

3.3 Vegetation

3.3.1 Existing Conditions

3.3.1.1 On-site Vegetation

Formal site investigations for vegetation were conducted on June 6, September 3, and September 23, 2008, and May 6, May 20, and June 17, 2009. Observations of additional vegetative species were also noted by biologists during wetland delineations and other biological surveys. Surveys consisted of a series of random/zig-zag transects with observation and/or ground searches being conducted as site specific features changed along the walking transect route (e.g. upland hardwood forest slopes to stream corridor, to shrub wetland). The nature of the random transects allowed the investigators to observe and actively investigate features of interest along the way. This tactic also allowed data to be collected from a greater variety of micro-habitats than might be observed using either linear or quadrant surveying techniques. General survey routes are indicated on Figure 3.3-1.

In addition to specific vegetation surveys performed in 2008 and 2009, vegetation observations were made during the wetland delineation of the site in Fall of 2007. Due to some of the site's rugged terrain and remote location of wetlands, each wetland was delineated by a pair of biologists. This delineation method allowed one biologist to focus their attention to the wetland boundary while a second biologist could make observations on vegetation both inside and outside of the wetlands.

Table 3.3-1 Comprehensive List of Observed Vegetation (Table continues on several pages.)	
Scientific Name	Common Name
Trees	
<i>Abies balsamea</i>	Balsam fir
<i>Acer pensylvanicum</i>	Striped maple
<i>Acer rubrum</i>	Red maple
<i>Acer saccharum</i>	Sugar maple
<i>Betula alleghaniensis</i>	Yellow birch
<i>Betula lenta</i>	Sweet (black) birch
<i>Betula populifolia</i>	Grey birch
<i>Carpinus caroliniana</i>	Ironwood (Blue beech)
<i>Carya glabra</i>	Pignut hickory
<i>Fagus grandifolia</i>	American beech
<i>Fraxinus americana</i>	White ash
<i>Fraxinus pennsylvanica</i>	Green ash
<i>Juniperus virginiana</i>	Eastern red cedar
<i>Larix laricina</i>	American larch
<i>Liriodendron tulipifera</i>	Tulip poplar
<i>Malus pumila</i>	Paradise apple (i.e. domestic)
<i>Nyssa sylvatica</i>	Sour-gum (Black gum)
<i>Ostrya virginiana</i>	Eastern hop hornbeam
<i>Picea mariana</i>	Black spruce
<i>Picea rubens</i>	Red spruce
<i>Pinus rigida</i>	Pitch pine

Table 3.3-1 Comprehensive List of Observed Vegetation (Table continues on several pages.)	
Scientific Name	Common Name
<i>Pinus strobus</i>	White pine
<i>Populus tremuloides</i>	Quaking aspen
<i>Prunus serotina</i>	Black cherry
<i>Quercus alba</i>	White oak
<i>Quercus bicolor</i>	Swamp white oak
<i>Quercus prinus</i>	Chestnut oak
<i>Quercus rubra</i>	Red oak
<i>Quercus velutina</i>	Black oak
<i>Sassafras albidum</i>	Sassafras
<i>Tilia americana</i>	Basswood
<i>Tsuga canadensis</i>	Eastern hemlock
Shrubs	
<i>Amelanchier arborea</i>	Common serviceberry
<i>Amelanchier canadensis</i>	Serviceberry
<i>Berberis thunbergii</i>	Japanese barberry
<i>Chamaedaphne calyculata</i>	Leatherleaf
<i>Clethra alnifolia</i>	Summersweet clethra
<i>Comptonia peregrina</i>	Sweetfern
<i>Cornus racemosa</i>	Gray dogwood (Red-panicle)
<i>Cornus sericea</i>	Red-osier dogwood
<i>Gaultheria procumbens</i> *	Wintergreen
<i>Gaylussacia baccata</i>	Black huckleberry
<i>Hamamelis virginiana</i>	Witchhazel
<i>Ilex verticillata</i> *	Winterberry
<i>Kalmia angustifolia</i> *	Sheep laurel
<i>Kalmia latifolia</i> *	Mountain laurel
<i>Lindera benzoin</i>	Spicebush
<i>Lyonia ligustrina</i>	Maleberry
<i>Photinia melanocarpa</i>	Black chokeberry
<i>Rhododendron maximum</i>	Great rhododendron
<i>Rosa multiflora</i>	Multiflora rose
<i>Rubus allegheniensis</i>	Allegheny blackberry
<i>Rubus flagellaris</i>	Prickly dewberry
<i>Rubus hispidus</i>	Bristly dewberry
<i>Rubus occidentalis</i>	Black raspberry
<i>Salix discolor</i>	Pussy willow
<i>Sambucus nigra</i>	Black elderberry
<i>Sambucus racemosa</i>	Red elderberry
<i>Spiraea alba</i> var. <i>latifolia</i>	Meadowsweet
<i>Spiraea tomentosa</i>	Steeplebush spirea
<i>Vaccinium angustifolium</i>	Lowbush blueberry
<i>Vaccinium corymbosum</i>	Highbush blueberry
<i>Vaccinium pallidum</i>	Blue Ridge blueberry
<i>Viburnum recognitum</i>	Southern arrowwood
Forbs	
<i>Acalypha rhomboidea</i>	Common threeseed mercury
<i>Achillea millefolium</i>	Yarrow

Table 3.3-1 Comprehensive List of Observed Vegetation (Table continues on several pages.)	
Scientific Name	Common Name
<i>Ageratina altissima</i>	White snakeroot
<i>Ambrosia artemisiifolia</i>	Common ragweed
<i>Anaphalis margaritacea</i>	Pearly everlasting
<i>Andromeda polifolia</i>	Bog rosemary
<i>Anemone virginiana</i>	Wood anemone
<i>Antennaria howellii</i>	Howell's pussytoes
<i>Antennaria neglecta</i>	Field pussytoes
<i>Antennaria plantaginifolia</i>	Plantainleaf pussytoes
<i>Apocynum cannabinum</i>	Indian hemp
<i>Aralia nudicaulis</i>	Wild sarsaparilla
<i>Arisaema triphyllum</i>	Jack in the Pulpit
<i>Artemisia vulgaris</i>	Mugwort
<i>Asclepias syriaca</i>	Common milkweed
<i>Bidens connata</i>	Swamp beggar-ticks
<i>Bidens frondosa</i>	Devils beggarticks
<i>Boehmeria cylindrica</i>	False nettle
<i>Callitriche heterophylla</i>	Water starwort
<i>Caltha palustris</i> *	Marsh marigold
<i>Calystegia sepium</i>	Hedge bindweed
<i>Cardamine pensylvanica</i>	Pennsylvania bittercress
<i>Centaurea stoebe</i>	Spotted knapweed
<i>Centaurea nigra</i>	Lesser knapweed
<i>Cerastium fontanum</i>	Mouse ear (Big chickweed)
<i>Chelone glabra</i> *	White turtlehead
<i>Chenopodium album</i>	Lambsquarter
<i>Chenopodium simplex</i>	Mapleleaf goosefoot
<i>Chrysanthemum leucanthemum</i>	Ox-eye daisy
<i>Chrysosplenium americanum</i>	American golden saxifrage
<i>Cicuta bulbifera</i>	Bulblet-bearing water hemlock
<i>Circaea alpina</i>	Small enchanter's nightshade
<i>Cirsium arvense</i>	Canada thistle
<i>Cirsium vulgare</i>	Bull thistle
<i>Clematis virginiana</i>	Virgin's bower
<i>Clinopodium vulgare</i>	Wild basil
<i>Conyza canadensis</i>	Horseweed
<i>Coptis trifolia</i>	Threeleaf goldthread
<i>Corallorhiza maculata</i> *	Spotted coralroot
<i>Corallorhiza trifida</i>	Yellow coralroot
<i>Corydalis sempervirens</i>	Pink corydalis
<i>Dalibarda repens</i>	Dewdrop
<i>Daucus carota</i>	Queen Anne's lace
<i>Decodon verticillatus</i>	Swamp loosestrife
<i>Dianthus armeria</i>	Deptford pink
<i>Doellingeria umbellata</i>	Parasol whitetop aster
<i>Drosera rotundifolia</i> *	Roundleaf sundew
<i>Epifagus virginiana</i>	Beech-drops
<i>Epilobium coloratum</i>	Purpleleaf willowherb

Table 3.3-1 Comprehensive List of Observed Vegetation (Table continues on several pages.)	
Scientific Name	Common Name
<i>Epilobium leptophyllum</i>	Narrowleaf willowherb
<i>Erechtites hieraciifolia</i>	Pilewort
<i>Erigeron annuus</i>	Annual (White-top fleabane)
<i>Erigeron strigosus</i>	Rough fleabane
<i>Eupatorium perfoliatum</i>	Boneset
<i>Eurybia divaricata</i>	White wood aster
<i>Euthamia graminifolia</i>	Flat-top goldenrod
<i>Fragaria virginiana</i>	Virginia strawberry
<i>Galium aparine</i>	Catchweed bedstraw
<i>Galium mollugo</i>	Great hedge bedstraw
<i>Galium palustre</i>	Marsh bedstraw
<i>Galium trifidum</i>	Threepetal bedstraw
<i>Geranium maculatum</i>	Wild geranium
<i>Glechoma hederacea</i>	Gill-over-the-ground
<i>Hieracium aurantiacum</i>	Orange hawkweed
<i>Hieracium caespitosum</i>	Meadow hawkweed
<i>Hieracium gronovii</i>	Hairy hawkweed
<i>Hieracium paniculatum</i>	Panicled hawkweed
<i>Hydrocotyle americana</i>	Marsh pennywort
<i>Hypericum mutilum</i>	Dwarf St. John's wort
<i>Hypericum perforatum</i>	Common St-John's wort
<i>Hypericum punctatum</i>	Spotted St. John's-wort
<i>Impatiens capensis</i>	Spotted jewelweed
<i>Iris versicolor</i>	Blue-flag iris
<i>Krigia biflora</i>	Cynthia
<i>Lactuca canadensis</i>	Canada lettuce
<i>Lathyrus latifolius</i>	Everlasting pea
<i>Leontodon autumnalis</i>	Fall dandelion
<i>Linaria vulgaris</i>	Butter-and-eggs
<i>Lobelia cardinalis</i> *	Cardinal flower
<i>Lobelia inflata</i>	Indian tobacco
<i>Lotus corniculatus</i>	Birdsfoot trefoil
<i>Ludwigia palustris</i>	Marsh seedbox
<i>Lycopus uniflorus</i>	Northern water horehound
<i>Lathyrus pratensis</i>	Meadow pea
<i>Lysimachia ciliata</i>	Fringed loosestrife
<i>Lysimachia nummularia</i>	Moneywort loosestrife
<i>Lysimachia quadrifolia</i>	Whorled loosestrife
<i>Lysimachia terrestris</i>	Swamp candles
<i>Maianthemum canadense</i>	Canada mayflower
<i>Maianthemum racemosum</i>	False Solomon's seal
<i>Matricaria matricarioides</i>	Pineappleweed
<i>Medeola virginiana</i>	Indian cucumber root
<i>Medicago lupulina</i>	Black medick
<i>Melilotus officinalis</i>	Yellow sweet clover
<i>Mitchella repans</i>	Partridgeberry
<i>Mollugo verticillata</i>	Green carpetweed

Table 3.3-1 Comprehensive List of Observed Vegetation (Table continues on several pages.)	
Scientific Name	Common Name
<i>Monotropa uniflora</i>	Indian pipe
<i>Myosoton aquaticum</i>	Giant chickweed
<i>Nasturtium officinale</i>	Watercress
<i>Oclemena acuminata</i>	Whorled wood aster
<i>Oenothera perennis</i>	Little sundrops
<i>Oxalis stricta</i>	Yellow wood sorrel
<i>Panax trifolium</i>	Dwarf ginseng
<i>Plantago lanceolata</i>	English plantain
<i>Plantago rugelii</i>	Blackseed plantain
<i>Polygala paucifolia</i>	Gaywings
<i>Polygala sanguinea</i>	Purple milkwort
<i>Polygonatum pubescens</i>	Hairy solomon's seal
<i>Polygonum arifolium</i>	Halberdleaf tearthumb
<i>Polygonum aviculare</i>	Prostrate knotweed
<i>Polygonum cespitosum</i>	Oriental lady's thumb
<i>Polygonum cilinode</i>	Fringed black bindweed
<i>Polygonum hydropiper</i>	Common smartweed
<i>Polygonum hydropiperoides</i>	Mild water pepper
<i>Polygonum persicaria</i>	Spotted lady's thumb
<i>Polygonum sagittatum</i>	Arrowleaf tearthumb
<i>Polygonum scandens</i>	Climbing false buckwheat
<i>Pontederia cordata</i>	Pickerelweed
<i>Potentilla canadensis</i>	Dwarf cinquefoil
<i>Potentilla norvegica</i>	Rough cinquefoil
<i>Potentilla simplex</i>	Common cinquefoil
<i>Prenanthes altissima</i>	Tall rattlesnakeroot
<i>Prenanthes trifoliolata</i>	Gall-of-the-earth
<i>Prunella vulgaris</i>	Selfheal
<i>Pseudognaphalium obtusifolium</i>	Sweet everlasting
<i>Ranunculus abortivus</i>	Littleleaf buttercup
<i>Ranunculus acris</i>	Tall buttercup
<i>Ranunculus hispidus</i>	Bristly buttercup
<i>Ranunculus recurvatus</i>	Hooked crowfoot
<i>Rumex acetosella</i>	Red sorrel
<i>Rumex crispus</i>	Curly dock
<i>Saxifraga pensylvanica</i>	Swamp saxifrage
<i>Scutellaria laterifolia</i>	Mad-dog skullcap
<i>Senecio aureus</i>	Golden ragwort
<i>Sium suave</i>	Water parsnip
<i>Solanum dulcamara</i>	Climbing nightshade
<i>Solidago</i>	Blue-stem goldenrod
<i>Solidago bicolor</i>	Silverrod
<i>Solidago nemoralis</i>	Gray goldenrod
<i>Solidago puberula</i>	Downy goldenrod
<i>Solidago rugosa</i>	Wrinkled-leaved goldenrod
<i>Stellaria graminea</i>	Grasslike starwort
<i>Stellaria longifolia</i>	Long-leaved starwort

Table 3.3-1 Comprehensive List of Observed Vegetation (Table continues on several pages.)	
Scientific Name	Common Name
<i>Symphotrichum lanceolatum</i>	Panicled aster
<i>Symphotrichum lateriflorum</i>	Calico aster
<i>Symphotrichum patens</i>	Late purple aster
<i>Symphotrichum prenanthoides</i>	Crookedstem aster
<i>Symphotrichum puniceum</i>	Purplestem aster
<i>Symphotrichum racemosum</i>	Small white aster
<i>Taraxacum officinale</i>	Common dandelion
<i>Thalictrum pubescens</i>	Tall meadowrue
<i>Thalictrum thalictroides</i>	Rue anemone
<i>Tiarella cordifolia</i>	Foam flower
<i>Toxicodendron radicans</i>	Poison ivy
<i>Tragopogon pratensis</i>	Yellow goat's beard
<i>Triadenum virginicum</i>	Marsh St. John's wort
<i>Trichostema dichotomum</i>	Bluecurls
<i>Trientalis borealis</i>	Starflower
<i>Trifolium agrarium</i>	Hop clover
<i>Trifolium arvense</i>	Rabbit foot clover
<i>Trifolium hybridum</i>	Alsike clover
<i>Trifolium pratense</i>	Red clover
<i>Trifolium repens</i>	White clover
<i>Trillium erectum</i> *	Purple trillium
<i>Trillium undulatum</i> *	Painted trillium
<i>Tussilago farfara</i>	Coltsfoot
<i>Uvularia sessilifolia</i>	Sessileleaf bellwort
<i>Veratrum viride</i>	False hellebore
<i>Verbascum thapsus</i>	Common mullein
<i>Veronica americana</i>	American brooklime
<i>Veronica officinalis</i>	Common speedwell
<i>Veronica serpyllifolia</i>	Thyme-leaved speedwell
<i>Vicia cracca</i>	Cow vetch
<i>Vicia tetrasperma</i>	Lentil vetch
<i>Viola blanda</i>	Sweet white violet
<i>Viola canadensis</i>	Canadian white violet
<i>Viola conspersa</i>	Dog violet
<i>Viola cucullata</i>	Marsh blue violet
<i>Viola sororia</i>	Common blue violet
<i>Viola spp.</i>	Violet
Grasses	
<i>Agrostis gigantea</i>	Redtop
<i>Anthoxanthum odoratum</i>	Sweet vernalgrass
<i>Brachyelytrum erectum</i>	Bearded shorthusk
<i>Carex crinita</i>	Fringed sedge
<i>Carex digitalis</i>	Slender wood sedge
<i>Carex folliculata</i>	Northern long sedge
<i>Carex intumescens</i>	Greater bladder sedge
<i>Carex lurida</i>	Shallow sedge
<i>Carex pensylvanica</i>	Pennsylvania sedge

Table 3.3-1 Comprehensive List of Observed Vegetation (Table continues on several pages.)	
Scientific Name	Common Name
<i>Carex stipata</i>	Awlfruit sedge
<i>Carex stricta</i>	Tussock sedge
<i>Carex utriculata</i>	Northwest Territory sedge
<i>Carex vulpinoides</i>	Fox sedge
<i>Cyperus strigosus</i>	Umbrella sedge
<i>Dactylis glomerata</i>	Orchard grass
<i>Dichanthelium clandestinum</i>	Deer-tongue witchgrass
<i>Dulichium arundinaceum</i>	Three-way sedge
<i>Echinochloa crus-galli</i>	Barnyard grass
<i>Epipactis helleborine</i>	Helleborine
<i>Eriophorum virginicum</i>	Tawny cotton-grass
<i>Glyceria canadensis</i>	Rattlesnake manna grass
<i>Glyceria obtusa</i>	Manna grass
<i>Iris versicolor</i>	Northern blue iris
<i>Juncus canadensis</i>	Canada rush
<i>Juncus effusus</i>	Soft rush
<i>Juncus tenuis</i>	Path rush
<i>Leersia orizoides</i>	Rice cut grass
<i>Microstegium vimineum</i>	Japanese stilt grass
<i>Panicum dichotomiflora</i>	Fall panicgrass
<i>Phleum pratense</i>	Timothy grass
<i>Phragmites australis</i>	Common reed
<i>Schizachyrium scoparium</i>	Little bluestem
<i>Scirpus atrovirens</i>	Dark green bulrush
<i>Scirpus cyperinus</i>	Woolly grass bulrush
<i>Scirpus tabernaemontani</i>	Soft-stemmed bulrush
<i>Setaria italica</i>	Foxtail bristlegrass
<i>Sisyrinchium angustifolium</i>	Stout blue-eyed grass
<i>Sisyrinchium atlanticum</i>	Eastern blue-eyed grass
<i>Sisyrinchium montanum</i>	Common blue-eyed grass
<i>Sparganium eurycarpum</i>	Large bur-reed
<i>Typha latifolia</i>	Broadleaf cattail
Moss/Ferns	
<i>Athyrium filix-femina</i> *	Lady fern
<i>Botrychium dissectum</i> *	Cut-leaf grape fern
<i>Botrychium matricariifolium</i> *	Daisy-leaved grapefern
<i>Botrychium simplex</i> *	Little grape fern
<i>Dennstaedtia punctilobula</i>	Hayscented fern
<i>Dryopteris campyloptera</i> *	Mountain woodfern
<i>Dryopteris carthusiana</i> *	Spinulose woodfern
<i>Dryopteris cristata</i> *	Crested woodfern
<i>Dryopteris intermedia</i> *	Evergreen woodfern
<i>Dryopteris marginalis</i> *	Marginal woodfern
<i>Equisetum arvense</i> *	Field horsetail
<i>Gymnocarpium dryopteris</i> *	Oak fern
<i>Huperzia lucidula</i> *	Shining clubmoss
<i>Lycopodium clavatum</i> *	Running clubmoss

Table 3.3-1 Comprehensive List of Observed Vegetation (Table continues on several pages.)	
Scientific Name	Common Name
<i>Lycopodium dedrioideum</i> *	Tree groundpine
<i>Lycopodium obscurum</i> *	Ground pine
<i>Onoclea sensibilis</i>	Sensitive fern
<i>Osmunda cinnamomea</i> *	Cinnamon fern
<i>Osmunda regalis</i> *	Royal fern
<i>Phegopteris connectilis</i> *	Northern beech fern
<i>Phegopteris hexagonoptera</i> *	Broad beech fern
<i>Polypodium vulgare</i> *	Common polypody
<i>Polystichum acrostichoides</i> *	Christmas fern
<i>Polytrichum spp.</i>	Hairy cap moss
<i>Pteridium aquilinum</i>	Bracken fern
<i>Sphagnum palustre</i>	Sphagnum moss
<i>Thelypteris noveboracensis</i> *	New York fern
<i>Thelypteris palustris</i> *	Marsh fern
* Indicates species listed by New York State as exploitably vulnerable. Source: Tim Miller Associates, 2009.	

Rare, Threatened or Endangered Plant Species

Correspondence received from the New York State Department of Environmental Conservation (NYSDEC) Natural Heritage Program (NHP) dated September 13, 2007 and October 20, 2009 indicated that it had no records of rare, threatened or endangered plant species or significant habitats occurring on or near the Lost Lake Resort development site. A copy of the letters is included in Correspondence Appendix B.¹

A review of the NYSDEC's Environmental Resource Mapper indicates the project site is within vicinity of one or more rare animals, but reinforces the NHP's absence of records of rare, threatened or endangered plant species occurring on or near the development site. Figure 3.3-1A shows the NYSDEC Environmental Resource Map for the project site and vicinity. Layers indicating "rare plants and rare animals" overlapping with the northwest portion of the project site are shown due to the presence of rare animals nesting near St. Joseph's Lake, as discussed in Chapter 3.4 Wildlife Ecology.

In addition to correspondence with the NHP, TMA searched the NHP's website for all rare, threatened, and endangered vegetation species that may occur in Sullivan County. The results of this inquiry were then narrowed down by omitting species that occur in habitats not typically found on the project site. This analysis concluded with twelve species of vegetation; northern monkshood (*Aconitum noveboracense*), blunt-lobe grape fern (*Botrychium oneidense*), Emory's sedge (*Carex emoryi*), cat-tail sedge (*Carex typhina*), rough avens (*Geum virginianum*), riverbank quillwort (*Isoetes riparia*), woodland rush (*Juncus subcaudatus*), Hooker's orchid (*Platanthera hookeri*), dwarf sand-cherry (*Prunus pumila* var *depressa*), swamp buttercup (*Ranunculus hispidus* var. *Nitidus*), Michaux's blue-eyed grass (*Sisyrinchium mucronatum*), and spreading globeflower (*Trollius laxus*), typically found in habitats similar to those existing on the project site. Particular attention was given to searching for these species when surveyors were

¹ As indicated in the NHP letter, attachment of sensitive wildlife habitat information is not included herein.

in appropriate habitats during vegetative surveys. None of the species were observed on the project site.

No federal or state-listed rare, threatened, or endangered plant species, habitats or significant natural communities were identified or observed by TMA during surveys of the project site.

Potential for State-listed or Exploitably Vulnerable Plant Species

During on site surveys, 314 species of vegetation were observed, of which 34 are listed by NYS as being exploitably vulnerable. As a note, the State includes all fern species with the exception of the sensitive, hayscented and bracken ferns in their State list of protected plants. Plants that are “exploitably vulnerable” are listed as protected species under 6NYCRR New Part 193, Protected Native Plants, and are defined in the state listing as, “...native plants likely to become threatened in the near future throughout all or a significant portion of their ranges within the state if causal factors continue unchecked [e.g, all orchids, most ferns].” New York State law protects state-listed plants existing on public lands. Right of protection of exploitably vulnerable species are conveyed by the State to the private land owner on which the species are present. With the consent of the land owner, it is not a violation “for any person, anywhere in the state, to pick, pluck, sever, remove, damage by the application of herbicides or defoliant, or carry away...any protected plant.”

3.3.1.2 Vegetative Communities

The project site includes twelve principal habitat/ecosystems which correspond with the following broadly described “Ecological Communities of New York State”²:

1. Allegheny Oak Forest
2. Appalachian Oak-Pine Forest
3. Hemlock-Northern Hardwood Forest
4. Beech-Maple Mesic Forest
5. Talus Slope
6. Shallow Emergent Marsh
7. Shrub Swamp
8. Red Maple-Hardwood Swamp
9. Hemlock-Hardwood Swamp
10. Highbush Blueberry Bog Thicket
11. Vernal Pool
12. Impounded Lake

Table 3.3-2 below presents the site acreage associated with each ecological community. The location of ecological community types and other habitat features of the site are shown on Figure 3.3-2 Upland Ecological Communities and Figure 3.3-3 Wetland Ecological Communities, and described later in this chapter.

² Edinger, G.J. et al (Eds.) 2002. Ecological Communities of New York State. Second Edition. NYSNHP, NYSDEC. Albany, NY. 136 pp.

Table 3.3-2 Existing On-site Habitat Coverage	
Habitat Type	Approximate Extent
<i>Upland Communities</i>	
Allegheny Oak Forest	260 acres
Appalachian Oak-Pine Forest	176 acres
Hemlock-Northern hardwood forest	802 acres
Beech-Maple Mesic Forest	518 acres
Talus Slope	55.6 acres
Total	1,811.6 acres
<i>Wetland Communities</i>	
Shallow Emergent Marsh	9.2 acres
Shrub Swamp	63.1 acres
Red Maple-Hardwood Swamp	57.8 acres
Hemlock-Hardwood Swamp	66.9 acres
Highbush Blueberry Bog Thicket	16.4 acres
Vernal Pool	2.5 acres
Impounded Lake	52.0 acres
Total	267.9 acres
Source: Tim Miller Associates, Inc., 2010	

Overall, the site's vegetation appears to be healthy and productive. Large diameter tree growth and the lack of stumps indicate the forests on the project site have redeveloped after from intensive logging for firewood, tannin, lumber, quarrying, and land clearing associated with the site's past usages.

Upland Communities

Allegheny Oak Forest

Allegheny oak forest is a community type that mostly occurs on the south and southwest portions of the project site. The NHP describes this forest type as a hardwood forest that occurs on well-drained sites. This mixed oak forest is characteristic of the rounded ridgetops and upper south-facing slopes of the unglaciated Allegheny Plateau. Dominant tree species include white oak, red oak, chestnut oak, and red maple, with lesser inclusions of hickory, black birch, and black cherry. The shrub layer of this community is a thick, mixed heath of lowbush blueberry, black huckleberry, and mountain laurel. The groundlayer vegetation is typically comprised of wintergreen, starflower, Pennsylvania sedge, bracken fern, and sheep's laurel. The NHP ranks this community as G3/G4 "apparently secure" globally and S2 "vulnerable" in New York State.

The Allegheny oak forest community is the principal forest community found in the Neversink River Unique Area, comprising approximately 62 percent (3,353 acres) of the management unit.

Appalachian Oak-Pine Forest

The Appalachian oak-pine forest community is a mixed forest type that occurs on sandy soils or on slopes with rocky soils that well drained. This forest community occurs on the south and southeastern portions of the project site. Dominant tree species in the community include red oak, chestnut oak, white oak, and white pine. Lesser inclusions of red maple, hemlock, beech,

and yellow birch occur throughout the community. The thick, extensive shrub layer shades out most of the groundlayer vegetation and consists of lowbush blueberry, blue ridge blueberry, and black huckleberry. Minimal groundlayer vegetation includes sporadic patches of wintergreen and Pennsylvania sedge. The community is ranked as G3/G4 “apparently secure” globally and S4 “apparently secure” in New York State.

Beech-Maple Mesic Forest

According to the NHP, beech-maple mesic forest is a, “...broadly defined community type with several regional and edaphic variants.” Beech-maple mesic forests typically occur in moist, well-drained areas usually containing acidic soils. American beech and red maple are dominant species within the tree canopy, with inclusions of red oak, white pine, sugar maple, and yellow birch. The shrub layer is generally sparse, consisting primarily of beech saplings with lesser inclusions of American hornbeam and striped maple. Herbaceous species found within the community include painted trillium, indian cucumber-root, Canada mayflower, star flower, hay-scented fern, and shining clubmoss. The community is ranked as G4 “apparently secure” globally and S4 “apparently secure” in New York State.

Hemlock-Northern Hardwood Forest

Hemlock northern hardwood forest, a deciduous forest type, covers a majority of the northerly portion of the project site. This ecological community is distributed throughout New York State and is ranked by the NYSNHP as G5/S5 “demonstrably secure” globally and in New York State. The community is dominated by Eastern hemlock, but includes one to several codominant species. Codominant trees on the project site include red maple, white pine, and beech, with a lesser numbers of other species such as red oak, white ash, and black cherry at locations across the community.

In the on-site hemlock-northern hardwood community, understory vegetation layers are denser than what is generally expected in the community type. The soils in this area are typically more acidic and very stony, resulting in an overall composition of vegetation that is different from the remainder of the site. There is very little in the way of understory in these areas due to the density of the evergreen canopy. Sphagnum moss, white trillium, Christmas fern and wood sorrel predominate in the herbaceous layer.

Talus Slope

A talus slope occurs on the central portion of the property, north and east of NYSDEC Wetland HA-40. This open canopy woodland community occurs on cool, dry outcrops of sandstone bedrock and contains some characteristics resembling the “Spruce-Fir Rocky Summit” community as described by the NHP. Tree canopy coverage is moderate (approximately 40 to 50 percent) and is comprised of red spruce, balsam fir, yellow birch, black birch, and white pine. The shrub layer is sparse with scattered clumps of lowbush blueberry, mountain laurel, and witch hazel. Herbaceous vegetation in this community includes Pennsylvania sedge, common polypody, running clubmoss, and common St-John’s wort. In addition to these forbs, reindeer lichen (*Cladonia rangiferina*) thrives in large mats on the rock outcrops.

Wetland Communities

Shallow Emergent Marsh

The NYSNHP describes “shallow emergent marsh, open mineral soil wetlands” as “wetlands with less than 50% cover of trees.” The shallow emergent marsh is a “...marsh meadow community that occurs on mineral soil or deep mulch soils (rather than true peat), that are permanently saturated and seasonally flooded.” According to the NYSNHP, shallow emergent marshes are ranked G5 (demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery) and S5 (demonstrably secure in New York State).³

Shrub Swamp

The NHP describes shrub swamp as “an inland wetland community dominated by tall shrubs that occurs along the shore of a lake or river, in a wet depression or valley not associated with lakes, or as a transition zone between a marsh, fen, or bog and a swamp or upland community. The tree layer in this community is virtually absent, with the exception being the occasional red maple. Dominant species observed within this community include highbush blueberry, maleberry, speckled alder, meadowsweet, steeple bush, and spicebush. Herbaceous species are somewhat limited due to the shading tendencies of the dense shrub layer. The community is ranked as G5 “secure” globally and S5 “secure” in New York State.

Red Maple-Hardwood Swamp

The Red Maple-Hardwood Swamp is an ecological community “...that occurs in poorly drained depressions, usually on inorganic soils.” According to the NHP, “This is a broadly defined community with many regional and edaphic variants.” On the project site, this community is dominated by red maple. Other tree species include green ash, white ash, American elm, black gum, and yellow birch. Shrubs found on site that are characteristic of the community include winterberry, spicebush, speckled alder, highbush blueberry, elderberry, and arrowwood viburnum. The well-developed herbaceous layer varies with inclusions of sensitive fern, cinnamon fern, ostrich fern, skunk cabbage, false hellebore, jewelweed, and marsh marigold. The community is ranked as G5 “secure” globally and S4S5 “secure” in New York State.

Hemlock-Hardwood Swamp

The Hemlock-Hardwood Swamp community is “...a mixed swamp that occurs on mineral soils and deep muck in depressions which receive groundwater discharge, typically in areas where the aquifer is basic or acidic substrate.” The dense tree canopy is dominated by hemlock with lesser inclusions of red maple, yellow birch, and white pine. The shrub and herbaceous layers are not well developed due to the dense tree canopy blocking out sunlight from the vegetative layers below. Shrub species observed include highbush blueberry, winterberry, arrowwood viburnum, and spicebush. Common groundlayer species include sensitive fern, three leaf goldthread, foamflower, and starflower. Mats of sphagnum moss grow throughout the community as well. The community is ranked as G4/G5 “apparently secure” globally and S4 “apparently secure” in New York State.

³ Edinger, G.J. et al (Eds.) 2002. Ecological Communities of New York State. Second Edition. NYSNHP, NYSDEC. Albany, NY. 136 pp.

Highbush Blueberry Bog Thicket

Portions of wetland ABD (NYSDEC wetland HA-40) contain the Highbush Blueberry Bog Thicket community. The NHP describes this community as "...an ombrotrophic or weakly minerotrophic peatland dominated by tall deciduous, ericaceous shrubs and peat mosses." The dominant shrub species in this community is highbush blueberry. Stunted trees are present in low densities and consists primarily of red maple. Other vegetation found within this community includes winterberry, spicebush, sensitive fern, cinnamon fern, and marsh fern. An extensive mat of sphagnum moss nearly covers the community floor.

Vernal Pool

Vernal pools are aquatic communities of intermittently to ephemerally ponded depressions. Vernal pools are typically flooded in spring time after snow melt or heavy rainfall and dry out throughout the summer months before fall rains fill them once again. Vegetation within this community are generally sparse and include *Carex* species (*Carex stricta*, *Carex lurida* among others), spikerush, and manna grass. Most of the vernal pools on the project site occur within other wetland communities. The community is ranked as G4 "apparently secure" globally and S3S4 "limited acreage or apparently secure" in New York State. Vernal pools do not have any greater regulatory protection than any other wetland type.

Impounded Lake

Lost Lake is an approximately 50-acre lake on the project site. The lake appears to have been created over 50 years ago by a man-made dam at the southern end of the lake. Vegetation around the lake shore is previously described in the aforementioned community types. Vegetation within the lake consists of aquatic species such as arrow-arum, smartweeds (*Polygonum* species), pond weeds (*Potamogeton* species), naiads, and algae.

3.3.2 Potential Impact

Impacts on Endangered, Threatened or Special Concern Plant Species

No federal or state-listed threatened or endangered species of vegetation were observed on the project site during extensive ecological surveys in 2008 and 2009, therefore no impacts to rare or protected species are anticipated.

Impacts to Vegetative Communities

To construct the proposed development, approximately 601 acres will be disturbed either permanently or temporarily during construction. Loss of vegetation within approximately 194 acres for proposed buildings, roads, driveways or parking areas is an unavoidable permanent impact. The loss of this vegetation will be mitigated as described below, and is not anticipated to result in significant adverse impacts. Loss of vegetation that is ultimately revegetated by lawn, landscaped areas, golf course areas, and stormwater management basins will be temporary impacts to most of the 601 acres developed (approximately 407 acres). The reduction in vegetative cover from the site will reduce the available wildlife habitat on the site, initially by approximately 601 acres that will be largely replaced by urban-type revegetated areas.

Table 3.3-3 shows the approximate change in land coverage and habitat types as a result of the Proposed Action.

Table 3.3-3 Proposed On-site Habitat Coverage			
Habitat Type	Approximate Extent	Proposed Extent	Change
<i>Upland Communities</i>			
Allegheny Oak Forest	260 acres	152 acres	- 108 acres
Appalachian Oak-Pine Forest	176 acres	135 acres	- 41 acres
Hemlock-Northern Hardwood Forest	802 acres	586 acres	- 216 acres
Beech-Maple Mesic Forest	518 acres	297 acres	- 221 acres
Talus Slope	55.6 acres	40.6 acres	- 15 acres
Landscaping/Lawns/Stormwater Facilities	0.0 acres	407 acres	+ 407 acres
Impervious Surfaces	0.0 acres	194 acres	+ 194 acres
Total	1,811.6 acres	1,811.6 acres	
<i>Wetland Communities</i>			
Shallow Emergent Marsh	9.2 acres	9.2 acres	0.0 acres
Shrub Swamp	63.1 acres	63.1 acres	0.0 acres
Red Maple-Hardwood Swamp	57.8 acres	59.4 acres	+1.6 acres*
Hemlock-Hardwood Swamp	66.9 acres	66.9 acres	0.0 acres
Highbush Blueberry Bog Thicket	16.4 acres	16.2 acres	0.0 acres
Vernal Pool	2.5 acres	2.5 acres	0.0 acres
Impounded Lake and adjacent shoreline	52 acres	52 acres	0.0 acres
Total	267.9 acres	269.3 acres	
*Includes 0.4 acre disturbance and 1.0 acre of created wetlands as mitigation. Sources: Brinkash Associates, Inc. and Tim Miller Associates, Inc., 2009			

Methods of Tree Removal and Disposal

Tree clearing will occur following the establishment of a delineated "limits of disturbance" line in the field, created by construction fencing and signage. Clearing limit lines, as shown on approved site plans, will be marked on the site prior to commencing the construction activity. The establishment of disturbance limit lines is an effective way to contain impacts to the approved areas and keep other portions of a project site undisturbed. Tree clearing will begin along the access roads and expand to the edge of the clearing line. Trees will be cut by logging machines or by handheld power equipment, as appropriate. Depending on the tree type, size and condition, the logged trees will either be loaded onto trucks for off-site processing as timber or shredded on-site for use to provide areas of temporary stabilization for disturbed soils during construction.

Impact of Conversion of Woodland to Residential Development

As mentioned above, approximately 601 acres of the project site will be disturbed as a result of the proposed development and much of the vegetation within this area will be eliminated. Approximately 1,478 acres of existing vegetation will be retained on the property, as well as the addition of about 407 acres of newly vegetated areas for lawns, landscaping, golf course areas, and plantings in stormwater management basins. The proposed development will result in the

permanent elimination of vegetation from approximately 194 acres, which will be covered by impervious surfaces.

Few species of vegetation that are considered to be invasive species were identified during vegetative surveys on the site. Most species that are typically considered invasive were found along St. Joseph's Road. Construction of the Lost Lake Resort will create roadways throughout the project site that will eliminate existing native vegetation and could potentially create areas that can colonize with undesirable species.

The intent of the current plan is to limit the area of disturbance and therefore the need for future maintenance for invasives to the extent practicable. The final approved landscape plans for the main entrance roadway corridors and the amenity areas will specify appropriate cover vegetation to be seeded on roadsides, stormwater basins and other vegetated areas. Appendix A of the *Design Guidelines* lists the selected lawn and naturalizing seed mixes for this project. It will be in the developer's interest to establish and maintain these publicly visible areas with suitable vegetative cover and eliminate undesirable species when they occur to maintain an attractive landscape for present and future buyers.

The *Design Guidelines* require the homeowners to stabilize their developed lots and maintain them not only for aesthetics but to minimize situations that may result in establishment of volunteer species. The seed mixes listed in Appendix A of the *Design Guidelines* also apply to the home sites in Lost Lake Resort. In addition, the Guidelines stipulate strict provisions for preserving existing trees and other vegetation on individual house lots through an internal design review process intended to preserve the forest character in Lost Lake Resort and reduce the potential impact of the conversion of woodland to residential development.

3.3.3 Mitigation Measures

The project is committed to reducing impacts attributed to construction and development within the upland deciduous forested plant community by protecting wetlands and wetland buffer areas on the site. The proposed development plan has been designed to minimize wetland and buffer impacts and by doing so will preserve substantial wooded buffer areas around the more sensitive vegetation habitats. Undisturbed land will remain within the wooded wetland buffer areas, wooded wetlands and wooded stream corridors. In consideration of the following mitigation actions that will be taken to offset the effects of the development, significant adverse impacts to natural resources are not anticipated to result from the completed project. As impacts to vegetation and wildlife on the project site are not considered to rise to the significant level and as none of the species identified on the project site are protected under a law that requires mitigation for their disturbance or loss, no further mitigation is being proposed.

Clearing limit lines will be marked on the site prior to commencing the construction activity. The establishment of disturbance limit lines is an effective way to contain impacts to the approved areas and keep other portions of a project site undisturbed.

Preservation of Existing Vegetation

As per the Town of Forestburgh's Planned Development District (PDD) zoning, at least 50 percent of the total approximate 2,080 acres of the project site must remain as open space. The proposed master plan shows approximately 1,040 acres (50 percent) of the project site to

remain as vegetated open space in the form of existing ecological communities, lawns and landscaped areas, golf course, and stormwater management practices.

Proposed Measures to Protect Trees to Remain

No trees in healthy condition beyond the field-identified limits of disturbance will be disturbed. These limits will be delineated by snow fencing or similar methods. Trees near working areas will be wrapped at the base by snow fencing to avoid accidental damage to trunks and roots.

There should be no disturbance of any kind within the projected root zone of these trees or within the drip line of the tree foliage. Snow fencing or other highly visible means of marking should be placed around the maximum area of the root system to prevent the destruction of roots by exposure or through the compaction of soils. Construction crews will be notified to exclude all equipment from these protected areas. If necessary, trees will be protected by tree wells in fill areas, and retaining walls in cut areas.

Revegetation and Landscaping

Landscaping Utilizing Native Vegetation

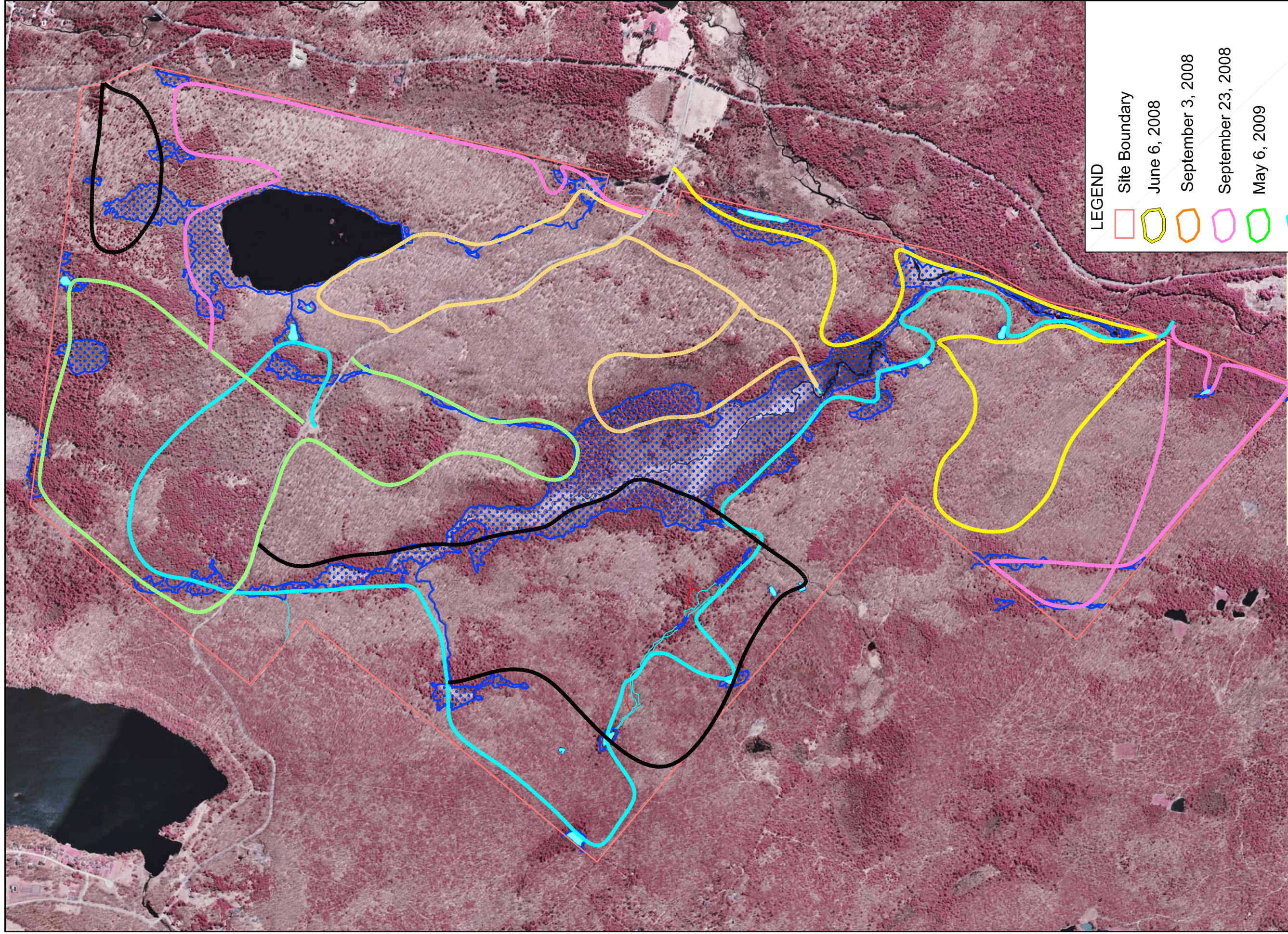
Native and adaptive plant species will be utilized for landscaping purposes and for revegetating the proposed water quality and stormwater detention basins where practical. This preference is based on native plant adaptability to local climatic conditions, including temperature, precipitation and length of the growing season. Many native species selected for landscape use will also be beneficial to indigenous wildlife, especially birds, by providing wildlife benefits such as nesting, cover and food. Typical landscape plantings that will be chosen for their hardiness to the local climate and to the proposed use on the site.

However many common landscape plant materials are not native. They are used for their aesthetic and practical considerations in the landscape, and are more common in plantings around residences. These plantings might include ornamental minor tree species such as Cherry, Plum, Dogwood or Maple, or shrub species such as Lilac, Boxwood, Cotoneaster, Hydrangea and Spirea. Such adaptive species that are non-invasive or otherwise non-problematic will be allowed in the project.








Landscaping on the single-family lots will be determined by the individual lot owners, subject to review and approval by the Lost Lake Design Review Board ("Architectural Control Committee"). Each individual owner will choose landscape vegetation from a master list provided in the *Design Guidelines for Single-Family Homes* (Appendix E2).

A conceptual landscaping plan has been prepared for the project's community-owned areas (i.e. amenity buildings and golf course) and presents the major evergreen and deciduous and shrub plantings to be installed throughout those portions of the project. The list of vegetation from the *Design Guidelines* was used as a basis for the selection of landscape materials in these common areas. Table 3.3-4 below shows typical landscape species that will be used in the community owned areas.

Table 3.3-4 Regional Upland Condition Landscaping Plantings	
Trees	Shrubs
Deciduous Trees - Major	Deciduous Shrubs
River birch (<i>Betula nigra</i>) *	Bottlebrush buckeye (<i>Aesculus parviflora</i>)
Red maple (<i>Acer rubrum</i>) *	Cotoneasters (<i>Cotoneaster</i> spp.)
American beech (<i>Fagus grandifolia</i>)*	Common witchhazel (<i>Hamamelis virginiana</i>)*
Pin oak (<i>Quercus palustris</i>)*	Common witchhazel (<i>Hamamelis virginiana</i>)*
Red oak (<i>Quercus rubra</i>)*	Red-osier dogwood (<i>Cornus stolonifera</i>)*
American elm (<i>Ulmus americana</i>)*	Winterberry (<i>Ilex verticillata</i>) *
Sugar maple (<i>Acer saccharum</i>)*	Eastern wahoo (<i>Euonymus atropurpureus</i>)
Deciduous Trees - Minor	Beautybush (<i>Kolkwitzia amabilis</i>)
Shadblow (<i>Amelanchier canadensis</i>) *	Northern bayberry (<i>Myrica pennsylvanica</i>)
Paperbark birch (<i>Betula papyrifera</i>)	Viburnums (<i>Viburnum</i> spp.)*
Flowering dogwood (<i>Cornus florida</i>)*	Snowberry (<i>Symphoricarpos alba</i>)
Crabapples (<i>Malus</i> spp.)	
Redbud (<i>Cercis canadensis</i>) *	
Plums (<i>Prunus</i> spp.)	
Coniferous Trees	Evergreen shrubs/vines
White fir (<i>Abies concolor</i>)	Rosebay rhododendron (<i>Rhododendron maximum</i>)
White pine (<i>Pinus strobus</i>) *	White rhododendron (<i>Rhododendron album</i>)
Red pine (<i>Pinus resinosa</i>)	Virginia creeper (<i>Parthenocissus quinquefolia</i>)*
Norway spruce (<i>Picea abies</i>)	Leatherleaf viburnum (<i>Viburnum rhytidophyllum</i>)*
Douglas fir (<i>Pseudotsuga mensiesii</i>)*	Mountain laurel (<i>Kalmia latifolia</i>)*
	Eastern red cedar (<i>Juniperus virginiana</i>)*
* Indicates a native species Source: Tim Miller Associates, Inc., 2010.	



LEGEND

-  Site Boundary
-  June 6, 2008
-  September 3, 2008
-  September 23, 2008
-  May 6, 2009
-  May 20, 2009
-  June 17, 2009

Note: Portions of several routes were searched on multiple days in different seasons, including during wildlife surveys. Wetland vegetation was identified during wetland delineations.

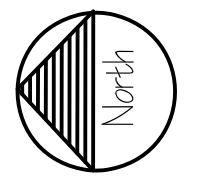
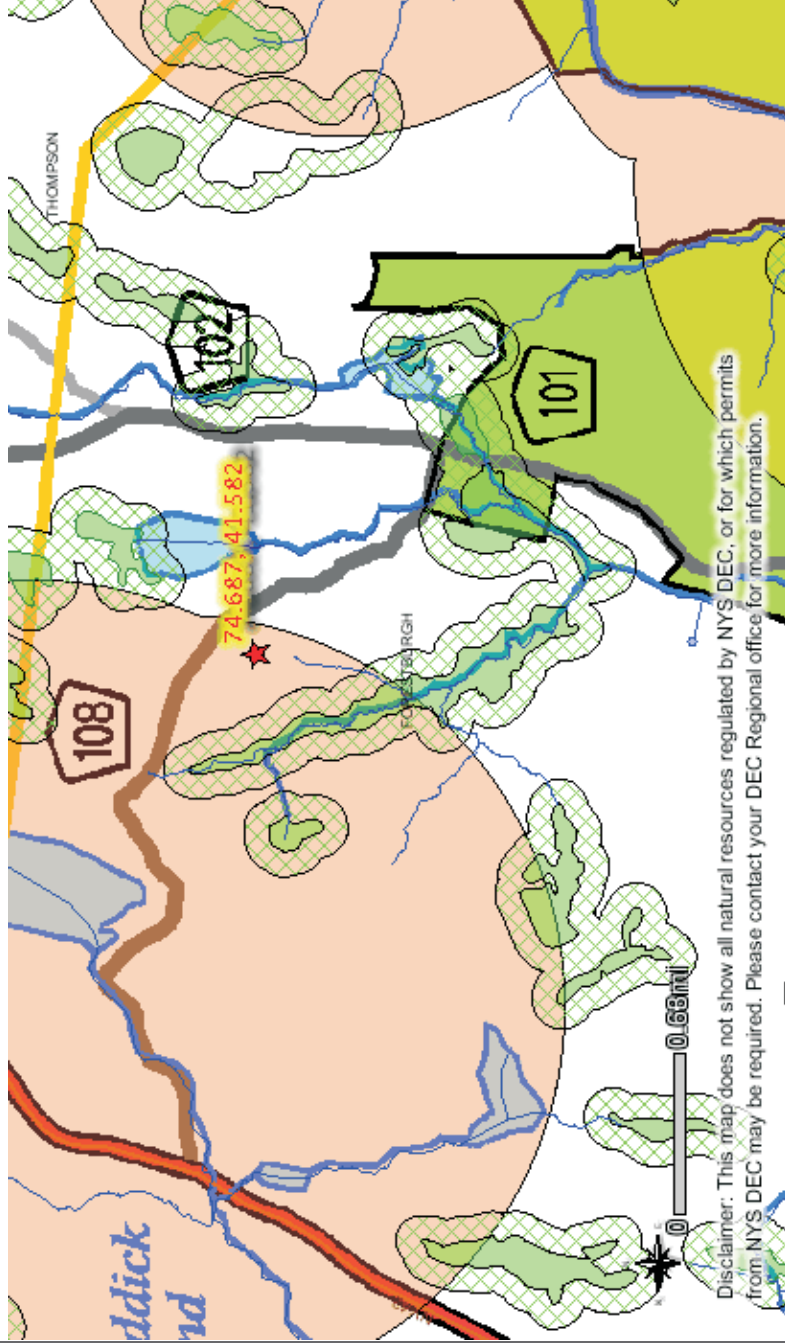


Figure 3.3-1: General Locations of Vegetation Survey Routes
 Lost Lake Resort
 Town of Forestburgh, Sullivan County, New York
 Basemap: NYS GIS Clearinghouse
 Scale: 1 inch = 1200 feet

Lost Lake Resort

Visible Layers

-  Classified Streams
-  Classified Ponds
-  State-Regulated Freshwater Wetlands
-  Wetland Checkzone
-  State-Regulated Freshwater Wetlands
-  Rare Plants and Rare Animals
-  Significant Natural Communities Buffered
-  Natural Communities Nearby
-  Significant Natural Communities
-  Interstate Highways
-  Adirondack Park Boundary
-  Counties



Disclaimer: This map does not show all natural resources regulated by NYS DEC, or for which permits from NYS DEC may be required. Please contact your DEC Regional office for more information.

MinX: 521780, MaxX: 530081, MinY: 4604821, MaxY: 4600369

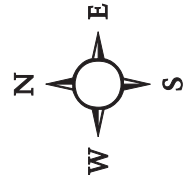
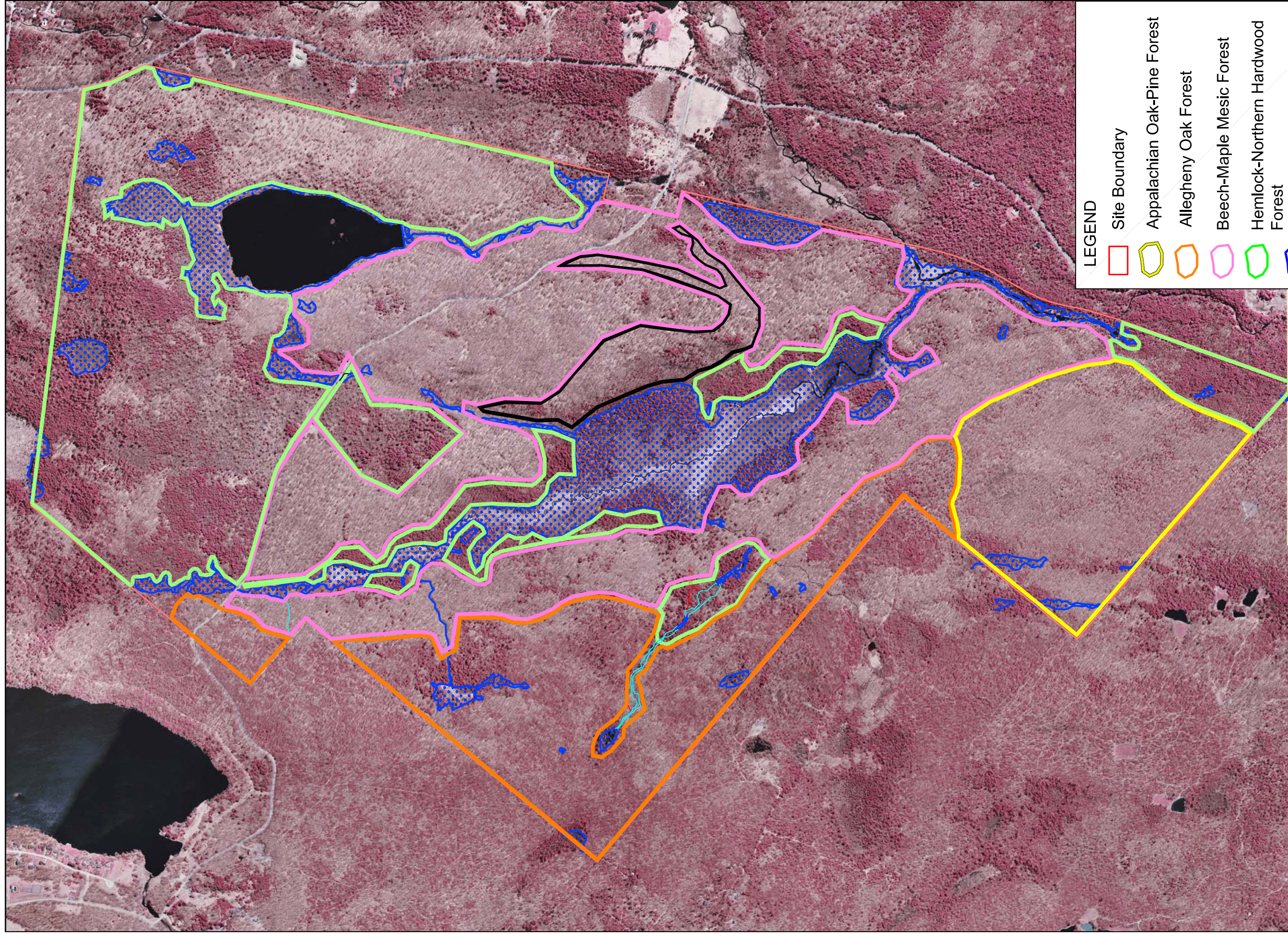


Figure 3.3-1A: NYS DEC Environmental Resources
 Lost Lake Resort
 Town of Forestburgh, Sullivan County, New York
 Source: NYS DEC Environmental Resources Mapper, 12/01/09
 Scale: As shown



LEGEND

-  Site Boundary
-  Appalachian Oak-Pine Forest
-  Allegheny Oak Forest
-  Beech-Maple Mesic Forest
-  Hemlock-Northern Hardwood Forest
-  Wetlands
-  Talus Slope

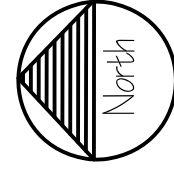
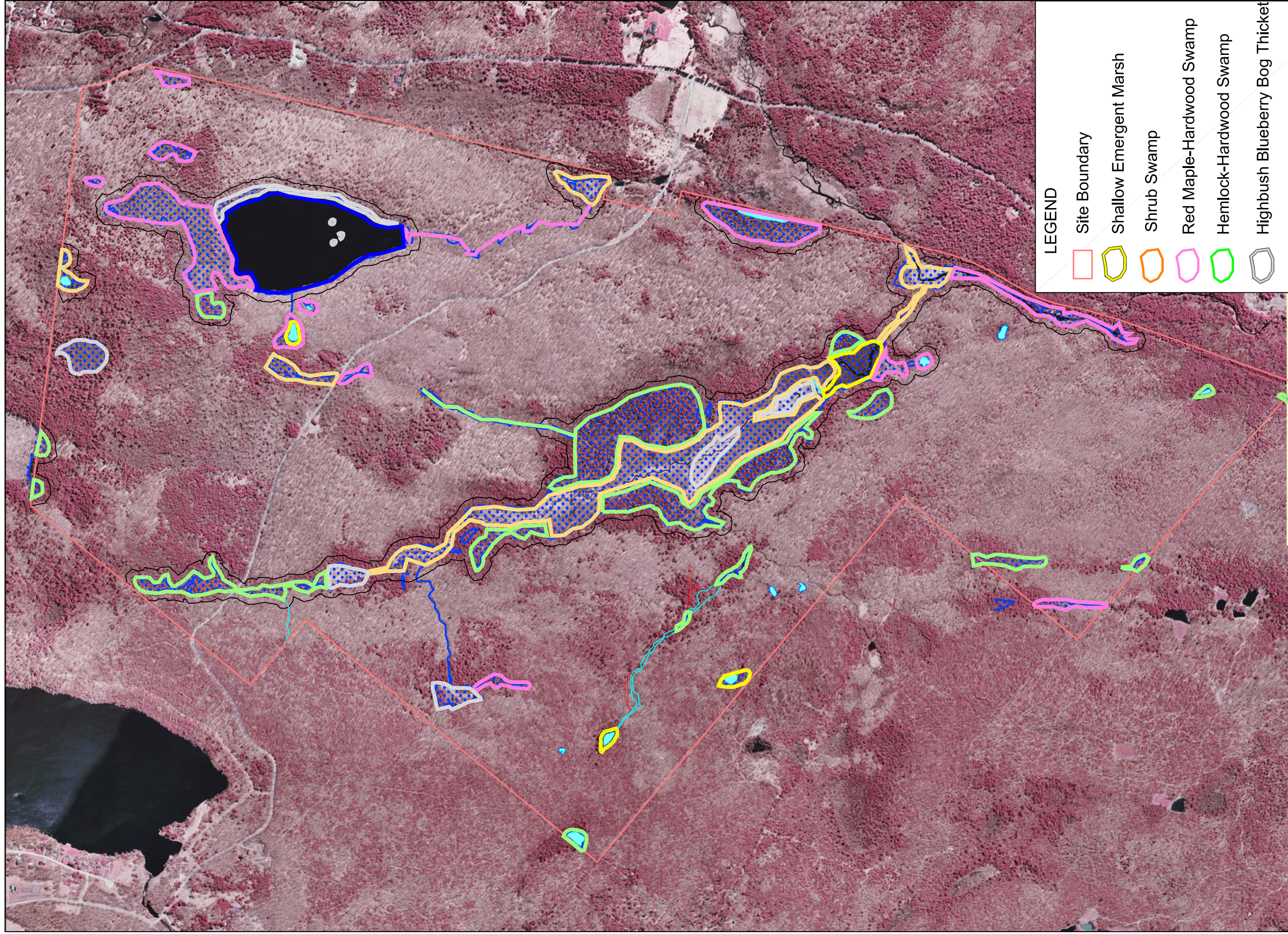


Figure 3.3-2: Upland Ecological Communities
 Lost Lake Resort
 Town of Forestburgh, Sullivan County, New York
 Basemap: NYS GIS Clearinghouse
 Scale: 1 inch = 1200 feet



LEGEND

- Site Boundary
- Shallow Emergent Marsh
- Shrub Swamp
- Red Maple-Hardwood Swamp
- Hemlock-Hardwood Swamp
- Highbush Blueberry Bog Thicket
- Vernal Pool
- Impounded Lake

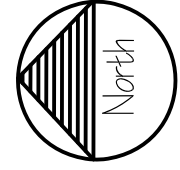


Figure 3.3-3: Wetland Communities
 Lost Lake Resort
 Town of Forestburgh, Sullivan County, New York
 Basemap: NYS GIS Clearinghouse
 Scale: 1 inch = 1200 feet