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Stewardship Plan for the 5 Corners Reserve, Lee, NH

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Stewardship Plan for the

Lee Five Corners Reserve

Lee, New Hampshire

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Lee Conservation Commission

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PISCATAQUA REGION Estuaries Partnership

Lee Five Corners Reserve Stewardship Plan

Table of Contents

Maps

Locus Map
Aerial Base Map
Stewardship Map

Appendices

Acknowledgments

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Several other people provided insights on the property. Dave Cedarholm, the Durham Town Engineer, met with me to review of the stewardship ideas and provided information on the abutting Durham town well site. John Litvaitis, UNH Wildlife Professor, and Greg Mannesto, U.S. Fish and Wildlife Service biologist accompanied me on a site walk to discuss management opportunities for New England cottontail. Emma Carcagno, UNH Cooperative Extension, also walked the site with me to discuss habitat management ideas. I give special thanks to Alan Eaton for sharing his exhaustive plant and animal survey of the Lee Five Corners Reserve. I also thank P. David Richards of Epping, a woodworker and barnwright, for visiting the property with me to evaluate the barn.

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Chapter 1 Property Description

Location and General Description

The 20.7–acre Lee Five Corners Reserve (Reserve) is located north of Route 4 and west of Snell Road in the northern "Five Corners" region of Lee, New Hampshire. The property is accessed at the end of Old Concord Turnpike, which leads northwest from Snell Road near the intersection of Route 155 (Map 1). The gravel access road continues through the Five Corners Reserve and onto a Town of Durham parcel that houses a public drinking water well. An iron gate that blocks public access to the Durham well site is located on the Five Corners Reserve. A small parking area is located along the east side of the access road, just before the gate.

The Lee Five Corners Reserve is identified on the Lee Tax Map as Map 5 Lot 6-4 (Appendix A). A large portion of the property (approximately 89%) was a former sand and gravel pit. The remaining land is about 10% forest and 1% wetland. A gated gravel and partly vegetated "road" leads from the gravel access road into the gravel pit. The northeast arm of the property has 294 feet of frontage on Snell Road. Residential lots border each side of this arm and extend down into the gravel pit.

A dilapidated one story barn with a dirt floor remains in the west-central portion of the property (Map 2). The gravel pit was not reclaimed by the last operator of the pit. Piles of dirt and sand, disturbed banks, large rocks, and some steep slopes remain. The last material was removed from the pit over 10 years ago. Grasses, goldenrods, raspberries, alder, dogwood, sumac, aspens, pines, some invasive shrubs, and other vegetation have colonized the pit and the slopes since it was abandoned. The forest in the western section of the property is primarily maturing white pine; a result of land once cleared for pasture and then abandoned. A stand of quaking and bigtooth aspens is sandwiched between the pine forest and the more recently disturbed sections of the gravel pit.

Recent History

The Town of Lee acquired the Five Corners Reserve from the Town of Durham in March 2008 for $290,000. The NH Department of Environmental Services (DES) Water Supply Land Grant Program provided $225,000; the Lee Conservation Commission contributed the balance. The conveyance was subject to a thirty-foot wide right of access across the gravel road, providing Durham access to their municipal well on the one-acre Durham-owned parcel beyond. This property transfer was also subject to a Conservation Easement Deed that the Town of Lee conveyed to the Strafford Rivers Conservancy (see Conservation Easement section below). The property was surveyed in January 2006 by Atlantic Survey Co, Inc for the Lee Conservation Commission (see Table 1 for a list of relevant documents).

The Town of Durham had acquired the Five Corners property from Samuel O. Mick on March 8, 2005, to protect the wellhead protection area around the Town's municipal well (Book 3153 Page 333). Mr. Mick acquired the original 33.25-acre parcel from James S. Pike on June 17, 1983 (Book 1104 Page 2). This property was locally known as a "sand pit," and was operated as the James Pike Gravel Pit by Mr. Pike.

Mr. Mick was the last to operate the gravel pit. His excavation permit expired in October 2001. Rather than renew the permit and provide a new bond, Mr. Mick instead submitted a subdivision plan for three house lots. Mr. Mick was not willing to complete the reclamation of the north and east slopes as depicted in a 1993 *Site Plan Mineral Extraction and Reclamation*, and a bond was no longer in place to enable the

town to complete any reclamation. There is also some indication that Mr. Mick may have re-disturbed the area along the southern boundary of the pit, an area that was previously reclaimed.

The three residential house lots developed by the Mick Construction Company extend down the slope and into the gravel pit. Each lot is approximately 3.6 to 4.7 acres. The Town of Durham acquired the remaining Lot 4 (20.7 acres), which is now the Lee Five Corners Reserve.

Table 1 Recorded documents for the Lee Five Corners Reserve, Lee, New Hampshire.

Document	Recording Date	Strafford County Registry of Deeds	Stewardship Plan Appendix
Warranty Deed	March 5, 2008	Book 3622 Page 0131	Appendix B
Conservation Easement Deed	March 5, 2008	Book 3622 Page 0134	Appendix C
Boundary Survey	April 11, 2006	Plan 85-28	Appendix D
Subdivision Plan of Land of Samuel O. Mick	May 7, 2003	Plan 69-34	Appendix E
Topography Plan of Land of Samuel O. Mick	Dec. 18, 2002	Not recorded	Appendix E
Site Plan Mineral Extraction and Reclamation Pike Gravel Pit	Oct 27, 1993	Not recorded	Appendix F

Conservation Easement

The Town of Lee conveyed a Conservation Easement to the Strafford Rivers Conservancy and an Executory Interest to the Town of Durham in March 2008. The Strafford Rivers Conservancy, a local land trust, annually monitors the easement to ensure that all aspects of the easement deed are adhered to.

The Conservation Easement Deed describes the purposes, use limitations, and reserved rights, which guide the stewardship of the property. Since the property was conserved through a grant from the NH DES water supply land grant program, the easement language reflects the goals of that program as well as the conservation goals of the Town of Lee, Strafford Rivers Conservancy (SRC), and Town of Durham.

For the full text of the Conservation Easement Deed see Appendix C. Pertinent parts of the deed that relate to land stewardship are summarized below.

Conservation Purposes for which the property was protected:

- Protect ground and surface water quality and quantity, including the underlying aquifer and the Town of Durham and University of New Hampshire drinking water supply
- Safeguard the environmental values that are dependent on water quality and quantity
- Maintain scenic enjoyment by travelers on state and town roads
- Preserve open space, natural resources, and forest land
- Preserve public recreational, scenic, educational, cultural, and historic values

Prohibited Uses and Activities

- No industrial or commercial activities
- No subdivision
- Only ancillary structures, approved by Grantee, are allowed
- No filling, removal, or soil disturbance or erosion or any changes in topography, wetlands, and water systems, except for earth reclamation or other permitted activities
    - A minimum of five vertical feet must be maintained between land surface and historical high groundwater table; any existing areas less than five feet do not have to be restored to this level
    - Any newly altered surface must be stabilized and re-vegetated
- No resource extraction, unless related to reclamation activities
- No dumping, burning, or storage of man-made or environmentally hazardous materials, or plowed snow
- Impervious surfaces must cover no more than 3% or 0.6 acres
- No unsustainable water withdrawal
- No public access using motorized vehicles, including ATVs and snowmobiles
- No hunting, except as noted below
- No camping, trails, or other recreational improvements in the Sanitary Zone; only dispersed pedestrian recreation in this area

Permitted Uses and Activities

- Sustainable groundwater withdrawal for a public water supply system, by the Town of Durham or the Town of Lee with permission from Durham
- Earth reclamation activities as required by law, or for easement purposes, or to disperse existing piles of materials or to minimize slopes, or for safety
- Vegetation management to maintain a meadow with early successional habitat and to remove invasive plant species
- Outdoor recreation: low-impact, non-motorized, non-commercial activities such as hiking, nature study, birding, snowshoeing, bike riding, horseback riding, and cross-country skiing; hunting can be permitted to remedy a health hazard or to further easement purposes, but must be approved by the SRC; trails and any ancillary structures such as signage, steps, bridges, and waterbars must be approved in advance by SRC and the Town of Durham
- Roadside maintenance to ensure safety and use of access road to reach abutting Durham property is specifically permitted
- Bird and bat houses are allowed and do not require further approval

- Agriculture and forestry are allowed provided they promote overall conservation of viable populations of native plant and animal species. Cutting more than 15 cords of wood per year requires a Forest Management Plan and agricultural activities require a Farm Management Plan -- see easement deed for plan details

- Use of biosolids limited to Class A biosolids, unless alternative materials agreed to by all parties

- Within the 400-foot Sanitary Zone: no pesticides, biosolids, septage, manure or similar amendments, no livestock, no new ponds, roads or buildings

Reserved Right Area Additional Restrictions

A 1.91-acre area along the gravel access road has additional reserved rights requiring prior approval from the Strafford Rivers Conservancy and the Town of Durham (see Map 2):

- Construction of a gravel driveway and trailhead parking for passive outdoor recreation

- Rehabilitation of the existing shed for temporary shelter, seasonal storage of outdoor activities equipment, conservation education, or as shelter for wildlife OR construction of a new building for these activities

Prior Approvals

Some permitted uses and activities described above require the prior approval of the Grantee (Strafford Rivers Conservancy) or the Executory Interest Holder (Town of Durham). The following table lists those activities that require such approval.

Table 2 Uses and activities that require prior written approval from the Strafford Rivers Conservancy or the Town of Durham.

	Requires Prior Written Approval From:	
Use or Activity	**Grantee (Stafford Rivers Conservancy)**	**Executory Interest Holder (Town of Durham)**
Groundwater withdrawal for public water supply system		X
Outdoor Recreation: location, design, use, and maintenance plans for trails and associated ancillary structures	X	X
Other ancillary structures as necessary for permitted activities	X	
Earth reclamation activities	X	
Posting against public access to protect easement purposes, if necessary	X	X
Opening the property to hunting, if warranted	X	
Forest Management Plan, if warranted	X	
Farm Management Plan, if warranted	X	
Use of a biosolid other than Class A biosolids	X	X
Activities in the Reserved Right Area	X	X

The Town of Lee must notify the applicable party at least 30 days in advance of initiating the activity. The Town of Durham and/or the Strafford Rivers Conservancy shall provide written notice of approval or denial of said activity. If the Town of Lee does not receive a response within 60 days, then it can proceed with the activity as long as it is consistent with the Easement.

Purpose of the Stewardship Plan

The goal of this Stewardship Plan is to understand and appreciate the values of the Lee Five Corners Reserve and to guide the use and management of these public values and resources over time. This is achieved by identifying the soils, topography, plants, animals, habitats, wetlands, cultural features, and public uses that occur on the property. The surrounding landscape, including ownership patterns, affects this property, and therefore can influence management decisions.

Another important purpose of the Stewardship Plan is to meet the provisions of the Conservation Easement Deed. As noted above several potential management activities require prior notification to the Strafford Rivers Conservancy or the Town of Durham, or both. This Stewardship Plan serves as a written notification to these entities as to the stewardship goals and activities of the Town of Lee. Several of the specific management activities recommended herein also require prior approval as noted in Table 2.

The Stewardship Plan includes the following chapters and materials:

- **Chapter 2 -- Ecological and Cultural Features** describes the landscape setting, soils, wetlands, habitats, environmental health, and public access and uses of the Lee Five Corners Reserve.

- **Chapter 3 – Stewardship Recommendations** presents potential management actions that can be implemented on the Lee Five Corners Reserve to sustain and enhance its ecological features, environmental health, and the public benefits. Appendix J includes a list of resource people and agencies that can provide further technical assistance or potential grant funding to help implement these actions.

- **A set of maps** is included in the plan to further illustrate the ecological features, public uses, and other features of the Lee Five Corners Reserve.

- **Appendices A-K** provides additional background material and documents associated with the Reserve.

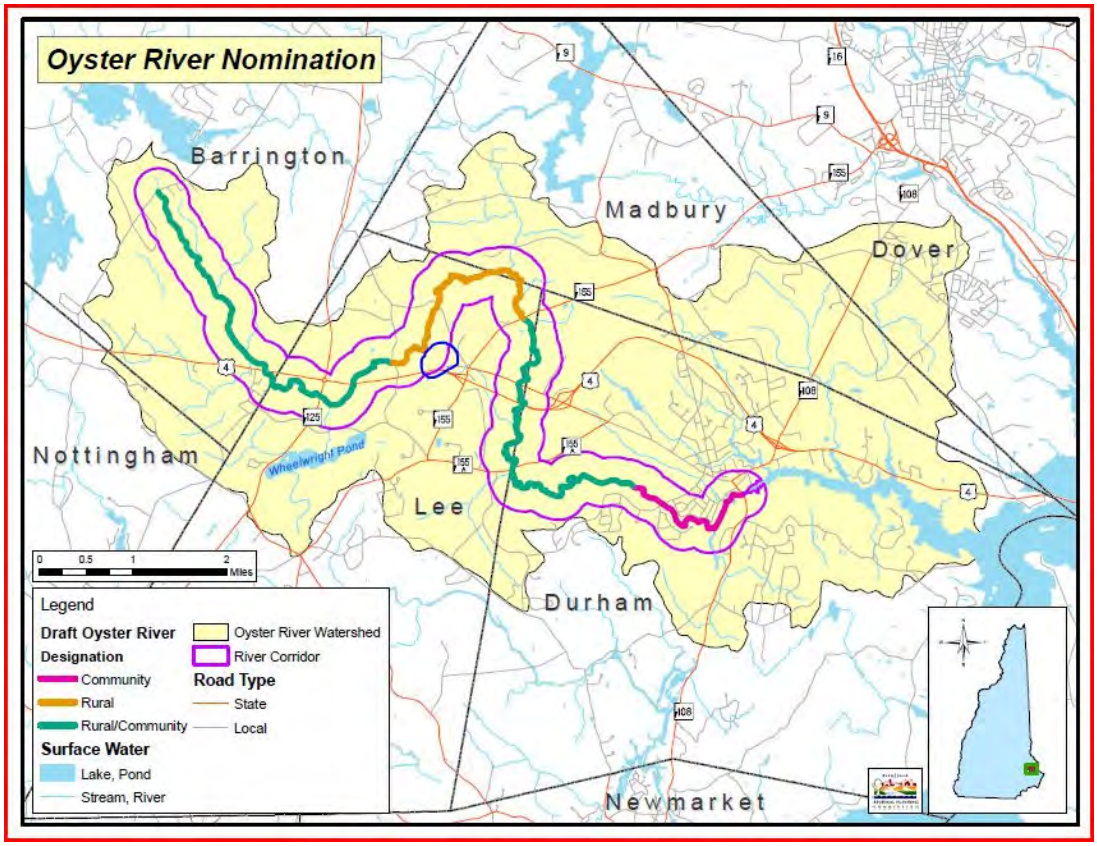
Chapter 2 Ecological and Cultural Features

Landscape Setting

The Lee Five Corners Reserve lies within the Great Bay drainage, part of New Hampshire's coastal watershed. More specifically, the Reserve is within the Oyster River sub-watershed (Figure 1). The Oyster River is one of seven major rivers that flow into the nationally-significant Great Bay estuary. At 19,828 acres, the Oyster River watershed is one of the smallest watersheds in the entire coastal region. Portions of six towns occur within the watershed including 38% of Durham, 24% of Lee, 17% of Madbury, 15% of Barrington, 5% of Dover, and 2% of Nottingham. According to Ted Diers (New Hampshire Coastal Program), the Oyster River carries the highest sediment load of any river in the seacoast. The reason for the high sediment load is not yet known.

In 2000, local volunteers formed the Oyster River Watershed Association to protect the ecological integrity and environmental quality of the Oyster River watershed. The Association is now nominating the entire freshwater portion of the river for designation in the state rivers program, which stretches from the headwaters in Barrington to the Mill Pond Dam in Durham. For a map of the Oyster River that is to be included in the state rivers nomination (see www.strafford.org/cmsAdmin/uploads/OysterMap_mailout8_5x11.pdf and Figure 1). The Watershed Association drafted a watershed management plan in 2001 that is available at www.lefh.net/orwa/.

Figure 1 Oyster River Watershed showing approximate location of the Lee Five Corners Reserve (see blue circle).



The Lee Five Corners Reserve is located less than 500 feet east of the Oyster River. The Reserve's northwest corner lies just a few feet from the river's floodplain. A large aquifer in the northwest corner of Lee underlies the Oyster River, with a finger extending under the Five Corners Reserve. The Town of Durham tapped into this aquifer for the "Lee Well," which is located on the abutting 1-acre property. A 400-foot sanitary radius (or zone) extends around the well and is referenced in this Stewardship Plan since it overlays on part of the Five Corners Reserve. As part of the Town of Durham's agreement with the Town of Lee, a portion of the water supply generated from the Lee Well is reserved for use by the Town of Lee. Once a month the Town of Durham monitors the water level in several monitoring wells including one on the Lee Five Corners Reserve; this is well number 3-85 (Map 2).

Conserved Lands Network

The Reserve is part of an approximately 163-acre block of conserved land that includes the following properties: 20-acre Reserve, 1-acre Durham well site, 38-acre Henry conservation easement, 97-acre Old Mill Reserve owned by the Town of Lee, and 7-acre Peters conservation easement. Just east of this block of conserved land, east of Snell Road, is another few hundred acres of conserved land, providing protection along and connectivity to the Oyster River (Map 1).

The Old Mill Reserve abuts the western-most boundary of the Lee Five Corners Reserve. In addition to providing habitat connectivity and greater protection of the Oyster River, the juxtaposition of these two town-owned parcels offers potential trail connectivity for low-impact outdoor recreation. The Natural Resource Conservation Service (NRCS) Wetlands Reserve Program (WRP) was instrumental in conserving the Old Mill Reserve. In addition to the land acquisition funds, NRCS implemented a major ecological restoration project on the property, which was just completed. The restoration included the creation of 7 acres of vernal pools (3.5 acres of pools and 3.5 acres of mounds and islands), planting of warm season grasses on 15 acres, restoration of 5 acres of sandplain and 1.8 acres of Atlantic white cedar swamp (1.8 acres), and invasive species control.

Topography and Soils

The NRCS (2001) Soil Survey mapped four soil types for the Lee Five Corners Reserve (Table 3). Most of the soil type is classified as "gravel and borrow pit" since the original soils were removed as part of the sand and gravel operation. Likely much of the disturbed area was originally well-drained Hinckley loamy sands and Hollis-Charlton very rocky fine sandy loams.

The topography drops steeply from Snell Road southwest into the property, as a result of past excavation. The property drops less steeply from the access road and the western region of the property down into the pit. Some portions of the western and southern sections of the gravel pit may have been partially reclaimed; however, piles of soil and boulders and uneven ground remain throughout the former pit. The forested western portion of the property slopes down and north toward the Oyster River and the Durham well site.

Table 3 Soil types on the Lee Five Corners Reserve.*

Soil #	Soil Name	Acres	Drainage	Parent Material
Gv	Gravel and borrow pit	12.1	----------	----------
EaB	Elmwood fine sandy loam, 3-8% slope	0.8	moderately well drained	Marine or lucustrine
MI	Mixed alluvial land, wet	1.3	poorly drained	alluvial deposits
HaC	Hinckley loamy sand, 8-15% slope	5.5	excessively drained	glacial outwash
HdC	Hollis-Charlton very rocky fine sandy loams, 8 to 15% slope	1.3	well-drained	glacial till

*from NRCS Strafford County Soil Survey Data, 2001

Figure 2 Soils re-drawn from NRCS Strafford County Soil Survey Data (2001) to reflect extent of removal of top soil during previous sand and gravel operations.

Wetlands

The Five Corners Reserve does not support any natural wetlands or stream drainages. This was likely all high ground prior to sand and gravel extraction. As a result of the disturbance, however, several pockets of wetlands were created. Two small pools are located west of the gravel access road; these function as vernal pools and extend onto the abutting property. Another low wet area lies in the northwest corner of the gravel pit, near the sand pile; specked alder is growing around the edges of this low area. Slightly west of this wetland, is a red maple-sensitive fern wetland that seems to be the result of a dug trench, which extends west through the Durham property to the Oyster River (Map 2). The soils in this part of the

property are mapped as “mixed alluvial land, wet” and historically might have supported a natural drainage that flowed northwest to the Oyster River.

Other pockets of the gravel pit, which lie close to the water table, will collect water during spring rains and other wet periods. According to Eaton (2009 draft), these wetlands retain water through the summer in wet years and dry up during years of dry or normal precipitation. The amount of rainfall each year affects the ability of amphibians to reproduce. Likely amphibian populations will remain low on this property, and will fluctuate from year to year depending on annual precipitation. Nevertheless, Eaton (2009 draft) documented seven species of frogs and toads on the Reserve: green frog, gray tree frog, northern leopard frog, pickerel frog, spring pepper, wood frog, and American toad. Two salamanders – redback and red eft – are more terrestrial in their habitats, and were documented by Eaton (2009 draft) as uncommon on the property, likely because of the lack of forested habitat with sufficient coarse woody debris, which they require.

Beaver are active along the floodplain of the Oyster River. Given the undeveloped and undisturbed stretch of the Oyster River in this region, the riparian area provides a safe travel corridor for other wide-ranging wildlife such as otter, fisher, white-tailed deer, and black bear.

Upland Habitats

Reverting Gravel Pit

The most prominent upland habitat feature on the property is the reverting gravel pit. Given the relatively recent abandonment of this pit (approximately 10 years ago), the natural succession to shrubs and forests is still underway. The lack of topsoil in many places within the pit also slows the rate of natural succession. Although the pit in its current condition may lack aesthetic appeal, it provides some unique habitat conditions beneficial to many wildlife species.

The mix of “early successional” vegetation growing in the reverting pit includes warm season grasses, goldenrods, asters, milkweeds, clovers and many other herbaceous plants, native and invasive shrubs, and small trees. Eaton (2009 draft) recorded 154 herbaceous plants, 32 trees, and 30 shrubs and vines on the Reserve. Although some of these plants are found only in the forested sections, most are growing somewhere in the reverting gravel pit. And a majority of the documented plants occur only in the disturbed areas of the property. *Early successional habitat* includes grasslands, shrublands, young forest, and other openings such as reverting gravel pits. This habitat is by its nature dynamic and transitional. The proportion of the landscape in an early successional stage varies over time depending on natural and human disturbances. In the heavily developed southeast corner of New Hampshire land use changes and development have greatly limited the amount of this habitat in the landscape as well as the ability of natural disturbances and human management to create and maintain such habitat conditions.

The mix of herbaceous vegetation and fruiting shrubs in the gravel pit provides a diverse food supply for a mix of wildlife species. Insects (including butterflies and dragonflies) and spiders are typically more plentiful in sunny, open areas, compared to forested areas. This in turn provides more food resources for migrating and nesting birds, foraging bats, frogs and toads, small and medium sized mammals. The rock and sand piles and exposed slopes are ideal den sites for fox and coyote, which appear to be common on the property. Their tracks, notable in winter, crisscross the pit. Shrews, voles, mice, and chipmunks also use the jumbled rock piles as cover. White-tailed deer are commonly seen foraging in or moving through the pit. Turtles may wander up from the Oyster River to lay eggs in exposed soils within the pit.

Shrublands are a transition between fields and forests that contain a mix of berry-producing shrubs and small trees important to many wildlife species. Some shrub habitats are dense and perhaps better known as "thickets," while other shrublands are more open with a mix of shrubs, grasses, sedges, and wildflowers. Shrubs grow under many different habitat conditions. The reverting gravel pit on the Five Corners Reserve has clumps of scattered shrubs; some are native, but many are invasive. Invasive plants, which readily colonize disturbed sites, are discussed on page 16.

Native shrubs growing in the pit include sweet fern, common juniper, lowbush and highbush blueberry, meadowsweet, speckled alder, willows, raspberry and blackberry, and silky dogwood, among others. In addition to the fruits and catkins, the shrubs provide nest sites for several breeding birds, including song sparrow and northern yellowthroat. Migrating songbirds are particularly dependent on berry-producing shrubs and trees, shifting from a diet of mostly insects in summer to one of mostly fruits during fall migration. This shift is particularly noticeable in thrushes, vireos, warblers, and mockingbirds (Parrish 2000). Eaton (2009 draft) documented a rich diversity of migrating songbirds using the Lee Five Corners Reserve.

New England cottontail

The New England cottontail (*Sylvilagus transitionalis*) is a native rabbit that has declined significantly throughout its range. So much so, that it is being considered for federal protection under the Endangered Species Act and is currently listed as an endangered species in New Hampshire. This species depends on dense, woody cover such as is found in shrub thickets, shrub swamps, brushy areas near wetlands, utility and railroad corridors that are shrubby, young regenerating forests, and potentially reverting gravel pits. Unlike eastern cottontails, they do not occur on lawns, golf courses, or active farmland. Mature forests also do not provide suitable habitat as it lacks a dense understory. If you can't walk through it then it is probably good New England cottontail habitat! The Lee Five Corners Reserve is within the historic range of the New England cottontail.

Table 4 Preferred foods of the New England cottontail.

Preferred Foods of the New England Cottontail
(from Arbuthnot 2008)

Shrubs & Vines	Herbs & Grasses	Trees
raspberry	goldenrod	red maple
blackberry	rushes	aspen
dewberry	clovers	gray birch
winterberry	lance leaf plantain	apple
willow	chickweed	choke cherry
maleberry	sheep sorrel	black cherry
highbush blueberry	wintergreen	sugar maple
lowbush blueberry	buttercup	oaks
silky dogwood	wild strawberry	white birch
native roses	cinquefoil	yellow birch
spiraea	violet	black birch
chokeberry		beech
sumac		striped maple
greenbriar		

The cottontail's food includes bark, twigs, leaves, fresh fruits, buds, flowers, grasses, rushes, and sedges. In spring and early summer they eat the tender shoots of grasses and herbs; later they shift to fruits, and then to a winter diet of bark, twigs, and buds. Some of their preferred foods include raspberry, blackberry, highbush blueberry, and willow (see Table 4 for a complete list). Often these plants provide both food and cover (Arbuthnot 2008). A full color copy of the publication by Margaret Arbuthnot, *A Landowner's Guide to New England Cottontail Habitat Management* is included as Appendix H.

In addition to having an historical occurrence and located within a larger conservation focus area for an existing population, the Five Corners Reserve has many of the preferred foods for cottontails. Through active management the town could enhance the habitat for New England cottontail, by managing for more native shrubs. This will benefit many other wildlife species, especially birds, which depend on this same habitat. These include eastern towhee, American woodcock, chestnut-sided warbler, prairie warbler, blue-winged warbler, black racers, and many pollinating bees and other insects.

New England cottontails are extremely susceptible to predation from coyotes and foxes, as well as fisher, weasel, domestic cats, owls, and hawks. The cottontail does not survive well in small patches of habitat (less than 6 acres) and does much better in patches of 25 acres or larger (Arbuthnot 2008). Given the size of the reverting gravel pit and the existing habitat conditions, the town is in a unique position to provide potential habitat to this native New England rabbit.

Aspen Forest

A stand of maturing aspen trees (approximately 3 acres) stretches from the west side of the access road to the east side, forming a transition between the more recently disturbed gravel pit and the less disturbed white pine forest (Map 3). Aspen is considered an *early successional* tree species since it requires relatively frequent disturbance to regenerate. It reproduces best through root suckering, rather than seed dispersal. Aspen requires full sunlight to regenerate and is a "pioneer" species; this stand emerged as a result of the ground disturbance associated with the pit. This band of aspen grows on a terrace above the pit, and was probably left undisturbed beginning about 25 to 30 years ago. Without disturbance – such as a wind storm, fire, hurricane, or logging – the aspen will begin to die out, starting around age 60.

Aspen is the primary food source for ruffed grouse; the birds rely on the tree's buds and catkins in winter and spring. I routinely flushed a grouse from the aspen stand during my site visits.

White Pine Forest

A white pine forest lies to the west of the access road and on both sides of the road beyond the gate. This pine forest is likely growing on old pasture. Associated species, primarily in the understory, include red and white oaks and eastern hemlock. An old woods road bisects the forest and extends from the access road (beyond the gate) west to the old Cheney property (now part of the town-owned Old Mill Reserve). This relatively undisturbed forest provides water quality protection to the Sanitary Zone around the Durham well, and maintains unbroken forested riparian habitat along the Oyster River.

Wildlife and Plant Observations

Many natural resource professional live in the Town of Lee and volunteer their time and expertise to the Conservation Commission and other community functions. Dr. Alan Eaton, University of New Hampshire Entomology Professor, is one such individual. Alan recorded his plant and animal observations on the Lee Five Corners Reserve from May 2006 until April 2009, documenting 439 species

of birds, mammals, reptiles, amphibians, butterflies, dragonflies, and plants (Table 5). He kindly permitted inclusion of his report (Eaton 2009 draft) as Appendix G to this Stewardship Plan.

Table 5 Species documented on the Lee Five Corners Reserve.

Taxa	#Species
VERTEBRATES	
Amphibians	9
Birds	127
Mammals	18
Reptiles	8
INVERTEBRATES	
Butterflies	30
Dragonflies	31
PLANTS	
Herbaceous plants	154
Shrubs	26
Trees	32
Woody vines	4
Total # species	**439**

Environmental Health

Environmental health, or *ecological integrity*, can be measured in several ways, such as the quality and quantity of surface waters, degree of erosion and runoff, amount of impervious surface, quality of air, presence of forest pests or invasive species. Some environmental stressors, such as mercury deposition, air pollution, extreme weather events and climate change, are large in geographic scope and largely outside the influence of land stewardship decisions on individual ownerships.

The ecological integrity of the Lee Five Corners Reserve was greatly compromised as a result of the sand and gravel excavation. However, although the topography was not restored, there is appears to be no long-lasting serious environmental degradation. New Hampshire Soils Consultants, Inc conducted a Phase I Environmental Site Assessment for the Town of Durham in March 2005 (NHSC 2005). Depth to the groundwater could not be determined by NH Soil Consultants. Their investigation found *no recognized environmental conditions* on this property. A small amount of miscellaneous scrap metal and other debris was found west of the barn and a large metal cylinder (15' x 3') west of the gravel access road. In their 2005 report, NHSC recommended that the Town remove and dispose of the miscellaneous debris and the steel cylinder, with further analysis of the cylinder to determine proper disposal. They also suggested that the "dilapidated barn" be razed to prevent collapse and injury. The debris pile and large cylinder were since removed.

Given that the Town of Durham actively uses the nearby groundwater well as a public drinking water source, water quality and quantity appears to be good. The greatest ecological change to the site from the sand gravel operation was the change in land cover. It was converted from a mostly pine-hemlock-hardwood forest on rolling topography to a mostly open, early successional disturbed site with much less forest cover. This disturbance provided ideal conditions for non-native plants to invade, which degrades the ecological integrity of the site. The impact of invasive plant species is described below.

Although this gravel pit was not reclaimed, most of the slopes are either shallow enough or have revegetated enough to reduce the risk of erosion. Most of the steeper slopes that do remain are located on the adjacent private lands, which were also part of the active pit. The northeast corner of the pit retains exposed rock ledge and sand and gravel. All-terrain vehicle riding (which is not allowed on the town property), combined with recent heavy rains, has caused some erosion and left gullies in the northeast corner of the Reserve.

Invasive Plant Species

The State of New Hampshire defines an "invasive species" as, *a naturalized, non-native plant taxon (species, subspecies, variety, form or cultivars) that invades native plant communities and proliferates, out-competes native species, disrupts ecological processes by threatening imperiled species and decreasing biological diversity. In addition, invasive species can also include plants, insects or fungi that cause economic harm to agricultural and forests crops or pose a serious health hazard.* In essence, it is any non-native plant, whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

One report estimated the economic cost of invasive species in the U.S. at $137 billion every year (Pimentel et al. 2000). Up to 46% of the plants and animals federally listed as endangered species have been negatively impacted by invasive species (Wilcove et al. 1998, National Invasive Species Council 2001).

Invasive species typically have certain traits that give them an advantage over most native species. These traits include producing many offspring, early and rapid development, and being adaptable and highly tolerant of many environmental conditions. Studies show that invasives can reduce natural diversity, impact endangered or threatened species, diminish wildlife habitat, affect water quality, stress and reduce forest and crop production, damage personal property, and cause health problems.

The New Hampshire Invasive Species Act states that *"no person shall knowingly collect, transport, sell, distribute, propagate or transplant any living or viable portion of any listed prohibited invasive plant species including all of their cultivars, varieties, and specified hybrids."* Appendix I includes the list of prohibited species referenced in this Act. For more information on New Hampshire's invasive species program see http://www.nh.gov/agric/divisions/plant_industry/plants_insects.htm and http://www.nh.gov/agric/divisions/plant_industry/documents/booklet.pdf.

Invasive plant species are transported by humans and wildlife; many were planted purposefully in the past for wildlife, erosion control, or as landscape plantings. Others came in via international commerce. Many invasive plants appear first in disturbed areas such as along roadsides and trails, in gravel pits, or edges of fields. They can be moved along roadways by plowing, mowing or other roadwork.

Lee Five Corners has several invasive plant species that are on the New Hampshire prohibited species list and are therefore, considered harmful to the environment (Table 6). These are scattered throughout the disturbed area within the old gravel pit and along the gravel roads and trails. Although these non-native shrubs also bear fruit, they are believed to be less nutritious for wildlife than the native shrub community.

Table 6 Invasive plant species on Lee Five Corners Reserve.

Common Name	Scientific Name
Autumn olive	*Elaeagnus umbellate*
Bush honeysuckles	*Lonicera spp.*
Common barberry	*Berberis vulgaris*
Glossy buckthorn	*Rhamnus frangula*
Japanese barberry	*Berberis thunbergii*
Japanese knotweed	*Polygonum cupidatum*
Multiflora rose	*Rosa multiflora*
Norway maple	*Acer platanoides*
Oriental bittersweet	*Celastrus orbiculata*
Purple loosestrife	*Lythrum salicaria*
Winged euonymous	*Euonymous alatus*

The Invasive Plant Atlas of New England (IPANE) maintains a more extensive list of invasive plants for the region. Some of these plants also occur on the Lee Five Corners Reserve – such as Canada thistle and celandine – but are not on the New Hampshire prohibited list, perhaps because they are not yet considered a threat to human or environmental health in this state. Visit http://nbii-nin.ciesin.columbia.edu/ipane/ for more information on the IPANE list.

Unfragmented Habitats

Although the Lee Five Corners Reserve has no documented rare species or exemplary natural communities as tracked by the NH Natural Heritage Bureau, its location near the Oyster River and within a larger block of undeveloped land are important ecological features.

Unfragmented lands are areas of habitat with no roads, houses, or other development (such as intensive recreational uses). The New Hampshire Fish and Game Department identified development (residential, commercial, or industrial) as one of the most significant risk factors to the State's wildlife and habitats (NHFG 2006). Development causes the fragmentation of habitat into small, unconnected parcels. Songbirds, small mammals, and other wildlife species are more susceptible to mid-sized predators such as fox, raccoon, and skunk in small blocks of habitat. These "generalist" predators adapt better than other species to a fragmented landscape. Habitat blocks crisscrossed with residential roads and houses expose wildlife to high rates of road mortality, increase conflicts with humans and pets, result in increased contaminated runoff, and offer more opportunities for invasive plants to spread to natural areas.

Public Access and Other Features

Access and Parking

The Old Concord Turnpike becomes a Class VI road at a turnaround 1,100 feet west of the Lee Five Corners intersection. The gravel access road continues through the Five Corners Reserve, which also serves as a 30-foot wide right-of-way for the Town of Durham to reach its drinking water well. The road is maintained year-round; the Town of Durham plows the road in winter.

A small parking area, with room for about 3 cars, is located on the right just past the gated entrance to the gravel pit. Another locked gate is located just beyond the parking area and blocks public access to the

Durham well. A fire hydrant is located across from the parking area. A utility line extends to the well house along the west side of the access road (Map 2).

The Lee Five Corners Reserve is open to pedestrian access; motorized vehicles including ATVs and snowmobiles are prohibited. Per the conservation easement deed, the property is not open to hunting.

Woods Roads and Trails

In addition to the access road into the property, a mostly vegetated "road" leads down into the gravel pit and loops around what was the bottom of the pit. A section of the loop, on the northeast side, runs through private land. This road now serves as a walking trail, although it is not currently maintained as such. The entrance to this trail is gated, with just enough space for a person to walk around. The Town of Durham currently drives into the pit to monitor the water level in their monitoring well, located in the southeast corner of the pit (Map 2).

An old woods road is located on the west side of the access road. It begins beyond the locked gate and runs west a short distance to the old Cheney property (now the town-owned Old Mill Reserve). Naturally regenerating white pine seedlings mark the location of this woods road.

Another old access road veers off to the left from the pit road/trail just past the old barn. This overgrown access road extends along the top of the pit – between the pit and the aspen stand. It could serve as another trail, if cleared and maintained.

The Barn

A one-story barn is located along the trail into the pit (Map 2). The barn was likely built in the 1930s or 40s to store equipment used in the sand and gravel operation. It has a concrete foundation, dirt floor, open interior and metal roof. The structure is not braced and is tilting slightly to one side. The barn was built from salvaged materials and does not appear to have historical significant (P. David Richards, personal communication). Bees and birds make some use of the rafters for nesting. A small amount of miscellaneous debris is found on the dirt floor.

Chapter 3 Stewardship Recommendations

As a community resource the Lee Five Corners Reserve offers many public benefits. These include walking paths, sweeping views, quiet spaces, wildlife habitat, nature observation, clean air, protection of drinking water, and connectivity of conserved land along the Oyster River. Stewardship of this open space and these values is a long-term commitment by dedicated community members working together. The Town of Lee is fortunate to have a strong tradition of volunteer service and commitment to land stewardship.

The Conservation Easement Deed (Appendix C) provides the overall framework for the stewardship of the Lee Five Corners Reserve. I conducted several site assessments during 2009 and early 2010, reviewed historic documents and town records, and met with a subcommittee of the Conservation Commission several times to develop these stewardship recommendations within the easement framework. Site-specific stewardship recommendations are shown on Map 3.

Most of these stewardship recommendations can be accomplished through a combination of town volunteers, grant funds from various state or federal programs, and assistance from the Lee Public Works department, when feasible. Appendix J contains a list of potential grant sources. Appendix K is a list of various management practices and associated costs from the Natural Resource Conservation Service cost-share programs. This is the best source of approximate costs for various practices. Unfortunately, government entities are no longer eligible for cost share through NRCS, but their cost estimates are valid and useful when applying for grants.

The following stewardship objectives were identified for the Lee Five Corners Reserve, based on the original intent to conserve the property, the specific guidance contained in the Conservation Easement Deed, and on conversations with the Conservation Commission.

Stewardship Objectives

- To protect ground water and surface water, including the Oyster River and the groundwater that serves the Durham municipal well
- To provide low-impact pedestrian uses, such as walking, nature study, and snowshoeing
- To encourage use of the site for nature-based educational programs, such as workshops for professional, hands-on classroom experiences, or other field trips
- To maintain native plants and animals and wildlife habitats

General Stewardship and Maintenance

- Provide a copy of this Stewardship Plan to the Strafford Rivers Conservancy and the Town of Durham, for their approval and reference.

- Join the Stafford Rivers Conservancy in their annual monitoring of the easement. Ensure that SRC submits an annual monitoring report to the NH DES and to the Town of Lee each year in fulfillment of the grant received to acquire the land.

- Blaze and paint the property boundaries and in combination with or instead of blazing, place Town of Lee conservation land signs along the boundary.

- Place more prominent markers on corners that are currently difficult to locate, such as those within the gravel pit and at the southwest corner that abuts a pasture.

- Note that no formal trails can be located within the 400-foot Sanitary Zone around the Durham well.

Public and Management Access and Information

- Work with the Lee and Durham Public Works staff to establish a year-round maintenance plan for the access road and parking area and other management issues. These include ensuring that no salt is used along this road so as to protect water quality; that the road and parking area are plowed; request that the Town of Durham use the parking area when collecting water level data from the monitoring well (rather than driving into the pit).

- Enhance the existing parking area along the access road to provide space for up to 4 cars; delineate the parking area with a berm or some other material.

- Construct an information kiosk near the gated entrance to the pit. Include a map, information on public uses and prohibitions (such as hunting and motorized vehicles), respect private property, be aware of ticks, etc.)

- Contact the abutter in the northeast corner to discuss the walking trail that crosses a portion of their land within the pit; arrange a cooperative agreement before creating a formal, public trail through the pit on the existing "pit road."

- Improve existing trails (as delineated on Map 3), after approval from abutter, by mowing herbaceous vegetation and clearing back invasive shrubs and other overhanging vegetation. Avoid any treatment of invasive plants when they are in fruit (for more on invasive plant control see page 22). Some sections of trails may require leveling using a small dozer, particularly the trail that continues past the proposed observation blind. Note that a portion of the loop trail through the gravel pit floods each spring. This should be noted on the information kiosk. There is no easy way to re-route this section of the trail.

- Block access to ATVs along northeastern boundary; contact abutter to let them know about prohibition on motorized vehicles.

- Construct a bench and/or observation blind along trail that leads past the barn.

Potential Future Projects

- Construct a new pedestrian trail leading from the parking lot west to the Old Mill Reserve. This trail could connect to potential trails on the abutting town-owned property.

The Old Barn and Surrounding Area

Based on the site evaluation by a local barn expert (P. David Richards), the barn has no historical significance and no special attributes that might make it worthwhile or cost-effective to restore or make

into another use (such as a bat shed) given is current condition. So, here are a few recommendations based on this assessment

- Clean-up and remove the loose debris lying inside and outside the barn.
- Leave building as is, allowing bees and birds to continue to use it. Over time the building will continue to deteriorate – the town should periodically monitor its condition to ensure that it will not fall down; OR
- Demolish and salvage the building immediately – perhaps advertise in town news that the barn is available for salvaging: anyone interested should remove all aspects of the barn, except the concrete foundation.

Regardless of which option is chosen for the old barn, the area around the barn serves as the main entrance to the trails and could be maintained as meadow. Just past the gated entrance into the pit, both sides of the trail are relatively open. On the right is a small clump of multiflora rose. On the left are piles of topsoil and several aspen saplings that have fallen. Here is a suggested management strategy for this area:

- Remove the clumps of multifora rose; dig up roots if possible.
- Cut up the fallen aspen into 6- to 8-foot lengths and pile within the aspen stand to serve as ruffed grouse drumming areas. Stack several logs to make a drumming area 12 to 16 inches high. Lay the logs against a standing tree or tree stump. Additional logs can be used to create cottontail brush piles in the "shrub" area within the pit. See Appendix H for guidance on building burrows and brush piles.
- Spread the piles of topsoil to smooth out the area on either side of the trail and around the barn.
- Seed area to a mix of warm season grasses and native wildflowers.
- Maintain through annual fall mowing if feasible, or allow to naturally succeed.

Habitat Restoration and Management

Reverting Gravel Pit: Shrub and Meadow Habitat

In discussions with the Lee Conservation Commission members and the Durham Town Engineer Dave Cedarholm, I concluded that "reclaiming" the gravel pit is not a viable option. Much of the pit has naturally revegetated since it was last disturbed about 10 years ago. Reclamation is not required by law, nor is there sufficient material to reclaim the pit. A few remaining piles of sand, gravel, or mixed material can be spread to improve the aesthetics of the pit and to use the material for trails, roads, or other purposes as needed. Given the presence of invasive plant species within the pit, it is recommended that as little as possible new earth-moving occur to avoid further spread of these plants, particularly Japanese knotweed, which spreads easily. Invasive plant management is discussed in more detail below. The following recommendations are for other activities within the pit:

- As shown on Map 3, spread or use the sand pile, two gravel piles, and three other mixed piles. These materials could be used to enhance the trails or to enhance the parking area. Some of the

material should be used to fill-in gullies and stabilize the slopes in the northeast corner of the pit, where trails from abutting properties enter the Reserve.

- Maintain the mix of native shrubs and small trees and herbaceous openings, through periodic brush hogging, mowing, or other mechanized treatment as appropriate and available to remove invasives and trees maturing beyond shrub/sapling stage. Leave all other native shrubs and small fruit or catkin-bearing trees such as aspen, birch, and cherry. If feasible, mow the "meadow" areas once a year in the fall. The "shrub" areas should be encouraged to fill-in, by allowing natives to grow, removing invasives, and planting native shrubs. Select suitable native shrubs from the list of cottontail plants in Table 4 on page 14. Once established, sections of the shrub area may need to be cut every 5-10 years to maintain it in a shrub condition. White pine, especially, should be controlled to prevent it from dominating the site. This treatment could be combined with the brontosaurus management in the aspen stand, described below.

- Manage invasive plant species as described below.

Other Potential Projects

Several other habitat enhancement projects are possible, with the help of additional volunteers, as scout projects, or as hands-on projects with University of New Hampshire or Thompson School classes, or through a grant-funded project. These include:

- Erect bluebird and tree swallow nest boxes in the "meadow" area.

- Build one or more rabbit burrows and brush piles in the "shrub" area.

These require regular maintenance, which should be built into any volunteer or class project.

Invasive Plant Species Management

Non-native invasive plant species thrive in disturbed areas. Exposed soils offer prime sites for invasive species to colonize and spread. The Lee Five Corners Reserve offers such a place. Control and removal of invasive plant species is one of the most difficult management challenges. Mechanical, chemical, and biological techniques can be effective depending on the specific invasive plant. The use of chemicals to control invasive plants requires a pesticide applicators license and requires careful consideration, especially in wetlands. Given the location of this reverting gravel pit within a wellhead protection area, I recommend that the Town rely primarily on mechanical methods for invasive species removal. Chemical application should be used only as a last resort and only after careful review and planning. Physical (or mechanical) removal of roots or stems can be effective, but usually requires repeated cutting or pulling over several years. Volunteers are often eager to help with the latter.

Eleven state and federal agencies and nonprofit organizations formed an alliance called the **Coastal Watershed Invasive Plant Partnership** to work collaboratively on invasive species control. The mission is *to protect the ecological integrity of natural habitats and economic vitality of managed lands in New Hampshire's coastal watershed through activities that reduce the threat of invasive plants*. As part of their effort they have developed methods for mapping the distribution of invasive plants on their respective lands, and are developing strategies for controlling invasive plants in the region. For more information see http://des.nh.gov/organization/divisions/water/wmb/coastal/cwipp/index.htm

For more information on identifying invasive plant species in New Hampshire see the following publications and resources at http://extension.unh.edu/forestry/Docs/invasive.pdf;

http://www.nashuarpc.org/envplanning/documents/SoRLAC/invasiveplants.pdf, and http://nbii-nin.ciesin.columbia.edu/ipane/index.htm.

- Engage volunteers in assisting with physical removal of invasive plant species. Given the propensity of these species to spread, proper removal and disposal is essential. Plants should be bagged and disposed of in landfills or burned and should not be cut or moved while they are fruiting. All vegetative parts, including the roots, should be removed. Repeated cutting is often required. Focus initial control efforts in areas along the existing trails and in the "shrub" areas within the pit. If possible, avoid use of a brush hog or other mower to control invasives as this has the potential to cause further spreading, especially with Japanese knotweed. Use hand tools as much as possible.

- Avoid introducing any non-native species onto the Reserve. Several local or regional sources of native plants are available, if the town desires to pursue the option of planting native shrubs. Consult the New Hampshire State Forest Nursery (http://www.dred.state.nh.us/nhnursery/), New England Wildflower Society (http://www.newfs.org/), New England Wetland Plants Inc (http://www.newp.com/), or other sources of native plants.

- Annually monitor the known locations of invasive plants and check potential sites for new infestations. Potential sites include any disturbed areas within the pit or along the forest and trail edges. Remove new invasive plants as soon as possible. Consider collaborating with UNH faculty or students to map the location of all invasive plants and to measure success at invasive control.

Aspen Management

As discussed in Chapter 2, the 3-acre aspen stand provides important habitat for ruffed grouse and is a transitional habitat component that will disappear over time. The aspen will begin to decline after age 60. The town could opt to allow this natural succession to occur or it could maintain the aspen stand through active management. The latter course would require the use of mechanized equipment, such as a chain saw or brontosaurus. Some grant sources are available to assist with this type of habitat management.

Aspen regenerates through root suckering and requires lots of sunlight to grow. Therefore, it is important to cut the mature aspen to get it to regenerate itself. A series of clearcuts within the aspen stand over a 40-year rotation is recommended. This involves cutting approximately one-fourth of the stand every ten years; preferably on frozen ground. I would begin with the area across from the parking area, as this seems to be the oldest stand.

If the town desires to maintain the aspen, then consider the following steps:

- Contact UNH Cooperative Extension, NH Fish and Game, and the U.S. Fish and Wildlife Service for more information on grants available to assist with habitat management. These sources should be able to assist with the grant application and cost estimates. See Appendix J for contact information and Appendix K for potential costs for various practices.

- A wildlife grant to assist with aspen management could also include assistance with invasive species control, native plantings, building cottontail burrows and brush piles.

- Contact the Thompson School and UNH Department of Natural Resources to see if they would like to use this site as a demonstration area for their classes. These habitat enhancements could be part of a hands-on experiential-learning for students.

If grant funding is not obtained for maintaining the aspen, then I would allow this area to change naturally over time. Eventually white pine, red oak, and hemlock will become dominant.

Other Forest Management

Currently there is no benefit to managing the white pine forest on the west side of the access road. Its small acreage makes it relatively inefficient to manage. If the Town of Lee pursued forest management on the abutting Old Mill Reserve (Cheney land), then it might make sense to include the Lee Five Corners Reserve in any forest management strategy. The old woods road on the Lee Five Corners Reserve could provide management access to both properties. The goals of any forest management on the Lee Five Corners Reserve should be to protect water quality, diversify forest structure, and prevent the spread of invasive plants. Joint forest management efforts on the two abutting town parcels should be guided by a Forest Management Plan prepared by a licensed forester.

Table 7 Summary of Stewardship Recommendations

Stewardship Activity	Who
Highest Priority	
Submit Stewardship Plan to SRC and Durham	Lee CC
Mark property boundaries and corners	Lee CC
Contact abutters about trail though the pit and prohibition on motorized vehicles	Lee CC
Block access to motorized vehicles; use boulders from pit	Lee CC with assist from public works
Enhance parking area	Assist from public works
Initiate invasive species control along trails	Lee CC and volunteers
Enhance trails – mowing, clearing, dozing, spreading material as needed	Lee and volunteers an assist from public works
Stabilize slopes in northeast corner of pit	Assist from public works
Apply to Moose Plate grant to fund kiosk, observation blind, invasive control, and to enhance pit entrance	Lee CC
Medium Priority	
Erect information kiosk	Lee CC
Create meadow at entrance to pit: remove invasives, cut up fallen aspen, spread piles of dirt, re-seed	Lee CC with assist from public works
Apply for habitat management grants: for invasive species control, shrub plantings, cottontail burrows/brush piles, aspen mgmt	Lee CC – contact UNHCE, NHFG, USFWS for assistance
Spread remaining piles of sand, gravel	Assist from public works
Erect bench/observation blind	Grant or volunteers/Eagle Scout
Plant native shrubs in “shrub area”	Contractor or volunteers
Create rabbit burrows/brush piles	Lee CC – contact UNH to assist or use volunteers
Create new trail to Old Mill Reserve	Lee and volunteers
Long-term Stewardship	
Easement monitoring	Lee CC and SRC
Easement monitoring report submission to DES and Lee	SRC
Trail maintenance	Lee CC and volunteer
Meadow around entrance to pit – fall mowing	Volunteer or assist from public works
Invasive species management	Contractor (if funded) or volunteers
Meadow management – mow in fall every year or every other year	Contractor (if funded) or volunteers
Shrub management -- invasive removal, plantings, cutting of large trees	Contractor (if funded) or volunteers
Aspen management	Contractor (if funded)
Forest management, if desired in combo with Old Mill Reserve	Licensed Forester

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- Watershed map: www.strafford.org/cmsAdmin/uploads/OysterMap_mailout8_5x11.pdf
- Management plan and river nomination: www.lefh.net/orwa/

New Hampshire Invasive Species Program:
http://www.nh.gov/agric/divisions/plant_industry/plants_insects.htm and
http://www.nh.gov/agric/divisions/plant_industry/documents/booklet.pdf

Invasive Plant Atlas of New England (IPANE): http://nbii-nin.ciesin.columbia.edu/ipane/

Coastal Watershed Invasive Plant Partnership:
http://des.nh.gov/organization/divisions/water/wmb/coastal/cwipp/index.htm

Identifying Invasive Plants:
http://extension.unh.edu/forestry/Docs/invasive.pdf

http://www.nashuarpc.org/envplanning/documents/SoRLAC/invasiveplants.pdf

http://nbii-nin.ciesin.columbia.edu/ipane/index.htm.

New Hampshire State Forest Nursery: http://www.dred.state.nh.us/nhnursery/

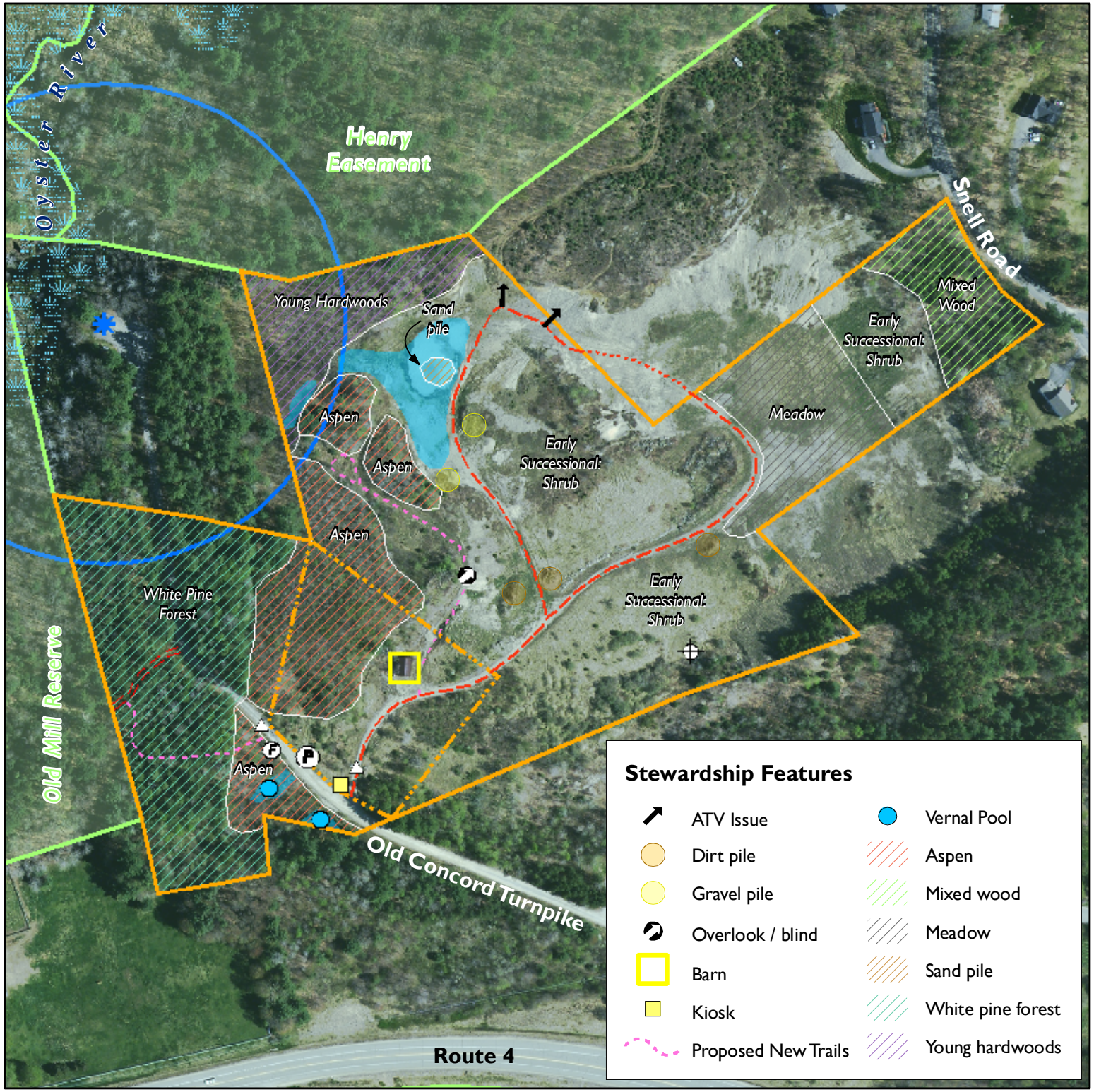
New England Wildflower Society: http://www.newfs.org/

New England Wetland Plants Inc: http://www.newp.com/

MAP 3 - Stewardship Map

Lee Five Corners Reserve
Lee, NH

- Lee Five Corners Reserve
- Other Conservation Lands
- Fire Hydrant
- Gate
- Monitoring Well
- Parking
- Old Woods Road
- Trail
- Trail on private land
- Durham Well
- Durham Well Sanitary Radius (400')
- Wetlands (NWI)
- Wet areas



Data Sources: Data provided by NH GRANIT.

Boundary and feature locations are approximate.

Map produced by Ibis Wildlife Consulting.
Cartography by Pete Ingraham.

0 100 200 400 Feet

Ibis Wildlife Consulting

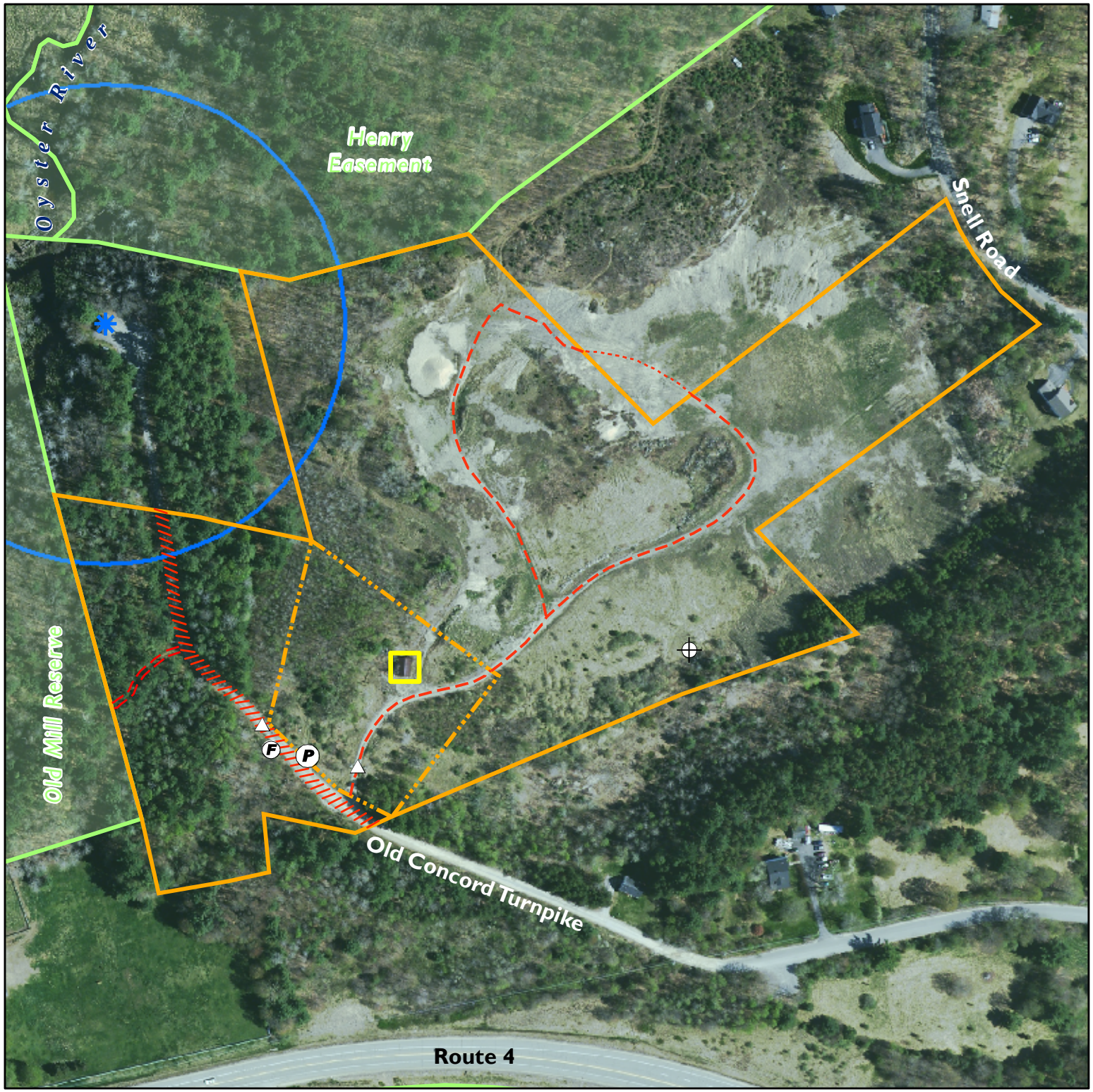
N W E S

April, 2010

MAP 2 - Base Map

Lee Five Corners Reserve
Lee, NH

- Lee Five Corners Reserve
- Reserved Rights Area
- 30' Right-of-way
- Other Conservation Lands
- Barn
- Fire Hydrant
- Gate
- Monitoring Well
- Parking
- Old Woods Road
- Trail
- Trail on private land
- Durham Well
- Durham Well Sanitary Radius (400')



Data Sources: Data provided by NH GRANIT, except trails and features data produced by Ibis Wildlife Consulting.

Boundary and feature locations are approximate.

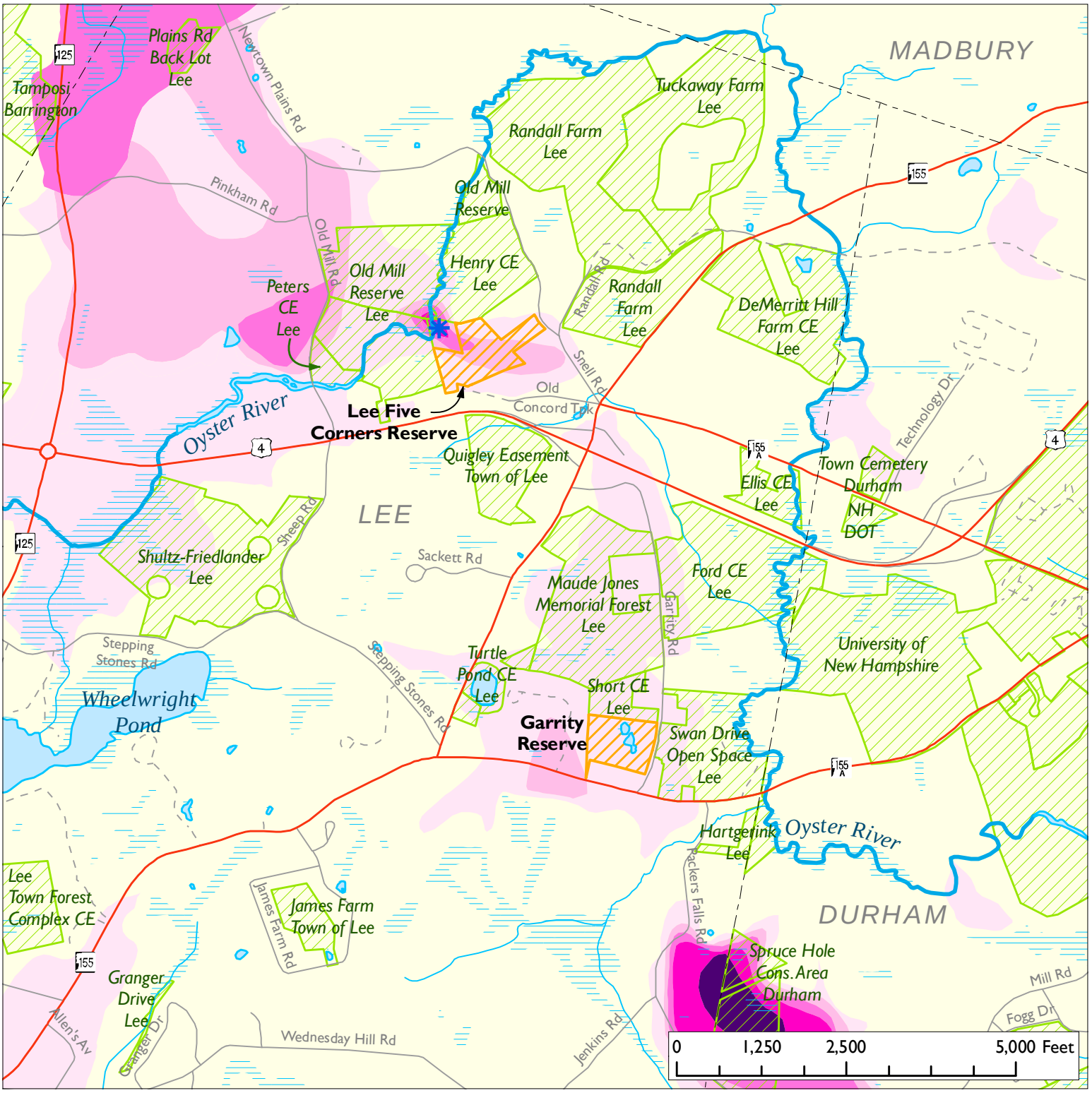
Map produced by Ibis Wildlife Consulting.
Cartography by Pete Ingraham.

0 100 200 400 Feet

Ibis Wildlife Consulting

N W E S

April, 2010



MAP 1 - Locus Map

Lee Five Corners and Garrity Reserves
Lee, NH

- Target Properties
- Other Cons. Lands
- Highways
- Roads
- Class VI Rds
- Town Boundaries
- Water
- Wetlands
- Oyster River
- Streams
- Durham Town Well

Aquifer Transmissivity (ft2 / day)

- 0 - 500
- 500 - 1,000
- 1,000 - 2,000
- 2,000 - 3,000
- 3,000 - 4,000
- 4,000 - 6,000
- > 6,000

N W E S

Data Sources: Data provided by NH GRANIT except: aquifers (NH Department of Environmental Services)
Boundary and feature locations are approximate.
Map produced by Ibis Wildlife Consulting.
Cartography by Pete Ingraham.

April, 2010

Ibis Wildlife Consulting

2009 New Hampshire
EQIP Practice List
5/11/2009

Practice	Code	Cost of Typical Practice Scenario	Standard Payment Offered (Percentage of Allowable Practice Costs)	Payment - Historically Underserved (Percentage of Allowable Practice Costs)	Practice Life (Years)	Practice Use and Restrictions
Access Control (formerly Use Exclusion)	472	Heavy Steel Gate $783.37 Ea	Heavy Steel Gate $570.90 Ea	Heavy Steel Gate $685.08 Ea	10	For restricting access to prevent erosion on forest trails and landings and access roads, or to protect sensitive wildlife habitat. Use in conjunction with Fence practice, if necessary.
Access Road	560	$17.82/LnFt Level Rd <4% $19.98/LnFt Sloping Rd, 4% and greater $21.89/LnFt Level Rd., <4% w/geotextile $24.05/LnFt Sloping Rd, 4% and greater w/geotextile	$13.01/Ln Ft Level Rd, <4% $14.59/LnFt Sloping Rd, 4% and greater $15.98/LnFt Level Rd, <4% w/geotextile $17.56/LnFt Sloping Rd, 4% and greater w/geotextile	$15.61/ Ln Ft Level Rd, <4% $17.50/ Ln Ft Sloping Rd, 4% and greater $19.18/LnFt Level Rd, <4% w/geotextile $21.07/LnFt Sloping Rd, 4% and greater w/geotextile	10	Use on farms and forestlands of 10 or more acres under management for heavy trucking. Use Forest Trails and Landings for access to forestlands for management activities and for erosion control on low standard forest access trails, including skid roads and trails.
Agrichemical Handling Facility	309	$50.60/SqFt	$36.30/SqFt	$43.56/SqFt	20	
Animal Trails & Walkways	575	8 Ft Gravel $21.34 Ln/Ft 12 Ft Gravel $29.66/Ln Ft Improve Existing Laneway $14.50/LnFt	8 Ft Gravel $15.28 Ln/Ft 12 Ft Gravel $21.23/Ln Ft Improve Existing Laneway $10.38/LnFt	8 Ft Gravel $18.34 Ln/Ft 12 Ft Gravel $25.48/LnFt Improve Existing Laneway $12.46	10	
Brush Management	314		Rotary Mowing $106.61/Ac Brush Saw $246.43/Ac	Rotary Mowing $127.93/Ac Brush Saw $295.71Ac	10	To establish or enhance prescribed grazing. Does not include land clearing. Area treated cannot exceed recommended stocking rates for existing livestock. Maximum of two years.
CNMP ACTIVITY PLAN	102	25 Ac or Less CNMP $5,000 26 to 200 Ac CNMP $7,500 Over 200 Ac CNMP $10,000	25 Ac or Less CNMP $3,750 26 to 200 Ac CNMP $5,625 Over 200 Ac CNMP $7,500	25 Ac or Less CNMP $4,500 26 to 200 Ac CNMP $6,750 Over 200 Ac CNMP $9,000	1	Payment is for a CNMP Activity Plan. Must be the only practice in a separate contract, must be developed by a TechReg Certified Technical Service Provider (TSP), and must be completed in 12 months.
Composting Facility	317	Small Facility $4.48/ CuFt Large Unroofed $2.15/CuFt Large Roofed $6.20/Cu Ft	Small Facility $2.80/ CuFt Large Unroofed $1.51/CuFt Large Roofed $4.48/Cu Ft	Small Facility $3.36/ CuFt Large Unroofed $1.81/CuFt Large Roofed $5.37/Cu Ft	15	Small facility approx. 15' X 30', Large facility Approximately 40' X 80'
Conservation Cover	327	Warm Season Grass $1275.98/Ac Cool Season grass/legume $1052.70/Ac	Warm Season Grass $913.48/Ac Cool Season grass/legume $767.59/Ac	Warm Season Grass $1096.18/Ac Cool Season grass/legume $921.11	3	For soil cover and wildlife habitat. Includes seedbed preparation, lime, fertilizer, seed and mulching, if needed.
Conservation Crop Rotation	328	2 Years Additional Hay $396.36/Ac 5 Years Additional Hay $487.16/Ac	2 Years Additional Hay $304.16/Ac 5 Years Additional Hay $394.96/Ac	2 Years Additional Hay $353.55/Ac 5 Years Additional Hay $444.35/Ac	1	Payment to add 2 or 5 years of hay to crop rotation that has been in continuous tillage for more than 5 years
Constructed Wetland	656	$11.66/Cu Yd	$8.34/Cu Yd	$10.01/Cu Yd	15	For treatment of contaminated runoff and wastewater.
Contour Farming	330	$87.10/Ac	$55.50/Ac	$66.60/Ac	1 Nat'l 5	One Time Payment at Establishment
Cover Crops	340	Grain $98.07/Ac Legume $140.17/Ac Vegetable Living Mulch $607.64/Ac	Grain $73.55/Ac Legume $105.13/Ac Vegetable Living Mulch $601.03/Ac	Grain $88.26/Ac Legume $126.15/Ac Vegetable Living Mulch $604.37	1	Requires nutrient or pest management unless planted with another crop or into an established crop. Legumes must be planted before Sept. 1. Legumes include grass/legume mixtures and legume interseeding. Maximum of three years.

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Critical Area Planting	342	$1,606.66Ac	$1,171.52/Ac	$1,405.82/Ac	10	Includes grading and shaping, seedbed preparation, seed or plant materials, fertilizer, lime and mulching. Use obstruction removal as separate practice if needed. NOT TO BE USED TO SEED LAND BEING BROUGHT INTO PRODUCTION.
Diversion	362	$8.69/Ln Ft	$6.40/Ln Ft	$7.68/Ln Ft	10	
Early Successional Habitat Development/ Management	647	Delayed Mowing $100/Ac Clear Openings, Average Site $840/Ac Clear Openings - Difficult Site $1976/Ac Rotary Mowing $146.28/Ac Brush Saw $338.14/Ac	Delayed Mowing $100/Ac Clear Openings, Average Site $630Ac Clear Openings - Difficult Site $1482/Ac Rotary Mowing $106.61/Ac Brush Saw $246.43/Ac	Delayed Mowing $100/Ac Clear Openings, Average Site $756Ac Clear Openings - Difficult Site $1778.40/Ac Rotary Mowing $127.93/Ac Brush Saw $295.71Ac	15	Maximum of three years for delayed mowing of grassland. Minimum of 5 contiguous acres for grassland management. EQIP PAYMENT INCLUDES FOREGONE INCOME, WHIP DOES NOT.
Fence	382	Permanent $4.57/Ft Movable Temporary $1.44/Ft Special Use $13.75/Ft	Permanent $3.27/Ft Movable Temporary $1.03/Ft Special Use $9.84/Ft	Permanent $3.92/Ft Movable Temporary $1.24/Ft Special Use $11.81/Ft	20	To facilitate prescribed grazing, excluding livestock from surface waters and wetlands. Special use fence is for safety fencing around manure storage facilities and other purposed approved by the ASTC-Technology or State Engineer.
Field Border	386	Cool season grass $0.63/Ft Pollinator habitat $0.78/Ft	Cool season grass $0.60/Ft Pollinator habitat $0.70/Ft	Cool season grass $0.62/Ft Pollinator habitat $0.74/Ft	10	A 20 foot wide by 2,178 foot strip of permanent vegetation will be established at the edge a field. Use "cool season grass" for wildlife habitat/cover & sediment/nutrient capture.
Filter Strip	393	$663.78/Ac	$497.84/Ac	$597.40/Ac	10	Use for filtering sediment. Use Vegetated Treatment Strip practice for filtering runoff containing agricultural wastes.
Firebreak	394	Partially Wooded $4.54/LnFt Open $0.76/LnFt	Partially Wooded $3.26/LnFt Openland $0.55/LnFt	Partially Wooded $3.91/LnFt Openland $0.66/LnFt	10	Used in conjunction with Prescribed Burning
Fish Passage	396	Arch Culverts 20' x 8' 3.5" $1214.85 LnFt Arch Culverts 16' x 6' 7.5" $785.40 LnFt Fish Ladder $180,892.95 each Dam Removal $6398.39/ LnFt	Arch Culverts 20' x 8' 3.5" $867.75 LnFt Arch Culverts 16' x 6' 7.5" $561 LnFt Fish Ladder $129,209.25 each Dam Removal $4570.28/ LnFt	Arch Culverts 20' x 8' 3.5" $1041.30 LnFt Arch Culverts 16' x 6' 7.5" $673.20 LnFt Fish Ladder $155,050.10 each Dam Removal $5484.34/ LnFt	15	Small Arch Culvert Approx. 16' Wide X 6' '7.5" Tall Or Smaller. Large Arch Culvert Approx. 20' Wide X 8' 3.5" Tall or Larger
Forest Management Plan (Activity Plan)	106	10 to 25 Acres $1250/Plan 26 to 99 Acres $2,000/Plan 100 to 199 Acres $3,900/Plan 200 to 350 Acres $5,087.50/Plan 351 to 499 Acres $6,375/Plan 500 to 999 Acres $7,500/Plan 1,000 + Acres $9,000/Plan	10 to 25 Acres $937.50/Plan 26 to 99 Acres $1,500/Plan 100 to 199 Acres $2,925/Plan 200 to 350 Acres $3,815.63/Plan 351 to 499 Acres $4,781.25/Plan 500 to 999 Acres $5,625/Plan 1,000 + Acres $6,750/Plan	10 to 25 Acres $1125/Plan 26 to 99 Acres $1,800/Plan 100 to 199 Acres $3,510/Plan 200 to 350 Acres $4,578.75/Plan 351 to 499 Acres $5,737.50/Plan 500 to 999 Acres $6,750/Plan 1,000 + Acres $8,100/Plan	1	For producers with 10 or more acres of forestland. Payment is for a Forest Management Activity Plan. Must be the only practice in a separate contract, must be developed by a TechReg Certified Technical Service Provider (TSP), completed in 12 months, and meet NRCS criteria and UNH Extension plan requirements

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Forest Stand Improvement	666	Dense Softwood $686.40/Ac Hardwood & Softwood $514.80 Storm Damaged Stands $1,796.96/Ac	Dense Softwood $491.40/Ac Hardwood & Softwood $368.55/Ac Storm Damaged Stands $1,286.46/Ac	Dense Softwood $589.68/Ac Hardwood & Softwood $442.26 Storm Damaged Stands $1,543.75/Ac	10	For pre-commercial weeding and thinning and thinning of stands where removal of low grade products is at or near a break even cost. Storm damage payment is to prepare severely damaged stands with little salvageable timber to meet identified regeneration, wildlife or carbon sequestration goals. Storm damage must meet established criteria and be assessed in the field by NRCS Biologist or UNH Extension Forester.
Forest Trails & Landings	655	Average Sites $4,740/Ac Moderately Difficult Sites $10,942.64/Ac Difficult Sites $15,135/Ac Landings $2,472.00/Ac	Average Sites $3,393/Ac Moderately Difficult Sites $7,823.45/Ac Difficult Sites $10,818/Ac Landings $1,773.00Ac	Average Sites $4,071.60/Ac Moderately Difficult Sites $9,388.15/Ac Difficult Sites $12,981.60/Ac Landings $2,127.60/Ac	5	Soil erosion control and water quality protection on surface area of forest roads, trails and landings. Use Stream Crossing practice for culverts larger than 18 inches and Critical Area Planting or Conservation Cover practice for establishing vegetation.
Grade Stabilization Structure	410	Bioengineering $237.42/Ln Ft Gabion Weir $336.87/Ln Ft Rock Lined Chute $154.94/Ln Ft Concrete Drop Structure $439.54/Ln Ft	Bioengineering $170.32/Ln Ft Gabion Weir $241.17/Ln Ft Rock Lined Chute $111.15/Ln Ft Concrete Drop Structure $315.32/Ln Ft	Bioengineering $204.39/Ln Ft Gabion Weir $289.40/Ln Ft Rock Lined Chute $133.38/Ln Ft Concrete Drop Structure $378.39/Ln Ft	15	
Grassed Waterway	412	$13.55/Ln Ft With Stone Center $33.50/Ln Ft	$10.16/Ln Ft With Stone Center $24.68/Ln Ft	$12.19/Ln Ft With Stone Center $29.62/Ln Ft	10	
GRAZING PLAN ACTIVITY PLAN	110	$2,150/Plan	$1,612.50/ Plan	$1,935/Plan		Payment is for a Grazing Activity Plan. Must be the only practice in a separate contract, must be developed by a TechReg Certified Technical Service Provider (TSP), and must be completed in 12 months.
Heavy Use Area Protection	561	Gravel $1.27/Sq Ft Asphalt $3.35/Sq Ft Concrete $8.19/Sq Ft Concrete Roofed $32.31/Sq Ft	Gravel $0.91/Sq Ft Asphalt $2.40/Sq Ft Concrete $5.88/Sq Ft Concrete Roofed $23.18/Sq Ft	Gravel $1.09/Sq Ft Asphalt $2.89/Sq Ft Concrete $7.05/Sq Ft Concrete Roofed $27.81/Sq Ft	10	Maximum of 100 square feet per animal unit. Roofs only allowed where site conditions preclude use of vegetated treatment strips, or constructed wetlands for treatment of effluent.
Irrigation Storage Reservoir	436	$17.60/Cu Yd	$12.60/Cu Yd	$15.12/Cu Yd	15	
Irrigation System - Microirrigation	441	Drip $1,013.91/Ac Greenhouse $20.48/Sq Ft	Drip $727.37/Ac Greenhouse $14.63/Sq Ft	Drip $872.84/Ac Greenhouse $17.55/Sq Ft	10	Only on land meeting EQIP irrigation history requirement.
Irrigation System - Tailwater Recovery	447	$60.48/Cy Yd	$43.39/Cu Yd	$52.07/Cu Yd	20	
Irrigation Water Conveyance	430 DD	3 Inch HDPE $6.41/Ft	3 Inch HDPE $4.60/Ft	3 Inch HDPE $5.52/Ft	25	Approved for buried high pressure plastic pipeline to supply irrigation water to microirrigation systems only.
Irrigation Water Management	449	IWM Payment $10.00/Ac	IWM Payment $7.50/Ac	IWM Payment $9.00/Ac	1	
Lined Waterway or Outlet	468	$176.28/Ln Ft	$126.46/Ln Ft	$151.75/Ln Ft	15	

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Mulching	484	Small Fruit & Vegetables $489.30/Ac	Small Fruit & Vegetables $349.50/Ac	Small Fruit & Vegetables $419.40/Ac	1	Adding residue to control erosion on small fruit and vegetable crops. One-time payment for producers that are not currently using this practice to reduce erosion and increase soil organic matter.
Nutrient Management	590	No Compost/Manure $52/Ac With Compost/Manure $80/Ac Soil Health $93/Assessment	No Compost/Manure $39/Ac With Compost/Manure $60/Ac Soil Health $69.75/Assessment	No Compost/Manure $46.80/Ac With Compost/Manure $72/Ac Soil Health $83.70/Assessment	1	Maximum 3 year payment tobegin implementing an NRCS approved nutrient management plan. Soil Health Assessment is a one time payment. The Soil Health Assessment requires that the producer is following a current NRCS approved nutrient management plan or will follow a newly developed NRCS nutrient management plan.
Obstruction Removal	500	Tree and Boulder Removal $3,141.60/Ac Debris Removal $2,490.40/Ac	Tree and Boulder Removal $2,249.10/Ac Debris Removal $1,782.90/Ac	Tree and Boulder Removal $2,698.92/Ac Debris Removal $2,139.48/Ac	10	To facilitate installation of prescribed grazing, erosion control, water conservation and waste management practices. Maximum of one acre per contract.
Pasture & Hay Planting	512	Pasture Planting $740.50/Ac Corn to Past/Hay $1434.74/Ac	Pasture Planting $539.66/Ac Corn to Past/Hay $1233.89/Ac	Pasture Planting $647.59/Ac Corn to Past/Hay $1341.82/Ac	10	For seeding down tilled land to permanent hay or in conjunction with prescribed grazing. Includes seedbed preparation, seed, fertilize, lime (to soil test.)
Pest Management	595	IPM $183.75/Ac Deer Exclusion $13.75/Ft INVASIVE PLANT CONTROL Invasives - Hand Tools $580/Ac Invasives - Cut Stem $1,335.40/Ac Invasives - Difficult Mowing $2,016/Ac Invasives - Average Mowing $840/Ac Invasives - Difficult Chemical $1,980/Ac Invasives - Lite treatment $110/Ac Invasives - Average Chemical $357.50/Ac	IPM $131.25/Ac Deer Exclusion $9.84/Ft INVASIVE PLANT CONTROL Invasives - Hand Tools $435/Ac Invasives - Cut Stem $956.03/Ac Invasives - Difficult Mowing $1,512/Ac Invasives - Average Mowing $630/Ac Invasives - Difficult Chemical $1417.50/Ac Invasives - Lite treatment $78.75/Ac Invasives - Average Chemical $255.94/Ac	IPM $157.50/Ac Deer Exclusion $11.81/Ft INVASIVE PLANT CONTROL Invasives - Hand Tools $522/Ac Invasives - Cut Stem $1,147/Ac Invasives - Difficult Mowing $1,814/Ac Invasives - Average Mowing $756/Ac Invasives - Difficult Chemical $1,701/Ac Invasives - Lite treatment $94.50/Ac Invasives - Average Chemical $307.13/Ac	1	Cropland, Orchards, Christmas Trees - Maximum 3 year payment to producers, if not used previously, to apply integrated pest management (IPM.) IPM must be conducted by properly licensed and qualified professionals. Invasive and Non-Native Plant Species Control -All agricultural and forest lands - invasive and non-native plant species control, maximum of three years treatment, does not need to be consecutive years.
Pipeline	516	1" Buried $2.67/Ln Ft Surface 1" $0.51/Ln Ft	1" Buried $1.92/Ln Ft Surface 1 " $0.36/Ln Ft	1" Buried $2.30/Ln Ft Surface 1" $0.43/Ln Ft	20	For livestock water in conjunction with prescribed grazing.
Pond	378	Small Dugout $20.15/Cu Yd Small Embankment $17.76/ Cu Yd	Small Dugout $14.45/Cu Yd Small Embankment $12.74/Cu Yd	Small Dugout $17.34/Cu Yd Small Embankment $15.29/Cu Yd	20	Ponds for livestock water as part of a grazing system. New ponds only. Does not include dredging of existing ponds. Must be most economical water source.
Pond Sealing or Lining	*521A*	$2.48/Sq Ft	$1.77/Sq Ft	$2.13/Sq Ft	20	Only for sealing and lining of Waste Storage Facilities
Prescribed Burning	338	Open Land Burning $1415.87/Ac Pine/Scrub Oak $4,876/Ac	Open Land Burning $1015.73/Ac Pine/Scrub Oak $3,498/Ac	Open Land Burning $1218.88/Ac Pine/Scrub Oak $4,197.60/Ac	5	Includes burning plan development and application by a qualified third party.

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Prescribed Grazing	528	Adv Rotat Graze Yr 1 $59.50/Ac Adv Rotat Graze Yr 2&3 $27/Ac Basic Rotat Graze Yr 1-3 $26/Ac Dairy Transition Yr 1-3 $558/Ac	Adv Rotat Graze Yr 1 $44.63/Ac Adv Rotat Grz Yr 2&3 $20.25/Ac Basic Rot Grz Yr 1-3 $19.50/Ac Dairy Transition Yr 1-3 $549/Ac	Adv Rotat Graze Yr 1 $53.55/Ac Adv Rotat Graze Yr 2&3 $24.30/Ac Basic Rotat Grz Yr 1-3 $23.40/Ac Dairy Transition Yr 1-3$554.40/Ac	5	Requires Grazing Plan (developed by UNH EXT, TSP or NRCS) or EQIP Activity Plan Developed by a private TSP. Maximum of 3 years for applying the 528 practice. Basic Rotational Grazing is for 2-7 day rotation schedule. Advanced Rotation Grazing is for <2 day rotation schedule (Management Intensive Grazing) and/or multi-species grazing (following at most a 7 day rotation schedule). Dairy transition is for changing from confinement to a rotational grazing system with at most a 7 day rotation schedule.
Pumping Plant	533	Water Pump $660 each Solar/Wind $9,540.40 each	Water Pump $472.50 each Solar/Wind $6,844.20 each	Water Pump $567 each Solar/Wind $8,213.04 each	15	Pumps to facilitate Prescribed Grazing and Heavy Use Area practices. Solar and wind powered water pumps approved if only feasible solution. Electrical hookups are not cost shared.
Residue and Tillage Management, Mulch Till	345	Mulch Till Corn $157/Ac	Mulch Till Corn $142.50/Ac	Mulch Till Corn $151.20/Ac	1	Maximum of 3 Years
Residue and Tillage Management, No-Till, Strip Till/Direct Seed	329	No-Till year 1 $130.96/Ac No-Till year 2&3 $86.96/Ac	No-Till year 1 $120.22/Ac No-Till year 2&3 $76.22/Ac	No-Till year 1 $126.67/Ac No-Till year 2&3 $82.67/Ac	1	Maximum of 3 Years
Residue Management, Seasonal	344	$56.90/Ac	$54.30/Ac	$55.86/Ac	1	Maximum of 3 Years
Restoration and Management of Declining Habitats	643	Declining forest $2,366/Ac Eelgrass Restoration $42,550/Ac Oyster Bed Restoration $50,025/Ac Barrens and Rare Forests $1,680/Ac T&E Species Habitat $2,625/Ac	Declining forest $1,962/Ac Eelgrass Restoration $30,525/Ac Oyster Bed Restoration $35,887.50/Ac Barrens and Rare Forests $1,200/Ac T&E Species Habitat $1,875/Ac	Declining forest $2,204.40/Ac Eelgrass Restoration $36,630/Ac Oyster Bed Restoration $43,065/Ac Barrens and Rare Forests $1,440/Ac T&E Species Habitat $2,250/Ac	15	
Riparian Forest Buffer	391	Zone 1 and 2 $11,642.16/Ac Zone 1, 2, and 3 $14,140.20/Ac	Zone 1 and 2 $8,797.17/Ac Zone 1, 2, and 3 $10,583.96/Ac	Zone 1 and 2 $10,226.60/Ac Zone 1, 2, and 3 $12,370.76/Ac	15	Includes shaping, seedbed preparation, soil amendments, seeding and tree/shrub planting stock and labor for establishing.
Roof Runoff Structure	558	Roof Gutters $23.48/Ln Ft Ground Gutters $35.37/Ln Ft	Roof Gutters $16.84/Ln Ft Ground Gutters $25.37/Ln Ft	Roof Gutters $20.21/Ln Ft Ground Gutters $30.45/Ln Ft	15	Only for clean water separation around livestock facilities
Sediment Basin	350	Drop Inlet $23.22/Cu Yd Rock Check Basin $18.35/Cu Yd	Drop Inlet $16.53/Cu Yd Rock Check Basin $12.81/Cu Yd	Drop Inlet $19.83/Cu Yd Rock Check Basin $15.37/Cu Yd	20	
Spring Development	574	$2,930.69 ea	$2,102.45 ea	$2,522.95 ea	10	For livestock water or in conjunction with irrigation regulating pit or reservoir, or for creating artificial seeps for wildlife. Use Pumping Plant practice where necessary

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Stream Crossing	578	Culverts 12"- 24" $49.72/Ft 36" $92.66/Ft >36" $129.95/Ft Concrete Box Culv. $$511.95/Ft Stone Fords $49.24/Ft Timber Bridge $1,018.55/Ft Steel Bridge $1300.79/Ft Pre Fab Bridge $1,649.68/Ft	Culverts 12" - 24" $36.30/Ft 36" $67.65/Ft >36" $94.88 /Ft Concrete Box Culvert $373.77/Ft Stone Fords $35.95/Ft Timber Bridge $743.63/Ft Steel Bridge $949.69/Ft Pre Fab Bridge $1,204.41/Ft	Culverts 12" - 24" $43.56/Ft 36" $81.18/Ft >36" $113.85/Ft Concrete Box Culvert $448.52/Ft Stone Fords $43.14/Ft Timber Bridge $892.36/Ft Steel Bridge $1,139.63/Ft Pre Fab Bridge $1,445.29/Ft	10	Culverts, stone fords, and bridges required for farm and forest access.
Stream Habitat Improvement and Management	395	Culvert Removal $2,173.31 Ea Riparian Management $140/Ac Log Jam $232 Ea Streambank Habitat $88.13/Ln Ft	Culvert Removal $1,412.51 Ea Riparian Management $117.50/Ac Log Jam $174 Ea Streambank Habitat $64.20/Ln Ft	Culvert Removal $1,695.01 Ea Riparian Management $131/Ac Log Jam $208.80 Ea Streambank Habitat $77.05/Ln Ft	10	Log Jam DES restoration permit required
Streambank & Shoreline Protection	580	$154/Ln Ft	$110.25/Ln Ft	$132.30/Ln Ft	20	Includes removal of fallen trees, shaping, revegetation, and rock protection of the toe of the slope. To protect critical fish or wildlife habitat or significant cultural resources.
Stripcropping	585	$213.48/Ac	$159.89/Ac	$161.87/Ac	5	One Time Payment at Establishment
Structure for Water Control	587	Gabion Structure $996.18/Ft In-line Water Control Level $9,284.45/Ea Instream Rock Chute $278.89/Ln Ft Pipe Replacement 12" - 18" $15093.75 Pipe Replacement >21" $26852.50	Gabion Structure $714.65/Ft In-line Water Level Control $6,552.98/Ea Instream Rock Chute $200.07Ln /Ft Pipe Replacement 12" - 18" $10828.13 Pipe Replacement >21" $19263.75	Gabion Structure $857.58/Ft In-line Water Level Control $7,863.57/Ea Instream Rock Chute $240.09/Ln Ft Pipe Replacement 12" - 18" $12993.75 Pipe Replacement >21" $23116.50	20	Use Stream Crossing practice for culverts, fords and bridges
Subsurface Drain	606	Channel Drainage $16.49/LnFt	Channel Drainage $11.83/LnFt	Channel Drainage $14.20/LnFt	20	Allowable when required to ensure proper functioning of other practices. NOT FOR LAND DRAINAGE
Terrace	600	Gradient $4.20/Ft Parallel $5.26/Ft	Gradient $2.10/Ft Parallel $2.63/Ft	Gradient $2.52/Ft Parallel $3.16/Ft	10	
Tree/Shrub Establishment	612	Softwoods $1,185.84/Ac Hardwood $1,451.52/Ac Hardwood-Deer Protection $3,330.72/Ac Native Shrubs $1,965.60/Ac Wildlife Shrubs $27.04/Ea	Softwoods $848.21/Ac Hardwood $1,038.24/Ac Hardwood-Deer Protection $2,382.39/Ac Native Shrubs $1,405.95/Ac Wildlife Shrubs $20.28/Ea	Softwoods $1017.85/Ac Hardwood $1,245.89/Ac Hardwood-Deer Protection $2,858.87/Ac Native Shrubs $1,687.14/Ac Wildlife Shrubs $24.34/Ea	15	Not to be used to plant grassland or cropland to forest. Maximum stocking density for wildlife habitat improvement is 70 Trees/Ac or 450 Shrubs/Ac.
Tree/Shrub Pruning	660	Mast Tree Pruning $50.88/Tree	Mast Tree Pruning $37.08/Tree	Mast Tree Pruning $44.50/Tree		For pruning fruit trees for wildlife food production
Tree/Shrub Site Preparation	490	$582.00/Ac	$423.00/Ac	$507.60/Ac	1	Was Forest Site Preparation. May be used for scarification to encourage natural seeding of white pine, aspen or other native species. May also be used to prepare a site for Tree/Shrub Establishment.
Underground Outlet	620	Concrete Drop Inlet and 8" PVC Pipe $17.58/Ln Ft	Concrete Drop Inlet and 8" PVC Pipe $12.61/Ln Ft	Concrete Drop Inlet and 8" PVC Pipe $15.14/Ln Ft	20	
Upland Wildlife Habitat Management	645	Hardwood Mast $617.12/Ac Softwood Retention $216/Ac Brush Piles $261/Ea Large Bird Houses $410.30/Ea Small Birdhouses $36.60/Ea	Hardwood Mast $445.44/Ac Softwood Retention $187/Ac Brush Piles $195.75/Ea Large Bird Houses $293.74/Ea Small Birdhouses $27.45/Ea	Hardwood Mast $534.53/Ac Softwood Retention $204/Ac Brush Piles $234.90/Ac Large Bird Houses $352.49/Ac Small Birdhouses $32.94/Ac	1	Large bird houses (target species Purple Martins) for installation only where there are known populations in the state. Maximum of 1 Large Birdhouse/landowner, unless approved by NRCS Biolgist. Small birdhouses - maximum 4/landowner.

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Vegetated Treatment Area (formerly Wastewater Treatment Strip)	635	Vegetated Treatment Area $5,131.30/ac	Vegetated Treatment Area $3,681.15/ac	Vegetated Treatment Area $4,417.38/ac	10	Used for treatment of runoff containing agricultural wastes
Waste Facility Cover	367	Flexible Covers $13.80/Sq Ft Rigid Covers $20.70/Sq Ft	Flexible Covers $9.90/Sq Ft Rigid Covers $14.85/Sq Ft	Flexible Covers $11.88/Sq Ft Rigid Covers $17.82/Sq Ft	25	Includes hoop roofs
Waste Storage Facility	313	Liquid Manure Storage $210.02/AUM Dry Stack $186.71/AUM Roofed Dry Stack $346.62/AUM	Liquid Manure Storage $154.37/AUM Dry Stack $136.88/AUM Roofed Dry Stack $256.82/AUM	Liquid Manure Storage $185.24/AUM Dry Stack $164.26/AUM Roofed Dry Stack $308.18/AUM	15	Payment is based on Animal Unit Months (AUM.) Roofs only allowed where site conditions dictate, as determined by NRCS.
Waste Transfer	634	Concrete Push Off Pad $7,904.41/Ea Gravity Pipe $33,791.60/Ea Transfer Pump $32,257.50/Ea	Concrete Push Off Pad $5670.56/Ea Gravity Pipe $24,241.80/Ea Transfer Pump $23,141.25/Ea	Concrete Push Off Pad $6,804.67/Ea Gravity Pipe $29,090.16/Ea Transfer Pump $27,769.50/Ea	10	Formerly Manure Transfer
Waste Treatment	629	$30.80/Gal/Day	$22.05/Gal/day	$26.46/Gal/Day	10	Use this practice for milkhouse waste water treatment
Water Well	642	Dug Well $3,850.00/Ea Well $15.89/Ft	Dug Well $2,756.25/Ea Well $11.40/Ft	Dug Well $3,307.50/Ea Well $13.68/Ft	20	Only when part of grazing system, or when used in association with other practices to protect water bodies from damage by livestock. Use with Pumping Plant practice. NOT FOR IRRIGATION WELLS
Watering Facility	614	Insulated Tank $1,174.95/Ea Water Tub w/Float Valve $2.71/Gal Nose Pump $693.53/Ea	Insulated Tank $839.25/Ea. Water Tub w/Float Valve $1.95/Gal Nose Pump $495.38/Ea	Insulated Tank $1,007.10/Ea. Water Tub w/Float Valve $2.34/Gal Nose Pump $594.45/Ea	10	Tanks and Troughs. For livestock watering as part of a grazing system or to manage livestock to prevent degradation of surface and groundwater. Use in conjunction with Pumping Plant, Pipeline, and Heavy Use Area Protection practices, if needed.
Wetland Enhancement	659	Broadcast Native Wetland Mix $2,827.10/Ac Native Wetland Plugs $6,138.00/Ac Hydrologic Improvement $42.41/Cu Yd	Broadcast Native Wetland Mix $2,023.50/Ac Native Wetland Plugs $4,394.25/Ac Hydrologic Improvement $30.31/Cu Yd	Broadcast Native Wetland Mix $2,428.20/Ac Native Wetland Plugs $5,273.10/Ac Hydrologic Improvement $36.37/Cu Yd	15	Use to enhance wetland functions in degraded wetlands, including venal pools. Does not include dredging of existing ponds.
Wetland Restoration	657	Salt Marsh $54.57/Cy Fresh Water Wetland $13.72/Cy Ditch Plugs $2,642.22/Ac	Salt Marsh $39.07/Cy Fresh Water Wetland $9.82/cy Ditch Plugs $2,056.67/Ac	Salt Marsh $46.88/Cy Fresh Water Wetland $11.79/cy Ditch Plugs $2,408.00/Ac	15	
Wetland Wildlife Habitat Management	644	Wetland Wildlife Habitat Management $636/Ac	Wetland Wildlife Habitat Management $463.50/Ac	Wetland Wildlife Habitat Management $556.20/Ac	1	Mechanical Manipulation of Wetland Vegetation
Windbreak Establishment	380	$3,356/Ac	$2517/Ac	$3020.40/Ac	15	

NOTE: The above list of practices include all practices that may be used in EQIP contracts.

NEW HAMPSHIRE PROHIBITED PLANT SPECIES:

(* indicates that the species is currently regulated by the Department of Environmental Services [DES])

Ailanthus altissima	Tree of Heaven
Alliaria petiolata	Garlic Mustard
Berberis vulgaris	European Barberry
*Butomous umbellate**	Flowering Rush
*Cabomba caroliniana**	Fanwort
Celastrus orbiculatus	Oriental Bittersweet
Cynanchum nigrum	Black Swallow-wort
Cynanchum rossicum	Pale Swallow-wort
*Egeria densa**	Brazilian elodea
Elaeagnus umbellata	Autumn Olive
Heracleum mantegazzianum	Giant Hogweed
*Hydrilla verticillata**	Hydrilla
*Hydrocharis morsus-ranae**	European Frogbit
Iris pseudacorus	Water-flag
Ligustrum obtusifolium	Blunt-leaved Privet
Lonicera x bella	Showy Bush Honeysuckle
Lonicera japonica	Japanese Honeysuckle
Lonicera morrowii	Morrow's Honeysuckle
Lonicera tatarica	Tartarian Honeysuckle
*Lythrum salicaria**	Purple loosestrife
*Myriophyllum aquaticum**	Parrot Feather
*Myriophyllum heterophyllum**	Variable Milfoil
*Myriophyllum spicatum**	European Water-Milfoil
*Najas minor**	European Naiad
*Nymphoides peltata**	Yellow Floating Heart
*Phragmites australis**	Common Reed
Polygonum cuspidatum	Japanese Knotweed
*Potomogeton crispus**	Curly-leaf Pondweed
Rhamnus cathartica	Common Buckthorn
Rhamnus frangula	Glossy Buckthorn
Rosa multiflora	Multiflora Rose
*Trapa nutans**	Water Chestnut

JANUARY 1, 2007
THE FOLLOWING NEW HAMPSHIRE PROHIBITED PLANT SPECIES WILL BE BANNED:

Euonymus alatus	Burning Bush
Acer platanoides	Norway Maple
Berberis thunbergii	Japanese Barberry

PROPOSED
NEW HAMPSHIRE PROHIBITED INSECT SPECIES:

Acarapis woodi	Honeybee Tracheal Mite
Adelges tsugae	Hemlock Woolly Adelgid
Aeolesthes sarta	City Longhorned Beetle
Anoplophora glabripennis	Asian Longhorned Beetle
Callidellum rufipenne	Cedar Longhorned Beetle
Dendrolimus sibircus	Siberian Silk Moth
Fiorinia externa	Elongated Hemlock Scale
Hylurgus lingniperda	Redhaired Bark Beetle
Ips typographus	European Spruce Bark Beetle
Lymantria dispar	Asian Gypsy Moth
Popillia japonica	Japanese Beetle
Pyrrhalta viburni	Viburnum Leaf Beetle
Rhizotrogus majalis	European Chafer
Symantria monacha	Nun Moth
Tetropium fuscum	Brown Spruce Longhorn Beetle
Varroa destructor	Varroa Mite