hardwood - Pine & North. Hdwds.	2697.8	57.7%	415.1	15.4%	84.6%
Rocky Oak – Hardwood – Spruce	1477.3	31.6%	359.2	24.3%	75.7%

2. Saco Bartlett: This area encompasses the upper Saco River Valley floodplain and lower mountain slopes through Bartlett from Harts Ledge to Mount Stanton. The key biological features are the Saco River itself, the associated riparian zone with cobble and gravel bars, floodplain and terrace forests, feeder streams with brook trout habitat, matrix forests extending to the WMNF, and embedded patches of cliffs, talus, steep rocky slopes, rich woods, and small wetlands. Aquifers occupy much of the valley bottom, and there are several patches of productive farmland soils and forestland. This is a diverse and somewhat unique section of river: well developed floodplains and terraces first appear in this section (poorly developed further upstream). Bottomlands of this type are absent from the WMNF, and therefore the focus area presents the opportunity to form a connected landscape from river to summit in concert with WMNF lands. The floodplains contain good examples of the rare sugar maple – ironwood floodplains largely restricted to Bartlett and Conway in northern New England.

2) Saco Bartlett	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	3799.6	100.0%	40.2	1.1%	98.9%
Aquifer	1830.7	48.2%	28.9	1.6%	98.4%
Riparian Zones	1520.1	40.0%	33.1	2.2%	97.8%
Prime Farmland Soils	306.3	8.1%	18.6	6.1%	93.9%
Farmland and Other Openings	178.4	4.7%			
RDM - High (70-132)	174.2	4.6%	12.6	7.2%	92.8%
RDM - Mod. High (55-70)	352.8	9.3%	4.8	1.4%	98.6%
RDM 40-55	522.7	13.8%	9.9	1.9%	98.1%
RDM 25-40	1352.4	35.6%	7.4	0.5%	99.5%
Natural Community Map Units					
Cliff / Talus	31.1	0.8%			
Rocky Oak – Hardwood – Spruce	681.9	17.9%	0.1	0.0%	100.0%
Pitch/Mixed Pine Plains	447.1	11.8%	1.1	0.3%	99.7%
Semi-rich to Rich Woods	160.0	4.2%	1.7	1.1%	98.9%
Floodplain Forest	467.9	12.3%	15.7	3.4%	96.6%
Threaded River Floodplain & Terrace	475.4	12.5%			
River Channel	109.6	2.9%	8.9	8.1%	91.9%
Farmland and Other Openings	210.3	5.5%	0.9	0.4%	99.6%

3. **Intervale:** The East Branch Saco River, Wildcat River, Ellis River, and Rocky Branch converge and join the mainstem of the Saco in the Intervale, nearly tripling the size of the watershed that feeds it, and giving rise to the broad Saco Valley floodplain. The valley bottom stretches a mile or more in belt-width here. Humphrey's and Cathedral Ledges are the prominent landmarks on the west side of the Intervale, and Thorn Mtn. and Kearsarge North rise steeply on the north and east sides. Riparian resources and natural communities form key features of the focus area: riparian zones, large aquifer area, large Floodplain Forests, gravel and sand barren River Channels, and Brook Trout feeder streams. Pitch/Mixed Pine Plain forests occupy the dry flats above the river, and there are some large stretches of farmland on productive soils. The area also provides important connectivity to the WMNF on either side of the valley, and potentially important wildlife corridors, which are few and far between further south along the Saco River in New Hampshire. The Intervale is at the upper end of the stretch of river between Bartlett and Fryeburg which contain the only locations in the world for the globally rare hudsonia - silverling river channel community.

3) Intervale	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	3272.8		325.9	10.0%	90.0%
Aquifer	2562.8	78.3%	325.4	12.7%	87.3%
Riparian Zones	1626.9	49.7%	222.3	13.7%	86.3%
Non-forested wetlands	263.2	8.0%	30.1	11.4%	88.6%
Prime Farmland Soils	906.9	27.7%	123.0	13.6%	86.4%
Farmland and Other Openings	636.2	19.4%	169.4	26.6%	73.4%
Exemplary Natural Communities	272.8	8.3%	80.7	29.6%	70.4%
RDM - High (70-132)	154.1	4.7%	35.7	23.2%	76.8%
RDM - Mod. High (55-70)	290.2	8.9%	57.8	19.9%	80.1%
RDM 40-55	590.0	18.0%	36.4	6.2%	93.8%
Natural Community Map Units					
Rocky Oak – Hardwood – Spruce	298.6	9.1%	0.3	0.1%	99.9%
Pitch/Mixed Pine Plains	299.2	9.1%	7.0	2.4%	97.6%
Floodplain Forest	1093.6	33.4%	123.5	11.3%	88.7%
River Channel	87.9	2.7%	11.2	12.7%	87.3%
Aquatic	173.4	5.3%	12.7	7.3%	92.7%
Farmland and Other Openings	653.1	20.0%	169.4	25.9%	74.1%

4. **Saco North Conway:** The dominant features of this area are the Saco River, attendant sand and gravel barrens, significant sugar and silver maple Floodplain Forests, and extensive open farmland, most of which is on prime farmland soils. Development along Rt. 16 and West Side Road hem in around the edges of the focus area, although there is connectivity to Echo Lake State Park and the WMNF on the west side. As with most of the bottomland of the Saco River, there is extensive aquifer beneath the surface. There are more open and forested wetlands here compared to further up river. The Pitch/Mixed Pine Plains are better expressed here as well, although they are mostly fragmented and on the periphery of the focus area. Many residents and visitors have a core association with the features of this and adjacent focus areas along the Saco River mainstem: a unique scenic landscape with a clear river meandering within a mosaic of farmland and forests, with ledges and summits rising sharply beyond, and a variety of recreational opportunities.

4) Saco North Conway	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	2979.0	100.0%	136.1	4.6%	95.4%
Aquifer	2582.4	86.7%	130.3	5.0%	95.0%
Riparian Zones	1232.3	41.4%	55.4	4.5%	95.5%
Non-forested wetlands	322.7	10.8%	8.8	2.7%	97.3%
Prime Farmland Soils	1225.7	41.1%	83.4	6.8%	93.2%
Farmland and Other Openings	1057.1	35.5%	59.0	5.6%	94.4%
RDM - High (70-132)	35.3	1.2%	4.1	11.5%	88.5%
RDM - Mod. High (55-70)	254.9	8.6%	20.0	7.9%	92.1%
RDM 40-55	497.5	16.7%	27.0	5.4%	94.6%
RDM 25-40	1051.0	35.3%	54.3	5.2%	94.8%
Natural Community Map Units					
Pitch/Mixed Pine Plains	228.8	7.7%	5.6	2.5%	97.5%
Fen > Marsh	85.4	2.9%			
Poor Swamps	86.3	2.9%			
Floodplain Forest	777.2	26.1%	53.8	6.9%	93.1%
River Channel	74.0	2.5%	4.3	5.8%	94.2%
Aquatic	131.1	4.4%	6.4	4.9%	95.1%
Farmland and Other Openings	1063.4	35.7%	59.0	5.6%	94.4%

5. **Swift River:** This area stretches between the WMNF and the Saco River along the lower three miles of the Swift River in Conway. The lower Swift River is somewhat unique among focus areas: it contains a long, undeveloped stretch of bottomland along a moderate-gradient mountain river, an uncommon feature on private land in the service area. The eastern most section on the Saco River floodplain is open farmland, but most of the remainder area is forested. There are some narrow floodplain forests, but mostly the sandy bottomlands consist of high terraces with dry pine forest, mesic hemlock-spruce forests, or the matrix type hemlock – oak – northern hardwood forests. This is a transition zone between the drier pine plains down-valley and the northern conifer dominated lowlands of the mountains. The Swift River is a moderate-gradient mountain river in this section, as it levels out from steeper and higher-gradient, boulder-choked sections above. Cobble and gravel bars are larger and more evident here than further upstream. Aquifer lies beneath. The coarse sandy terrace soils are productive for softwoods.

5) Swift River	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	1345.2	100.0%	58.5	4.3%	95.7%
Aquifer	1136.8	84.5%	50.6	4.5%	95.5%
Riparian Zones	461.0	34.3%	8.0	1.7%	98.3%
Non-forested wetlands	152.9	11.4%	3.4	2.2%	97.8%
Productive Forest Soils - Med	346.8	25.8%	13.4	3.9%	96.1%
Prime Farmland Soils	168.4	12.5%	2.8	1.6%	98.4%
Farmland and Other Openings	256.9	19.1%	2.2	0.9%	99.1%
RDM - Mod. High (55-70)	30.5	2.3%			
RDM 40-55	274.8	20.4%	3.3	1.2%	98.8%
Natural Community Map Units					
Pitch/Mixed Pine Plains	312.7	23.2%	13.4	4.3%	95.7%
Fen > Marsh	35.4	2.6%	0.0	0.0%	100.0%
Floodplain Forest	179.6	13.3%	0.9	0.5%	99.5%
River Channel	26.4	2.0%			
Aquatic	77.4	5.8%	0.1	0.2%	99.8%
Farmland and Other Openings	264.9	19.7%	3.9	1.5%	98.5%

6. **Green Hills:** The Green Hills perch above the U-shaped bend in the Saco River between North Conway and Fryeburg, topping out on Black Cap at 2,300 feet elevation. This is the largest unfragmented block of forest land in the service area in NH outside the WMNF. It contains a great diversity of upland and wetland communities, including nearly all groups other than riparian types. These include large patches of Rocky Ridge and dry forests, including Red Pine Rocky Ridges, several rare plants of these habitats, as well as large swaths of Hemlock – Hardwood – Pine & Northern Hardwood Forests, which include productive forest lands. The sandplains on the southeast side contain part of the enormous Saco Valley aquifer, some unusual Pitch Pine – Heath Swamps, a variety of open wetlands, and on slightly higher outwash soils, Pitch/Mixed Pine Plains with northern conifers mixed in. This focus area abuts the Saco East Conway focus area immediately to the south.

6) Green Hills	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	12594.7	100.0%	5834.1	46.3%	53.7%
Unfragmented Blocks	11330.9	90.0%	5644.9	49.8%	50.2%
Productive Forest Soils - High	7050.1	56.0%	3130.5	44.4%	55.6%
Productive Forest Soils - Low	2938.1	23.3%	2076.0	70.7%	29.3%
Exemplary Natural Communities	1119.8	8.9%	784.5	70.1%	29.9%
RDM 40-55	1761.1	14.0%	778.3	44.2%	55.8%
RDM 1-25	7011.8	55.7%	2791.9	39.8%	60.2%
RDM 0	43.5	0.3%	5.4	12.5%	87.5%
Natural Community Map Units					
Rocky Ridge	1983.4	15.7%	1801.3	90.8%	9.2%
Hemlock - Hardwood - Pine & North. Hdwds.	6688.1	53.1%	2827.1	42.3%	57.7%
Pitch/Mixed Pine Plains	1310.2	10.4%	301.7	23.0%	77.0%
Semi-rich to Rich Woods	356.6	2.8%	298.9	83.8%	16.2%
Poor Swamps	765.1	6.1%	189.8	24.8%	75.2%

7. **Saco East Conway:** The Saco River in East Conway contains some large patches of farmland on productive soils, much on prime farmland soils. Most of the bottomlands here are forested, including some substantial patches of Floodplain Forests, and surrounding Pitch/Mixed Pine Plains on outwash soils. The riparian zone contains River Channel gravel barrens, which are frequent along this section of river. Some residential development occurs near the river, but for the most part the focus area is rural and undeveloped, although there is no conservation land. Aquifer underlies nearly the entire area. It abuts the Green Hills to the north across East Conway Rd.

7) Saco East Conway	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	2345.9	100.0%			
Aquifer	2137.9	91.1%			
Riparian Zones	1097.7	46.8%			
Non-forested wetlands	143.2	6.1%			
Productive Forest Soils - Med	524.9	22.4%			
Prime Farmland Soils	697.9	29.7%			
Farmland and Other Openings	938.9	40.0%			
Exemplary Natural Communities	90.5	3.9%			
RDM - Mod. High (55-70)	162.0	6.9%			
RDM 40-55	461.0	19.7%			
RDM 25-40	859.8	36.7%			
Natural Community Map Units					
Pitch/Mixed Pine Plains	519.0	22.1%			
Fen > Marsh	22.0	0.9%			
Floodplain Forest	493.3	21.0%			
River Channel	25.6	1.1%			
Aquatic	194.7	8.3%			
Farmland and Other Openings	958.7	40.9%			

8. Weeks Brook: Weeks Brook is a large stream that drains the eastern slopes of the Green Hills and cuts through a flat bottomland between the steep slopes of Black Cap to the west and low summit of Birch Hill to the east, joining the Saco River at the southeast end of the focus area. Several other brooks feed into Upper Kimball Pond at the north end of the focus area, which drains to Lower Kimball Pond and the Saco by the Charles River. This is a moderately large unfragmented block that abuts the Green Hills and Saco Fryeburg focus area to the west and south, respectively. Aquifer lies beneath most of the focus area. A diversity of open and wooded wetlands are also present, including Poor Swamps, Fens and Drainage Marshes, along with Minor River Floodplain or Swamp that stretches along Weeks Brook. Pitch/Mixed Pine Plains cover the extensive flat outwash terrain, corresponding to medium productivity soils (productive for softwoods). The pines here probably mix with northern conifers, such as balsam fir and red spruce, based on proximity to mountain forests with these trees and composition of sand plains nearby.

8) Weeks Brook	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	2931.8	100.0%	879.2	30.0%	70.0%
Aquifer	1964.5	67.0%	473.7	24.1%	75.9%
Riparian Zones	587.1	20.0%	117.0	19.9%	80.1%
Non-forested wetlands	306.2	10.4%	44.7	14.6%	85.4%
Great Ponds Shorelines	125.7	4.3%	16.8	13.3%	86.7%
Unfragmented Blocks	2311.0	78.8%	756.1	32.7%	67.3%
Productive Forest Soils - Med	871.0	29.7%	252.1	28.9%	71.1%
Productive Forest Soils - Low	573.9	19.6%	197.0	34.3%	65.7%
Farmland and Other Openings	263.7	9.0%	15.9	6.0%	94.0%
RDM - Mod. High (55-70)	68.1	2.3%	13.9	20.4%	79.6%
RDM 40-55	678.0	23.1%	251.6	37.1%	62.9%
RDM 0	3.9	0.1%	3.9	99.7%	0.3%
Natural Community Map Units					
Pitch/Mixed Pine Plains	871.0	29.7%	252.1	28.9%	71.1%
Fen > Marsh	158.5	5.4%	21.2	13.4%	86.6%
Fen	64.7	2.2%	5.9	9.1%	90.9%
Semi-rich to Rich Swamp	72.4	2.5%	30.2	41.7%	58.3%
Poor Swamps	302.7	10.3%	129.6	42.8%	57.2%
Minor River Floodplain or Swamp	198.8	6.8%	37.2	18.7%	81.3%
Aquatic	171.1	5.8%	0.2	0.1%	99.9%
Farmland and Other Openings	291.9	10.0%	20.9	7.2%	92.8%

9. South Conway/Tibbetts Mtn.: This area straddles the NH-ME border and forms the headwaters area for the Little Saco River, which flows north and east across the Fryeburg Barrens to the Saco River. The large, unfragmented forest block and productive forest soils are the main driving features of the South Conway/Tibbetts Mtn. area. This is a relatively flat landscape with Hemlock – Hardwood – Pine Forests on productive glacial till soils, some large patches of Pitch/Mixed Pine Plains and Rich, and Poor Swamps. Non-forested wetlands along drainages are frequent, and there are also lots of small, isolated basin wetlands. The isolated basins support swamps, Fens, and Marshes. The south end of the focus area rises steeply onto the north slope of Dundee Hill and Tibbetts Mtn.. Tibbetts Mtn. is a drumlin with a gradual north slope and steep south face.

9) South Conway/Tibbetts Mtn.	Input Layer Acres in F.A.		Acres on Conservation Land		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	6154.8	100.0%	606.6	9.9%	90.1%
Non-forested wetlands	448.3	7.3%	33.7	7.5%	92.5%
Unfragmented Blocks	5571.5	90.5%	577.3	10.4%	89.6%
Productive Forest Soils - High	4111.5	66.8%	343.3	8.3%	91.7%
RDM 40-55	499.6	8.1%	134.3	26.9%	73.1%
RDM 1-25	4359.5	70.8%	339.5	7.8%	92.2%
Natural Community Map Units					
Hemlock - Hardwood - Pine & North. Hdwds.	4105.7	66.7%	343.3	8.4%	91.6%
Pitch/Mixed Pine Plains	637.7	10.4%	159.0	24.9%	75.1%
Fen > Marsh	137.0	2.2%	12.7	9.3%	90.7%
Bog	16.4	0.3%			
Semi-rich to Rich Swamp	253.0	4.1%	17.1	6.7%	93.3%
Poor Swamps	385.8	6.3%	12.6	3.3%	96.7%
Isolated Basin Wetland - Undifferentiated	6.5	0.1%			
Drainage Marsh	12.3	0.2%	1.6	13.3%	86.7%

New Hampshire South

10. Whitton Pond & Chain-of-Ponds: There is a wide diversity of natural communities and wildlife habitats in this block, including a few Rocky Ridges and Cliffs, Pitch/Mixed Pine Plain forests, a variety of swamps, and open wetlands including Isolated Basin Wetlands, Fens, Marshes, and Bogs. These patch communities are set within a more extensive matrix forest of hemlock – beech – oak – pine and hemlock - oak - northern hardwood forests, many of which occur on productive forest soils. Whitton Pond – effectively hidden from view from surrounding roads - is a 167 acre undeveloped pond perched among hills at the drainage divide between the Saco and Ossipee Rivers. Iona Lake sits at the north end of the block, and the Chain-of-Ponds, a series of small ponds and kettleholes in a band of outwash plain drained by Pequawket Brook, stretches along the southeastern side of the focus area. In all, there are five Great Ponds with undeveloped shores, and numerous smaller ponds and headwater streams potentially suitable for Brook Trout that drain from the highlands. More than a dozen summits or knobs are scattered across the focus area. This is a relatively large, unfragmented forest block for New Hampshire outside the WMNF.

10) Whiton Pond & Chain-of-Ponds	Input Layer Acres in F.A.		Acres on Conservation Land		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	7995.4	100.0%	990.9	12.4%	87.6%
Aquifer	2437.1	30.5%	110.9	4.5%	95.5%
Non-forested wetlands	1045.3	13.1%	160.3	15.3%	84.7%
Great Ponds Shorelines	307.6	3.8%	15.2	4.9%	95.1%
Productive Forest Soils - High	4205.0	52.6%	705.0	16.8%	83.2%
Productive Forest Soils - Med	1646.1	20.6%	85.8	5.2%	94.8%
RDM 40-55	729.6	9.1%	51.4	7.1%	92.9%
RDM 1-25	4681.7	58.6%	521.0	11.1%	88.9%
Natural Community Map Units					
Hemlock - Hardwood - Pine & North. Hdwds.	4196.5	52.5%	704.8	16.8%	
Rocky Oak – Hardwood – Spruce	761.0	9.5%	54.6	7.2%	92.8%
Pitch/Mixed Pine Plains	901.4	11.3%	31.2	3.5%	96.5%
Fen > Marsh	529.1	6.6%	100.6	19.0%	81.0%
Bog	19.1	0.2%			
Semi-rich to Rich Swamp	391.0	4.9%	88.9	22.7%	77.3%
Minor River Floodplain or Swamp	47.4	0.6%			
Aquatic	317.6	4.0%	2.4	0.8%	99.2%

11. Conway Lake South: Conway Lake, its undeveloped shores, and the surrounding productive, unfragmented matrix forests are the key features that define this focus area. It contains the longest extent of undeveloped shore in the service area within NH. There is very little open farmland in the area, although the extent of unfragmented forest this close to developed parts of Conway is notable. The block encompasses the immediate watershed of surrounding low hills, several small wetland complexes, and patches of aquifer. Libby and Atkinson Mountains, Birch Hill, and several other unnamed hills around 1,000 ft. in elevation form a U-shaped ridgeline around the southern end of the lake. Labrador Pond, attended by an apparent Bog and Fen communities, and Roberts Pond are two smaller Great Ponds that compliment the obvious value of Conway Lake and its shorelines. Several streams with potential Brook Trout habitat thread through the block. Sixteen percent of the focus area is conservation land.

11) Conway Lake South	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	4518.4	100.0%	731.6	16.2%	83.8%
Non-forested wetlands	358.7	7.9%	72.3	20.2%	79.8%
Great Ponds Shorelines	400.1	8.9%	70.0	17.5%	82.5%
Productive Forest Soils - High	3158.7	69.9%	567.9	18.0%	82.0%
RDM 1-25	3382.9	74.9%	497.4	14.7%	85.3%
Natural Community Map Units					
Hemlock - Hardwood - Pine & North. Hdwds.	3149.5	69.7%	567.4	18.0%	82.0%
Rocky Oak – Hardwood – Spruce	386.2	8.5%	10.4	2.7%	97.3%
Fen > Marsh	192.5	4.3%	25.3	13.2%	86.8%
Bog	9.0	0.2%			
Semi-rich to Rich Swamp	222.9	4.9%	20.1	9.0%	91.0%

12. Lyman Mountain: Much of the southwestern portion of the service area consists of relatively small forest blocks. Lyman Mountain is among the largest unfragmented blocks, and this is its main feature of importance. Rocky Oak – Hardwood – Spruce forests occupy much of the middle and upper slopes of Lyman Mtn., which exceeds 1,500 feet in elevation. The lower slope contains more productive Hemlock – Hardwood – Pine and Northern Hardwood Forests. There are a few small patches of other communities, and the undeveloped Loud Pond on the north side of the mountain, but the unfragmented forests are the primary natural resource. There are current conservation lands in the focus area.

12. Lyman Mtn.	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	2734.2	100.0%			
Unfragmented Blocks	2480.7	90.7%			
Productive Forest Soils - Med	1805.4	66.0%			
Farmland and Other Openings	119.4	4.4%			
RDM 25-40	1232.3	45.1%			
RDM 1-25	1452.3	53.1%			
Natural Community Map Units					
Rocky Oak – Hardwood – Spruce	1781.0	65.1%			
Semi-rich to Rich Swamp	65.1	2.4%			
Farmland and Other Openings	126.0	4.6%			

13. Silver Lake: The Silver Lake focus area is dominated by Pitch/Mixed Pine Plains. Much of this map unit is, more specifically, comprised of pitch pine – scrub oak woodland, a globally rare fire-dependent ecosystem with many rare moths and concentrations of uncommon birds and plants. These pine woodlands wrap around the southern end of Silver Lake and extend south to Ossipee Lake on either side of the intervening Jackman Ridge, a drumlinoid hill that supports Hemlock – Hardwood – Pine and Northern Hardwood Forests. Aquifer occurs beneath the entire focus area. Bogs and Fens occur in the outwash terrain on the east side of the focus area. A significant portion of the unfragmented block that starts in this focus area extends southward out of the service area. Much of the focus area is in conservation land.

13) Silver Lake	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	1676.6	100.0%	1405.6	83.8%	16.2%
Aquifer	1643.8	98.0%	1405.6	85.5%	14.5%
Non-forested wetlands	159.3	9.5%	117.9	74.0%	26.0%
Great Ponds Shorelines	96.3	5.7%	66.9	69.5%	30.5%
Productive Forest Soils - Med	834.7	49.8%	715.4	85.7%	14.3%
Important Bird Areas	1573.5	93.9%	1405.6	89.3%	10.7%
Exemplary Natural Communities	540.5	32.2%	513.0	94.9%	5.1%
RDM - High (70-132)	42.9	2.6%	41.8	97.4%	2.6%
RDM - Mod. High (55-70)	323.8	19.3%			
RDM 40-55	519.2	31.0%	426.8	82.2%	17.8%
RDM 25-40	656.6	39.2%	581.2	88.5%	11.5%
Natural Community Map Units					
Pitch/Mixed Pine Plains	803.4	47.9%	671.7	83.6%	16.4%
Fen > Marsh	50.6	3.0%	34.1	67.3%	32.7%
Bog	6.6	0.4%	3.1	46.7%	53.3%
Fen	41.3	2.5%	33.3	80.8%	19.2%
Semi-rich to Rich Swamp	41.4	2.5%	39.9	96.5%	3.5%
Minor River Floodplain or Swamp	28.7	1.7%	28.4	99.3%	0.7%

Maine

14. Saco Fryeburg: Large expanses of cropland, much of which is on prime farmland soils, are the dominant feature of the Saco Fryeburg focus area. Other primary features are the Saco River and its riparian zone, and an extensive aquifer beneath the surface. In the riparian zone and surrounding bottomlands, there are patches of the globally rare hudsonia - silverling river channel community and its rare species, other sand bar features, oxbow ponds and other scattered open wetlands, and some Floodplain Forests. More well drained sandy soils support Pitch/Mixed Pine Plains. Swan's Falls dam occurs on this stretch. The Saco River is a free-flowing river above this dam. There are essentially no conservation land (1%) within the focus area.

14) Saco Fryeburg	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	3404.6	100.0%	34.9	1.0%	99.0%
Aquifer	3075.1	90.3%	34.6	1.1%	98.9%
Riparian Zones	1299.0	38.2%	24.6	1.9%	98.1%
Non-forested wetlands	315.2	9.3%			
Prime Farmland Soils	1171.7	34.4%	1.6	0.1%	99.9%
Farmland and Other Openings	1693.1	49.7%			
RDM - Mod. High (55-70)	284.1	8.3%	9.2	3.2%	96.8%
RDM 40-55	514.6	15.1%	12.5	2.4%	97.6%
RDM 25-40	1248.5	36.7%	12.5	1.0%	99.0%
Natural Community Map Units					
Pitch/Mixed Pine Plains	284.1	8.3%	24.5	8.6%	91.4%
Floodplain Forest	690.7	20.3%	9.9	1.4%	98.6%
River Channel	149.9	4.4%			
Aquatic	261.7	7.7%	0.0	0.0%	100.0%
Farmland and Other Openings	1705.7	50.1%			

15. Old Saco Cropland: The primary features of interest in this block are the extensive cropland on prime agricultural soils, the abandoned course of the Old Saco River, and the aquifer beneath the surface. As with other areas of prime farmland soil along the extensive floodplains of the Saco River, these are some of the most productive agricultural soils in the broader region. There are some Floodplain Forest patches mapped in the area (based on soil type), although flooding may not occur as frequently or at all since the shift in river course. The Old Course of the Saco is a large aquatic feature, although the habitat is probably more pond-like in its western portion without river flow and flooding dynamics. Flow from Kezar Pond outlet joins the Old Saco Course in the eastern portion of the focus area. Small Fen areas occur in abandoned floodplain channels or oxbow wetlands, some with the globally rare Long's bulrush (*Scirpus longii*). No conservation land occurs within the focus area. The focus area forms a connection between Charles Pond and Lower Kimball Pond focus areas to the northwest and Kezar Pond/Mt. Tom to the southeast.

15) Old Saco Cropland	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	4091.8	100.0%			
Aquifer	3579.7	87.5%			
Riparian Zones	1333.6	32.6%			
Great Ponds Shorelines	70.9	1.7%			
Prime Farmland Soils	1682.9	41.1%			
Farmland and Other Openings	2616.2	63.9%			
RDM 25-40	1583.1	38.7%			
RDM 1-25	2105.5	51.5%			
Natural Community Map Units					
Fen	109.1	2.7%			
Floodplain Forest	426.3	10.4%			
Aquatic	275.5	6.7%			
Farmland and Other Openings	2646.9	64.7%			

16. Lower Kimball Pond: This area includes the northern and northeastern shores of Lower Kimball Pond, portions of which are undeveloped. In addition to the pond and shoreline, other key features are the large extent of aquifer, open wetlands, several rare plants, rare wildlife, Brook Trout headwater streams, and productive forest land on the upland areas. The open wetlands here include a large Fen and significant Sandplain Pondshore communities. There is a large, former floodplain forest along the Old Course of the Saco, which may be transitioning to swamp due to changes in flood regime. Development occurs on portions of the north shore of the pond. No conservation land is present within the focus area.

16) Lower Kimball Pond	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	926.4	100.0%			
Aquifer	812.4	87.7%			
Riparian Zones	283.4	30.6%			
Non-forested wetlands	348.3	37.6%			
Great Ponds Shorelines	79.8	8.6%			
Unfragmented Blocks	815.8	88.1%			
Productive Forest Soils - High	591.9	63.9%			
Brook Trout headwaters	114.2	12.3%			
RDM - High (70-132)	62.8	6.8%			
RDM - Mod. High (55-70)	110.8	12.0%			
RDM 40-55	517.9	55.9%			
Natural Community Map Units					
Fen	259.4	28.0%			
Sand Plain Basin / Pond Shore Marsh	1.7	0.2%			
Floodplain Forest	494.4	53.4%			

17. Charles Pond: This focus area occurs at the north end of the service area and extends beyond the service area boundary. The unfragmented block size and wetlands are the key significant features of the focus area. Charles Pond is the central feature, which is fed by the Cold River and Kimball Brook, and drained by the Charles River, which feeds into the Old Course of the Saco and eventually the current Saco River. Fens and Hemlock – Hardwood – Pine & Northern Hardwood forests surround the pond. Overall, relief is low, and soils are productive types for hardwoods. Floodplain Forest is mapped here (based on soils), although flood regime may have changed along portions of Saco Old Course.

17) Charles Pond	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	1173.9	100.0%			
Riparian Zones	409.5	34.9%			
Non-forested wetlands	361.6	30.8%			
Great Ponds Shorelines	75.0	6.4%			
Unfragmented Blocks	1037.4	88.4%			
Productive Forest Soils - High	599.4	51.1%			
Prime Farmland Soils	84.8	7.2%			
Farmland and Other Openings	134.1	11.4%			
Exemplary Natural Communities	148.7	12.7%			
RDM - High (70-132)	56.0	4.8%			
RDM - Mod. High (55-70)	121.0	10.3%			
RDM 40-55	268.9	22.9%			
Natural Community Map Units					
Fen	230.9	19.7%			
Floodplain Forest	253.3	21.6%			
Minor River Floodplain or Swamp	18.7	1.6%			
Aquatic	133.2	11.4%			
Farmland and Other Openings	140.8	12.0%			

18. Kezar Pond/Mt. Tom: This is the largest focus area in either state, containing large unfragmented complexes of uplands and wetlands, including productive forest, major extent of aquifers, undeveloped pond shores, exemplary natural communities, and numerous rare plants and wildlife. It contains beautiful silver maple floodplain forests along the Saco, which are collectively among the largest in the state of Maine. There are some very large Fens along the broad floodplain of the Saco, as well as around Kezar Pond. Some of the Fens contain the globally rare *Scirpus longii* (Long's bulrush) and other rare plants and animals. Aquifer lies beneath the floodplains and fens and along the eastern edge of the focus area. Globally/regionally rare communities occur, including Sandplain Pondshores on Kezar Lake and Hudsonia – silverling river channel communities on the Saco River. Mt. Tom supports a diversity of upland forest and Rocky Ridge communities.

18) Kezar Pond/Mt. Tom	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	13527.6	100.0%	980.5	7.2%	92.8%
Aquifer	3604.0	26.6%	217.4	6.0%	94.0%
Riparian Zones	2415.8	17.9%	178.3	7.4%	92.6%
Non-forested wetlands	3071.3	22.7%	20.8	0.7%	99.3%
Great Ponds Shorelines	413.0	3.1%			
Unfragmented Blocks	10662.5	78.8%	866.1	8.1%	91.9%
Exemplary Natural Communities	4012.4	29.7%	394.0	9.8%	90.2%
RDM - High (70-132)	1104.5	8.2%	96.6	8.7%	91.3%
RDM - Mod. High (55-70)	1068.4	7.9%	83.9	7.8%	92.2%
RDM 40-55	2522.0	18.6%	84.8	3.4%	96.6%
Natural Community Map Units					
Fen	2382.5	17.6%	10.8	0.5%	99.5%
Poor Swamps	319.6	2.4%	1.6	0.5%	99.5%
Isolated Basin Wetland - Undifferentiated					
Sand Plain Basin / Pond Shore Marsh	123.9	0.9%			
Floodplain Forest	2960.0	21.9%	204.1	6.9%	93.1%
River Channel	70.2	0.5%			
Aquatic	1684.9	12.5%	10.7	0.6%	99.4%

19. Brownfield Bog/Pleasant Pond: This area straddles the boundaries of Fryeburg, Brownfield, and Denmark along the Saco River between Pleasant and Lovewell Ponds. The key features are open wetlands, riparian zone of the Saco, aquifer, and the large size of the unfragmented block. Much of the western and southern portions of the area is within the Brownfield Bog Wildlife Management Area. The floodplain of the Saco River and Pleasant Pond here contains what appears to be the largest contiguous open wetlands in the service area, much of which is an exemplary Fen (Unpatterned Fen Ecosystem, MENAP). There are beautiful silver maple floodplain forests as well, which are a continuation of this type from upstream in the Kezar Pond/Mt. Tom focus area. The globally rare *Scirpus longii* (Long's bulrush) occurs within the focus area as well, and the area contains great habitat for many species of wildlife. There is proportionally little upland area compared to other focus areas, but there are several drumlinoid hills adjacent to the wetlands (northwest-southeast trending hills comprised of compact glacial till).

19) Brownfield Bog/Pleasant Pond	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	7829.6	100.0%	3714.5	47.4%	52.6%
Aquifer	4537.8	58.0%	2707.8	59.7%	40.3%
Riparian Zones	2149.2	27.4%	1155.5	53.8%	46.2%
Non-forested wetlands	3006.4	38.4%	1967.4	65.4%	34.6%
Great Ponds Shorelines	300.9	3.8%	120.4	40.0%	60.0%
Unfragmented Blocks	6283.4	80.3%	3401.0	54.1%	45.9%
Exemplary Natural Communities	3008.0	38.4%	2146.1	71.3%	28.7%
RDM - High (70-132)	772.7	9.9%	541.3	70.1%	29.9%
RDM - Mod. High (55-70)	1251.0	16.0%	879.5	70.3%	29.7%
RDM 40-55	1754.4	22.4%	961.0	54.8%	45.2%
Natural Community Map Units					
Fen	2370.2	30.3%	1638.1	69.1%	30.9%
Poor Swamps	671.4	8.6%	253.1	37.7%	62.3%
Sand Plain Basin / Pond Shore Marsh	29.0	0.4%	4.6	15.7%	84.3%
Floodplain Forest	1709.1	21.8%	618.7	36.2%	63.8%
Aquatic	607.3	7.8%	96.5	15.9%	84.1%

20. Fryeburg Barrens & Sandplain Wetlands: The outwash plains of Fryeburg and Brownfield support extensive pitch pine – scrub oak barrens and sand plain wetlands, including pitch pine – heath swamps (a type of Poor Swamp), numerous Bogs, Fens, and Sand Plain Basin and Sandy Pond Shore Marshes, two Great Ponds, several small ones, and a long stretch of the Little Saco River and its tributaries. Numerous rare moths occur in the pine barrens, as well as rare plants in some of the wetlands. Several low mountains frame the southern (Peary and Frost Mtns.) and northern (Starks Mtn. and Frost Hill) sides of the focus area. The Brownfield Bog Wildlife Management Area includes a large segment of the pine barrens here. Aquifer occurs beneath the surface of most of the focus area. The area contains a large and two medium sized forest blocks, although the fragmenting roads are rural and minimally developed.

20) Fryeburg Barrens & Sandplain Wetlands	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	8042.1	100.0%	1682.8	20.9%	79.1%
Aquifer	5788.3	72.0%	1528.1	26.4%	73.6%
Non-forested wetlands	855.5	10.6%	207.7	24.3%	75.7%
Unfragmented Blocks	6609.3	82.2%	1286.3	19.5%	80.5%
Productive Forest Soils - Med	2168.7	27.0%	630.0	29.1%	70.9%
Productive Forest Soils - Low	1725.7	21.5%	755.1	43.8%	56.2%
RDM - High (70-132)	137.7	1.7%	116.9	84.9%	15.1%
RDM - Mod. High (55-70)	270.0	3.4%	141.4	52.4%	47.6%
RDM 40-55	1316.4	16.4%	497.0	37.8%	62.2%
RDM 25-40	3851.3	47.9%	721.8	18.7%	81.3%
Natural Community Map Units					
Rocky Ridge	408.1	5.1%			
Hemlock - Hardwood - Pine & North. Hdwds.	3039.8	37.8%	146.7	4.8%	95.2%
Pitch/Mixed Pine Plains	1777.4	22.1%	620.5	34.9%	65.1%
Bog	138.4	1.7%	44.7	32.3%	67.7%
Fen	365.8	4.5%	79.5	21.7%	78.3%
Poor Swamps	999.7	12.4%	716.9	71.7%	28.3%
Isolated Basin Wetland - Undifferentiated	6.8	0.1%			
Sand Plain Basin / Pond Shore Marsh	4.7	0.1%			
Minor River Floodplain or Swamp	188.9	2.3%	38.1	20.2%	79.8%

21. Pleasant Mtn.: Pleasant Mountain is the dominant feature of this area. At over 2,000 feet elevation, it is one of the higher small mountains outside the main core of the White Mountains. The key driving features of the area are unfragmented forest block size, extent of productive matrix forests on the lower slopes, and large Rocky Ridge and Rocky Oak – Hardwood – Spruce areas on the upper slopes, and sections of great pond shorelines on Beaver Pond and the south end of Moose Pond. Hiking trails, a ski area, and good views of the service area from the summit are important recreational assets. Several cove areas with predicted semi-rich woods, exemplary natural communities, and a rare plant occur in the area. Wetlands occupy a small percentage of the area, unlike adjacent focus areas along the Saco River.

21) Pleasant Mtn.	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	8087.7	100.0%	1116.5	13.8%	86.2%
Great Ponds Shorelines	334.2	4.1%			
Unfragmented Blocks	7706.3	95.3%	1107.6	14.4%	85.6%
Productive Forest Soils - Med	2593.2	32.1%	623.4	24.0%	76.0%
Exemplary Natural Communities	771.6	9.5%	112.7	14.6%	85.4%
RDM 40-55	797.0	9.9%	61.8	7.7%	92.3%
RDM 25-40	3389.8	41.9%	683.6	20.2%	79.8%
Natural Community Map Units					
Rocky Ridge	651.2	8.1%	62.4	9.6%	90.4%
Hemlock - Hardwood - Pine & North. Hdwds.	3485.0	43.1%	355.3	10.2%	89.8%
Rocky Oak – Hardwood – Spruce	1838.4	22.7%	619.4	33.7%	66.3%
Pitch/Mixed Pine Plains	754.8	9.3%	4.0	0.5%	99.5%
Bog	25.4	0.3%			
Poor Swamps	340.1	4.2%			
Isolated Basin Wetland - Undifferentiated	2.2	0.0%			
Aquatic	483.2	6.0%	0.2	0.0%	100.0%

22. Saco/Boston Hills: The Saco/Boston Hills area contains the meandering course of the Saco River where it exits the service area, with the ridge of the Boston Hills above. Key features are a large unfragmented forest block and productive forest lands. One of the other impressive aspects of this focus area is its diversity. It contains a wide variety of upland and wetland natural communities and wildlife habitats, ranging from Rocky Ridges and Semi-rich to Rich Woods on the slopes of the Boston Hills, to Pitch/Mixed Pine Plains, Bogs, Fens, and Swamps in the lowlands, and a long, winding stretch of the Saco River and its floodplain. Several tributary streams with associated wetlands feed the Saco, and much of the area contains aquifer beneath the surface.

22) Saco/Boston Hills	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	7445.0	100.0%	341.0	4.6%	95.4%
Aquifer	3135.2	42.1%	249.7	8.0%	92.0%
Riparian Zones	1862.7	25.0%	166.1	8.9%	91.1%
Non-forested wetlands	1019.8	13.7%	83.1	8.1%	91.9%
Great Ponds Shorelines	147.4	2.0%	12.4	8.4%	91.6%
Unfragmented Blocks	6760.1	90.8%	337.6	5.0%	95.0%
Productive Forest Soils - Med	2019.0	27.1%	14.3	0.7%	99.3%
Exemplary Natural Communities	384.4	5.2%	169.3	44.0%	56.0%
RDM - High (70-132)	328.5	4.4%	137.4	41.8%	58.2%
RDM - Mod. High (55-70)	542.3	7.3%	37.3	6.9%	93.1%
RDM 40-55	1323.5	17.8%	55.2	4.2%	95.8%
Natural Community Map Units					
Rocky Oak – Hardwood – Spruce	580.0	7.8%			
Pitch/Mixed Pine Plains	1285.8	17.3%	6.8	0.5%	99.5%
Fen	583.6	7.8%	50.3	8.6%	91.4%
Semi-rich to Rich Swamp	216.1	2.9%	2.1	1.0%	99.0%
Poor Swamps	532.4	7.2%	26.2	4.9%	95.1%
Isolated Basin Wetland - Undifferentiated	1.1	0.0%	0.0	0.3%	99.7%
Drainage Marsh	18.4	0.2%			
Floodplain Forest	942.8	12.7%	171.1	18.1%	81.9%
Minor River Floodplain or Swamp	25.4	0.3%			
Aquatic	379.4	5.1%	14.1	3.7%	96.3%

23. Tenant River: The Tenant River is a small river that flows northeast through a large sandplain to the Saco River. This is a medium sized unfragmented forest block with productive softwood forest soils, a few small undeveloped ponds with surrounding Bogs, numerous open wetlands along the Tenant River, and a large area of aquifer beneath the extensive Pitch/Mixed Pine Plains. Small drumlinoid hills occur on either side of the Tenant River with small patches of Rocky Ridge. Burnt Meadow Mtn. looms above the focus area to the west.

23) Tenant River	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	2233.3	100.0%			
Aquifer	1245.0	55.7%			
Riparian Zones	312.7	14.0%			
Non-forested wetlands	446.2	20.0%			
Unfragmented Blocks	1876.6	84.0%			
Productive Forest Soils - Med	877.4	39.3%			
Productive Forest Soils - Low	368.7	16.5%			
RDM - Mod. High (55-70)	80.5	3.6%			
RDM 40-55	606.1	27.1%			
Natural Community Map Units					
Rocky Ridge	85.7	3.8%			
Pitch/Mixed Pine Plains	791.1	35.4%			
Bog	46.6	2.1%			
Fen	204.5	9.2%			
Poor Swamps	281.9	12.6%			
Isolated Basin Wetland - Undifferentiated	5.6	0.2%			
Aquatic	70.5	3.2%			

24. Burnt Meadow Mountain: This is a large unfragmented forest block that extends out of the service area. Burnt Meadow Mountain is the dominant feature, rising to more than 1,600 feet and supporting extensive Rocky Ridges on its upper slopes, comprised of dry oak – pine forests and open rocky ridge woodlands. Some areas contain patches of exemplary natural communities. Productive forest soils occur on the lower slopes, with patches of predicted Semi-Rich Woods in concavities. There are few wetland and aquifer features in this block, although there are numerous small Isolated Basin Wetlands perched on flat ridgelines. There are no protected lands in this focus area.

24) Burnt Meadow Mtn.	**Input Layer Acres in F.A.**		**Acres on Conservation Land**		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	4363.4	100.0%			
Unfragmented Blocks	3970.1	91.0%			
Productive Forest Soils - Low	1995.6	45.7%			
RDM 25-40	2081.4	47.7%			
Natural Community Map Units					
Rocky Ridge	1788.8	41.0%			
Hemlock - Hardwood - Pine & North. Hdwds.	1653.4	37.9%			
Semi-rich to Rich Woods	194.5	4.5%			
Poor Swamps	100.9	2.3%			
Isolated Basin Wetland - Undifferentiated	3.3	0.1%			
Minor River Floodplain or Swamp	42.6	1.0%			

Table 10. Tabular Data on Draft Focus Areas.

Report #	Name	Type	Acres	Perim. to Acre Ratio	Perimeter (Feet)	Average Score	Average Score Rank	Acres A-ranked NatCom	Percent A-Ranked NatCom	Driver1	Driver2	Driver3
13	Silver Lake	3	1,676.6	27.6	44,690.80	43.8	1	842.1	52%	NatCom	Aquifer	Unfrag
16	Lower Kimball Pond	1	926.4	35.6	39,429.80	43.4	2	760.1	69%	NatCom	Unfrag	Wetland
19	Brownfield Bog/Pleasant Pond	1	7,829.6	12.5	89,573.00	41.5	3	4,189.00	58%	NatCom	Unfrag	Wetland
18	Kezar Pond/Mt. Tom	1	13,527.6	8.2	120,245.90	35.4	4	7,529.00	51%	NatCom	Unfrag	Productive
22	Saco/Boston Hills	1	7,445.0	10.8	77,743.40	34.7	5	2,563.30	36%	NatCom	Unfrag	Productive
2	Saco Bartlett	3	3,799.6	32.2	110,856.40	34.4	6	752.1	22%	NatCom	Riparian	Productive
17	Charles Pond	1	1,173.9	20.6	39,238.20	33.2	7	747.6	39%	NatCom	Unfrag	Wetland
3	Intervale	1	3,272.8	32.3	99,327.20	32.5	8	933.8	30%	NatCom	Riparian	Aquifer
7	Saco East Conway	3	2,345.9	30.9	71,871.60	31.9	9	874.4	38%	NatCom	Aquifer	Riparian
4	Saco North Conway	3	2,979.0	27	78,169.80	31.8	10	833.4	29%	NatCom	Aquifer	Riparian
23	Tenant River	3	2,233.3	20.5	45,679.60	31.2	11	1,010.80	45%	NatCom	Unfrag	Wetland
14	Saco Fryeburg	3	3,404.6	19.1	64,646.60	30.7	12	957.1	28%	NatCom	Aquifer	Riparian
20	Fryeburg Barrens & Sandplain Wetlands	3	8,042.1	12	95,702.60	29.8	13	3,077.80	39%	NatCom	Unfrag	Aquifer
8	Weeks Brook	3	2,931.8	18.7	54,498.30	29.1	14	1,240.50	42%	NatCom	Unfrag	Aquifer
6	Green Hills	1	12,594.7	10.5	131,253.00	28	15	3,380.90	27%	NatCom	Unfrag	Productive
5	Swift River	3	1,345.2	43.7	58,041.00	27.7	16	322.2	24%	NatCom	Aquifer	Riparian
21	Pleasant Mtn.	2	8,087.7	11	104,763.10	26.6	17	1,773.00	19%	Unfrag	NatCom	Productive
24	Burnt Meadow Mtn.	2	4,363.4	16.3	71,347.10	26.1	18	2,032.50	47%	Unfrag	NatCom	Productive
15	Old Saco Cropland	3	4,091.8	20.6	84,647.60	24.8	19	498.6	12%	NatCom	Aquifer	Riparian
10	Whitton Pond & Chain-of-Ponds	3	7,995.4	19.1	147,803.10	24.8	20	1,047.80	14%	NatCom	Unfrag	Productive
9	South Conway/Tibbetts Mtn.	3	6,154.8	12.8	78,572.30	24.2	21	1,086.30	18%	NatCom	Unfrag	Productive
12	Lyman Mtn.	2	2,734.2	25	68,394.60	22.7	22	-	0%	Unfrag	Productive	NatCom
11	Conway Lake South	3	4,518.4	26.4	119,049.10	22.4	23	82.8	2%	NatCom	Productive	Unfrag
1	Thorn Mtn.	3	4,674.8	20.4	94,906.60	21.4	24	-	0%	Productive	Unfrag	NatCom

Notes: **Report #** refers to the Focus Area description number in the preceding report pages. **Type** refers to three broad categories of focus areas, as follows: **Type 1**: Focus area contains large areas or concentration zones of medium-high to high value RDM scores (two darkest orange colors on map). Adjacent medium to low value areas were included as supporting landscapes, often extending to the bounding roads of the associated unfragmented block. **Type 2**: Large unfragmented blocks outside the WMNF; may contain large areas of low to medium value areas, but often small or no high score areas. **Type 3**: Medium-sized or smaller unfragmented blocks dominated by medium to medium-high value areas, typically with less supporting landscape around the medium value areas. Small or scattered high-value areas are small or absent. The extent of relatively lower value supporting landscape varies among focus areas and affects average scores. **Drivers 1, 2, and 3** were the model inputs that contributed the most to the average score of any given Focus Area, accounting for area *and* score. They were generated by compiling all the model input scores for all polygons within any given focus area, multiplying those scores by acres, summing by input layer across polygons, and identifying those input layers with the three highest sums. Natural community/habitat is often Driver 1, in part because they form a seamless coverage across the service area.

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Appendices

Appendix 1: New Hampshire- Maine Natural Community Cross-Reference

USVLT map units and corresponding NH Natural Communities (NHB; Sperduto & Kimball 2011)	ME Natural Communities (MENAP; Gawler & Cutko 2010)	Northeast Terrestrial Wildlife Habitat Classification System (Gawler et. al. 2008)*
ROCKY GROUND		
Subalpine		
Subalpine heath - krummholz/rocky bald system	Subalpine Heath - Krummholz	Acadian-Appalachian Subalpine Woodland & Heath-Krummholz
Rocky Ridge		
Red oak - white pine forest	Oak - Pine Forest	
Montane rocky ridge system	Rock Outcrop Ecosystem	Northern Appalachian-Acadian Rocky Heath Outcrop
Red pine rocky ridge	Red Pine Woodland	
Red oak - pine rocky ridge	Oak - Pine Woodland	
Red spruce - heath - cinquefoil rocky ridge	Three-toothed Cinquefoil - Blueberry Low Summit Bald, Red Spruce - Mixed Conifer Woodland	
Jack pine rocky ridge	Jack Pine Woodland	
Cliff/Talus		
Temperate acidic cliff	Acidic cliff - gorge	
Temperate circumneutral cliff	Boreal Circumneutral Open Outcrop	
Temperate lichen talus barren	Birch - Oak Talus Woodland	
Montane cliff system	Acidic cliff - gorge, Boreal Circumneutral Open Outcrop	Laurentian-Acadian Acidic Cliff and Talus (NVC)
Montane - subalpine acidic cliff	Acidic cliff - gorge	

FORESTS

Hemlock – Hardwood – Pine and Northern Hardwood Forests

Hemlock - beech - oak - pine forest	in part, White Pine - Mixed Conifer Forest, Red Oak - Northern Hardwoods - White Pine Forest, Hemlock Forest	
Hemlock forest	Hemlock forest	
Sugar maple - beech - yellow birch forest	Beech – birch – maple forest	
Northern hardwood - spruce - fir forest	Spruce – northern hardwoods forest	
Hemlock - oak - northern hardwood forest	Red oak – northern hardwoods – white pine forest	
Beech forest	Beech - Birch - Maple Forest	

Spruce – Fir

High-elevation spruce - fir forest system	part of Spruce - Fir - Northern Hardwood Ecosystem	Acadian-Appalachian Montane Spruce-Fir Forest
High-elevation spruce - fir forest	Montane Spruce - Fir Forest	
High-elevation balsam fir forest	Fir - Heartleaved Birch Subalpine Forest	
Northern hardwood - spruce - fir forest	Spruce - Northern Hardwoods Forest	

Hemlock – Spruce & Lowland Spruce – Fir

Hemlock - spruce - northern hardwood forest	Spruce - Northern Hardwoods Forest, Hemlock Forest	
Lowland spruce - fir forest/swamp system		Acadian Low Elevation Spruce-Fir Forest and Flats
Lowland spruce - fir forest	Spruce - Fir - Broom-moss Forest	
Red spruce swamp	Spruce - Fir - Cinnamon Fern Swamp	
Northern hardwood - spruce - fir forest	Spruce - Northern Hardwoods Forest	

Rocky Oak – Hardwood – Spruce

Dry red oak - white pine forest	Oak - Pine Forest	
Sugar maple - beech - yellow birch forest	Beech - Birch - Maple Forest	
Beech forest	Beech - Birch - Maple Forest	
High-elevation spruce - fir forest	Montane Spruce - Fir Forest	
Hemlock - oak - northern hardwood forest	Red Oak - Northern Hardwoods - White Pine Forest	

Pitch/Mixed Pine Plains

Mixed pine - red oak woodland	no precise match (see Red Pine Woodland, Red Pine - White Pine Forest, Oak - Pine Woodland)	Laurentian-Acadian Northern Pine-(Oak) Forest?
Pitch pine sand plain system	Pine Barrens Ecosystem; Pitch Pine - Heath Barren, Pitch Pine - Scrub Oak Barren	Northern Atlantic Coastal Plain Pitch Pine Barrens
Pitch pine - scrub oak woodland	Pitch Pine - Scrub Oak Barren	
Dry river bluff	No direct match	
Dry red oak - white pine forest	Oak - Pine Forest	

Semi-rich to Rich Woods

Semi-rich mesic sugar maple forest	Semi-Rich Northern Hardwood Forest	
Semi-rich oak - sugar maple forest	in part, Ironwood - Oak - Ash Woodland, and Semi-Rich Northern Hardwood Forest	
Rich mesic forest	Maple - Basswood - Ash Forest	
Rich red oak rocky woods	Ironwood - Oak - Ash Woodland	

SWAMPS

Poor Swamps

Red spruce swamp	Spruce - Fir - Cinnamon Fern Swamp	
Pitch pine – heath swamp	Pitch Pine Bog, in part	
Temperate peat swamp system	No direct match; in part Appalachian - Acadian Basin Swamp Ecosystem	North-Central Appalachian Acidic Swamp or Northern Appalachian-Acadian Conifer-Hardwood Acidic Swamp
Red maple – Sphagnum basin swamp	Hemlock - Hardwood Pocket Swamp, Red Maple Wooded Fen?	
Hemlock – cinnamon fern forest	No direct match	
Black spruce swamp	Spruce - Larch Wooded Bog	

Semi-Rich to Rich Swamp

Temperate minerotrophic swamp system	No direct match	Northern Appalachian-Acadian Conifer-Hardwood Acidic Swamp and Acadian-Appalachian Conifer Seepage Forest
Hemlock - cinnamon fern forest	No direct match	
Red maple - sensitive fern swamp	Red maple – sensitive fern swamp	
Red maple - black ash swamp	Hardwood Seepage Forest	
Northern white cedar - hemlock swamp	Northern White Cedar Swamp	
Larch - mixed conifer swamp	Spruce - Larch Wooded Bog, in part	
Highbush blueberry - winterberry shrub thicket	Red Maple Wooded Fen, in part	

FLOODPLAIN FORESTS and RIVER CHANNELS

River Channels

Moderate-gradient sandy-cobbly riverbank	No direct match; part of Appalachian - Acadian Rivershore Ecosystem	
High-gradient rocky riverbank system	No direct match; part of Appalachian - Acadian Rivershore Ecosystem	
Hudsonia - silverling river channel	Hudsonia River Beach	

Cobble - sand river channel	Sand Cherry - Tufted Hairgrass River Beach, in part	
Boulder - cobble river channel	No direct match; part of Appalachian - Acadian Rivershore Ecosystem	
Willow low riverbank	Dogwood - Willow Shoreline Thicket	
Twisted sedge low riverbank	No direct match; part of Appalachian - Acadian Rivershore Ecosystem	

Floodplain Forest

Major river silver maple floodplain system	Silver Maple Floodplain Forest; part of Appalachian - Acadian Rivershore Ecosystem	Laurentian-Acadian Floodplain Systems
Silver maple - false nettle - sensitive fern floodplain forest	Silver Maple Floodplain Forest	
Sugar maple - silver maple - white ash floodplain forest	Silver Maple Floodplain Forest	
Montane/near-boreal floodplain system	Silver Maple Floodplain Forest	Laurentian-Acadian Floodplain Systems
Sugar maple - ironwood - short husk floodplain forest	No direct match	
Balsam fir floodplain/silt plain	No direct match	
Red maple floodplain forest	Red Maple - Sensitive Fern Swamp, maybe Hardwood River Terrace Forest, in part	
Semi-rich mesic sugar maple forest	Semi-Rich Northern Hardwood Forest	
Rich mesic forest	Maple - Basswood - Ash Forest	

Threaded River Floodplain & Terrace

Montane/near-boreal floodplain system	No direct match or part of Appalachian - Acadian Rivershore Ecosystem	Laurentian-Acadian Floodplain Systems
Sugar maple - ironwood - short husk floodplain forest	No direct match	

Balsam fir floodplain/silt plain forest	No direct match	
Semi-rich mesic sugar maple forest	Semi-Rich Northern Hardwood Forest	
Hemlock - oak - northern hardwood forest	Red oak – northern hardwoods – white pine forest	

Minor River Floodplain or Swamp

Temperate minor river floodplain system	No direct match	Laurentian-Acadian Floodplain Systems
Red maple floodplain forest	Red maple – sensitive fern swamp	
Alder - dogwood - arrowwood alluvial thicket	Dogwood – willow shoreline thicket	
Temperate minerotrophic swamp system	No direct match	Northern Appalachian-Acadian Conifer-Hardwood Acidic Swamp and Acadian-Appalachian Conifer Seepage Forest
Red maple - sensitive fern swamp	Red maple – sensitive fern swamp	
Seasonally flooded red maple swamp	Red maple – sensitive fern swamp	
Red maple - lake sedge swamp	Red maple – sensitive fern swamp	

OPEN WETLANDS

Bog

Poor level fen/bog system		Boreal Laurentian Bog
Kettle hole bog system	Kettlehole Bog Pond Ecosystem	Boreal Laurentian Bog
Leatherleaf - black spruce bog	Sheep Laurel Dwarf Shrub Bog, in part	
Mountain holly - black spruce wooded fen	Spruce - Larch Wooded Bog, in part	
Sphagnum rubellum - small cranberry moss carpet	Bog Moss Lawn	

Fen

Medium level fen system	Unpatterned Fen Ecosystem	Boreal-Laurentian-Acadian Acidic Basin Fen
Sweet gale - meadowsweet - tussock sedge fen	Mixed tall sedge fen, Sweetgale Mixed Shrub Fen	
Wire sedge - sweet gale fen	Mixed tall sedge fen	

Large cranberry - short sedge moss lawn	Leatherleaf Boggy Fen	
Bog rosemary - sedge fen	Leatherleaf Boggy Fen, Sedge - Leatherleaf Fen Lawn	
various tall shrub wooded fens	Red Maple Wooded Fen, in part	

Marshes

Drainage Marsh

Emergent marsh - shrub swamp system	Lakeshore Ecosystem or Streamshore Ecosystem	Laurentian-Acadian Freshwater Marsh and Wet Meadow-Shrub Swamp
Tall graminoid meadow marsh	Bluejoint Meadow, Tussock Sedge Meadow	
Cattail marsh	Cattail Marsh	
Emergent marsh	Pickerelweed - Macrophyte Aquatic Bed	
Aquatic bed	Water-lily - Macrophyte Aquatic Bed	
Highbush blueberry - winterberry shrub thicket	No direct match?	
Alder - dogwood - arrowwood alluvial thicket	Dogwood - Willow Shoreline Thicket	

Sand Plain Basin and Sandy Pond Shore Marsh

Sand plain basin marsh system	no direct match, but similar to Coastal Plain Pond Shore Ecosystem	North Atlantic Coastal Plain Pond (closest match)
Meadowsweet – robust graminoid sand plain marsh	Three-way Sedge - Goldenrod Outwash Plain Pondshor	
Three-way sedge - mannagrass mud flat marsh	Three-way Sedge - Goldenrod Outwash Plain Pondshore	
Sandy pond shore system	Coastal Plain Pond Shore Ecosystem	North Atlantic Coastal Plain Pond
Twig rush sandy turf pond shore	Lakeshore Beach	
Water lobelia aquatic sandy pond shore	Pipewort - Water Lobelia Aquatic Bed	
Bulblet umbrella sedge open sandy pond shore	Lakeshore Beach	

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* The Northeast Habitat Classification provides a unifying system of habitat units for northeastern state wildlife program habitat classifications. It is used here to cross-reference NH natural community systems, including those that have no direct match to MENAP communities or ecosystems.

Appendix 2: Maps

Aquifers

Riparian Zones

Non-Forested Wetlands

Great Ponds

Unfragmented Forest Blocks

Productive Forest Soils

Natural Communities/Wildlife Habitats

Important Bird Areas

Brook Trout Headwaters

Prime Farmland Soils

Farmland and Other Openings

Ecological Integrity Map

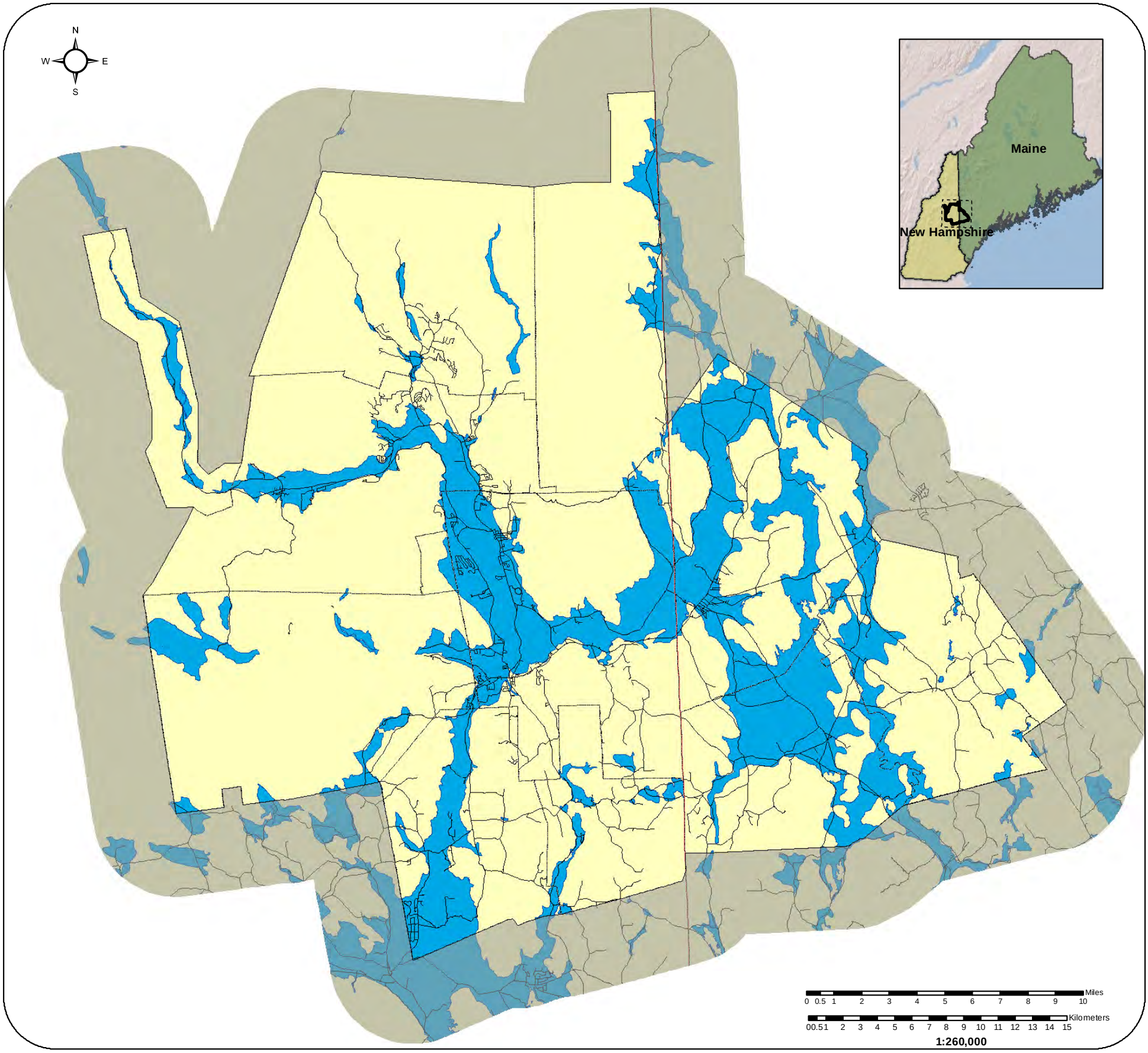
Resource Data Model

Draft Focus Areas

Rare Species and Exemplary Natural Communities in Maine

The Upper Saco Valley Land Trust Resource Inventory

Aquifers



Main Roads

USVLT Service Area

Municipal Boundaries

State Boundary

Aquifers

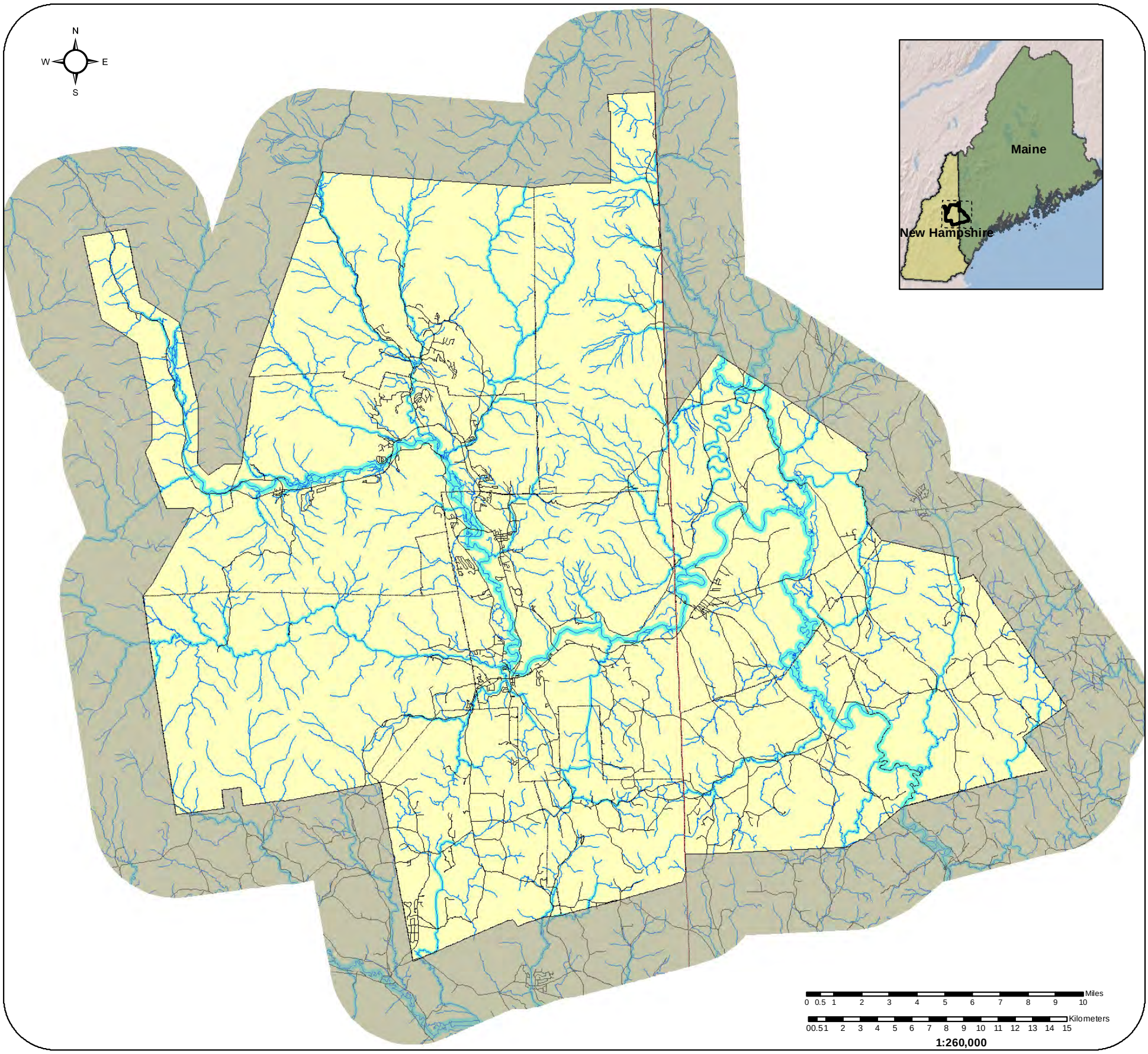
Map prepared by Ellis Ecological Services LLC and Sperduto Ecological Services LLC, February 2011.

For more information, see Sperduto and Ellis, Upper Saco Valley Land Trust Resource Inventory, 2011.

Many thanks to the numerous people and institutions who provided the data used in this Resource Inventory, including New Hampshire GRANIT, the Natural Resources Conservation Service, Maine GIS Data Catalog Larry Garland and the Appalachian Mountain Club, the New Hampshire Natural Heritage Bureau, the Maine Natural Areas Program, the Maine Department of Inland Fisheries and Wildlife, the New Hampshire Fish and Game Department, the Nature Conservancy, and the New Hampshire Audubon Society.

The Upper Saco Valley Land Trust Resource Inventory

Riparian Zones



Main Roads

USVLT Service Area

Municipal Boundaries

State Boundary

Streams and Rivers

Riparian Zones

Map prepared by Ellis Ecological Services LLC and Sperduto Ecological Services LLC, February 2011.

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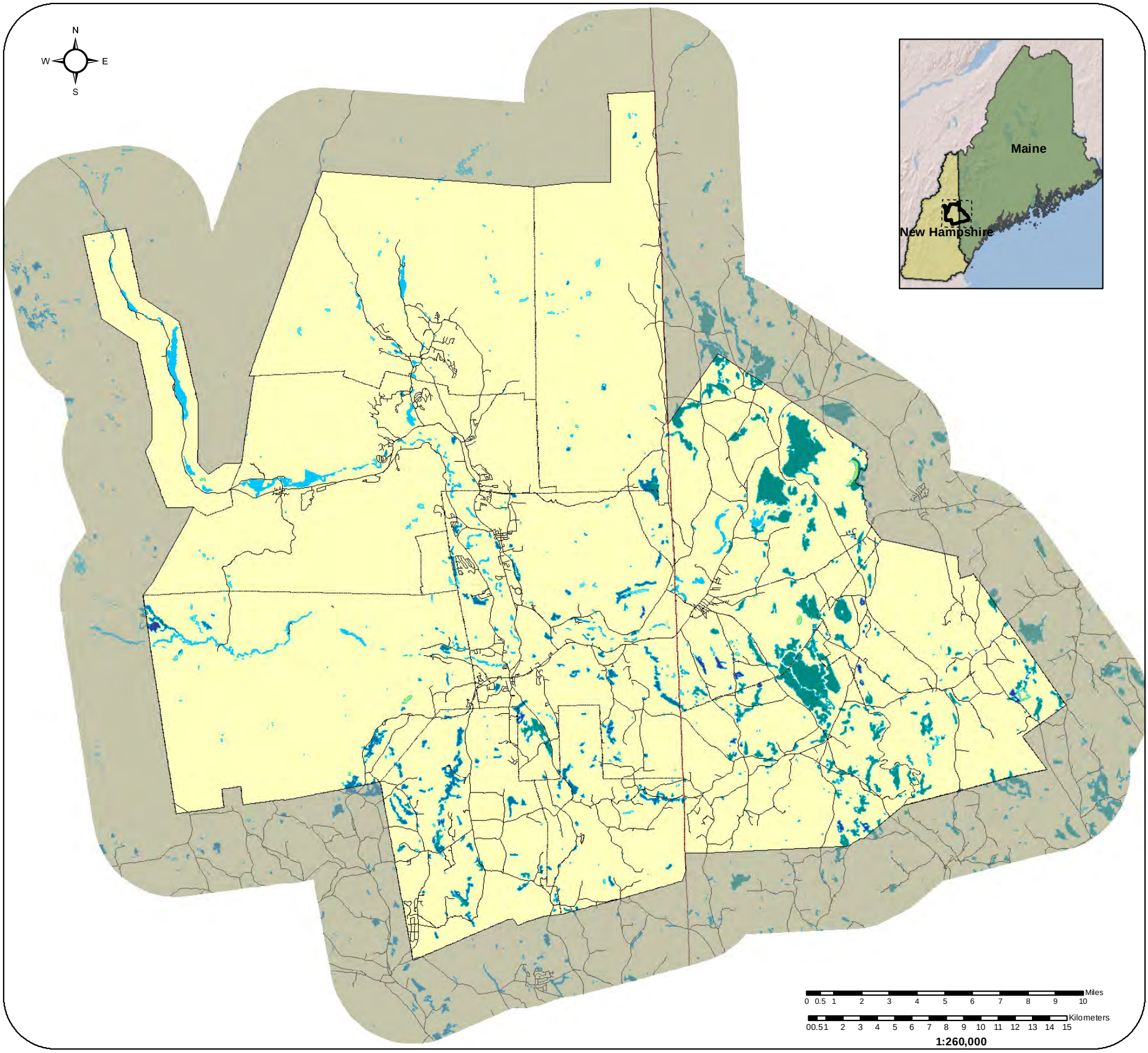
The Upper Saco Valley Land Trust Resource Inventory

Non-Forested Wetlands



Main Roads

USVLT Service Area

Municipal Boundaries

State Boundary

Open Wetlands

- Fen > Marsh
- Bog
- Fen
- Isolated Basin Wetland - Undifferentiated
- Drainage Marsh
- Sand Plain Basin / Pond Shore Marsh
- Open Wetlands Buffer

Map prepared by Ellis Ecological Services LLC and Sperduto Ecological Services LLC, February 2011.

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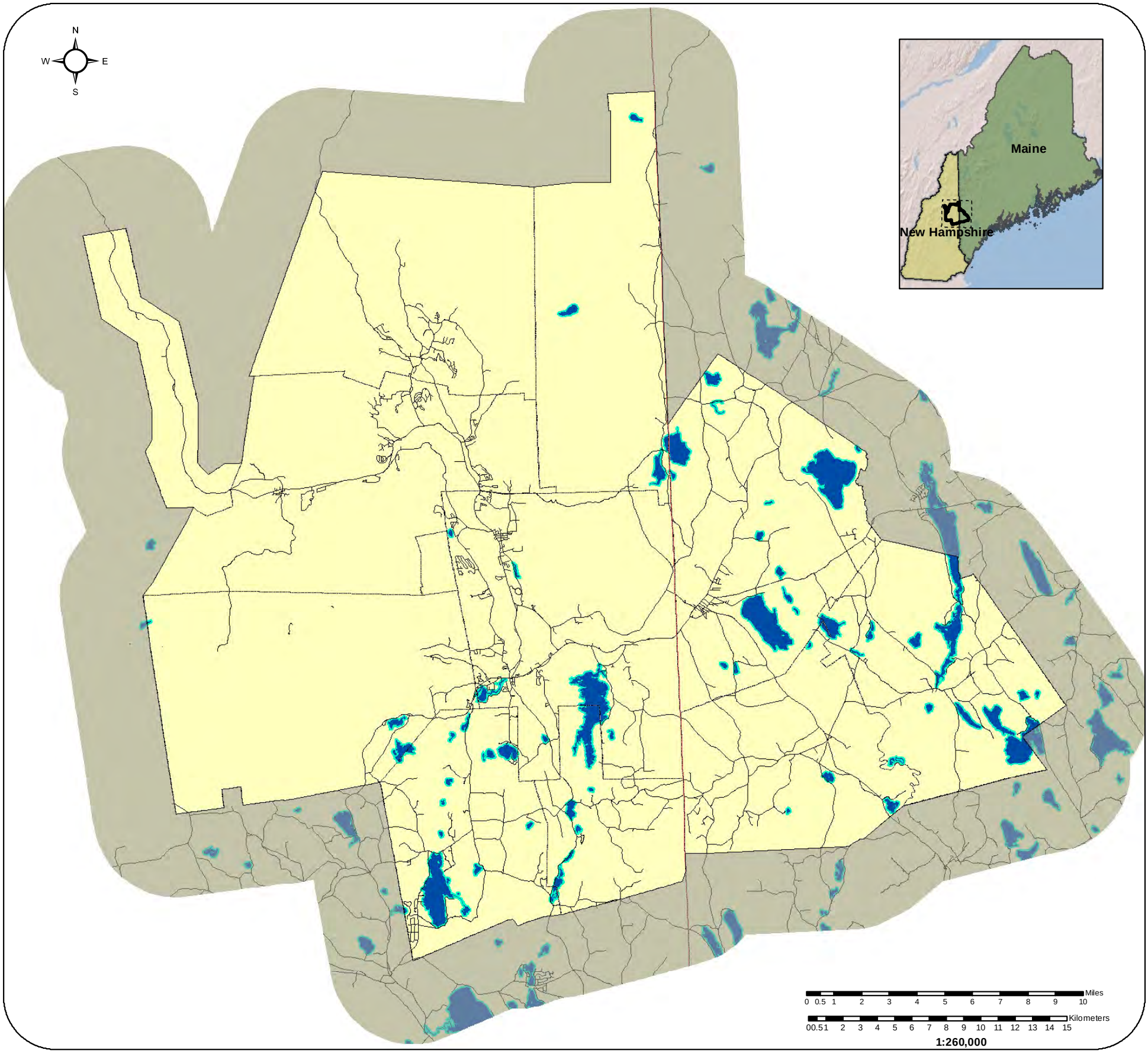
The Upper Saco Valley Land Trust Resource Inventory

Great Ponds



Main Roads

USVLT Service Area

Municipal Boundaries

State Boundary

Great Ponds

Great Ponds Shorelines

Map prepared by Ellis Ecological Services LLC and Sperduto Ecological Services LLC, February 2011.

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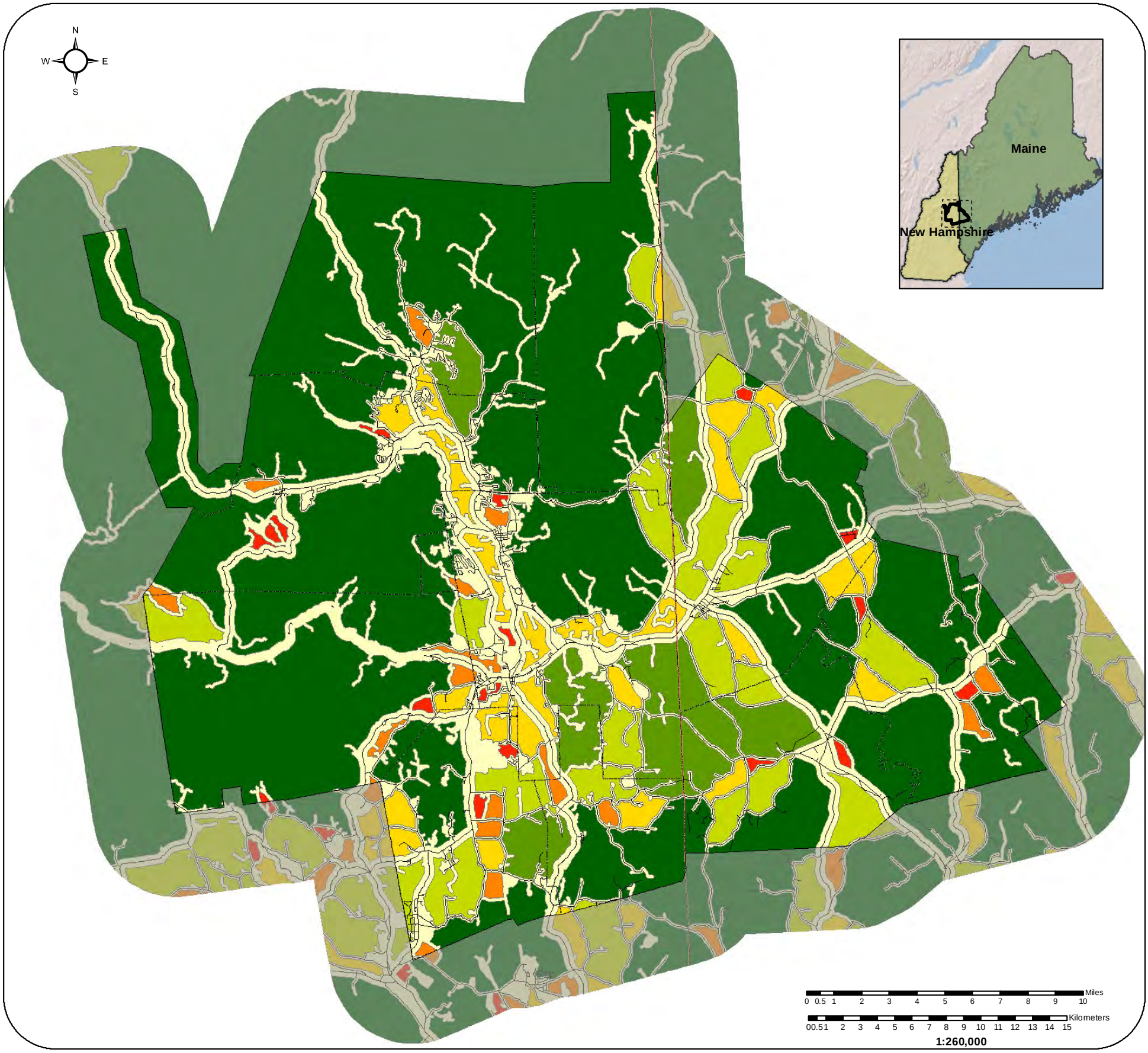
Unfragmented Forest Blocks



Main Roads

USVLT Service Area

Municipal Boundaries

State Boundary

Unfragmented Forest Blocks

- > 5000 acres
- 2500 - 5000 acres
- 1000 - 2500 acres
- 500 - 1000 acres
- 200 - 500 acres
- 100 - 200 acres

Map prepared by Ellis Ecological Services LLC and Sperduto Ecological Services LLC, February 2011.

For more information, see Sperduto and Ellis, Upper Saco Valley Land Trust Resource Inventory, 2011.

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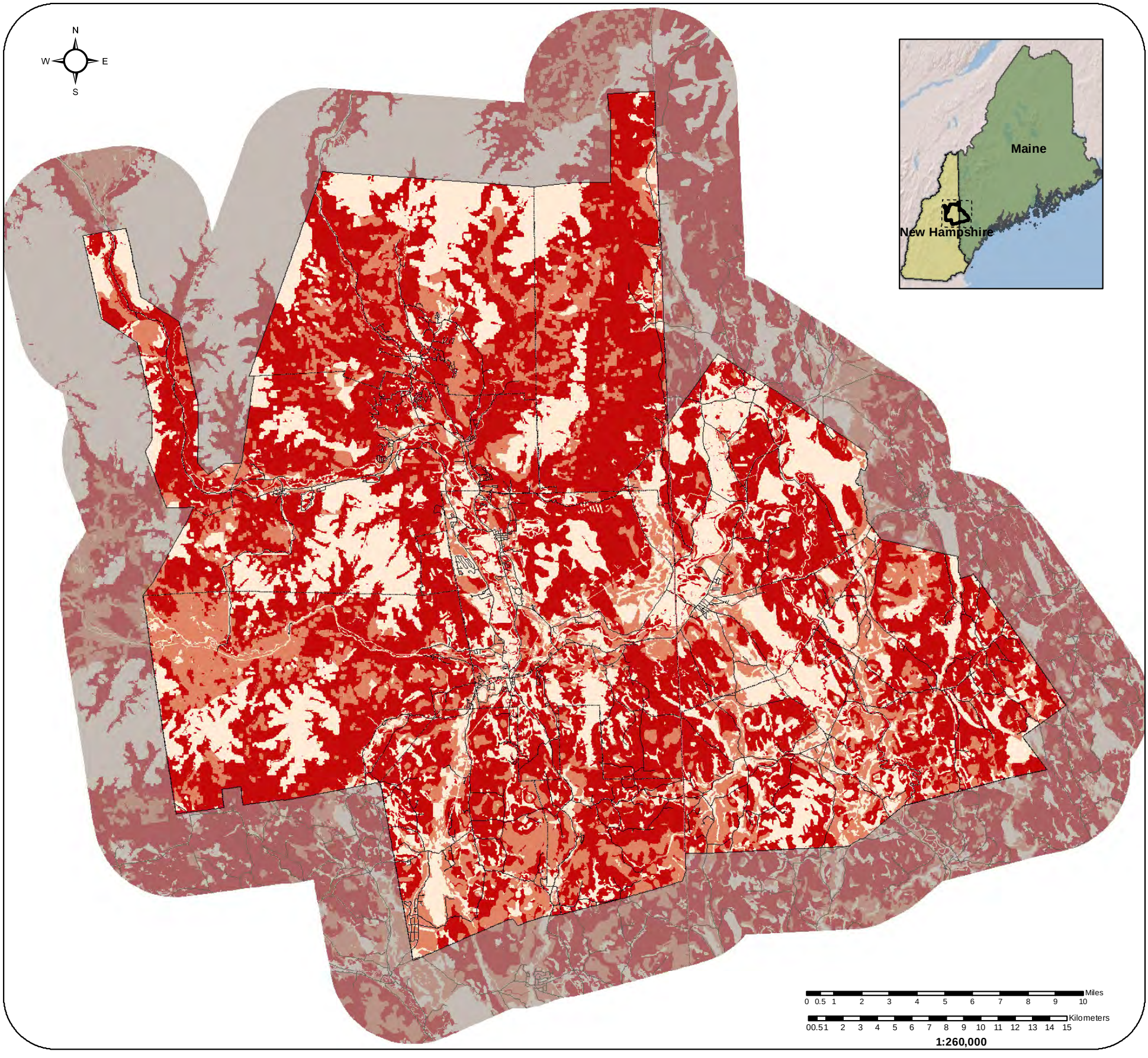
The Upper Saco Valley Land Trust Resource Inventory

Productive Forest Soils



Main Roads

USVLT Service Area

Municipal Boundaries

State Boundary

Productive Forest Soils

Low Productivity

Moderate Produtivity

High Productivity

Map prepared by Ellis Ecological Services LLC and Sperduto Ecological Services LLC, February 2011.

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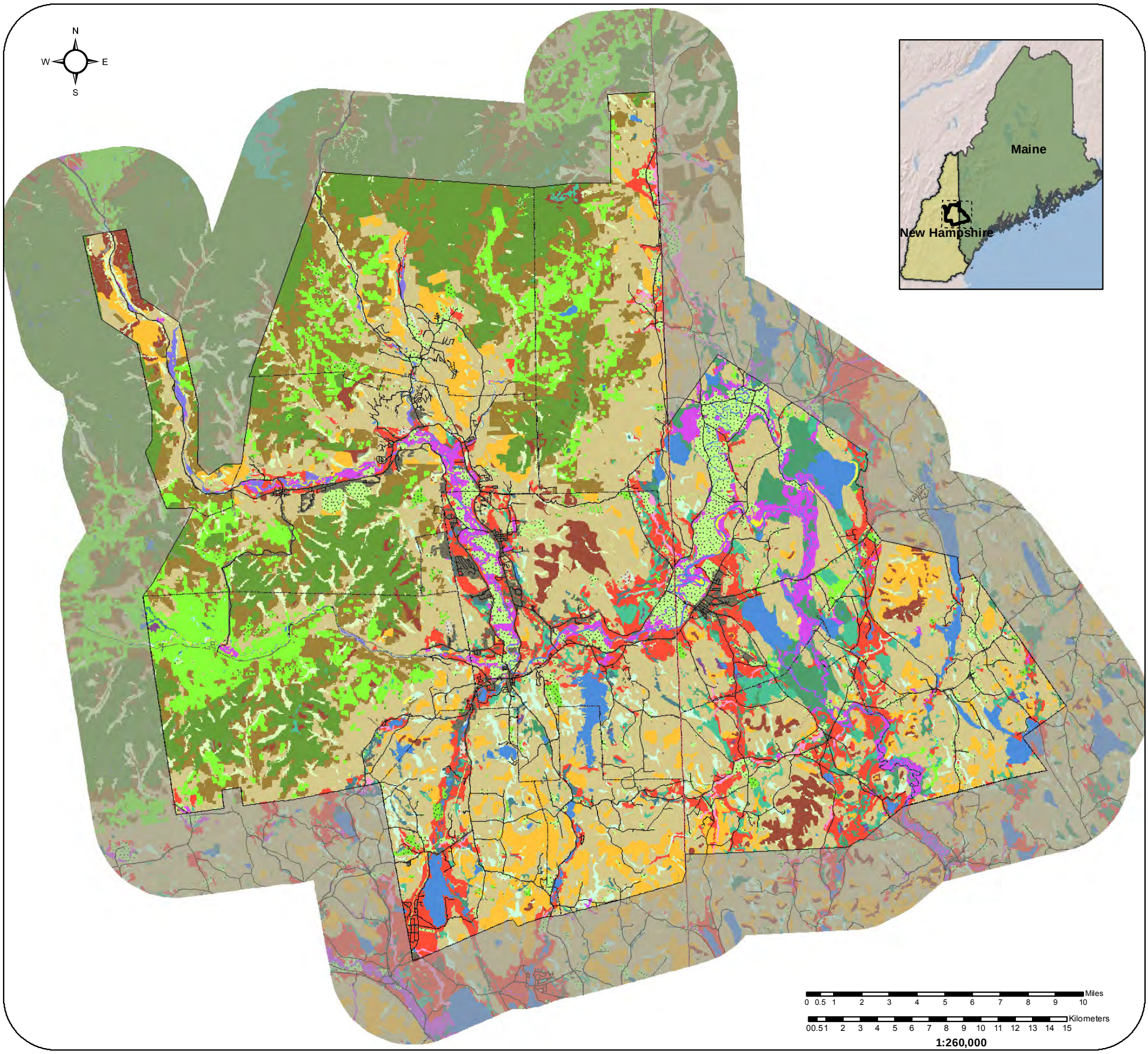
The Upper Saco Valley Land Trust Resource Inventory

Natural Community Map



Main Roads
USVLT Service Area
Municipal Boundaries
State Boundary

Natural Community Map

Rocky Ground
- Subalpine
- Rocky Ridge
- Cliff and Talus

Matrix Forests
- Spruce - Fir
- Hemlock - Spruce and Lowland Spruce - Fir
- Hemlock - Hardwood - Pine and Northern Hardwoods
- Northern Hardwoods

Large to Small Patch Forests
- Rocky Oak - Hardwood - Spruce
- Pitch/Mixed Pine Plains
- Semi-Rich to Rich Woods

Open Wetlands
- Fen > Marsh
- Bog
- Fen
- Isolated Basin Wetland - Undifferentiated
- Drainage Marsh
- Sand Plain Basin / Pond Shore Marsh

Swamps
- Semi-rich to Rich Swamp
- Poor Swamp

Floodplains and River Channels
- Floodplain Forest
- Threaded River Floodplain and Terrace
- Minor River Floodplain or Swamp
- River Channel

Aquatic
- Aquatic

Human
- Farmland and Other Openings
- Early Successional Thicket
- Developed
- Gravel / Sand Pit

Map prepared by Ellis Ecological Services LLC and Sperduto Ecological Services LLC, February 2011.

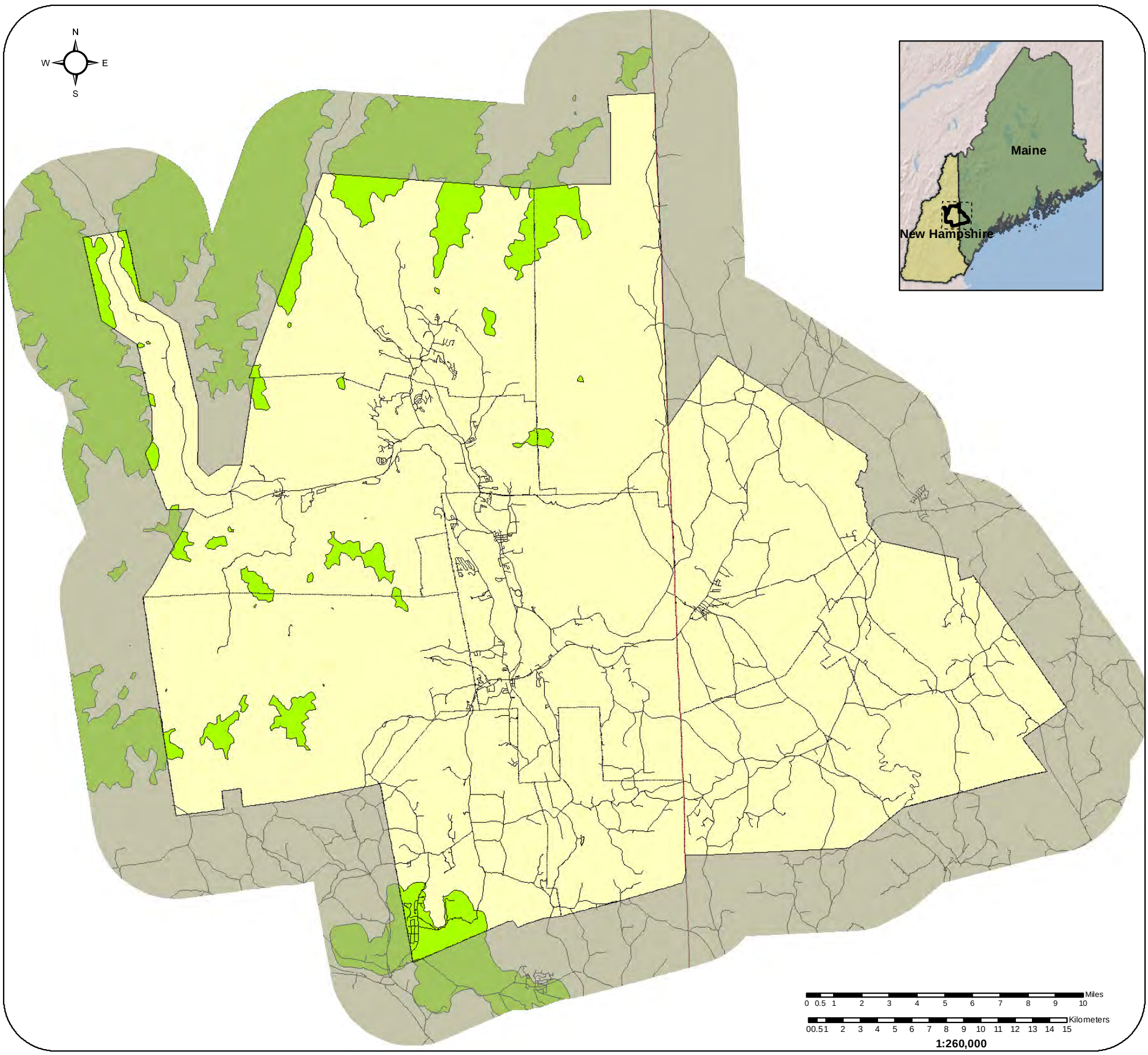
For more information, see Sperduto and Ellis, Upper Saco Valley Land Trust Resource Inventory, 2011.

Many thanks to the numerous people and institutions who provided the data used in this Resource Inventory, including New Hampshire GRANIT, the Natural Resources Conservation Service, Maine GIS Data Catalog Larry Garland and the Appalachian Mountain Club, the New Hampshire Natural Heritage Bureau, the Maine Natural Areas Program, the Maine Department of Inland Fisheries and Wildlife, the New Hampshire Fish and Game Department, the Nature Conservancy, and the New Hampshire Audubon Society.

This Natural Community Map was derived from an interpretation of NRCS soils, National Wetlands Inventory wetlands, NH Wildlife Action Plan, The Nature Conservancy's Ecological Land Units, data from NHNHB and MENAP, aerial photo interpretation, and field work.

The Upper Saco Valley Land Trust Resource Inventory

Unfragmented Forest Blocks



Main Roads

USVLT Service Area

Municipal Boundaries

State Boundary

Important Bird Areas

Map prepared by Ellis Ecological Services LLC and Sperduto Ecological Services LLC, February 2011.

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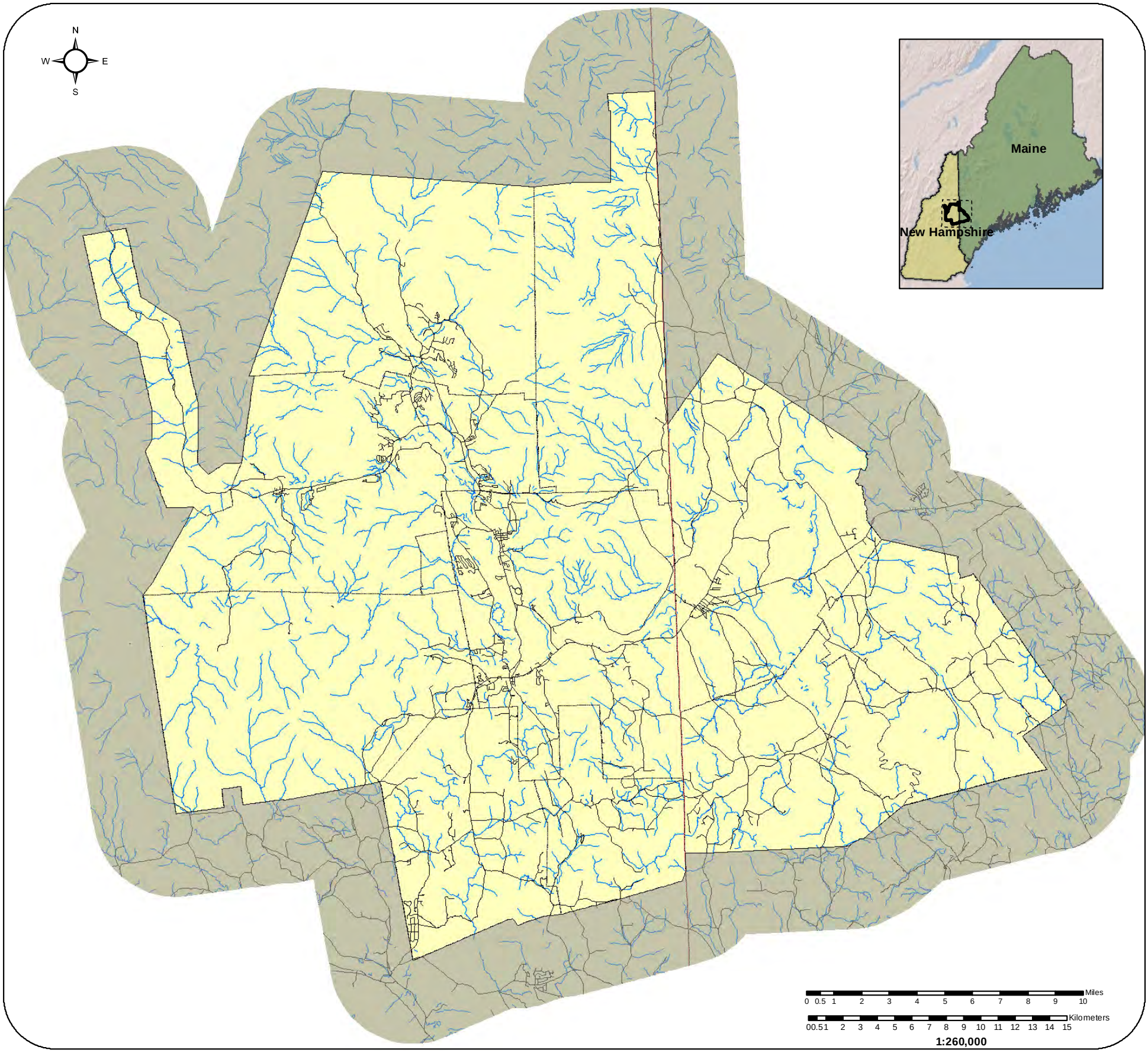
The Upper Saco Valley Land Trust Resource Inventory

Brook Trout Headwaters



Main Roads

USVLT Service Area

Municipal Boundaries

State Boundary

Streams (Stream Order 1-2)

Brook Trout Riparian Zones

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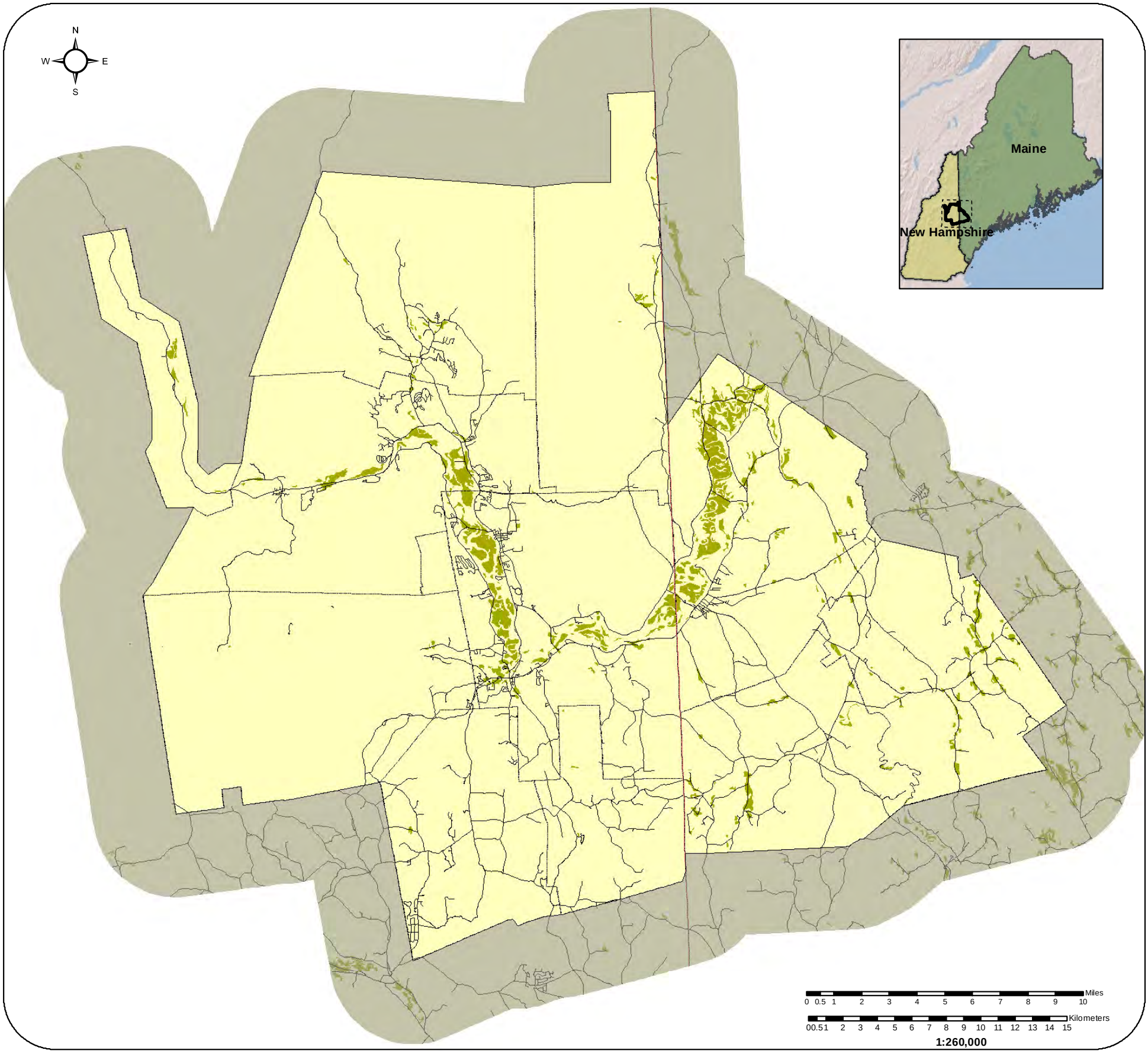
The Upper Saco Valley Land Trust Resource Inventory

Prime Farmland Soils



Main Roads

USVLT Service Area

Municipal Boundaries

State Boundary

Prime Farmland

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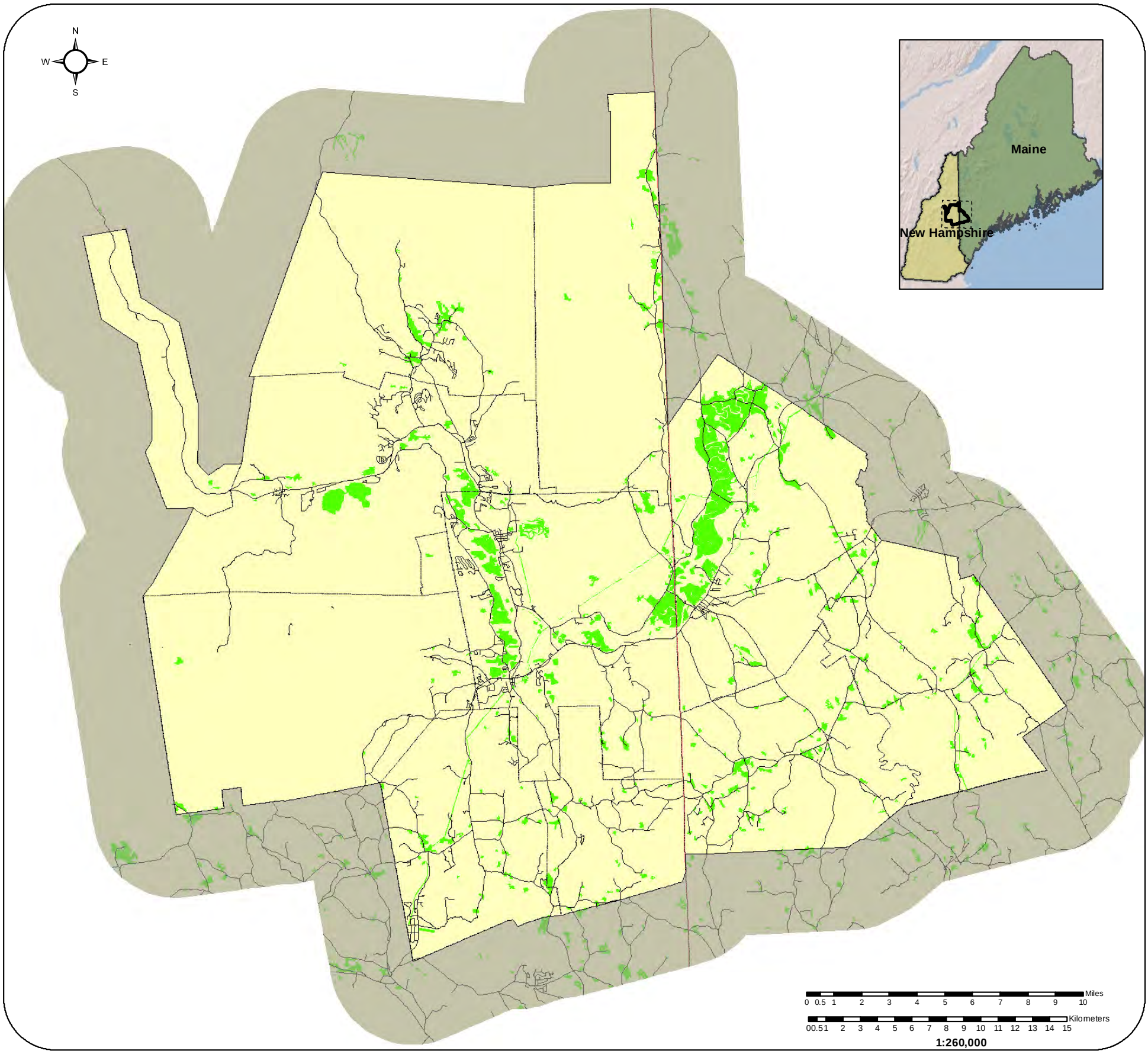
The Upper Saco Valley Land Trust Resource Inventory

Farmland and Other Openings



Main Roads

USVLT Service Area

Municipal Boundaries

State Boundary

Farmland and Other Openings > 5 acres

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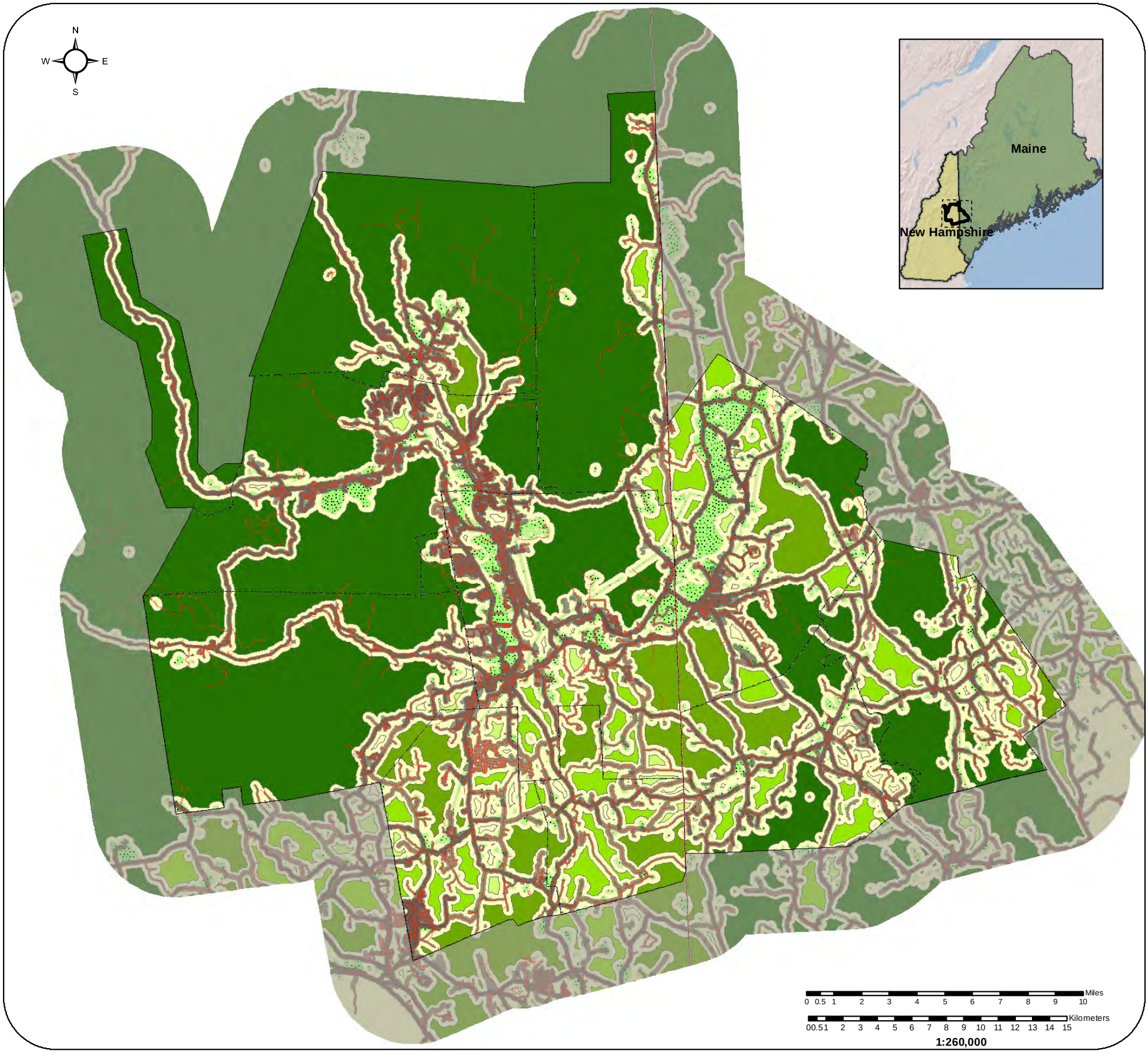
The Upper Saco Valley Land Trust Resource Inventory

Ecological Integrity Map



USVLT Service Area
Municipal Boundaries
State Boundary

Roads

Woods Roads
Small Roads
Main Roads

Developed Land
Development/Road Buffer
Maintained Clearing
ClearingsBuffer

Unfragmented Blocks

< 100 acres
100 - 200 acres
200 - 1000 acres
1000 - 5000 acres
> 5000 acres

Map prepared by Ellis Ecological Services LLC and Sperduto Ecological Services LLC, February 2011.

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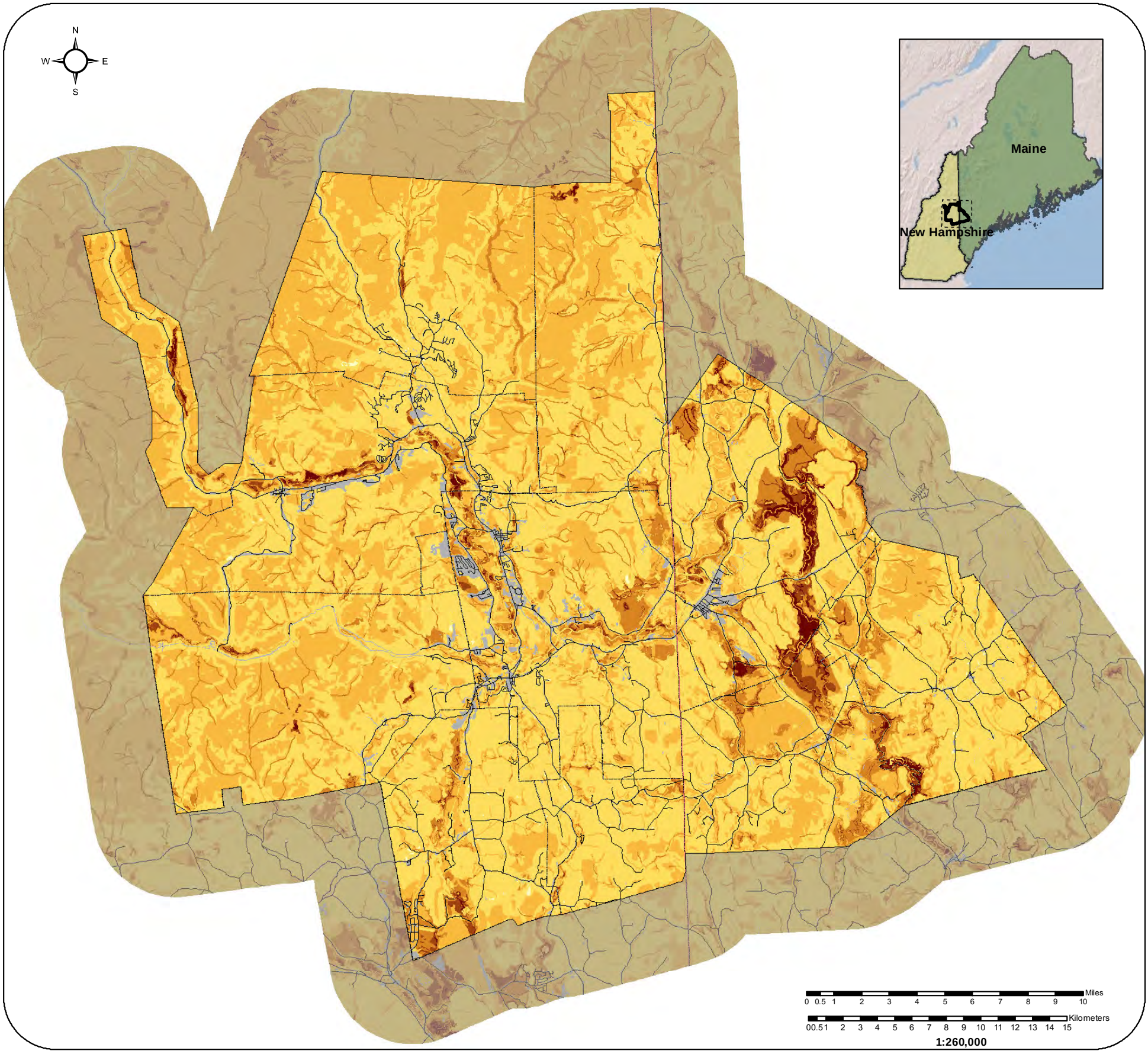
The Upper Saco Valley Land Trust Resource Inventory

Resource Data Model



Main Roads

USVLT Service Area

Municipal Boundaries

State Boundary

Resource Data Model Score

- 0
- 1 - 25
- 25 - 40
- 40 - 55
- 55 - 70
- 70 - 132
- Developed

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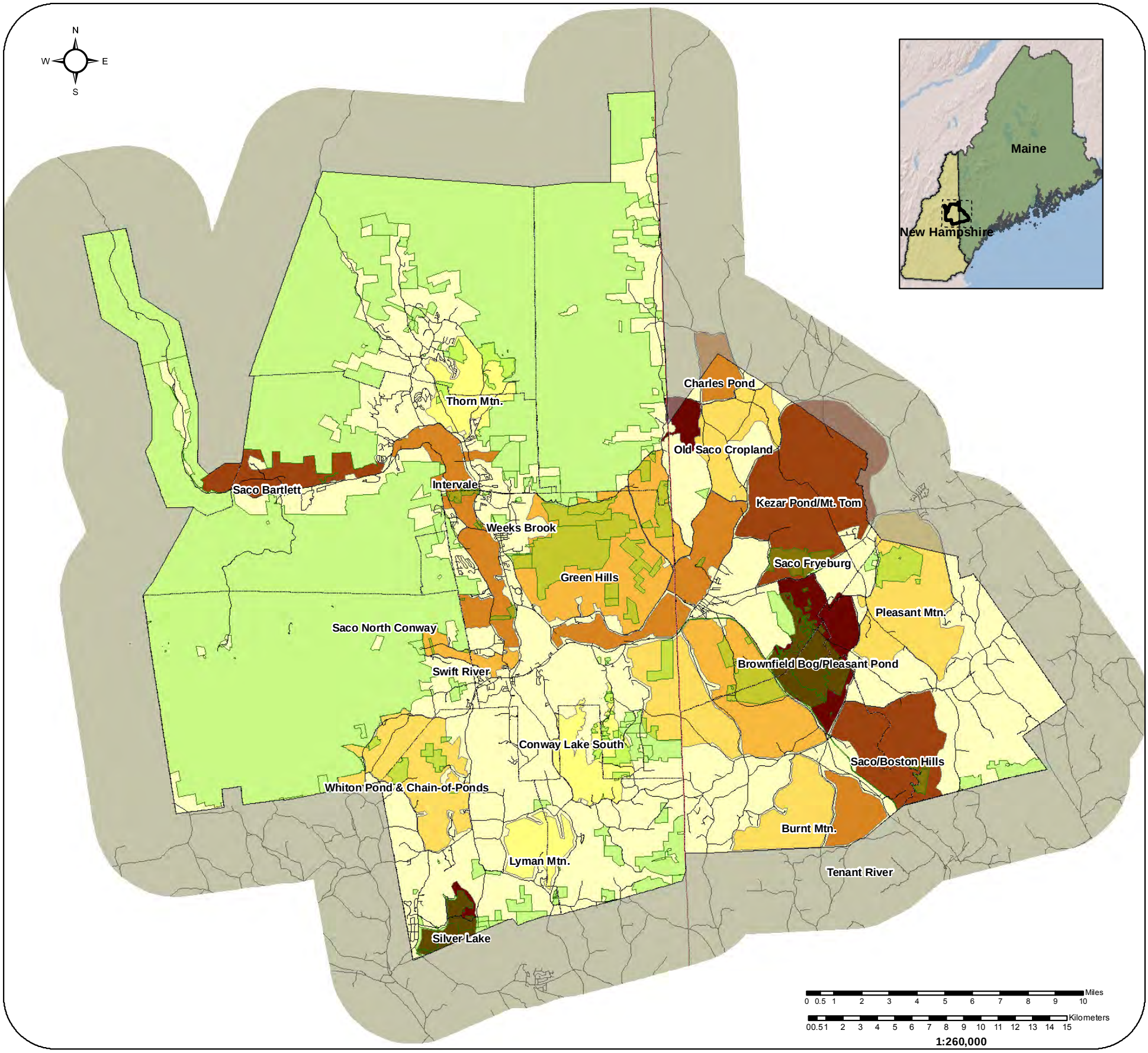
The USVLT Resource Data Model identifies areas of predicted high conservation value within the Upper Saco Valley Land Trust (USVLT) service area. Scores shown here were derived using a Geographic Information System (GIS) in 2 steps. First, 13 resource layers (see Table) were scored based on their relative resource value as determined by the USVLT Resource Inventory Committee. Some resources had sliding scores based on size, rarity, or quality. These resource layers were then overlain in GIS to derive a "co-occurrence" score for every location within the USVLT service area.

Second, scores within certain resource layers were adjusted based on the type of resource and the proximity to and type of human influence. For example, resources such as riparian zones and natural communities were down-ranked based on their proximity to roads, development, and clearings that might compromise their ecological integrity or quality. Conversely, resources that were above average size, more isolated from human development, or embedded in large un-fragmented forest blocks received a boost to their score.

The Upper Saco Valley Land Trust Resource Inventory

Focus Areas



Main Roads
USVLT Service Area
Municipal Boundaries
State Boundary
Conservation Lands

Focus Areas by Acre-Weighted Average Score

21 - 23
24 - 27
28 - 30
31 - 33
34 - 35
36 - 44

Map prepared by Ellis Ecological Services LLC and Sperduto Ecological Services LLC, February 2011.

For more information, see Sperduto and Ellis, Upper Saco Valley Land Trust Resource Inventory, 2011.

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Appendix 3: Acreage and Conservation Land Status for Input Layer Features in Draft Focus Areas

Notes: Statistics refer only to portions of focus areas within the service area boundaries. Natural community map units form a seamless coverage of the service area and therefore total to service area acreage. Other input layers are independent and therefore acreages do not sum to total service area acreages. Resource Data Model (RDM) acreages also do not sum to total acreage (RDM developed category is not included). Although Subalpine occurs on the WMNF in the service area (Mt. Chocorua, South Baldface), it is excluded from the tables because it does not occur within any of the focus areas.

1) Thorn Mtn.	Input Layer Acres in F.A.		Acres on Conservation Land		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	4674.8	100.0%	877.6	18.8%	81.2%
Aquifer	115.4	2.5%	57.9	50.2%	49.8%
Riparian Zones	529.4	11.3%	56.3	10.6%	89.4%
Non-forested Wetlands	14.7	0.3%	2.6	17.5%	82.5%
Great Ponds Shorelines					
Unfragmented Blocks	3781.3	80.9%	793.0	21.0%	79.0%
Productive Forest Soils - High	2820.6	60.3%	431.7	15.3%	84.7%
Productive Forest Soils - Med	1547.0	33.1%	415.3	26.8%	73.2%
Productive Forest Soils - Low	64.8	1.4%	18.8	28.9%	71.1%
Important Bird Areas					
Brook Trout Headwaters	251.6	5.4%	14.6	5.8%	94.2%
Prime Farmland Soils	2.8	0.1%			
Farmland and Other Openings	61.2	1.3%			
Exemplary Natural Communities					
RDM - High (70-132)					
RDM - Mod. High (55-70)	8.2	0.2%	0.2	2.0%	98.0%
RDM (40-55)	45.0	1.0%	24.5	54.3%	45.7%
RDM (25-40)	1288.7	27.6%	324.8	25.2%	74.8%
RDM (1-25)	3228.1	69.1%	520.5	16.1%	83.9%
RDM (0)	11.0	0.2%			
Natural Community Map Units					
Rocky Ridge	19.9	0.4%			
Cliff / Talus	10.7	0.2%			
Spruce – Fir	0.7	0.0%	0.7	96.0%	4.0%
Hemlock – Spruce & Lowland Spruce – Fir	2.4	0.1%	1.7	73.2%	26.8%
Hemlock - Hardwood - Pine & North. Hdwds.	2697.8	57.7%	415.1	15.4%	84.6%
Northern Hardwoods	11.9	0.3%	4.3	36.0%	64.0%
Rocky Oak – Hardwood – Spruce	1477.3	31.6%	359.2	24.3%	75.7%
Pitch/Mixed Pine Plains	67.4	1.4%	54.3	80.6%	19.4%
Semi-rich to Rich Woods	102.0	2.2%	12.1	11.9%	88.1%
Fen > Marsh	1.8	0.0%			
Bog					
Fen					
Semi-rich to Rich Swamp	42.4	0.9%	18.1	42.7%	57.3%
Poor Swamps	1.9	0.0%			
Isolated Basin Wetland - Undifferentiated					
Drainage Marsh	1.5	0.0%	0.5	32.2%	67.8%
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest	8.8	0.2%	0.2	2.3%	97.7%
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp					
River Channel					
Aquatic	36.3	0.8%	2.8	7.7%	92.3%
Farmland and Other Openings	81.0	1.7%			
Early Successional Thicket	17.3	0.4%	0.9	5.4%	94.6%
Developed	93.6	2.0%	7.7	8.2%	91.8%
Gravel / Sand Pit					
Grand Total (Natural Communities)	4674.8	100.0%	877.6	18.8%	81.2%

2) Saco Bartlett	Input Layer Acres in F.A.		Acres on Conservation Land		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	3799.6	100.0%	40.2	1.1%	98.9%
Aquifer	1830.7	48.2%	28.9	1.6%	98.4%
Riparian Zones	1520.1	40.0%	33.1	2.2%	97.8%
Non-forested wetlands	633.5	16.7%	19.4	3.1%	96.9%
Great Ponds Shorelines					
Unfragmented Blocks	2404.3	63.3%	27.4	1.1%	98.9%
Productive Forest Soils - High	1776.1	46.7%	25.6	1.4%	98.6%
Productive Forest Soils - Med	1130.3	29.7%	1.5	0.1%	99.9%
Productive Forest Soils - Low	95.5	2.5%	0.2	0.2%	99.8%
Important Bird Areas					
Brook Trout headwaters	266.3	7.0%	10.7	4.0%	96.0%
Prime Farmland Soils	306.3	8.1%	18.6	6.1%	93.9%
Farmland and Other Openings	178.4	4.7%			
Exemplary Natural Communities	105.0	2.8%	2.9	2.8%	97.2%
RDM - High (70-132)	174.2	4.6%	12.6	7.2%	92.8%
RDM - Mod. High (55-70)	352.8	9.3%	4.8	1.4%	98.6%
RDM 40-55	522.7	13.8%	9.9	1.9%	98.1%
RDM 25-40	1352.4	35.6%	7.4	0.5%	99.5%
RDM 1-25	1106.5	29.1%	5.4	0.5%	99.5%
RDM 0	0.1	0.0%			
Natural Community Map Units					
Rocky Ridge	24.4	0.6%	0.0	0.2%	99.8%
Cliff / Talus	31.1	0.8%			
Spruce – Fir	30.4	0.8%	0.1	0.5%	99.5%
Hemlock – Spruce & Lowland Spruce – Fir	1.3	0.0%	0.2	15.9%	84.1%
Hemlock - Hardwood - Pine & North. Hdwds.	881.7	23.2%	6.3	0.7%	99.3%
Northern Hardwoods	18.4	0.5%	1.9	10.1%	89.9%
Rocky Oak – Hardwood – Spruce	681.9	17.9%	0.1	0.0%	100.0%
Pitch/Mixed Pine Plains	447.1	11.8%	1.1	0.3%	99.7%
Semi-rich to Rich Woods	160.0	4.2%	1.7	1.1%	98.9%
Fen > Marsh					
Bog					
Fen					
Semi-rich to Rich Swamp	26.7	0.7%			
Poor Swamps	14.0	0.4%			
Isolated Basin Wetland - Undifferentiated					
Drainage Marsh	2.5	0.1%			
Sand Plain Basin / Pond Shore Marsh	5.4	0.1%			
Floodplain Forest	467.9	12.3%	15.7	3.4%	96.6%
Threaded River Floodplain & Terrace	475.4	12.5%			
Minor River Floodplain or Swamp					
River Channel	109.6	2.9%	8.9	8.1%	91.9%
Aquatic	90.3	2.4%	3.0	3.4%	96.6%
Farmland and Other Openings	210.3	5.5%	0.9	0.4%	99.6%
Early Successional Thicket	47.5	1.2%			
Developed	63.3	1.7%	0.1	0.1%	99.9%
Gravel / Sand Pit	10.6	0.3%			
Grand Total (Natural Communities)	3799.6	100.0%	40.2	1.1%	98.9%

3) Intervale	Input Layer Acres in F.A.		Acres on Conservation Land		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	3272.8		325.9	10.0%	90.0%
Aquifer	2562.8	78.3%	325.4	12.7%	87.3%
Riparian Zones	1626.9	49.7%	222.3	13.7%	86.3%
Non-forested wetlands	263.2	8.0%	30.1	11.4%	88.6%
Great Ponds Shorelines					
Unfragmented Blocks	1324.0	40.5%	173.5	13.1%	86.9%
Productive Forest Soils - High	1487.9	45.5%	123.6	8.3%	91.7%
Productive Forest Soils - Med	597.8	18.3%	7.3	1.2%	98.8%
Productive Forest Soils - Low	58.9	1.8%	0.0	0.0%	100.0%
Important Bird Areas					
Brook Trout headwaters	267.0	8.2%	42.0	15.7%	84.3%
Prime Farmland Soils	906.9	27.7%	123.0	13.6%	86.4%
Farmland and Other Openings	636.2	19.4%	169.4	26.6%	73.4%
Exemplary Natural Communities	272.8	8.3%	80.7	29.6%	70.4%
RDM - High (70-132)	154.1	4.7%	35.7	23.2%	76.8%
RDM - Mod. High (55-70)	290.2	8.9%	57.8	19.9%	80.1%
RDM 40-55	590.0	18.0%	36.4	6.2%	93.8%
RDM 25-40	867.3	26.5%	98.6	11.4%	88.6%
RDM 1-25	1180.0	36.1%	95.7	8.1%	91.9%
RDM 0	0.3	0.0%			
Natural Community Map Units					
Rocky Ridge	6.5	0.2%	0.0	0.1%	99.9%
Cliff / Talus	4.4	0.1%	0.0	0.1%	99.9%
Spruce – Fir	1.1	0.0%			
Hemlock – Spruce & Lowland Spruce – Fir					
Hemlock - Hardwood - Pine & North. Hdwds.	361.1	11.0%	0.0	0.0%	100.0%
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce	298.6	9.1%	0.3	0.1%	99.9%
Pitch/Mixed Pine Plains	299.2	9.1%	7.0	2.4%	97.6%
Semi-rich to Rich Woods	72.2	2.2%	0.0	0.0%	100.0%
Fen > Marsh	18.8	0.6%			
Bog					
Fen					
Semi-rich to Rich Swamp	7.0	0.2%			
Poor Swamps	44.4	1.4%			
Isolated Basin Wetland - Undifferentiated					
Drainage Marsh					
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest	1093.6	33.4%	123.5	11.3%	88.7%
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp					
River Channel	87.9	2.7%	11.2	12.7%	87.3%
Aquatic	173.4	5.3%	12.7	7.3%	92.7%
Farmland and Other Openings	653.1	20.0%	169.4	25.9%	74.1%
Early Successional Thicket					
Developed	151.7	4.6%	1.7	1.1%	98.9%
Gravel / Sand Pit					
Grand Total (Natural Communities)	3272.8	100.0%	325.9	10.0%	90.0%

4) Saco North Conway	Input Layer Acres in F.A.		Acres on Conservation Land		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	2979.0	100.0%	136.1	4.6%	95.4%
Aquifer	2582.4	86.7%	130.3	5.0%	95.0%
Riparian Zones	1232.3	41.4%	55.4	4.5%	95.5%
Non-forested wetlands	322.7	10.8%	8.8	2.7%	97.3%
Great Ponds Shorelines					
Unfragmented Blocks	1543.0	51.8%	64.3	4.2%	95.8%
Productive Forest Soils - High	1151.3	38.6%	59.7	5.2%	94.8%
Productive Forest Soils - Med	228.8	7.7%	5.6	2.5%	97.5%
Productive Forest Soils - Low	126.9	4.3%			
Important Bird Areas					
Brook Trout headwaters	173.8	5.8%	10.2	5.8%	94.2%
Prime Farmland Soils	1225.7	41.1%	83.4	6.8%	93.2%
Farmland and Other Openings	1057.1	35.5%	59.0	5.6%	94.4%
Exemplary Natural Communities	86.9	2.9%	15.7	18.1%	81.9%
RDM - High (70-132)	35.3	1.2%	4.1	11.5%	88.5%
RDM - Mod. High (55-70)	254.9	8.6%	20.0	7.9%	92.1%
RDM 40-55	497.5	16.7%	27.0	5.4%	94.6%
RDM 25-40	1051.0	35.3%	54.3	5.2%	94.8%
RDM 1-25	1024.6	34.4%	29.7	2.9%	97.1%
RDM 0					
Natural Community Map Units					
Rocky Ridge	1.3	0.0%			
Cliff / Talus					
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir					
Hemlock - Hardwood - Pine & North. Hdwds.	375.1	12.6%	5.9	1.6%	98.4%
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce					
Pitch/Mixed Pine Plains	228.8	7.7%	5.6	2.5%	97.5%
Semi-rich to Rich Woods	1.4	0.0%			
Fen > Marsh	85.4	2.9%			
Bog					
Fen					
Semi-rich to Rich Swamp	39.3	1.3%			
Poor Swamps	86.3	2.9%			
Isolated Basin Wetland - Undifferentiated					
Drainage Marsh					
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest	777.2	26.1%	53.8	6.9%	93.1%
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp					
River Channel	74.0	2.5%	4.3	5.8%	94.2%
Aquatic	131.1	4.4%	6.4	4.9%	95.1%
Farmland and Other Openings	1063.4	35.7%	59.0	5.6%	94.4%
Early Successional Thicket	2.4	0.1%			
Developed	113.4	3.8%	1.0	0.9%	99.1%
Gravel / Sand Pit	0.0	0.0%			
Grand Total (Natural Communities)	2979.0	100.0%	136.1	4.6%	95.4%

5) Swift River	Input Layer Acres in F.A.		Acres on Conservation Land		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	1345.2	100.0%	58.5	4.3%	95.7%
Aquifer	1136.8	84.5%	50.6	4.5%	95.5%
Riparian Zones	461.0	34.3%	8.0	1.7%	98.3%
Non-forested wetlands	152.9	11.4%	3.4	2.2%	97.8%
Great Ponds Shorelines					
Unfragmented Blocks	615.1	45.7%	26.0	4.2%	95.8%
Productive Forest Soils - High	501.8	37.3%	36.5	7.3%	92.7%
Productive Forest Soils - Med	346.8	25.8%	13.4	3.9%	96.1%
Productive Forest Soils - Low	25.9	1.9%			
Important Bird Areas					
Brook Trout headwaters	90.1	6.7%	5.2	5.7%	94.3%
Prime Farmland Soils	168.4	12.5%	2.8	1.6%	98.4%
Farmland and Other Openings	256.9	19.1%	2.2	0.9%	99.1%
Exemplary Natural Communities	13.8	1.0%			
RDM - High (70-132)	0.7	0.1%			
RDM - Mod. High (55-70)	30.5	2.3%			
RDM 40-55	274.8	20.4%	3.3	1.2%	98.8%
RDM 25-40	389.8	29.0%	24.4	6.3%	93.7%
RDM 1-25	583.8	43.4%	27.0	4.6%	95.4%
RDM 0					
Natural Community Map Units					
Rocky Ridge					
Cliff / Talus					
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir					
Hemlock - Hardwood - Pine & North. Hdwds.	310.5	23.1%	34.7	11.2%	88.8%
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce	34.1	2.5%			
Pitch/Mixed Pine Plains	312.7	23.2%	13.4	4.3%	95.7%
Semi-rich to Rich Woods	11.7	0.9%	0.9	8.0%	92.0%
Fen > Marsh	35.4	2.6%	0.0	0.0%	100.0%
Bog					
Fen					
Semi-rich to Rich Swamp	20.9	1.6%			
Poor Swamps	5.0	0.4%			
Isolated Basin Wetland - Undifferentiated					
Drainage Marsh	0.8	0.1%	0.7	87.0%	13.0%
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest	179.6	13.3%	0.9	0.5%	99.5%
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp					
River Channel	26.4	2.0%			
Aquatic	77.4	5.8%	0.1	0.2%	99.8%
Farmland and Other Openings	264.9	19.7%	3.9	1.5%	98.5%
Early Successional Thicket					
Developed	65.7	4.9%	3.8	5.7%	94.3%
Gravel / Sand Pit					
Grand Total (Natural Communities)	1345.2	100.0%	58.5	4.3%	95.7%

6) Green Hills	Input Layer Acres in F.A.		Acres on Conservation Land		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	12594.7	100.0%	5834.1	46.3%	53.7%
Aquifer	2151.2	17.1%	370.5	17.2%	82.8%
Riparian Zones	1060.3	8.4%	452.1	42.6%	57.4%
Non-forested wetlands	459.8	3.7%	96.8	21.1%	78.9%
Great Ponds Shorelines	40.3	0.3%	16.3	40.4%	59.6%
Unfragmented Blocks	11330.9	90.0%	5644.9	49.8%	50.2%
Productive Forest Soils - High	7050.1	56.0%	3130.5	44.4%	55.6%
Productive Forest Soils - Med	1570.2	12.5%	470.3	30.0%	70.0%
Productive Forest Soils - Low	2938.1	23.3%	2076.0	70.7%	29.3%
Important Bird Areas					
Brook Trout headwaters	929.9	7.4%	452.1	48.6%	51.4%
Prime Farmland Soils					
Farmland and Other Openings	256.1	2.0%	17.8	6.9%	93.1%
Exemplary Natural Communities	1119.8	8.9%	784.5	70.1%	29.9%
RDM - High (70-132)	14.2	0.1%	4.4	30.8%	69.2%
RDM - Mod. High (55-70)	149.5	1.2%	45.7	30.6%	69.4%
RDM 40-55	1761.1	14.0%	778.3	44.2%	55.8%
RDM 25-40	3418.4	27.1%	2195.9	64.2%	35.8%
RDM 1-25	7011.8	55.7%	2791.9	39.8%	60.2%
RDM 0	43.5	0.3%	5.4	12.5%	87.5%
Natural Community Map Units					
Rocky Ridge	1983.4	15.7%	1801.3	90.8%	9.2%
Cliff / Talus	0.5	0.0%	0.5	100.0%	0.0%
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir					
Hemlock - Hardwood - Pine & North. Hdwds.	6688.1	53.1%	2827.1	42.3%	57.7%
Northern Hardwoods	1.6	0.0%	0.7	41.0%	59.0%
Rocky Oak – Hardwood – Spruce	276.1	2.2%	168.6	61.1%	38.9%
Pitch/Mixed Pine Plains	1310.2	10.4%	301.7	23.0%	77.0%
Semi-rich to Rich Woods	356.6	2.8%	298.9	83.8%	16.2%
Fen > Marsh	191.4	1.5%	35.9	18.8%	81.2%
Bog	13.4	0.1%			
Fen	6.1	0.0%	0.5	8.1%	91.9%
Semi-rich to Rich Swamp	159.7	1.3%	85.0	53.2%	46.8%
Poor Swamps	765.1	6.1%	189.8	24.8%	75.2%
Isolated Basin Wetland - Undifferentiated	1.2	0.0%	1.2	100.0%	0.0%
Drainage Marsh	53.1	0.4%	10.1	19.0%	81.0%
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest	3.8	0.0%	3.8	99.8%	0.2%
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp	36.7	0.3%		0.0%	100.0%
River Channel					
Aquatic	22.1	0.2%	6.1	27.6%	72.4%
Farmland and Other Openings	280.2	2.2%	18.5	6.6%	93.4%
Early Successional Thicket	170.3	1.4%	72.0	42.3%	57.7%
Developed	171.0	1.4%	12.3	7.2%	92.8%
Gravel / Sand Pit	104.2	0.8%	0.0	0.0%	100.0%
Grand Total (Natural Communities)	12594.7	100.0%	5834.1	46.3%	53.7%

7) Saco East Conway	Input Layer Acres in F.A.		Acres on Conservation Land		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	2345.9	100.0%			
Aquifer	2137.9	91.1%			
Riparian Zones	1097.7	46.8%			
Non-forested wetlands	143.2	6.1%			
Great Ponds Shorelines					
Unfragmented Blocks	1293.3	55.1%			
Productive Forest Soils - High	551.3	23.5%			
Productive Forest Soils - Med	524.9	22.4%			
Productive Forest Soils - Low	21.9	0.9%			
Important Bird Areas					
Brook Trout headwaters	117.1	5.0%			
Prime Farmland Soils	697.9	29.7%			
Farmland and Other Openings	938.9	40.0%			
Exemplary Natural Communities	90.5	3.9%			
RDM - High (70-132)	17.5	0.7%			
RDM - Mod. High (55-70)	162.0	6.9%			
RDM 40-55	461.0	19.7%			
RDM 25-40	859.8	36.7%			
RDM 1-25	810.2	34.5%			
RDM 0					
Natural Community Map Units					
Rocky Ridge					
Cliff / Talus					
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir					
Hemlock - Hardwood - Pine & North. Hdwds.	52.5	2.2%			
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce	5.9	0.3%			
Pitch/Mixed Pine Plains	519.0	22.1%			
Semi-rich to Rich Woods	6.9	0.3%			
Fen > Marsh	22.0	0.9%			
Bog					
Fen					
Semi-rich to Rich Swamp					
Poor Swamps	21.9	0.9%			
Isolated Basin Wetland - Undifferentiated					
Drainage Marsh	0.5	0.0%			
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest	493.3	21.0%			
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp					
River Channel	25.6	1.1%			
Aquatic	194.7	8.3%			
Farmland and Other Openings	958.7	40.9%			
Early Successional Thicket					
Developed	33.9	1.4%			
Gravel / Sand Pit	11.0	0.5%			
Grand Total (Natural Communities)	2345.9	100.0%			

8) Weeks Brook	Input Layer Acres in F.A.		Acres on Conservation Land		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	2931.8	100.0%	879.2	30.0%	70.0%
Aquifer	1964.5	67.0%	473.7	24.1%	75.9%
Riparian Zones	587.1	20.0%	117.0	19.9%	80.1%
Non-forested wetlands	306.2	10.4%	44.7	14.6%	85.4%
Great Ponds Shorelines	125.7	4.3%	16.8	13.3%	86.7%
Unfragmented Blocks	2311.0	78.8%	756.1	32.7%	67.3%
Productive Forest Soils - High	736.5	25.1%	375.9	51.0%	49.0%
Productive Forest Soils - Med	871.0	29.7%	252.1	28.9%	71.1%
Productive Forest Soils - Low	573.9	19.6%	197.0	34.3%	65.7%
Important Bird Areas					
Brook Trout headwaters	91.1	3.1%	11.8	13.0%	87.0%
Prime Farmland Soils					
Farmland and Other Openings	263.7	9.0%	15.9	6.0%	94.0%
Exemplary Natural Communities	64.7	2.2%	5.9	9.1%	90.9%
RDM - High (70-132)	0.3	0.0%			
RDM - Mod. High (55-70)	68.1	2.3%	13.9	20.4%	79.6%
RDM 40-55	678.0	23.1%	251.6	37.1%	62.9%
RDM 25-40	956.5	32.6%	220.2	23.0%	77.0%
RDM 1-25	1177.1	40.2%	384.5	32.7%	67.3%
RDM 0	3.9	0.1%	3.9	99.7%	0.3%
Natural Community Map Units					
Rocky Ridge					
Cliff / Talus					
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir					
Hemlock - Hardwood - Pine & North. Hdwds.	724.3	24.7%	375.9	51.9%	48.1%
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce					
Pitch/Mixed Pine Plains	871.0	29.7%	252.1	28.9%	71.1%
Semi-rich to Rich Woods					
Fen > Marsh	158.5	5.4%	21.2	13.4%	86.6%
Bog					
Fen	64.7	2.2%	5.9	9.1%	90.9%
Semi-rich to Rich Swamp	72.4	2.5%	30.2	41.7%	58.3%
Poor Swamps	302.7	10.3%	129.6	42.8%	57.2%
Isolated Basin Wetland - Undifferentiated					
Drainage Marsh	2.8	0.1%			
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest	12.2	0.4%			
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp	198.8	6.8%	37.2	18.7%	81.3%
River Channel					
Aquatic	171.1	5.8%	0.2	0.1%	99.9%
Farmland and Other Openings	291.9	10.0%	20.9	7.2%	92.8%
Early Successional Thicket	7.4	0.3%	0.9	12.7%	87.3%
Developed	47.9	1.6%	5.1	10.6%	89.4%
Gravel / Sand Pit	6.0	0.2%			
Grand Total (Natural Communities)	2931.8	100.0%	879.2	30.0%	70.0%

9) South Conway/Tibbetts Mtn.	Input Layer Acres in F.A.		Acres on Conservation Land		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	6154.8	100.0%	606.6	9.9%	90.1%
Aquifer	229.4	3.7%	14.5	6.3%	93.7%
Riparian Zones	221.3	3.6%	23.2	10.5%	89.5%
Non-forested wetlands	448.3	7.3%	33.7	7.5%	92.5%
Great Ponds Shorelines					
Unfragmented Blocks	5571.5	90.5%	577.3	10.4%	89.6%
Productive Forest Soils - High	4111.5	66.8%	343.3	8.3%	91.7%
Productive Forest Soils - Med	942.2	15.3%	219.3	23.3%	76.7%
Productive Forest Soils - Low	663.3	10.8%	29.7	4.5%	95.5%
Important Bird Areas					
Brook Trout headwaters	221.3	3.6%	23.2	10.5%	89.5%
Prime Farmland Soils	45.0	0.7%			
Farmland and Other Openings	58.2	0.9%			
Exemplary Natural Communities					
RDM - High (70-132)	1.6	0.0%			
RDM - Mod. High (55-70)	11.7	0.2%	300.4	2565.2%	-2465.2%
RDM 40-55	499.6	8.1%	134.3	26.9%	73.1%
RDM 25-40	1233.9	20.0%	132.8	10.8%	89.2%
RDM 1-25	4359.5	70.8%	339.5	7.8%	92.2%
RDM 0	4.4	0.1%			
Natural Community Map Units					
Rocky Ridge	15.4	0.2%			
Cliff / Talus					
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir					
Hemlock - Hardwood - Pine & North. Hdwds.	4105.7	66.7%	343.3	8.4%	91.6%
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce	307.4	5.0%	60.3	19.6%	80.4%
Pitch/Mixed Pine Plains	637.7	10.4%	159.0	24.9%	75.1%
Semi-rich to Rich Woods	0.9	0.0%			
Fen > Marsh	137.0	2.2%	12.7	9.3%	90.7%
Bog	16.4	0.3%			
Fen	67.1	1.1%			
Semi-rich to Rich Swamp	253.0	4.1%	17.1	6.7%	93.3%
Poor Swamps	385.8	6.3%	12.6	3.3%	96.7%
Isolated Basin Wetland - Undifferentiated	6.5	0.1%			
Drainage Marsh	12.3	0.2%	1.6	13.3%	86.7%
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest	4.9	0.1%			
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp	9.2	0.1%			
River Channel					
Aquatic	1.5	0.0%			
Farmland and Other Openings	69.0	1.1%			
Early Successional Thicket	75.2	1.2%			
Developed	41.3	0.7%			
Gravel / Sand Pit	8.6	0.1%			
Grand Total (Natural Communities)	6154.8	100.0%	606.6	9.9%	90.1%

10) Whiton Pond & Chain-of-Ponds

Input Layers	Input Layer Acres in F.A.		Acres on Conservation Land		
	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	7995.4	100.0%	990.9	12.4%	87.6%
Aquifer	2437.1	30.5%	110.9	4.5%	95.5%
Riparian Zones	654.6	8.2%	49.1	7.5%	92.5%
Non-forested wetlands	1045.3	13.1%	160.3	15.3%	84.7%
Great Ponds Shorelines	307.6	3.8%	15.2	4.9%	95.1%
Unfragmented Blocks	5587.6	69.9%	764.0	13.7%	86.3%
Productive Forest Soils - High	4205.0	52.6%	705.0	16.8%	83.2%
Productive Forest Soils - Med	1646.1	20.6%	85.8	5.2%	94.8%
Productive Forest Soils - Low	656.2	8.2%	89.0	13.6%	86.4%
Important Bird Areas					
Brook Trout headwaters	388.4	4.9%	49.1	12.6%	87.4%
Prime Farmland Soils					
Farmland and Other Openings	185.1	2.3%	1.3	0.7%	99.3%
Exemplary Natural Communities	141.6	1.8%	30.5	21.5%	78.5%
RDM - High (70-132)	20.1	0.3%	0.3	1.3%	98.7%
RDM - Mod. High (55-70)	116.7	1.5%	3.3	2.9%	97.1%
RDM 40-55	729.6	9.1%	51.4	7.1%	92.9%
RDM 25-40	2250.7	28.1%	413.9	18.4%	81.6%
RDM 1-25	4681.7	58.6%	521.0	11.1%	88.9%
RDM 0	9.2	0.1%			
Natural Community Map Units					
Rocky Ridge	85.7	1.1%			
Cliff / Talus	3.7	0.0%	0.6	17.1%	82.9%
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir					
Hemlock - Hardwood - Pine & North. Hdwds.	4196.5	52.5%	704.8	16.8%	
Northern Hardwoods	0.3	0.0%			
Rocky Oak – Hardwood – Spruce	761.0	9.5%	54.6	7.2%	92.8%
Pitch/Mixed Pine Plains	901.4	11.3%	31.2	3.5%	96.5%
Semi-rich to Rich Woods	8.1	0.1%	0.2	2.2%	97.8%
Fen > Marsh	529.1	6.6%	100.6	19.0%	81.0%
Bog	19.1	0.2%			
Fen	57.1	0.7%	1.2	2.1%	97.9%
Semi-rich to Rich Swamp	391.0	4.9%	88.9	22.7%	77.3%
Poor Swamps	132.2	1.7%	0.1	0.1%	99.9%
Isolated Basin Wetland - Undifferentiated					
Drainage Marsh	9.2	0.1%			
Sand Plain Basin / Pond Shore Marsh	1.2	0.0%	0.2	12.9%	87.1%
Floodplain Forest	0.1	0.0%			
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp	47.4	0.6%			
River Channel					
Aquatic	317.6	4.0%	2.4	0.8%	99.2%
Farmland and Other Openings	204.9	2.6%	5.2	2.6%	97.4%
Early Successional Thicket	159.4	2.0%			
Developed	164.8	2.1%	1.0	0.6%	99.4%
Gravel / Sand Pit	5.5	0.1%			
Grand Total (Natural Communities)	7995.4	100.0%	990.9	12.4%	87.6%

11) Conway Lake South

Input Layers	Input Layer Acres in F.A.		Acres on Conservation Land		
	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	4518.4	100.0%	731.6	16.2%	83.8%
Aquifer	505.2	11.2%	104.7	20.7%	79.3%
Riparian Zones	471.2	10.4%	41.4	8.8%	91.2%
Non-forested wetlands	358.7	7.9%	72.3	20.2%	79.8%
Great Ponds Shorelines	400.1	8.9%	70.0	17.5%	82.5%
Unfragmented Blocks	3313.5	73.3%	616.4	18.6%	81.4%
Productive Forest Soils - High	3158.7	69.9%	567.9	18.0%	82.0%
Productive Forest Soils - Med	627.5	13.9%	53.8	8.6%	91.4%
Productive Forest Soils - Low	300.9	6.7%	37.3	12.4%	87.6%
Important Bird Areas					
Brook Trout headwaters	211.8	4.7%	40.2	19.0%	81.0%
Prime Farmland Soils	10.1	0.2%			
Farmland and Other Openings	115.6	2.6%	33.6	29.1%	70.9%
Exemplary Natural Communities					
RDM - High (70-132)	2.3	0.1%			
RDM - Mod. High (55-70)	21.2	0.5%	5.1	24.3%	75.7%
RDM 40-55	181.1	4.0%	43.5	24.0%	76.0%
RDM 25-40	908.4	20.1%	183.8	20.2%	79.8%
RDM 1-25	3382.9	74.9%	497.4	14.7%	85.3%
RDM 0	6.4	0.1%			
Natural Community Map Units					
Rocky Ridge					
Cliff / Talus					
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir					
Hemlock - Hardwood - Pine & North. Hdwds.	3149.5	69.7%	567.4	18.0%	82.0%
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce	386.2	8.5%	10.4	2.7%	97.3%
Pitch/Mixed Pine Plains	242.0	5.4%	43.4	17.9%	82.1%
Semi-rich to Rich Woods	9.2	0.2%	0.5	5.8%	94.2%
Fen > Marsh	192.5	4.3%	25.3	13.2%	86.8%
Bog	9.0	0.2%			
Fen					
Semi-rich to Rich Swamp	222.9	4.9%	20.1	9.0%	91.0%
Poor Swamps	77.9	1.7%	17.2	22.1%	77.9%
Isolated Basin Wetland - Undifferentiated					
Drainage Marsh	5.9	0.1%	4.3	73.0%	27.0%
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest					
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp					
River Channel					
Aquatic	67.0	1.5%	7.6	11.3%	88.7%
Farmland and Other Openings	137.2	3.0%	33.6	24.5%	75.5%
Early Successional Thicket					
Developed	15.4	0.3%	1.7	11.1%	88.9%
Gravel / Sand Pit	3.5	0.1%			
Grand Total (Natural Communities)	4518.4	100.0%	731.6	16.2%	83.8%

12) Lyman Mtn.	Input Layer Acres in F.A.		Acres on Conservation Land		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	2734.2	100.0%			
Aquifer	11.8	0.4%			
Riparian Zones	144.9	5.3%			
Non-forested wetlands	62.1	2.3%			
Great Ponds Shorelines	31.5	1.2%			
Unfragmented Blocks	2480.7	90.7%			
Productive Forest Soils - High	687.7	25.2%			
Productive Forest Soils - Med	1805.4	66.0%			
Productive Forest Soils - Low	65.1	2.4%			
Important Bird Areas					
Brook Trout headwaters	144.9	5.3%			
Prime Farmland Soils					
Farmland and Other Openings	119.4	4.4%			
Exemplary Natural Communities					
RDM - High (70-132)					
RDM - Mod. High (55-70)	1.5	0.1%			
RDM 40-55	44.3	1.6%			
RDM 25-40	1232.3	45.1%			
RDM 1-25	1452.3	53.1%			
RDM 0	1.9	0.1%			
Natural Community Map Units					
Rocky Ridge					
Cliff / Talus					
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir					
Hemlock - Hardwood - Pine & North. Hdwds.	676.9	24.8%			
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce	1781.0	65.1%			
Pitch/Mixed Pine Plains	24.4	0.9%			
Semi-rich to Rich Woods	10.8	0.4%			
Fen > Marsh	12.6	0.5%			
Bog					
Fen	15.4	0.6%			
Semi-rich to Rich Swamp	65.1	2.4%			
Poor Swamps					
Isolated Basin Wetland - Undifferentiated					
Drainage Marsh	1.2	0.0%			
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest					
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp					
River Channel					
Aquatic	19.1	0.7%			
Farmland and Other Openings	126.0	4.6%			
Early Successional Thicket					
Developed	1.7	0.1%			
Gravel / Sand Pit					
Grand Total (Natural Communities)	2734.2	100.0%			

13) Silver Lake

Input Layers	Input Layer Acres in F.A.		Acres on Conservation Land		
	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	1676.6	100.0%	1405.6	83.8%	16.2%
Aquifer	1643.8	98.0%	1405.6	85.5%	14.5%
Riparian Zones	158.7	9.5%	141.3	89.0%	11.0%
Non-forested wetlands	159.3	9.5%	117.9	74.0%	26.0%
Great Ponds Shorelines	96.3	5.7%	66.9	69.5%	30.5%
Unfragmented Blocks	1281.5	76.4%	1088.0	84.9%	15.1%
Productive Forest Soils - High	553.0	33.0%	491.7	88.9%	11.1%
Productive Forest Soils - Med	834.7	49.8%	715.4	85.7%	14.3%
Productive Forest Soils - Low	105.2	6.3%	103.0	97.9%	2.1%
Important Bird Areas	1573.5	93.9%	1405.6	89.3%	10.7%
Brook Trout headwaters	55.6	3.3%	38.3	68.9%	31.1%
Prime Farmland Soils					
Farmland and Other Openings	22.3	1.3%	15.5	69.5%	30.5%
Exemplary Natural Communities	540.5	32.2%	513.0	94.9%	5.1%
RDM - High (70-132)	42.9	2.6%	41.8	97.4%	2.6%
RDM - Mod. High (55-70)	323.8	19.3%			
RDM 40-55	519.2	31.0%	426.8	82.2%	17.8%
RDM 25-40	656.6	39.2%	581.2	88.5%	11.5%
RDM 1-25	115.0	6.9%	55.0	47.9%	52.1%
RDM 0					
Natural Community Map Units					
Rocky Ridge					
Cliff / Talus					
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir					
Hemlock - Hardwood - Pine & North. Hdwds.	553.0	33.0%	491.7	88.9%	11.1%
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce	43.7	2.6%	43.7	100.0%	0.0%
Pitch/Mixed Pine Plains	803.4	47.9%	671.7	83.6%	16.4%
Semi-rich to Rich Woods					
Fen > Marsh	50.6	3.0%	34.1	67.3%	32.7%
Bog	6.6	0.4%	3.1	46.7%	53.3%
Fen	41.3	2.5%	33.3	80.8%	19.2%
Semi-rich to Rich Swamp	41.4	2.5%	39.9	96.5%	3.5%
Poor Swamps	35.1	2.1%	34.6	98.6%	1.4%
Isolated Basin Wetland - Undifferentiated					
Drainage Marsh					
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest					
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp	28.7	1.7%	28.4	99.3%	0.7%
River Channel					
Aquatic	50.1	3.0%	9.2	18.4%	81.6%
Farmland and Other Openings	22.3	1.3%	15.5	69.5%	30.5%
Early Successional Thicket					
Developed	0.4	0.0%	0.3	72.7%	27.3%
Gravel / Sand Pit					
Grand Total (Natural Communities)	1676.6	100.0%	1405.6	83.8%	16.2%

14) Saco Fryeburg	Input Layer Acres in F.A.		Acres on Conservation Land		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	3404.6	100.0%	34.9	1.0%	99.0%
Aquifer	3075.1	90.3%	34.6	1.1%	98.9%
Riparian Zones	1299.0	38.2%	24.6	1.9%	98.1%
Non-forested wetlands	315.2	9.3%			
Great Ponds Shorelines					
Unfragmented Blocks	2290.4	67.3%	10.9	0.5%	99.5%
Productive Forest Soils - High	894.0	26.3%	10.0	1.1%	98.9%
Productive Forest Soils - Med	284.1	8.3%	24.5	8.6%	91.4%
Productive Forest Soils - Low	28.0	0.8%			
Important Bird Areas					
Brook Trout headwaters	104.1	3.1%	0.1	0.1%	99.9%
Prime Farmland Soils	1171.7	34.4%	1.6	0.1%	99.9%
Farmland and Other Openings	1693.1	49.7%			
Exemplary Natural Communities	66.2	1.9%			
RDM - High (70-132)	20.0	0.6%			
RDM - Mod. High (55-70)	284.1	8.3%	9.2	3.2%	96.8%
RDM 40-55	514.6	15.1%	12.5	2.4%	97.6%
RDM 25-40	1248.5	36.7%	12.5	1.0%	99.0%
RDM 1-25	1278.1	37.5%	0.4	0.0%	100.0%
RDM 0	2.9	0.1%			
Natural Community Map Units					
Rocky Ridge					
Cliff / Talus					
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir					
Hemlock - Hardwood - Pine & North. Hdwds.	204.4	6.0%	0.2	0.1%	99.9%
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce					
Pitch/Mixed Pine Plains	284.1	8.3%	24.5	8.6%	91.4%
Semi-rich to Rich Woods					
Fen > Marsh	2.9	0.1%			
Bog					
Fen	17.5	0.5%			
Semi-rich to Rich Swamp					
Poor Swamps	27.3	0.8%			
Isolated Basin Wetland - Undifferentiated					
Drainage Marsh					
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest	690.7	20.3%	9.9	1.4%	98.6%
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp	0.7	0.0%			
River Channel	149.9	4.4%			
Aquatic	261.7	7.7%	0.0	0.0%	100.0%
Farmland and Other Openings	1705.7	50.1%			
Early Successional Thicket					
Developed	55.3	1.6%	0.3	0.6%	99.4%
Gravel / Sand Pit	4.4	0.1%			
Grand Total (Natural Communities)	3404.6	100.0%	34.9	1.0%	99.0%

15) Old Saco Cropland

Input Layers	Input Layer Acres in F.A.		Acres on Conservation Land		
	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	4091.8	100.0%			
Aquifer	3579.7	87.5%			
Riparian Zones	1333.6	32.6%			
Non-forested wetlands	170.5	4.2%			
Great Ponds Shorelines	70.9	1.7%			
Unfragmented Blocks	2702.5	66.0%			
Productive Forest Soils - High	782.1	19.1%			
Productive Forest Soils - Med	153.2	3.7%			
Productive Forest Soils - Low	52.7	1.3%			
Important Bird Areas					
Brook Trout headwaters	101.2	2.5%			
Prime Farmland Soils	1682.9	41.1%			
Farmland and Other Openings	2616.2	63.9%			
Exemplary Natural Communities					
RDM - High (70-132)	1.8	0.0%			
RDM - Mod. High (55-70)	72.0	1.8%			
RDM 40-55	254.4	6.2%			
RDM 25-40	1583.1	38.7%			
RDM 1-25	2105.5	51.5%			
RDM 0	6.9	0.2%			
Natural Community Map Units					
Rocky Ridge					
Cliff / Talus					
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir					
Hemlock - Hardwood - Pine & North. Hdwds.	355.7	8.7%			
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce	2.7	0.1%			
Pitch/Mixed Pine Plains	150.5	3.7%			
Semi-rich to Rich Woods					
Fen > Marsh					
Bog					
Fen	109.1	2.7%			
Semi-rich to Rich Swamp					
Poor Swamps	52.7	1.3%			
Isolated Basin Wetland - Undifferentiated					
Drainage Marsh					
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest	426.3	10.4%			
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp					
River Channel					
Aquatic	275.5	6.7%			
Farmland and Other Openings	2646.9	64.7%			
Early Successional Thicket					
Developed	68.0	1.7%			
Gravel / Sand Pit	4.3	0.1%			
Grand Total (Natural Communities)	4091.8	100.0%			

16) Lower Kimball Pond	Input Layer Acres in F.A.		Acres on Conservation Land		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	926.4	100.0%			
Aquifer	812.4	87.7%			
Riparian Zones	283.4	30.6%			
Non-forested wetlands	348.3	37.6%			
Great Ponds Shorelines	79.8	8.6%			
Unfragmented Blocks	815.8	88.1%			
Productive Forest Soils - High	591.9	63.9%			
Productive Forest Soils - Med	23.8	2.6%			
Productive Forest Soils - Low	1.4	0.2%			
Important Bird Areas					
Brook Trout headwaters	114.2	12.3%			
Prime Farmland Soils	40.8	4.4%			
Farmland and Other Openings	9.8	1.1%			
Exemplary Natural Communities	1.7	0.2%			
RDM - High (70-132)	62.8	6.8%			
RDM - Mod. High (55-70)	110.8	12.0%			
RDM 40-55	517.9	55.9%			
RDM 25-40	141.1	15.2%			
RDM 1-25	86.1	9.3%			
RDM 0	1.7	0.2%			
Natural Community Map Units					
Rocky Ridge					
Cliff / Talus					
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir					
Hemlock - Hardwood - Pine & North. Hdwds.	103.5	11.2%			
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce					
Pitch/Mixed Pine Plains	23.8	2.6%			
Semi-rich to Rich Woods					
Fen > Marsh	5.3	0.6%			
Bog					
Fen	259.4	28.0%			
Semi-rich to Rich Swamp	1.4	0.2%			
Poor Swamps					
Isolated Basin Wetland - Undifferentiated					
Drainage Marsh					
Sand Plain Basin / Pond Shore Marsh	1.7	0.2%			
Floodplain Forest	494.4	53.4%			
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp					
River Channel					
Aquatic	20.5	2.2%			
Farmland and Other Openings	13.9	1.5%			
Early Successional Thicket	2.5	0.3%			
Developed	0.0	0.0%			
Gravel / Sand Pit					
Grand Total (Natural Communities)	926.4				

17) Charles Pond

Input Layers	Input Layer Acres in F.A.		Acres on Conservation Land		
	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	1173.9	100.0%			
Aquifer	711.4	60.6%			
Riparian Zones	409.5	34.9%			
Non-forested wetlands	361.6	30.8%			
Great Ponds Shorelines	75.0	6.4%			
Unfragmented Blocks	1037.4	88.4%			
Productive Forest Soils - High	599.4	51.1%			
Productive Forest Soils - Med	43.9	3.7%			
Productive Forest Soils - Low	18.7	1.6%			
Important Bird Areas					
Brook Trout headwaters	37.3	3.2%			
Prime Farmland Soils	84.8	7.2%			
Farmland and Other Openings	134.1	11.4%			
Exemplary Natural Communities	148.7	12.7%			
RDM - High (70-132)	56.0	4.8%			
RDM - Mod. High (55-70)	121.0	10.3%			
RDM 40-55	268.9	22.9%			
RDM 25-40	266.0	22.7%			
RDM 1-25	454.4	38.7%			
RDM 0	0.6	0.1%			
Natural Community Map Units					
Rocky Ridge					
Cliff / Talus					
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir	31.6	2.7%			
Hemlock - Hardwood - Pine & North. Hdwds.	351.1	29.9%			
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce					
Pitch/Mixed Pine Plains	12.3	1.0%			
Semi-rich to Rich Woods					
Fen > Marsh					
Bog					
Fen	230.9	19.7%			
Semi-rich to Rich Swamp					
Poor Swamps					
Isolated Basin Wetland - Undifferentiated					
Drainage Marsh					
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest	253.3	21.6%			
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp	18.7	1.6%			
River Channel					
Aquatic	133.2	11.4%			
Farmland and Other Openings	140.8	12.0%			
Early Successional Thicket					
Developed	2.0	0.2%			
Gravel / Sand Pit					
Grand Total (Natural Communities)	1173.9	100.0%			

18) Kezar Pond/Mt. Tom

Input Layers	Input Layer Acres in F.A.		Acres on Conservation Land		
	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	13527.6	100.0%	980.5	7.2%	92.8%
Aquifer	3604.0	26.6%	217.4	6.0%	94.0%
Riparian Zones	2415.8	17.9%	178.3	7.4%	92.6%
Non-forested wetlands	3071.3	22.7%	20.8	0.7%	99.3%
Great Ponds Shorelines	413.0	3.1%			
Unfragmented Blocks	10662.5	78.8%	866.1	8.1%	91.9%
Productive Forest Soils - High	6369.0	47.1%	815.9	12.8%	87.2%
Productive Forest Soils - Med	771.4	5.7%	116.1	15.0%	85.0%
Productive Forest Soils - Low	355.5	2.6%	23.3	6.5%	93.5%
Important Bird Areas					
Brook Trout headwaters	432.8	3.2%	29.2	6.8%	93.2%
Prime Farmland Soils	365.3	2.7%			
Farmland and Other Openings	529.8	3.9%			
Exemplary Natural Communities	4012.4	29.7%	394.0	9.8%	90.2%
RDM - High (70-132)	1104.5	8.2%	96.6	8.7%	91.3%
RDM - Mod. High (55-70)	1068.4	7.9%	83.9	7.8%	92.2%
RDM 40-55	2522.0	18.6%	84.8	3.4%	96.6%
RDM 25-40	2012.0	14.9%	224.7	11.2%	88.8%
RDM 1-25	5543.6	41.0%	487.6	8.8%	91.2%
RDM 0	15.4	0.1%	1.8	11.5%	88.5%
Natural Community Map Units					
Rocky Ridge	27.3	0.2%	21.6	79.4%	20.6%
Cliff / Talus					
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir	147.6	1.1%	21.5	14.6%	85.4%
Hemlock - Hardwood - Pine & North. Hdwds.	4548.0	33.6%	610.8	13.4%	86.6%
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce	208.7	1.5%	90.3	43.3%	56.7%
Pitch/Mixed Pine Plains	415.7	3.1%	4.3	1.0%	99.0%
Semi-rich to Rich Woods	1.0	0.0%	1.0	100.0%	0.0%
Fen > Marsh					
Bog	8.5	0.1%			
Fen	2382.5	17.6%	10.8	0.5%	99.5%
Semi-rich to Rich Swamp	8.7	0.1%			
Poor Swamps	319.6	2.4%	1.6	0.5%	99.5%
Isolated Basin Wetland - Undifferentiated					
Drainage Marsh					
Sand Plain Basin / Pond Shore Marsh	123.9	0.9%			
Floodplain Forest	2960.0	21.9%	204.1	6.9%	93.1%
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp					
River Channel	70.2	0.5%			
Aquatic	1684.9	12.5%	10.7	0.6%	99.4%
Farmland and Other Openings	566.8	4.2%			
Early Successional Thicket	4.2	0.0%	0.8	18.3%	81.7%
Developed	48.3	0.4%	1.1	2.3%	97.7%
Gravel / Sand Pit	1.8	0.0%	1.8	100.0%	0.0%
Grand Total (Natural Communities)	13527.6	100.0%	980.5	7.2%	92.8%

19) Brownfield Bog/Pleasant Pond

Input Layers	Input Layer Acres in F.A.		Acres on Conservation Land		
	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	7829.6	100.0%	3714.5	47.4%	52.6%
Aquifer	4537.8	58.0%	2707.8	59.7%	40.3%
Riparian Zones	2149.2	27.4%	1155.5	53.8%	46.2%
Non-forested wetlands	3006.4	38.4%	1967.4	65.4%	34.6%
Great Ponds Shorelines	300.9	3.8%	120.4	40.0%	60.0%
Unfragmented Blocks	6283.4	80.3%	3401.0	54.1%	45.9%
Productive Forest Soils - High	2813.2	35.9%	1485.4	52.8%	47.2%
Productive Forest Soils - Med	434.3	5.5%	142.4	32.8%	67.2%
Productive Forest Soils - Low	760.8	9.7%	334.2	43.9%	56.1%
Important Bird Areas					
Brook Trout headwaters	356.2	4.5%	139.0	39.0%	61.0%
Prime Farmland Soils	73.0	0.9%	1.2	1.7%	98.3%
Farmland and Other Openings	220.0	2.8%	2.8	1.3%	98.7%
Exemplary Natural Communities	3008.0	38.4%	2146.1	71.3%	28.7%
RDM - High (70-132)	772.7	9.9%	541.3	70.1%	29.9%
RDM - Mod. High (55-70)	1251.0	16.0%	879.5	70.3%	29.7%
RDM 40-55	1754.4	22.4%	961.0	54.8%	45.2%
RDM 25-40	1650.0	21.1%	542.3	32.9%	67.1%
RDM 1-25	1817.8	23.2%	783.8	43.1%	56.9%
RDM 0	0.5	0.0%			
Natural Community Map Units					
Rocky Ridge					
Cliff / Talus					
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir	108.6	1.4%	81.0	74.6%	25.4%
Hemlock - Hardwood - Pine & North. Hdwds.	1644.2	21.0%	866.7	52.7%	47.3%
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce	66.9	0.9%	0.7	1.0%	99.0%
Pitch/Mixed Pine Plains	258.8	3.3%	60.8	23.5%	76.5%
Semi-rich to Rich Woods					
Fen > Marsh					
Bog					
Fen	2370.2	30.3%	1638.1	69.1%	30.9%
Semi-rich to Rich Swamp	85.8	1.1%	80.1	93.4%	6.6%
Poor Swamps	671.4	8.6%	253.1	37.7%	62.3%
Isolated Basin Wetland - Undifferentiated	0.2	0.0%	0.2	100.0%	0.0%
Drainage Marsh					
Sand Plain Basin / Pond Shore Marsh	29.0	0.4%	4.6	15.7%	84.3%
Floodplain Forest	1709.1	21.8%	618.7	36.2%	63.8%
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp	3.7	0.0%	1.0	26.5%	73.5%
River Channel	0.3	0.0%	0.1	45.8%	54.2%
Aquatic	607.3	7.8%	96.5	15.9%	84.1%
Farmland and Other Openings	231.5	3.0%	2.8	1.2%	98.8%
Early Successional Thicket	11.1	0.1%	3.6	32.3%	67.7%
Developed	31.7	0.4%	6.6	20.8%	79.2%
Gravel / Sand Pit					
Grand Total (Natural Communities)	7829.6	100.0%	3714.5	47.4%	

20) Fryeburg Barrens & Sandplain Wetlands	Input Layer Acres in F.A.		Acres on Conservation Land		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	8042.1	100.0%	1682.8	20.9%	79.1%
Aquifer	5788.3	72.0%	1528.1	26.4%	73.6%
Riparian Zones	476.6	5.9%	127.0	26.7%	73.3%
Non-forested wetlands	855.5	10.6%	207.7	24.3%	75.7%
Great Ponds Shorelines	73.4	0.9%	44.7	60.9%	39.1%
Unfragmented Blocks	6609.3	82.2%	1286.3	19.5%	80.5%
Productive Forest Soils - High	3090.2	38.4%	146.7	4.7%	95.3%
Productive Forest Soils - Med	2168.7	27.0%	630.0	29.1%	70.9%
Productive Forest Soils - Low	1725.7	21.5%	755.1	43.8%	56.2%
Important Bird Areas					
Brook Trout headwaters	322.2	4.0%	127.0	39.4%	60.6%
Prime Farmland Soils	36.5	0.5%	4.8	13.3%	86.7%
Farmland and Other Openings	206.7	2.6%	0.5	0.2%	99.8%
Exemplary Natural Communities	14.1	0.2%	11.2	79.7%	20.3%
RDM - High (70-132)	137.7	1.7%	116.9	84.9%	15.1%
RDM - Mod. High (55-70)	270.0	3.4%	141.4	52.4%	47.6%
RDM 40-55	1316.4	16.4%	497.0	37.8%	62.2%
RDM 25-40	3851.3	47.9%	721.8	18.7%	81.3%
RDM 1-25	2284.2	28.4%	190.8	8.4%	91.6%
RDM 0	2.6	0.0%	2.5	94.1%	5.9%
Natural Community Map Units					
Rocky Ridge	408.1	5.1%			
Cliff / Talus	2.3	0.0%			
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir	9.3	0.1%			
Hemlock - Hardwood - Pine & North. Hdwds.	3039.8	37.8%	146.7	4.8%	95.2%
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce	382.1	4.8%	9.6	2.5%	97.5%
Pitch/Mixed Pine Plains	1777.4	22.1%	620.5	34.9%	65.1%
Semi-rich to Rich Woods	30.8	0.4%			
Fen > Marsh					
Bog	138.4	1.7%	44.7	32.3%	67.7%
Fen	365.8	4.5%	79.5	21.7%	78.3%
Semi-rich to Rich Swamp	134.9	1.7%			
Poor Swamps	999.7	12.4%	716.9	71.7%	28.3%
Isolated Basin Wetland - Undifferentiated	6.8	0.1%			
Drainage Marsh	4.1	0.1%			
Sand Plain Basin / Pond Shore Marsh	4.7	0.1%			
Floodplain Forest	19.6	0.2%			
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp	188.9	2.3%	38.1	20.2%	79.8%
River Channel					
Aquatic	76.1	0.9%	9.5	12.5%	87.5%
Farmland and Other Openings	271.0	3.4%	0.5	0.2%	99.8%
Early Successional Thicket					
Developed	158.8	2.0%	12.3	7.8%	92.2%
Gravel / Sand Pit	23.6	0.3%	4.5	19.3%	80.7%
Grand Total (Natural Communities)	8042.1	100.0%	1682.8	20.9%	79.1%

21) Pleasant Mtn.	Input Layer Acres in F.A.		Acres on Conservation Land		
Input Layers	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	8087.7	100.0%	1116.5	13.8%	86.2%
Aquifer	1144.2	14.1%			
Riparian Zones	651.0	8.0%	58.9	9.0%	91.0%
Non-forested wetlands	100.8	1.2%			
Great Ponds Shorelines	334.2	4.1%			
Unfragmented Blocks	7706.3	95.3%	1107.6	14.4%	85.6%
Productive Forest Soils - High	3702.2	45.8%	430.4	11.6%	88.4%
Productive Forest Soils - Med	2593.2	32.1%	623.4	24.0%	76.0%
Productive Forest Soils - Low	1096.1	13.6%	62.4	5.7%	94.3%
Important Bird Areas					
Brook Trout headwaters	452.6	5.6%	58.9	13.0%	87.0%
Prime Farmland Soils					
Farmland and Other Openings	63.8	0.8%			
Exemplary Natural Communities	771.6	9.5%	112.7	14.6%	85.4%
RDM - High (70-132)	2.4	0.0%			
RDM - Mod. High (55-70)	26.6	0.3%			
RDM 40-55	797.0	9.9%	61.8	7.7%	92.3%
RDM 25-40	3389.8	41.9%	683.6	20.2%	79.8%
RDM 1-25	3839.1	47.5%	371.1	9.7%	90.3%
RDM 0	6.1	0.1%			
Natural Community Map Units					
Rocky Ridge	651.2	8.1%	62.4	9.6%	90.4%
Cliff / Talus	14.5	0.2%			
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir					
Hemlock - Hardwood - Pine & North. Hdwds.	3485.0	43.1%	355.3	10.2%	89.8%
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce	1838.4	22.7%	619.4	33.7%	66.3%
Pitch/Mixed Pine Plains	754.8	9.3%	4.0	0.5%	99.5%
Semi-rich to Rich Woods	181.9	2.2%	75.1	41.3%	58.7%
Fen > Marsh					
Bog	25.4	0.3%			
Fen	19.3	0.2%			
Semi-rich to Rich Swamp	104.8	1.3%			
Poor Swamps	340.1	4.2%			
Isolated Basin Wetland - Undifferentiated	2.2	0.0%			
Drainage Marsh	0.2	0.0%			
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest	35.3	0.4%	0.0	0.1%	99.9%
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp					
River Channel					
Aquatic	483.2	6.0%	0.2	0.0%	100.0%
Farmland and Other Openings	82.0	1.0%			
Early Successional Thicket	42.8	0.5%			
Developed	26.6	0.3%			
Gravel / Sand Pit					
Grand Total (Natural Communities)	8087.7	100.0%	1116.5	13.8%	86.2%

22) Saco/Boston Hills

Input Layers	Input Layer Acres in F.A.		Acres on Conservation Land		
	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	7445.0	100.0%	341.0	4.6%	95.4%
Aquifer	3135.2	42.1%	249.7	8.0%	92.0%
Riparian Zones	1862.7	25.0%	166.1	8.9%	91.1%
Non-forested wetlands	1019.8	13.7%	83.1	8.1%	91.9%
Great Ponds Shorelines	147.4	2.0%	12.4	8.4%	91.6%
Unfragmented Blocks	6760.1	90.8%	337.6	5.0%	95.0%
Productive Forest Soils - High	3163.4	42.5%	232.1	7.3%	92.7%
Productive Forest Soils - Med	2019.0	27.1%	14.3	0.7%	99.3%
Productive Forest Soils - Low	934.2	12.5%	28.3	3.0%	97.0%
Important Bird Areas					
Brook Trout headwaters	140.8	1.9%	6.0	4.3%	95.7%
Prime Farmland Soils	90.9	1.2%			
Farmland and Other Openings	109.0	1.5%			
Exemplary Natural Communities	384.4	5.2%	169.3	44.0%	56.0%
RDM - High (70-132)	328.5	4.4%	137.4	41.8%	58.2%
RDM - Mod. High (55-70)	542.3	7.3%	37.3	6.9%	93.1%
RDM 40-55	1323.5	17.8%	55.2	4.2%	95.8%
RDM 25-40	2469.9	33.2%	70.6	2.9%	97.1%
RDM 1-25	2550.3	34.3%	38.7	1.5%	98.5%
RDM 0	3.2	0.0%			
Natural Community Map Units					
Rocky Ridge	160.2	2.2%			
Cliff / Talus					
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir	204.3	2.7%	7.5	3.7%	96.3%
Hemlock - Hardwood - Pine & North. Hdwds.	2344.2	31.5%	61.0	2.6%	97.4%
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce	580.0	7.8%			
Pitch/Mixed Pine Plains	1285.8	17.3%	6.8	0.5%	99.5%
Semi-rich to Rich Woods	22.2	0.3%			
Fen > Marsh	3.0	0.0%			
Bog					
Fen	583.6	7.8%	50.3	8.6%	91.4%
Semi-rich to Rich Swamp	216.1	2.9%	2.1	1.0%	99.0%
Poor Swamps	532.4	7.2%	26.2	4.9%	95.1%
Isolated Basin Wetland - Undifferentiated	1.1	0.0%	0.0	0.3%	99.7%
Drainage Marsh	18.4	0.2%			
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest	942.8	12.7%	171.1	18.1%	81.9%
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp	25.4	0.3%			
River Channel					
Aquatic	379.4	5.1%	14.1	3.7%	96.3%
Farmland and Other Openings	115.7	1.6%			
Early Successional Thicket					
Developed	30.4	0.4%	1.9	6.1%	93.9%
Gravel / Sand Pit					
Grand Total (Natural Communities)	7445.0	100.0%	341.0	4.6%	95.4%

23) Tenant River

Input Layers	Input Layer Acres in F.A.		Acres on Conservation Land		
	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	2233.3	100.0%			
Aquifer	1245.0	55.7%			
Riparian Zones	312.7	14.0%			
Non-forested wetlands	446.2	20.0%			
Great Ponds Shorelines	26.0	1.2%			
Unfragmented Blocks	1876.6	84.0%			
Productive Forest Soils - High	611.6	27.4%			
Productive Forest Soils - Med	877.4	39.3%			
Productive Forest Soils - Low	368.7	16.5%			
Important Bird Areas					
Brook Trout headwaters	100.4	4.5%			
Prime Farmland Soils					
Farmland and Other Openings	12.6	0.6%			
Exemplary Natural Communities					
RDM - High (70-132)	2.3	0.1%			
RDM - Mod. High (55-70)	80.5	3.6%			
RDM 40-55	606.1	27.1%			
RDM 25-40	644.8	28.9%			
RDM 1-25	878.8	39.3%			
RDM 0	0.1	0.0%			
Natural Community Map Units					
Rocky Ridge	85.7	3.8%			
Cliff / Talus					
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir	5.1	0.2%			
Hemlock - Hardwood - Pine & North. Hdwds.	606.5	27.2%			
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce	82.1	3.7%			
Pitch/Mixed Pine Plains	791.1	35.4%			
Semi-rich to Rich Woods					
Fen > Marsh					
Bog	46.6	2.1%			
Fen	204.5	9.2%			
Semi-rich to Rich Swamp	0.4	0.0%			
Poor Swamps	281.9	12.6%			
Isolated Basin Wetland - Undifferentiated	5.6	0.2%			
Drainage Marsh					
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest	5.1	0.2%			
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp	0.7	0.0%			
River Channel					
Aquatic	70.5	3.2%			
Farmland and Other Openings	20.1	0.9%			
Early Successional Thicket					
Developed	19.8	0.9%			
Gravel / Sand Pit	7.6	0.3%			
Grand Total (Natural Communities)	2233.3	100.0%			

24) Burnt Meadow Mtn.

Input Layers	Input Layer Acres in F.A.		Acres on Conservation Land		
	Acres in F.A.	% of F.A.	Acres	% Cons. Land	% not Cons.
Total Acres in Focus Area	4363.4	100.0%			
Aquifer	152.2	3.5%			
Riparian Zones	154.0	3.5%			
Non-forested wetlands	26.6	0.6%			
Great Ponds Shorelines	21.6	0.5%			
Unfragmented Blocks	3970.1	91.0%			
Productive Forest Soils - High	1847.9	42.3%			
Productive Forest Soils - Med	446.8	10.2%			
Productive Forest Soils - Low	1995.6	45.7%			
Important Bird Areas					
Brook Trout headwaters	154.0	3.5%			
Prime Farmland Soils					
Farmland and Other Openings	26.4	0.6%			
Exemplary Natural Communities	57.9	1.3%			
RDM - High (70-132)					
RDM - Mod. High (55-70)	7.7	0.2%			
RDM 40-55	118.7	2.7%			
RDM 25-40	2081.4	47.7%			
RDM 1-25	2151.6	49.3%			
RDM 0	2.5	0.1%			
Natural Community Map Units					
Rocky Ridge	1788.8	41.0%			
Cliff / Talus	4.8	0.1%			
Spruce – Fir					
Hemlock – Spruce & Lowland Spruce – Fir	2.5	0.1%			
Hemlock - Hardwood - Pine & North. Hdwds.	1653.4	37.9%			
Northern Hardwoods					
Rocky Oak – Hardwood – Spruce	251.2	5.8%			
Pitch/Mixed Pine Plains	193.1	4.4%			
Semi-rich to Rich Woods	194.5	4.5%			
Fen > Marsh					
Bog					
Fen	1.5	0.0%			
Semi-rich to Rich Swamp	63.4	1.5%			
Poor Swamps	100.9	2.3%			
Isolated Basin Wetland - Undifferentiated	3.3	0.1%			
Drainage Marsh					
Sand Plain Basin / Pond Shore Marsh					
Floodplain Forest					
Threaded River Floodplain & Terrace					
Minor River Floodplain or Swamp	42.6	1.0%			
River Channel					
Aquatic	16.5	0.4%			
Farmland and Other Openings	43.6	1.0%			
Early Successional Thicket					
Developed	1.4	0.0%			
Gravel / Sand Pit	2.1	0.0%			
Grand Total (Natural Communities)	4363.4	100.0%			