NEW YORK STATE OF OPPORTUNITY. | Department of Environmental Conservation

# Tug Hill East

# UNIT MANAGEMENT PLAN

## FINAL

### Towns of Lewis, Martinsburg, Osceola, West Turin, Turin, Ava and Redfield

Counties of Lewis, Oneida, Oswego

July 2023

**DIVISION OF LANDS AND FORESTS**
Bureau of Forest Resource Management, Region 6

7327 State Route 812

Lowville, New York 13367

**OFFICE OF THE COMMISSIONER**

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# MEMORANDUM

**Date:** July 6, 2023

**TO:** The Record

**FROM:** Basil Seggos, Commissioner

**SUBJECT:** Tug Hill East State Forests UMP

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The Tug Hill East Unit Management Plan has been completed. The Plan is consistent with Department policy and procedure, involved public participation and is consistent with the Environmental Conservation Law, Rules and Regulations. The plan includes management objectives for a ten-year period and is hereby approved and adopted.

# Tug Hill East

# Unit Management Plan

**A planning unit consisting of 7 State Forests, 1 Unique Area and 10 Detached Forest Preserve Lots**
**in**
**Lewis, Oneida and Oswego Counties**

**October 2021**


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https://www.dec.ny.gov/docs/regions_pdf/tughilldraftump.pdf

## DEC’s Mission

"The quality of our environment is fundamental to our concern for the quality of life. It is hereby declared to be the policy of the State of New York to conserve, improve and protect its natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being." - Environmental Conservation Law 1-0101(1)

## Vision Statement

State Forests on the Tug Hill East Unit will be managed in a sustainable manner by promoting ecosystem health, enhancing landscape biodiversity, protecting soil productivity and water quality. In addition, the State Forests on this Unit will continue to provide the many recreational, social and economic benefits valued so highly by the people of New York State. DEC will continue the legacy, which was started in 1929, of leaving these lands to the next generation in better condition than they are today.

This plan sets the stage for DEC to reach these ambitious goals by applying the latest research and science, with guidance from the public, whose land we have been entrusted to manage.

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# Preface

## State Forest Overview

The public lands comprising this Unit play a unique role in the landscape. Generally, the State Forests of the Unit are described as follows:

- large, publicly owned land areas,
- managed by professional Department of Environmental Conservation (DEC) forestry staff,
- green certified jointly by the Forest Stewardship Council® (FSC®) & Sustainable Forestry Initiative® (SFI®),
- set aside for the sustainable use of natural resources, and
- open to recreational use.

Management will ensure the **sustainability**, **biological diversity**, and protection of **functional ecosystems** and optimize the ecological benefits that these State lands provide, including the following:

- maintenance or increase of local and regional biodiversity
- response to shifting land use trends that affect habitat availability
- mitigation of impacts from invasive species
- response to climate change through carbon sequestration and habitat, soil and water protection

## Legal Considerations

Article 9, Titles 5 and 7, of the Environmental Conservation Law (ECL) authorize DEC to manage lands acquired outside the Adirondack and Catskill Parks. This management includes **watershed protection**, production of **timber** and other forest products, **recreation**, and **kindred purposes**.

In the 2019 Climate Leadership and Community Preservation Act (Climate Act), New York State committed to reducing greenhouse gas emissions in the state and to ultimately achieve net zero emissions. In accordance with Section 7(2) of the Climate Act, DEC's CP-49 Climate Change and DEC Action, and the New York State Climate Action Council Scoping Plan (Scoping Plan), the management actions proposed in this UMP have taken climate change, greenhouse gas emissions, and the entirety of the Climate Act into consideration. To find more information on how the State Forest lands in this plan can help mitigate, adapt, and remain resilient to the impacts of climate change, please visit The Climate Act and Climate Mitigation Efforts on State Forest lands and the *Potential Climate Vulnerability and Resilience* sections later in this plan.

For additional information on DEC's legal rights and responsibilities, as well as more specific information on the applicability of the Climate Act on State Forest lands, please review the statewide Strategic Plan for State Forest Management (SPSFM) (pages 37 and 336) that can be found on DEC's public website.

## CP-42 Contact Cooperation, and Consultation with Indian Nations

The Commissioner's Policy (CP-42) (https://www.dec.ny.gov/public/36929.html) provides guidance to DEC staff concerning cooperation and consultation with Indian Nations on issues

relating to protection of environmental and cultural resources within New York State. Specifically, this policy (i) formally recognizes that relations between the Agency and Indian Nations will be conducted on a government-to-government basis; (ii) identifies the protocols to be followed by Agency staff in working with Indian Nations; and (iii) endorses the development of cooperative agreements between the Agency and Indian Nations to address environmental and cultural resource issues of mutual concern.

Nine Indian Nations reside within or have common geographic borders with New York State: the Mohawk, Oneida, Onondaga, Cayuga, Seneca, Tonawanda Seneca, Tuscarora, Unkechaug, and Shinnecock. Communication between DEC and the Indian Nations should be direct and involve two-way dialogue and feedback. Face-to-face meetings are generally desirable; however, phone calls, correspondence, and other methods of communication are also encouraged. Therefore, DEC staff have reached out to the respective Nations as early in the UMP planning process as possible. The Agency wishes to ensure that its actions, with respect to the environment and cultural resources, are sensitive to the concerns of Indian Nations, and that the perspective of the recognized Indian Nations is sought and taken into account when DEC undertakes an action having implications for indigenous peoples, their territories, and their culture. The Agency and Indian Nations share key roles in protecting and preserving natural and cultural resources important to all citizens, and early consultation and cooperation between the Agency and Indian Nations will foster more comprehensive protection and preservation of those resources.

## Management Planning Overview

The Tug Hill East Unit Management Plan (UMP) is based on a long-range vision for the management of the lands within the unit, balancing long-term ecosystem health with current and future demands. This Plan addresses management activities on this Unit for the next ten years, though some management recommendations will extend beyond the ten-year period. Factors such as budget constraints, wood product markets, and forest health problems may necessitate deviations from the scheduled management activities.

### Public Participation

One of the most valuable and influential aspects of UMP development is public participation. Public meetings are held to solicit input from written and verbal comments are encouraged while management plans are in draft form. Mass-mailings, press releases and other methods for soliciting input are often also used to obtain input from adjoining landowners, interest groups and the general public.

### Strategic Plan for State Forest Management

This unit management plan is designed to implement DEC's statewide Strategic Plan for State Forest Management (SPSFM). Management actions are designed to meet local needs while supporting statewide and ecoregional goals and objectives.

The SPSFM is the statewide master document and Generic Environmental Impact Statement (GEIS) that guides the careful management of natural and recreational resources on State Forests. The plan aligns future management with principles of landscape ecology, ecosystem management, multiple use management and the latest research and science available at this time. It provides a foundation for the development of Unit Management Plans. The SPSFM divides the State into 80 geographic "units," composed of DEC administered State Forests that

are adjacent and similar to one another. For more information on management planning, see SPSFM page 21 at http://www.dec.ny.gov/lands/64567.html.

## DEC's Management Approach and Goals

### Forest Certification of State Forests

In 2000, DEC Bureau of State Land Management received Forest Stewardship Council® (FSC®) certification under an independent audit conducted by the National Wildlife Federation - SmartWood Program. This certification included 720,000 acres of State Forests in DEC Regions 3 through 9 managed for water quality protection, recreation, wildlife habitat, timber and mineral resources (multiple use). To become certified, DEC had to meet more than seventy-five rigorous criteria established by FSC®. Meeting these criteria established a benchmark for forests managed for long-term ecological, social and economic health. The original certification and contract were for five years.

By 2005, the original audit contract with the SmartWood Program expired. Recognizing the importance and the value of dual certification, the Bureau sought bids from prospective auditing firms to reassess the Bureau's State Forest management system to the two most internationally accepted standards – FSC® and the Sustainable Forestry Initiative® (SFI®) program. However, contract delays and funding shortfalls slowed the DECs ability to award a new agreement until early 2007.

Following the signed contract with NSF-International Strategic Registrations and Scientific Certification Systems, the Agency was again audited for dual certification against FSC® and additionally the SFI® program standards on over 762,000 acres of State Forests in Regions 3 through 9. This independent audit of State Forests was conducted by these auditing firms from May until July 2007 with dual certification awarded in January 2008.

State Forests continue to maintain certification under the most current FSC® and SFI® standards. Forest products derived from wood harvested off State Forests from this point forward may be labeled as "certified" through chain-of-custody certificates. Forest certified labeling on wood products may assure consumers that the raw material was harvested from well-managed forests.

DEC is part of a growing number of public, industrial, and private forest landowners throughout the United States and the world whose forests are certified as sustainably managed. The Agency's State Forests can also be counted as part of a growing number of working forest lands in New York that are *third-party certified* as well managed to protect habitat, cultural resources, water, recreation, and economic values now and for future generations.


The mark of responsible forestry
FSC® C002027

## Ecosystem Management Approach

State Forests on this Unit will be managed using an ecosystem management approach which will holistically integrate principles of landscape ecology and multiple use management to promote habitat biodiversity, while enhancing the overall health and resiliency of the State Forests.

Ecosystem management is a process that considers the total environment, including all non-living and living components. It considers all living things from soil micro-organisms to large mammals, including their complex interrelationships and habitat requirements, and all social, cultural, and economic factors as well. For more information on ecosystem management, see SPSFM page 41 at http://www.dec.ny.gov/lands/64567.html.

**Landscape ecology seeks to improve landscape conditions, taking into account the existing habitats and land cover throughout the planning unit, including private lands**

### *Multiple-use Management*

DEC will seek to simultaneously provide many resource values on the Unit such as, fish and wildlife, wood products, recreation, aesthetics, minerals, watershed protection, and historic or scientific values.

### *Landscape Ecology*

The guiding principle of multiple use management on the Unit will be to provide a wide diversity of habitats that naturally occur within New York, while ensuring the protection of rare, endangered and threatened species and perpetuation of highly ranked unique natural communities. The actions included in this plan have been developed following an analysis of habitat needs and overall landscape conditions within the planning unit (i.e., the geographical area surrounding and including the State Forests) the larger ecoregion and New York State.

## Ecosystem Management Strategies

The following strategies are the tools at DEC's disposal, which will be carefully employed to practice landscape ecology and multiple-use management on the unit. The management strategy will affect species composition and habitat in both the short and long term. For more information on these management strategies, please see SPSFM page 93 at http://www.dec.ny.gov/lands/64567.html.

### *Passive Management*

DEC forestry staff will employ passive management strategies through the designation of natural and protection areas, and buffers around those areas, such as along streams, ponds and other wetlands, where activity is limited.

### *Silviculture (Active Management)*

DEC forestry staff will practice silviculture; the art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands, in an effort to promote biodiversity and produce sustainable forest products. There are two fundamental silvicultural systems which can mimic the tree canopy openings and disturbances that occur naturally in all forests; even-aged management and uneven aged management. Each system favors a different set of tree species. In general, even-aged management includes creating wide openings for

large groups of trees that require full sunlight to regenerate and grow together as a cohort, while uneven-aged management includes creating smaller patch openings for individual trees or small groups of trees that develop in the shade but need extra room to grow to their full potential.

## State Forest Management Goals

### *Goal 1 – Provide Healthy and Biologically Diverse Ecosystems*

Ecosystem health is measured in numerous ways. One is by the degree to which natural processes are able to take place. Another is by the amount of naturally occurring species that are present, and the absence of non-native species. No single measure can reveal the overall health of an ecosystem, but each is an important part of the larger picture. The Agency will manage State Forests so that they demonstrate a high degree of health as measured by multiple criteria, including the biodiversity that they support.

### *Goal 2 – Maintain Man-made State Forest Assets*

Man-made assets on State Forests include structures, boundary lines, trails, roads and any other object or infrastructure that exists because it was put there by people. Many of these items need no more than a periodic check to make sure they are still in working order. Others need regular maintenance to counteract the wear of regular use. DEC intends to ensure that all man-made items on State Forests are adequately maintained to safely perform their intended function.

### *Goal 3 – Provide Recreational Opportunities for People of all Ages and Abilities*

State Forests are suitable for a wide variety of outdoor recreational pursuits. Some of these activities are entirely compatible with one another, while others are best kept apart from each other. Equally varied are the people who undertake these activities, as well as their abilities, and their desire to challenge themselves. While not all people will be able to have the experience they desire on the same State Forest, the Agency will endeavor to provide recreational opportunities to all those who wish to experience the outdoors in a relatively undeveloped setting.

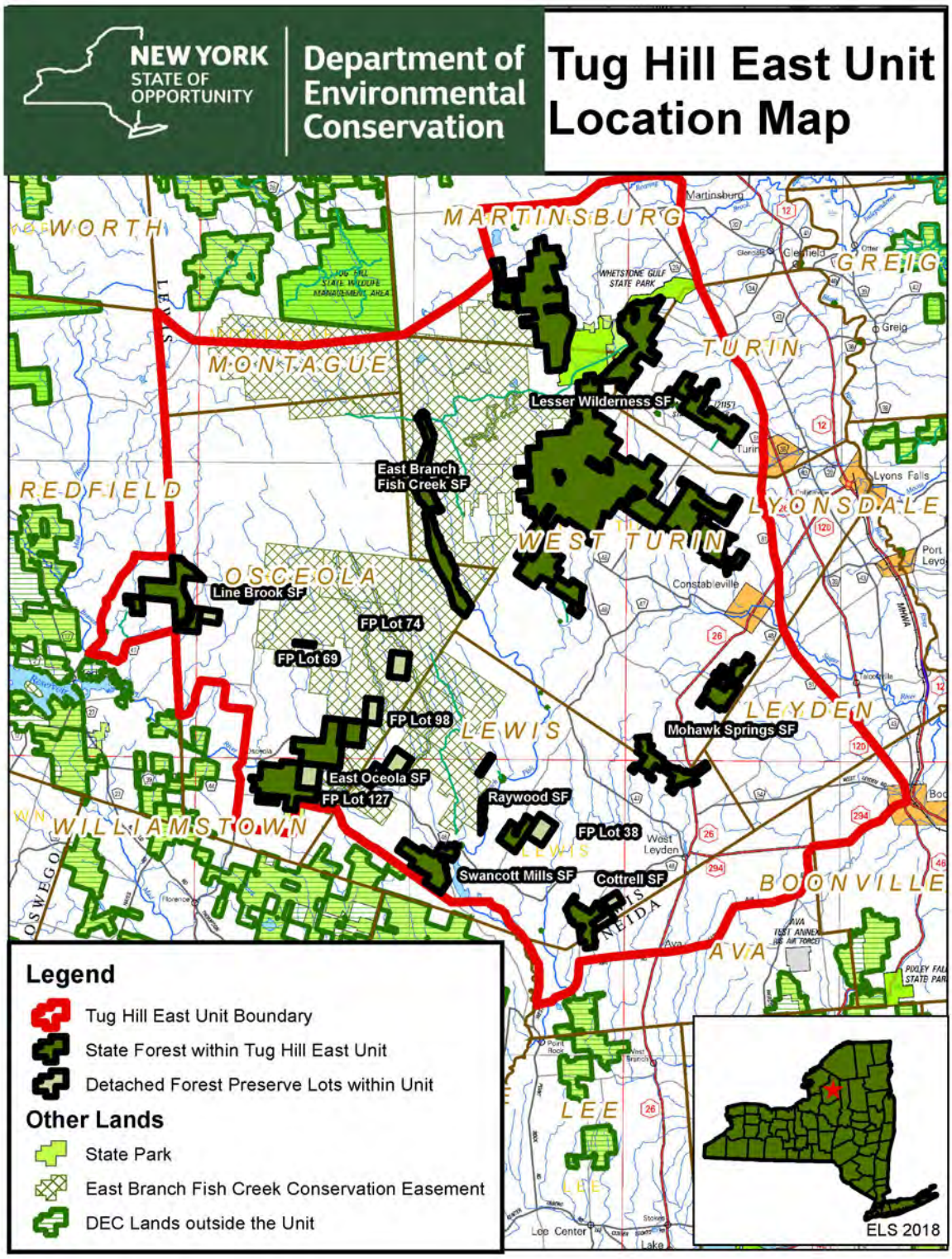
### *Goal 4 – Provide Economic Benefits to the People of the State*

ECL §1-0101(1) provides in relevant part that "It is hereby declared to be the policy of the State of New York to conserve, improve and protect its natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being." In considering all proposed actions, the Agency will attempt to balance environmental protection with realizing potential economic benefit.

### *Goal 5 – Provide a Legal Framework for Forest Conservation and Sustainable Management of State Forests*

Staff must have clear and sound guidance to direct their decisions and actions. Likewise, the public must have clear information regarding what they are and are not allowed to do on State Forests. Both of these are provided by well-written laws, regulations and policies. The Agency will work to improve existing legal guidance, when it has proved to be inadequate, and create new guidance when needed.

## Location Map



# Information on the Tug Hill East Unit

## State Lands in the Unit

### State Forest (Reforestation) Areas

State Forest (Reforestation) Areas were purchased under authorizing legislation (ECL 9-0501 (1)), acquisition of Reforestation Areas:

> "…in order to provide for the acquisition of lands outside of the Adirondack Park and the Catskill Park… which are adapted for the reforestation and the establishment and maintenance thereon of the forest for watershed protection, the production of timber and other forest products, and for the recreation and kindred purposes, the Department may acquire in the name of the state, by gift, purchase or appropriation, reforestation areas which shall consist respectively of not less than five hundred acres of contiguous lands, which shall be forever devoted to the planting, growth and harvesting of such trees as shall be reforested."

### Unique Areas

A Unique Area Preservation Project is defined in ECL 51-0703(4) as "…a state project to acquire lands of special natural beauty, wilderness character, geological, ecological or historical significance for the State Nature and Historic Preserve, and similar lands within a forest preserve county outside the Adirondack and Catskill Parks." See also ECL 52-0101(h). Unique Areas are formed by land acquisition or re-designation of existing state land at the discretion of DEC. State Nature and Historical Preserves are also commonly referred to as Unique Areas and are managed by DEC in much the same way.

### Detached Forest Preserve Parcels

When the Adirondack Park was established in 1892 some lands acquired as Forest Preserve (because they were in the previously designated Forest Preserve counties) prior to that time ended up outside the Park. These parcels are known as Detached Forest Preserve. There are a number of these parcels that fall within the Tug Hill East Unit. They range in size from 8 to 332 acres. Like Forest Preserve lands inside the Park, they cannot be managed for timber production; tree cutting for any purpose must be very limited. Many have relatively poor access with few developed trails or facilities. They provide wildlife habitat and watershed protection values, and often have old growth forest character. The 1929 State Reforestation Act and the 1931 Hewitt Amendment authorized the Conservation Department to acquire land outside the Adirondack and Catskill Parks for reforestation purposes, resulting in the hundreds of thousands of acres of State Forests we now have. However, because the Detached Forest Preserve lands were acquired prior to the 1929 Act and 1931 Amendment they remain defined as Forest Preserve lands.

### Conservation Easements

A conservation easement is a voluntary legal agreement that protects the natural resources of a parcel of land by restricting future land use and/or development on the property in perpetuity (permanently). This agreement is held between the landowner and the DEC, with the landowner maintaining ownership. The owner conveys (generally sells) the conservation easement to the DEC which r provides a variety of tax benefits for the landowner. The easement is recorded with the property's deed and transfers to all future landowners.

### Public Fishing Access

Boat launch sites that provide public fishing access are managed by DEC's Division of Fish and Wildlife to provide fishing opportunities to the public. Public Fishing Rights (PFRs) are permanent easements purchased by DEC from willing landowners, giving anglers the right to

fish and walk along the bank (usually a 33' strip on one or both banks of the stream). This right is for the purpose of fishing only and no other purpose. Treat the land with respect to insure the continuation of this right and privilege. Fishing privileges may be available on some other private lands with permission of the landowner. Courtesy toward the landowner and respect for their property will insure their continued use.

Table I.A.1 contains the names of the state land facilities that make up this Unit. A web page has been developed for each of the State Forests and the Unique Area. Each web page features an updated map of the State Forest with recreational information and natural features.

*Table I.A.1 – State Lands in the Unit*

| Facility Name and Webpage | Acreage |
|---|---|
| Cottrell State Forest – Lewis RA# 44 http://www.dec.ny.gov/lands/8056.html | 482 |
| East Branch of Fish Creek State Forest – Lewis RA# 45 http://www.dec.ny.gov/lands/8052.html | 1,398 |
| East Osceola State Forest– Lewis RA#21 http://www.dec.ny.gov/lands/8050.html | 1,974 |
| Lesser Wilderness State Forest – Lewis RA# 2, 33, 5, 7, 8, 9, 23, 25, http://www.dec.ny.gov/lands/8029.html | 16,090 |
| Line Brook State Forest – Lewis RA# 41 http://www.dec.ny.gov/lands/8027.html | 1,128 |
| Mohawk Springs State Forest – Lewis RA# 16 & 39 http://www.dec.ny.gov/lands/8023.html | 1,217 |
| Raywood Unique Area – Lewis RA# 43 http://www.dec.ny.gov/lands/37759.html | 316 |
| Swancott Mill State Forest – Lewis RA# 26 http://www.dec.ny.gov/lands/8003.html | 741 |

*Table I.A.2 – Detached Forest Preserve Lots in the Unit*

| Detached Forest Preserve Lot | Description | Acreage |
|---|---|---|
| Lot-20 | Access through EBFC CE | 45.2 |
| Lot-38 | Township 13, off North Osceola Rd | 61.2 |
| Lot-38 | Adjacent to Lewis 43, Raywood SF | 258.4 |
| Lot-44 | Access through EBFC CE | 256.7 |

State Lands in the Unit

| *Table I.A.2 – Detached Forest Preserve Lots in the Unit* | | |
|---|---|---|
| Lot-50 | Adjacent to Lewis 41 Line Brook SF | 123.8 |
| Lot-57 | Off Osceola Road with Parking | 99.4 |
| Lot-69 | Access through EBFC CE | 23.9 |
| Lot-74 | Access through EBFC CE | 238.8 |
| Lot-98 | Access through EBFC CE | 187.6 |
| Lot-127 | Access through Lewis 21 East Osceola SF | 271.7 |
| Lot 134 | Located on the Southside of Driscoll Road | 74.1 |
| Lot-153 | Access through Lewis 44 Cottrell SF | 102.3 |
| Lot-154 | Access though Lewis 44 Cottrell SF | 123.4 |

## DEC Facilities Not Included in this UMP

| *Table I.A.3 – Conservation Easements within the Unit* | |
|---|---|
| **Facility Name and Webpage** | **Acreage** |
| East Branch Fish Creek North Conservation Easement Tract https://www.dec.ny.gov/lands/7991.html | 14,110 |
| East Branch Fish Creek South Conservation Easement Tract https://www.dec.ny.gov/lands/110452.html | 30,246 |

| *Table I.A.4 – Public Fishing Stream Parking Areas* | |
|---|---|
| | **Location** |
| Broad Brook | Off Kotary Road, Town of Lewis |
| East Branch Fish Creek | Off Osceola Rd, Town of Lewis<br>Corner of Junction Road and Kotary Road, Town of Lewis<br>https://www.dec.ny.gov/docs/fish_marine_pdf/pfrebfishcreek.pdf |
| East Branch Fish Creek- Rome Reservoir | Off Swancott Mill Rd, Town of Lewis<br>https://www.dec.ny.gov/docs/fish_marine_pdf/pfrebfishcreek.pdf |
| Point Rock Creek | Off Stazer Rd, Town of Lewis<br>https://www.dec.ny.gov/docs/fish_marine_pdf/pfrpointrockck.pdf |
| Alder Creek | Off Junction Road, Town of Lewis<br>https://www.dec.ny.gov/docs/fish_marine_pdf/pfralderck.pdf |

## Other Public Lands Within the Unit Not Included in this UMP

### *Whetstone Gulf State Park*

https://parks.ny.gov/parks/92/details.aspx

Whetstone Gulf State Park is built in and around a three-mile-long gorge cut into the eastern edge of the Tug Hill Plateau. The gorge is one of the most spectacular scenic vistas east of the Rocky Mountains. The Park has 56 wooded campsites (some of which have electricity available), a scenic picnic area along Whetstone Creek, a man-made swimming area and trails for hiking and cross-country skiing, one of which circles the gorge. Above the gorge is Whetstone Marsh Pond which has an unimproved beach launch capable of launching trailered boats. When available, approximately 500 tiger muskie are stocked annually. This pond is popular for fishing and canoeing.

### *Oneida County Reforestation Area #2*

Within the Unit boundary there is a county owned reforestation area. This parcel is approximately 832 acres and is located off Route 294 in the Town of Ava.

## Soils

Soils provide the foundation, both figuratively and literally, of forested ecosystems. They support an immense number of microorganisms, fungi, mosses, insects, herpetofauna and small mammals which form the base of the food chain. They filter and store water and also provide and recycle nutrients essential for all plant life. For information on DEC's policies for the protection of forest soils, as well as water resources please see SPSFM page 119 at http://www.dec.ny.gov/lands/64567.html.

The soils that form the Tug Hill East Unit are typical of the Tug Hill Region. In general, Tug Hill soils are derived from glacial till and tend to be poorly stony, sandy or steeply sloping. The soils are generally unfit for agriculture and are dominated by forests. The Unit's soils are best suited to grow trees; however, in most of the Unit the soils will grow low quality trees. The poorly drained and very poorly drained soils are better suited to grow spruce and fir but not hardwoods, other than yellow birch and red maple. One of the most important limiting factors of some of the soil on Tug Hill and the Tug Hill East Unit is its fairly shallow fragipan. The fragipan is a restrictive layer at least 15 cm thick that does not allow roots to grow or water to permeate. The difference in drainage and acidity of the upper layers of soil greatly influence the growth of trees. This makes for very low productivity soils with high equipment limitations.

The soils on the Unit range from well drained to very poorly drained. Generally, the lands to the south and west of the Unit, Line Brook State Forest and East Osceola State Forest, have more well drained, productive soils than lands to the north and east part of the Unit. Only 45% of the State Land on the Unit has well drained or moderately well drained soils. Often these well drained soils tend to be islands of productive soil bisected north to south or entirely surrounded by poorly drained soils, making access and management very difficult.

The Unit soils encompass twelve soils series, of which the following four make up seventy-eight percent of the total Unit: Worth-Pinckney, Empeyville, Westbury-Camroden-Darien, and Tug Hill-Alden-Sloan series. Soil series characterize groups of soil types aggregated together according to similar pedogenesis (i.e., the process of creating soil), soil chemistry and physical

properties. Each series represents broad areas that have distinctive patterns of soils that perform similarly for specific land use purposes.

Worth-Pinckney series soils consist of very deep, well drained, and moderately well drained soils formed in till derived from shale, siltstone and some limestone. These soils are on nearly level to steep upland till plains. Mean annual precipitation is 45 inches and mean annual temperature is 42 degrees F.*

Empeyville series soils are very deep, moderately well drained soils formed in loamy till. They are nearly level to moderately steep soils derived from acid sandstone, siltstone and shale. They have a fragipan. Saturated hydraulic conductivity in mineral soil is moderately high or higher above the fragipan and low to moderately high in the fragipan. Mean annual precipitation is 58 inches and mean annual temperature 42 F.*

Westbury-Camroden-Darien series soils consists of moderately well drained to somewhat poorly drained. It's a medium textured soil with a strongly developed fragipan. These soils have developed from glacial till of Late Wisconsin age. The till was derived of ray shale that included some fine-grained sandstone. *

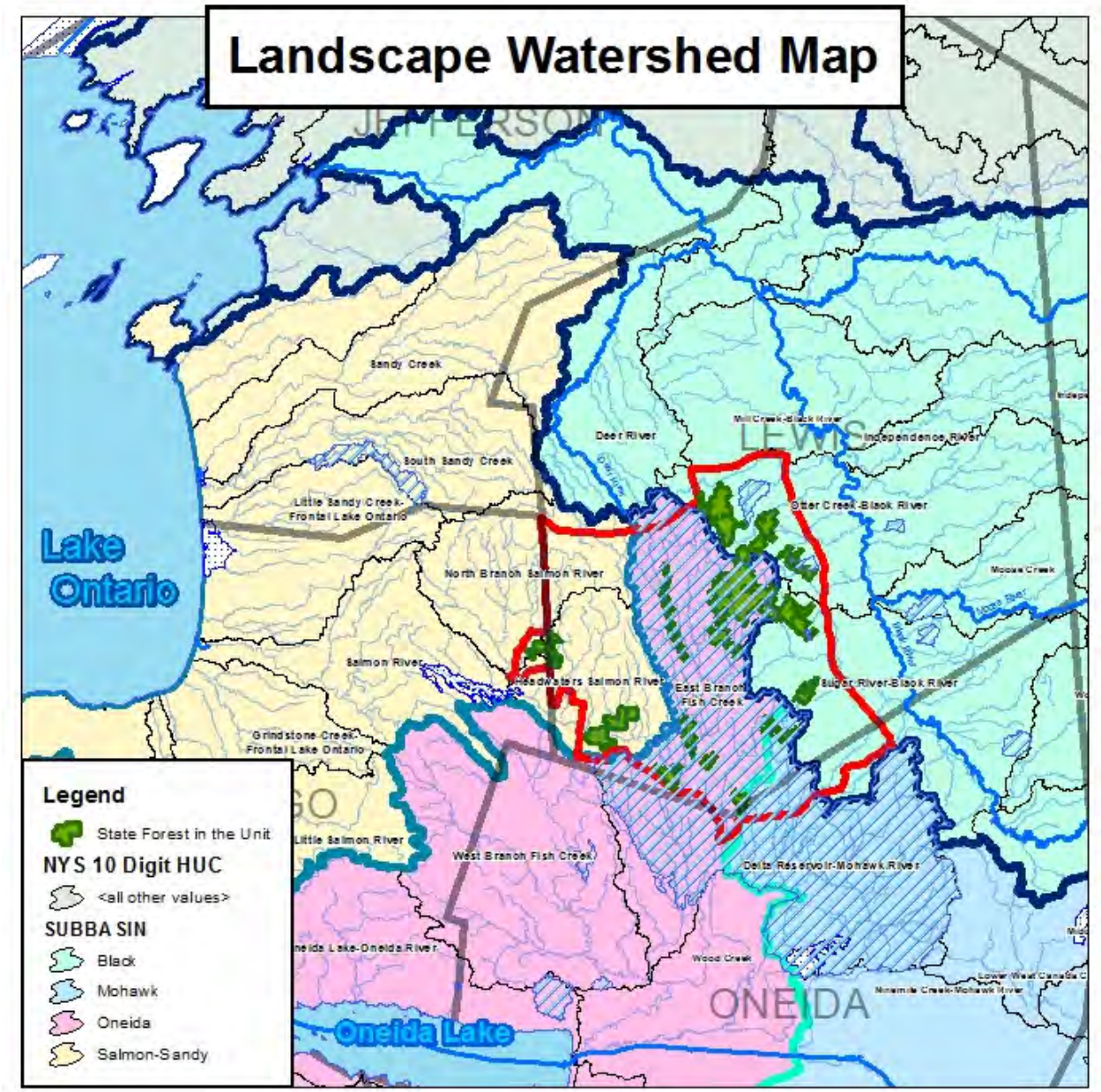
Tug Hill-Alden-Sloan series soils consists of very deep, very poorly drained soils formed in loamy alluvium flood plains. Mean annual precipitation is 36 inches and mean annual temperature is 51F.*

*Lewis County Soil Survey

***Table I.B. - Soils***

| Predominant Soil Type(s) | Soil Drainage Type(s) | Percent of the Unit | Acres |
|---|---|---|---|
| **Worth-Pinckney**: WmC, WmD, WSC, PeB, PeC, PeD, | Well Drained | 35% of Unit | 7,289 |
| **Empeyville:** EdB, EdC | Moderately Well Drained | 25% of Unit | 5,311 |
| **Westbury-Camroden-Darien:** WdB, CaB, WdA, TbB, CaC | Somewhat Poorly Drained | 17% of Unit | 3,705 |
| **Tughill-Alden-Sloan**: TaB, AcA, PbA, SaA | Very Poorly Drained | 15% of Unit | 3,112 |
| **Marcy-Rumney:** MeA, RhA, MeB | Poorly Drained | 4% of Unit | 831 |
| **Colton**: CdB, CdC, CfD, CeB | Excessively Drained | 3% of Unit | 674 |
| **Rock Outcrop** | Rock Outcrop | 1% of Unit | 106 |
| **Water** | Water | | 62 |
| *Source: Natural Resources Conservation Service (NRCS) Soils Website, USDA (http://soils.usda.gov/)* | | | 21,090 |

## Water Resources




The Unit is unequally divided into three major watersheds. Much of the Unit is in the Southeastern Lake Ontario Watershed. State Forest waters in the Osceola Township flow eventually into the Salmon River or Sandy Creek and then into Lake Ontario. State Forest streams of Lewis and western West Turin townships flow into Fish Creek, then Oneida Lake and into Lake Ontario. Township of Martinsburg, Turin and eastern West Turin are a part of the Northern Lake Ontario-St. Lawrence watershed. They flow into the Black River and then north into Lake Ontario. In the southern part of the Unit, waters flow into the Mohawk River and eventually into the Upper Hudson River.

## Water Resources

The quantity and quality of water that flows from the Unit is impressive. The Unit has one hundred eighteen separate stream reaches uniquely identified by the Bureau of Fisheries FIN (Fisheries Index Number) system equaling approximately 80.15 miles of streams (70.44 miles are NYS classified by the Division of Water) on State lands. Streams are classified by their best use, meaning the highest classification (AA) is suitable for drinking water, the next best use (B) is recreation, and the third classification (C) best usage is fishing. These classifications can also be accompanied by a (t) or (ts) designation which indicates the waters supports trout populations or trout spawning, respectively. Approximately 58.1 miles of streams are identified with a (t) or (ts) standard within the Unit. Some streams may not be mapped. Unmapped streams that have a continuous flow year-round are assigned the same classes and standards of quality and purity as the specifically designated waters to which they are directly tributary.

These streams tend to be surrounded by contiguous forest cover. Headwater streams within State Forests have heavy forest buffers that filter out overland flow before sedimentation can occur and there is little influence from agriculture or storm water flow from impervious surfaces. As the streams progress farther from their source and closer to development, they encounter a higher occurrence of non-point source pollution. Non-point source pollution comes from rainfall or snowmelt moving across the ground picking up and carrying natural and manmade pollutants until finally depositing it into streams or other waterbodies. Non-point source pollution will inevitably increase as population, road and farm densities increase. Forestry activities can also harm water quality. Haul roads and skid trails used to get forest products out of the woods can also be a source of non-point pollution. However, Best Management Practices are simple techniques used to minimize the threat to water quality. Implementing New York States forestry best management practices for water quality is a way to help protect our waters while also tending to our forests.

DEC's GIS data contains an inventory of wetlands, vernal pools, spring seeps, intermittent streams, perennial streams, rivers and water bodies on the unit. This data is used to establish special management zones and plan appropriate stream crossings for the protection of water resources. Table I.C. contains a summary of water resources data on the unit.

### Major Streams, Rivers and Water Bodies

East Branch of Fish Creek headwaters begin in the Unit and drains part of the Tug Hill, one of the most rural areas of New York State. The source of the East Branch of Fish Creek is a swamp, west of Whetstone Gulf State Park. The stream runs south off Tug Hill, passing through the hamlet of Taberg before turning west, joining the main branch and emptying into Oneida Lake at Sylvan Beach. Fish Creek is part of the Oneida Lake watershed which is in turn part of the Oswego River watershed that flows into Lake Ontario. E. Branch Fish Creek was recommended for inclusion in New York's "Wild, Scenic & Recreational River" system in a study by SUNY ES&F in 1974, though no action has been taken to include it. It was also studied for inclusion in the Federal Wild and Scenic Rivers system and deemed eligible but the report resulting from that study recommended local or state protection rather than federal. E. Branch Fish Creek is incorporated in the New York Open Space Plan Priority Project "Tug Hill Core Forests and Headwater Streams", making it a priority for protection.

In 2005, as part of the East Branch of Fish Creek Project, the Department of Environmental Conservation accomplished its largest single land acquisition on the Tug Hill Plateau. Much of

the land conservation was in the form of a “working forest” Conservation Easement where the state mainly purchased development rights and certain recreational rights over the property. Out of that project, the DEC also acquired full fee ownership of a 1,350-acre State Forest, bought for the main purpose of protecting the waters and immediate uplands of East Branch of Fish Creek. The EBFC Project consciously involved local landowners, local government officials and other interested parties to develop a recommended acquisition package that everyone could agree on. Several main objectives were identified in the project: protection of East Branch of Fish Creek waters, maintaining timber management and harvesting, maintaining traditional lease camps and maintaining snowmobile trails, all of which were accomplished in the final purchase agreement.

A few State Forests have streams with the highest protection classification -- AA or A -- for source drinking water. Most of the streams on Mohawk Spring State Forest (Lewis 16) are Class A. These streams are either headwaters or tributaries to East Branch of the Mohawk River, hence the name of the State Forest. Cottrell State Forest (Lewis 44) holds the headwaters of Egger Brook, a main tributary to the West Branch of the Mohawk River. The southeast portion of Lesser Wilderness State Forest (Lewis 25) carries an AA(T) unnamed stream that is a first order tributary to the Sugar River. These waters hold the AA(T) classification because they are the source of a surface reservoir for the Village of Constableville. In Lesser Wilderness State Forest (Lewis 25), along Smith Road and adjacent to the state boundary line, the Village of Constableville owns two separate private property reservations of approximately 1 acre each that contain springs. The lower spring has a pipe coming out of it, and on a hot summer day it’s a great place to stop for a cold drink, though it should be properly filtered since it is not tested at its source.

### Wetlands

As set forth in the Freshwater Wetlands Act, the policy of New York State is to preserve, protect and conserve freshwater wetlands and the benefits derived from them. Wetlands in New York outside the Adirondack Park are legally protected by the State if they meet criteria found in section 24-0107 of the Freshwater Wetlands Act and occupy at least 12.4 acres as determined and/or mapped by DEC. A wetland smaller than 12.4 acres may also be classified protected if demonstrated to be locally unique or significant. In all cases, an upland area of 100 feet surrounding the protected wetland, defined as the adjacent area, is also protected. The Freshwater Wetlands Act recognizes the value of wetlands and their function as flood and storm water control, wildlife habitat, water quality, recreation, open space, education and scientific research, among others and serves to prevent unnecessary loss of these values and functions in a manner consistent with the general welfare and beneficial economic, social and agricultural development of the state.

The federal Clean Water Act considers all wetlands larger than one (1) acre significant. Therefore, freshwater wetlands less than 12.4 acres in NYS, outside of the Adirondack Park, fall under the jurisdiction of the U.S. Army Corps of Engineers unless the Commissioner of the Department deems a wetland of Unusual Local Importance (ULI).

Wetlands are characterized by soils that are saturated for a significant period during the growing season which support unique plant communities adapted to life in those saturated conditions. Wetlands can be dominated by trees, shrubs, grasses or herbs or a combination of these plant

types thriving in an environment with saturated or inundated soils. Ponds and lakes are typically open bodies of water not demonstrating wetland characteristics although, in some cases, very shallow ponds and shallow areas of lakes support wetland communities. Of the Federally regulated wetlands on the Unit, 71% are classified forested/shrub wetlands, 21% are classified freshwater emergent wetland, 6% classified as freshwater pond, 0.1% are classified as lake and 0.8% are classified as Riverine.

The Tug Hill East Unit contains 7,755.6 acres that will be protected because of wetland characteristics, 36.5% of the whole Unit. 2,632.6 acres are Federally protected as regulated National Wetlands, 1,215.6 acres are New York State regulated wetlands and 3,897.4 acres are stands that forestry staff has designated as exhibiting wetland characteristics. Overall, the DEC forestry staff is protecting far more, almost double, what is federally protected. Forestry staff has field checked every acre and therefore has a more accurate delineation of these sensitive soils. These stands, while not state or federally regulated wetlands, have soils generally too saturated to actively manage for timber. Heavy equipment would be damaging to the soils structure and could negatively impact water quality. These stands would generally be treated as if they were regulated. While management is not off limits in these stands, management would need to be justified and specific Best Management Practices would need to be applied to ensure negative impacts were avoided.

Generally, State Forest in the eastern part of the Unit have more of these wetland soils. Lesser Wilderness SF has approximately 44% of its area typed as wetland. This does present a challenge in doing management; often the wetland stands prevent access into all parts of the state forest, excluding some timber from harvesting. Furthermore, timber harvesting layout is affected by the occurrence of these wetlands. The layout generally calls for creating more landings to avoid crossing wetlands and negatively impacting soils

As our global climate changes, we will also see how our wetlands are affected. Long term predictions for the Tug Hill region calls for a later start to winter, more frequent freeze-thaw events, drier summers and more frequent large weather events. Climate exerts a strong influence over ecological functions, such as water use and plant productivity, that have critical impacts on forests and surrounding wetlands. This may result in a drying out of wetlands and reducing the amount of wetland habitat present on the Unit. Another possible change is in nutrient cycling of the forest litter layer which could increase the amount of nitrates that shed into our streams and wetlands, making them more acidic and degrading water quality. Maintaining State Forest stand data is one way we can monitor the changes we see over our forest landscape due to climate change.

| *Table I.C. – Water Resources (see Figure 2 for maps)* | |
|---|---|
| ***Watersheds*** | |
| **Hydrologic unit(s):** | |
| Alder Creek | 6,802.2 acres |
| Headwaters East Branch Fish Creek | 1,385.6 acres |
| Headwaters Salmon River | 1,955.6 acres |
| Mill Creek-Black River | 541.1 acres |

| | |
|---|---|
| Mill Stream | 373.8 acres |
| Mud Brook-East Branch Fish Creek, | 1,125.2 acres |
| Point Rock Creek, | 363.4 acres |
| Prince Brook-Salmon River, | 790.8 acres |
| Roaring Brook-Black River, | 1,693.5 acres |
| Sugar River, | 2,538.1 acres |
| West Branch Mohawk River, | 744.9 acres |
| Whetstone Creek-Black River | 2,787.9 acres |
| **Watershed HCVF:** | |
| Lesser Wilderness State Forest | 1,941.6 acres |
| Mohawk Springs State Forest | 595.4 acres |
| ***Wetlands*** | |
| Federally Regulated Wetlands | 2,632.6 acres |
| NYS Regulated Wetlands | 1,215.6 acres |
| Non-Regulated Wetland Stands | 3,897.4 acres |
| | |

| ***Perennial Streams/Rivers**** | **Class** | **Miles** |
|---|---|---|
| Unnamed Waters | Unclassified | 9.71 |
| | C | 8.82 |
| Douglass Creek | C | 0.59 |
| House Creek | C | 0.85 |
| Mill Creek | C | 0.08 |
| Olmstead Brook | C | 2.00 |
| ***Trout streams/Rivers**** | **Class** | **Miles** |
| Unnamed Waters | AA(T) | 0.24 |
| | A(T) | 1.92 |
| | C(T) | 13.74 |
| | C(TS) | 2.23 |
| East Branch Mohawk River | A(T) | 0.56 |
| Egger Brook | A(T) | 0.53 |
| Mohawk River | A(TS) | 0.69 |
| Alder Creek | C(T) | 5.26 |
| Beaver Meadow Brook | C(T) | 0.18 |
| Boiling Spring Brook | C(T) | 0.82 |
| East Branch Fish Creek | C(T) | 7.28 |

Water Resources

| | | |
|---|---|---|
| East Fork Salmon River | C(T) | 0.03 |
| Heron Brook | C(T) | 0.05 |
| Kelly Creek | C(T) | 1.50 |
| Line Brook | C(T) | 2.30 |
| Little Alder Creek | C(T) | 2.50 |
| Mill Creek | C(T) | 0.91 |
| Mill Stream | C(T) | 0.32 |
| North Branch Sugar River | C(T) | 1.08 |
| Pickens Brook | C(T) | 0.61 |
| Point Rock Creek | C(T) | 0.40 |
| Powlish Pond Brook | C(T) | 0.42 |
| Roaring Brook | C(T) | 0.13 |
| Salmon River | C(T) | 2.24 |
| Searles Brook | C(T) | 0.17 |
| Sevenmile Creek | C(T) | 0.21 |
| Sixmile Creek | C(T) | 0.50 |
| Stony Brook | C(T) | 0.96 |
| Sucker Creek | C(T) | 3.32 |
| Whetstone Creek | C(T) | 0.71 |
| Cowles Creek | C(TS) | 0.22 |
| East Fork Salmon River | C(TS) | 0.26 |
| Keese Brook | C(TS) | 1.00 |
| Malloy Brook | C(TS) | 2.25 |
| Mulligan Brook | C(TS) | 0.35 |
| Pickens Brook | C(TS) | 0.11 |
| Smith Brook | C(TS) | 1.19 |
| West Fork Salmon River | C(TS) | 0.61 |
| White River | C(TS) | 0.28 |
| ***Water Bodies*** | | |
| Rome Reservoir | | 191.94 acres |

*For information regarding stream classifications please refer to http://www.dec.ny.gov/permits/6042.html

## Biodiversity

Information regarding biodiversity has been gathered by DEC staff and others to support the following goals:

- "Keep Common Species Common" by maintaining landscape-level habitat diversity and a wide variety of naturally occurring forest-based habitat as well as managing plantations according to DEC natural resources policy.
- Protect and, in some cases, manage known occurrences and areas with potential to harbor endangered plants, wildlife and natural communities.
- Consider other "at-risk species" whose population levels may presently be adequate but are at risk of becoming imperiled due to new incidences of disease or other stressors.

## Common Species

The following information sources indicate which common species (among other species) are present over time:

- NYS Breeding Bird Atlas Block Numbers 4381B, 4382C, 4481A, 4481D, 4482B, 4482D, 4483B, 4484D, 4580A, 4581B, 4582A, 4582B, 4582C, 4582D, 4583A, 4583B, 4583C, 4583D

  Breeding Bird Atlas blocks can be searched at http://www.dec.ny.gov/cfmx/extapps/bba/

- Herp Atlas Block Numbers 4307544, 4307545, 4307546, 4307554, 4307555, 4307556, 4307557, 4307564, 4307565

  Herp Atlas information on amphibians, toads, frogs, turtles, lizards and snakes can be found at http://www.dec.ny.gov/animals/7140.html

- Game Species Harvest Levels Wildlife Management Unit: WMU 6N,6K
  (Deer take, bear take, turkey harvest, etc.)

*Table I.D.- Fish Species identified within the Unit using DEC Fisheries Databases; v62 and Historic*

| Common Name | Genus | Species |
|---|---|---|
| Atlantic Salmon | *Salmo* | *salar* |
| Black Bullhead | *Ameiurus* | *melas* |
| Blacknose Shiner | *Notropis* | *heterolepis* |
| Blackside Darter | *Percina* | *maculata* |
| Bluntnose Minnow | *Pimephales* | *notatus* |
| Brassy Minnow | *Hybognathus* | *hankinsoni* |
| Brook Stickleback | *Culaea* | *inconstans* |
| Brook Trout | *Salvelinus* | *fontinalis* |
| Brown Bullhead | *Ameiurus* | *nebulosus* |
| Brown Trout | *Salmo* | *trutta* |
| Burbot | *Lota* | *lota* |
| Common Shiner | *Luxilus* | *cornutus* |
| Creek Chub | *Semotilus* | *atromaculatus* |
| Cutlip Minnow | *Exoglossum* | *maxillingua* |
| Eastern Blacknose Dace | *Rhinichthys* | *atratulus* |
| Fantail Darter | *Etheostoma* | *flabellare* |
| Fathead Minnow | *Pimephales* | *promelas* |
| Finescale Dace | *Chrosomus* | *neogaeus* |
| Golden Shiner | *Notemigonus* | *crysoleucas* |
| Green Sunfish | *Lepomis* | *cyanellus* |
| Hornyhead Chub | *Nocomis* | *biguttatus* |
| Johnny Darter | *Etheostoma* | *nigrum* |
| Largemouth Bass | *Micropterus* | *salmoides* |

| | | |
|---|---|---|
| Logperch | *Percina* | *caprodes* |
| Longnose Dace | *Rhinichthys* | *cataractae* |
| Longnose Sucker | *Catostomus* | *catostomus* |
| Margined Madtom | *Noturus* | *insignis* |
| Mimic Shiner | *Notropis* | *volucellus* |
| Mottled Sculpin | *Cottus* | *bairdii* |
| Northern Hog Sucker | *Hypentelium* | *nigricans* |
| Northern Pike | *Esox* | *lucius* |
| Northern Redbelly Dace | *Chrosomus* | *eos* |
| Pumpkinseed | *Lepomis* | *gibbosus* |
| Rainbow Trout | *Oncorhynchus* | *mykiss* |
| Redfin Shiner | *Lythrurus* | *umbratilis* |
| Redside Dace | *Clinostomus* | *elongatus* |
| Sand Shiner | *Notropis* | *stramineus* |
| Slimy Sculpin | *Cottus* | *cognatus* |
| Stonecat | *Noturus* | *flavus* |
| Tessellated Darter | *Etheostoma* | *olmstedi* |
| White Sucker | *Catostomus* | *commersonii* |

## Habitat

The following information provides several representations of habitat types on the unit.

Maple-Beech-Birch Forest

Beech-maple mesic forest communities are closed-canopy hardwood forests with co-dominating sugar maple (Acer saccharum) and American beech (Fagus grandifolia). This is a broadly defined community type with several variations. These forests occur on moist, well drained, usually acidic soils. There are many spring ephemerals that bloom before the trees in the canopy leaf out. Hemlock (Tsuga canadensis) may be present at a low density. Typically, there is also an abundance of tree seedlings, especially sugar maple in the understory, along with shrubs such as American witch-hazel (Hamamelis virginiana) and hobblebush (Vibernum lantanoides). Most interior forest bird species will utilize the communities, especially if there are large mature trees available.

Northern Hardwood-Hemlock Forest

A mixed forest type that typically occurs on middle to lower slopes of ravines, on cool, mid elevation slopes and on moist, well-drained sites at the margins of swamps. Eastern hemlock (Tsuga canadensis) is codominant with any one to three of the following tree species: American beech (Fagus grandifolia), sugar maple (Acer saccharum), red maple (Acer rubrum), black cherry (Prunus serotina), white pine (Pinus strobus), yellow birch (Betula alleghaniensis) and basswood (Tilia americana). The relative cover of eastern hemlock is quite variable, ranging from early pure stands in some steep ravines to as little as 20% of the canopy cover. Striped maple (Acer pennsylvanicum) is often prominent as a mid-story tree. This is a broadly defined and very widespread community. The sheltered coves that hemlock-northern hardwood forest often inhabit offer a pleasant escape from the leafless deciduous forests in the winter.

Throughout the winter, birds can be found foraging in bark crevices and among the green needles of hemlock trees.

Northern Hardwood-Spruce-Fir Forest

Spruce-northern hardwood forest is a mixed forest that occurs on lower mountain slopes and upper margins of flats on glacial till. Codominant trees are red spruce (Picea rubens), sugar maple (Acer saccharum), American beech (Fagus grandifolia), yellow birch (Betula alleghaniensis), and red maple (Acer rubrum) with scattered balsam fir (Abies balsamea). Striped maple (Acer pennsylvanicum) and mountain maple (Acer spicatum) are common subcanopy trees. Characteristic shrubs are hobblebush (Viburnum lantanoides), American fly honeysuckle (Lonicera canadensis) and Canada yew (Taxus canadensis). Characteristic ground layer plants are common wood-sorel (Oxalis montana), common wood fern (Dryopteris intermedia), shining fir clubmoss (Huperzia lucidula), wild sarsaparilla (Aralia nudicaulis), bluebeads (Clintonia borealis), mayflower (Maianthemum canadense) and Indian cucumber - root (Medeola virginiana).

Softwood Plantation

A softwood plantation is a forest of softwoods planted for the cultivation and harvest of timber products, or to provide wildlife habitat, soil erosion control, windbreaks or landscaping. This is a broadly defined community that excludes stands in which pine, spruce or fir are dominant, although they may be present in low densities. These plantations may be monocultures with more than 90% of the canopy cover consisting of one species or they may be mixed stands with two or more codominant species (in which case more than 50% of the cover consists of one or more pine species). Softwoods that are typically planted in New York include European larch (Larix decidua), Japanese larch (Larix kaepferi), white pine (Pinus strobus), red pine (Pinus resinosa), Scotch pine (Pinus sylvestris), white spruce (Picea glauca) and Norway spruce (Picea abies). Ground vegetation is usually sparse because of heavy shade and a dense duff layer. Characteristic birds include golden-crowned kinglet (Regulus satrapa), red-breasted nuthatch, yellow-rumped warbler (Dendroica coronate), and Blackburnian warbler (Dendroica fusca).

Swamp Hardwood

A hardwood swamp that occurs in poorly drained depressions, usually on inorganic soils with peat, if present, that is less than 20cm deep. This is a broadly defined community with many variants. In any one stand red maple is either the only canopy dominant or it is codominant with one or more hardwoods. The shrub layer can be well-developed and may be dense. The herbaceous layer may be diverse and is often dominated by ferns.

Spruce-Fir Swamp

A conifer swamp with little to no peat development that typically occurs in a drainage basin, at the edge of a lake or pond, or along gentle slopes of islands where there is some nutrient input from groundwater discharge or subsurface flow. These swamps are usually dense, with a fairly closed canopy (80- 90% cover). The dominant tree is usually red spruce. Codominant trees include balsam fir and red maple. On Tug Hill, white spruce and balsam fir may replace red spruce as a dominant tree. The shrub layer is often sparse; characteristic and dominant shrubs include sapling canopy trees. Cinnamon fern is a characteristic herb and patches of peat moss can be common.

## Biodiversity

Shrub Swamp

A shrub swamp is an inland wetland 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 substrate is usually mineral soil or muck. This is a very broadly defined type that includes several distinct communities and many other intermediates. Many of the shrub swamps are dominated by alder (Alnus incana ssp. Rugosa); these swamps are sometimes called alder thickets. Other characteristic shrubs that might be found in this community are swamp azalea (Rhododendron viscosum), steeplebush (Spiraea tomentosa), gray dogwood (Cornus racemose) or spicebush (Lindera benzoin). Birds that may be found in the shrub swamps include both common species such as common yellowthroat (Geothlypis trichas) and swamp sparrow (Melospiza georgiana), and rare species such as the American bittern (Botaurus lentiginosus).

Open Wetland

Shallow emergent marshes have a very diverse assemblage of herbaceous plants that include grasses, sedges, cattails, wetland ferns and a variety of forbs. These marshes often have a number of different types of sedges, bulrushes and rushes but have less than 50% cover of tussocks-forming sedges (Carex stricta, Carex aquatilis).

### Vegetative Types and Stages

Summaries of each parcel, and information on each stand, is available in Table 111.F: Land Management Actions and Figure 3 Current Forest Type and Forest Stand Identification Map at the end of this document.

*Table I.E. - Vegetative Types & Stages (Date of earlier UMP) Title*

| Vegetative Type | Acres by DBH Size Class | | | | % of Total |
|---|---|---|---|---|---|
| | 0 - 5in | 6 - 11 in | 12+ in | other | |
| Natural Forest Hardwood | 162.8 | 2,984.1 | 2,981.5 | | 28.9% |
| Natural Forest Conifer | 103.3 | 3,834.7 | 1,824.5 | | 27.2% |
| Plantation | 75.5 | 1,138.6 | 3,787.2 | | 23.2% |
| Wetland | | | | 3,848.2 | 18.5% |
| Ponds | | | | 45.8 | .2% |
| Open/Brush | | | | 153 | .7% |
| Other (Rds., Parking lots, etc.) | | | | 284.3 | 1.3% |
| Total (Acres) | 341.6 | 7,957.4 | 8,593.2 | 4,325.6 | 21,223.5 |
| % of total | 1.3% | 37.5% | 40.5% | 20.7% | 100% |

## High Conservation Value Forests

High Conservation Value Forests (HCVF) are those portions of State Forests that have known high conservation values as identified below. The Agency

feels preservation of these values should take precedent over other land use values when making management decisions. HCVFs may not be identified on every Unit. Areas that are identified as having HCFVs may be managed for timber, wildlife and/or recreation, however management activities must maintain or enhance the high conservation values present. Currently, HCVFs are assigned to one or more of five land classifications, four of which may be found on State Forests:

1. Rare Community - Forest areas that are in or contain rare, threatened or endangered ecosystems.
2. Special Treatment - Forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g., endemism, endangered species, and refugia).
3. Cultural Heritage – Forest areas fundamental to meeting basic needs of local communities (e.g., subsistence, health) and are critical to their traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).
4. Watershed - Forest areas that provide safe drinking water to local municipalities.
5. Forest Preserve* - Forest areas containing globally, regionally or nationally significant large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.

   **Forest Preserve lands inside both the Adirondack and Catskills Park Blue Line. Although Forest Preserve is not considered State Forest, they offer a significant high conservation value for lands managed by the Department.*

Portions of the Tug Hill East Unit have been identified as having high conservation value. Acreage totals for designated HCVFs located within the Unit can be found in the appropriate sections below in Table 1.F. For more information on HCVFs please go to http://www.dec.ny.gov/lands/42947.html.

## Representative Sample Areas

Representative Sample Areas (RSA) are stands which represent *common* ecological communities (i.e., forest types) of high or exceptional quality in their natural state. RSAs are established to serve one or more of the following purposes:

1. To establish and/or maintain an ecological reference condition; or
2. To create or maintain an under-represented ecological condition (i.e., includes samples of successional phases, forest types, ecosystems, and/or ecological communities); or
3. To serve as a set of protected areas or refugia for species, communities and community types not captured in other protection standards such as an endangered species or a High Conservation Value Forest.

## Biodiversity

RSAs can simply be viewed as an effort to keep high quality examples of common ecosystems or assemblages from becoming rare in the landscape. An RSA designation does not prevent future management and in certain cases might require silvicultural treatment to achieve site conditions that will perpetuate the representative community. In addition, treatment of an RSA to mitigate unfavorable conditions that threaten the continuation of the target community will be allowed (*e.*g., fire, natural pests or pathogens). Although allowed, silvicultural treatment or infrastructure development must not impact the RSA in a way that will degrade or eliminate the viability of the specific assemblage or community. Acreage totals for designated RSAs located within the Unit can be found in the appropriate sections below in Table 1.F. For more information on RSAs please go to http://www.dec.ny.gov/lands/42947.html.

### *Resource Protection Areas*

In the course of practicing active forest management, it is important to identify areas on the landscape that are either reserved from management activity or where activity must be conducted in such a manner as to provide direct protection and enhancement of habitat and ecosystem functions. For more information on these protective measures, see SPSFM page 97 at http://www.dec.ny.gov/lands/64567.html.

**Special Management Zones** (SMZs) provide continuous over-story shading of riparian areas and adjacent waters, by retaining sufficient tree cover to maintain acceptable aquatic habitat and protect riparian areas from soil compaction and other impacts. DEC's buffer guidelines also maintain corridors for movement and migration of all wildlife species, both terrestrial and aquatic. Buffers are required within SMZs extending from wetland boundaries, high-water marks on perennial and intermittent streams, vernal pool depression, spring seeps, ponds and lakes, recreational trails, campsites and other land features requiring special consideration. See Figure 2 for a map of the SMZs as applied on the unit. For more information regarding Special Management Zones please see www.dec.ny.gov/sfsmzbuffers.pdf

**Matrix blocks** are large, unfragmented forested areas, an important component of biodiversity conservation and forest ecosystem protection. In addition, **connectivity corridors** are connections between major forested landscapes and their imbedded matrix forest blocks, and are important for the maintenance of viable populations of species, especially wide-ranging and highly mobile species, and ecological processes such as dispersal and pollination over the long term. Identification of both of these features will help to guide management of state forest lands that fall within them.

Maintaining or enhancing matrix forest blocks and connectivity corridors must be balanced against the entire array of goals, objectives and demands that are placed on a particular State Forest. Where matrix forest block maintenance and enhancement are chosen as a priority for a given property, management actions and decisions will focus on keeping a forested condition. . The following areas have been identified to meet demands at the landscape level:

- Matrix Forest Block 9756 acres 45% of the Unit
- Forest Landscape Connectivity Corridor 2868 acres 13% of the Unit
- USFWS Critical Habitat Area 0 acres

More information regarding Matrix Forest blocks, connectivity corridors and associated management considerations can be found in the SPSFM page 97 at http://www.dec.ny.gov/lands/64567.html.

**The Important Bird Area (IBA)** Program of Audubon New York, in cooperation with a host of partners, has identified 136 critical bird breeding, migratory stop-over, feeding and over-wintering areas in the state. Important Bird Areas have been identified throughout New York in all types of habitats, including forests, shrub/scrub, grasslands, freshwater and saltwater wetlands and bodies of water. The identification of these areas along with education and outreach has led to conservation success in these areas. The Tug Hill Area IBA is unique as a remote core area of wetlands and spruce-northern hardwood forest uninterrupted by paved roads at its highest elevation (1,700 - 2,100feet). This site supports a number of interior forest breeding birds. Identification as an IBA will hopefully influence sustainable forestry and responsible recreational use. More information can be found at the Audubon New York web page: New York Important Bird Areas | Audubon.

*Table I.F. – RSAs, HCFVs, and Resources Protection Areas within the Unit*

| Community Name | Vegetative Type | Facility Name / Stand Numbers | NYNHP Rank | Acreage |
|---|---|---|---|---|
| ***Representative Sample Areas of Commonly Occurring Natural Communities*** | | | | |
| Confined River | Wetlands Open | E. Branch Fish Creek State Forest A-3.0 | S3S4 | 31.6 |
| Confined River | Wetlands Open | East Osceola State Forest B-8.0 | S3S4 | 7.4 |
| N. White Cedar Swamp | RM-BF-WC | Lesser Wilderness State Forest B-50.0 | --- | 82.0 |
| Rocky Headwater Stream | RM-HM-YB | Line Brook State Forest A-32.0 | S4 | 6.6 |
| Rocky Headwater Stream | Wetlands Open | E. Branch Fish Creek State Forest A-3.0 | S4 | 17.7 |
| Spruce-Fir Swamp | RM-HM-BEE | Lesser Wilderness State Forest B-1.0 | S3 | 2.2 |
| ***Rare Community HCVF*** | | | | |
| Special Treatment Area | Brown Bog Sedge | Lesser Wilderness State Forest/ A-10.0 | Rare Community | 4.6 |
| ***Watershed HCVF*** | | | | |
| Lesser Wilderness State Forest | | Lewis 25 | | 1,169 |
| Lesser Wilderness State Forest | | Lewis 9 | | 252 |
| Mohawk Springs State Forest | | Lewis 39 | | 595 |
| **Resource Protection Areas** | | | | |
| ***Matrix Forest Blocks and Linkages*** | | | | |
| Core Tug Hill Area (Lewis R.A. # 2 & 33) | | Part of the Lesser Wilderness State Forest | Tier 1 | 1,682.0 |

| | | | |
|---|---|---|---|
| Core Tug Hill Area (Lewis R.A. # 5) | Part of the Lesser Wilderness State Forest | Tier 1 | 963.0 |
| Core Tug Hill Area (Lewis R.A. # 8) | Part of the Lesser Wilderness State Forest | Tier 1 | 4,447.0 |
| Core Tug Hill Area (Lewis R.A. # 21) | East Osceola State Forest | Tier 1 | 270.0 |
| Core Tug Hill Area (Lewis R.A. # 41) | Line Brook State Forest | Tier 1 | 989.0 |
| Core Tug Hill Area (Lewis R.A. # 45) | East Branch Fish Creek State Forest | Tier 1 | 1,405.0 |
| Tug Hill-ADK Linkage (Lewis R.A. # 21) | East Osceola State Forest | | 1,682.4 |
| Tug Hill-ADK Linkage (Lewis R.A. # 26) | Swancott Mill State Forest | | 703.9 |
| Tug Hill-ADK Linkage (Lewis R.A. # 44) | Cottrell State Forest | | 482.3 |
| ***Important Bird Areas*** | | | |
| Tug Hill Area | Part of the Lesser Wilderness State Forest (Lewis R.A. # 2) | | 1,396.1 |
| Tug Hill Area | Part of the Lesser Wilderness State Forest (Lewis R.A. # 5) | | 299.8 |
| Tug Hill Area | Part of the Lesser Wilderness State Forest (Lewis R.A. # 8) | | 2,891.1 |
| Tug Hill Area | East Osceola State Forest (Lewis R.A. # 21) | | 259.9 |
| Tug Hill Area | Part of the Lesser Wilderness State Forest (Lewis R.A. # 33) | | 645.3 |
| Tug Hill Area | East Branch Fish Creek State Forest (Lewis R.A. # 45) | | 1,328.6 |

## At-Risk Species

The presence of at-risk species and communities on the Tug Hill East Unit and in the surrounding landscape has been investigated by Natural Heritage and DEC staff to inform appropriate management actions and protections. This investigation was conducted in development of this UMP and the associated inventory of State Forest resources. A more focused assessment will be conducted before undertaking specific management activities in sensitive sites. Appropriate protections may include reserving areas from management activity or mitigating impacts of activity. For more information on protection of at-risk species, please see SPSFM page 133 at http://www.dec.ny.gov/lands/64567.html.

Investigation included the following:

- A formal plant survey was conducted on this Unit in the spring of 2005 by the New York Natural Heritage Program.
- Element Occurrence Records for the New York Natural Heritage Program's Biological and Conservation Data System were consulted for information.
- Consultation of NHP species guides.
- Consultation of the NYS Comprehensive Wildlife Conservation Strategy

The Bay-breasted Warbler is the at-risk species of greatest concern within the list below. The northern spruce-fir forest that is required habitat for the bay-breasted warbler may be on the decline on Tug Hill. Tug Hill is on the edge of the native range for red spruce which may make it

a vulnerable species in the face of climate change, unsustainable timber harvesting practices and fragmentation. If the habitat for the bay-breasted warbler is vulnerable, then the occurrence of this warbler on Tug Hill may also be vulnerable. Many of the other at-risk plant, animal and communities are within habitats that already have protection measures in place. The Agency's rules on special management zones and environmental check list for work plan activities would bring to light any know occurrence of at-risk species but also highlight classified wetlands, marshes or bogs which are habitat for any of these species.

Table I.G. Lists the species confirmed or predicted on the State Forests that comprise this Unit and in the larger landscape, as well as their required habitats.

Table I.G. At-Risk Species*

| Species Name | NYNHP Rank | Habitat | Record Source | NYS Status |
|---|---|---|---|---|
| ***Confirmed within Lesser Wilderness State Forest*** | | | | |
| Bay-breasted Warbler | S2B | Northern Spruce-Fir Forests | NHEO -CONF | Protected |
| ***Confirmed within East Branch of Fish Creek State Forest*** | | | | |
| Blacknose Shiner | S2S3 | Freshwater Streams | NHEO -CONF | Unlisted |
| Eastern Pearlshell | S2 | Freshwater Streams | NHEO-CONF | Unlisted-SGCN |
| ***Confirmed Communities within the Lesser Wilderness State Forest*** | | | | |
| Spruce-Fir Swamp | S3 | Wetland/Aquatic Communities | NHEO -CONF | Vulnerable |
| ***Confirmed Communities within East Osceola State Forest*** | | | | |
| Dwarf Shrub Bog | S3 | Wetland/Aquatic Communities | NHEO -CONF | Vulnerable |
| Confined River | S3S4 | Wetland/Aquatic Communities | NHEO -CONF | Vulnerable |
| ***Confirmed Communities within Line Brook State Forest*** | | | | |
| Beech-Maple Mesic Forest | S4 | Northern Hardwood Forest | NHEO -CONF | Common |
| Rocky Headwater Stream | S4 | Wetland/Aquatic Communities | NHEO -CONF | Common |
| ***Confirmed Communities within East Branch Fish Creek State Forest*** | | | | |
| Shrub Swamp | S5 | Wetland/Aquatic Communities | NHEO -CONF | Abundant |
| Shallow Emergent Marsh | S5 | Wetland/Aquatic Communities | NHEO -CONF | Abundant |
| Rocky Headwater Stream | S4 | Wetland/Aquatic Communities | NHEO -CONF | Common |
| Confined River | S3S4 | Wetland/Aquatic Communities | NHEO -CONF | Vulnerable |
| ***Predicted within the Unit*** | | | | |
| Arctic Rush | S2 | Alpine of the Adirondacks | PRED | Threatened |
| Jacob's-ladder | S3 | Freshwater Wetlands | PRED | Rare |
| Hill's Pondweed | S2 | Marsh headwater stream, deep emergent marsh | PRED | Threatened |

Biodiversity

| | | | | |
|---|---|---|---|---|
| Rock-cress | S2 | Calcareous Cliff and Limestone Forests | PRED | Threatened |
| Drummond's Rockcress | S2 | Shale Cliff and Talus Community | PRED | Threatened |
| Smooth Cliff Fern | S1 | Calcareous Cliff Community | PRED | Endangered |
| Smooth Cliff Brake | S2 | Calcareous Cliff Community | PRED | Threatened |
| Farwell's Water-milfoil | S2 | Acidic Ponds and Streams | PRED | Threatened |
| Extra-striped Snaketail | S2S3 | Freshwater Rivers | PRED | Special Concern |
| Brook Snaketail | S3 | Freshwater Rivers | PRED | Not Listed |
| Pied-billed Grebe | S3 | Freshwater Marsh | PRED | Threatened |

*Defined as NYNHP rank S1, S2, S2-3, G1, G2 or G2-3 OR identified as an SGCN

**Key to Codes**

BBA - Breeding Bird Atlas

(PRED) - Predicted Species

(CONF) - Confirmed Species

**Status**

E - Endangered Species (New York)

T - Threatened Species (New York)

PSC - Protected, Special Concern Species (New York)

SGCN - Species of Greatest Conservation Need

## Visual Resources

The aesthetic quality of State Forests is considered in management activity across the unit. However, some areas have greater potential to preserve or create unique opportunities for public enjoyment. These especially scenic areas are inventoried below. For information on the protection of visual resources, please see SPSFM page 145 at http://www.dec.ny.gov/lands/64567.html.

Carpenter Hill cross-country ski trails are an attraction all themselves but there is a special treat right at the parking area. At an elevation of approximately 1,840 feet, there is a beautiful view of the Black River valley and on a clear day, the western Adirondack mountains.

If you are into mosquitos, or damselflies and dragonflies, Lesser Wilderness State Forest (Lewis RA# 8) contains Big Alder flow. An impressive, large, 69-acre wetland complex between Page Road and Dolphin Road. Great for wildlife and insect viewing.

State Parks, while not State Forest nor managed by the DEC, are public lands and Whetstone Gulf State Park located within the Unit has some of the most scenic spots. Whetstone was originally part of a State Forest with developed facilities that was transferred to the Office of Parks, Recreation and Historic Preservation when OPRHP and DEC were created in 1970. All campgrounds, day use and beaches outside the Adirondack and Catskill Parks were transferred to OPRHP at that time. Whetstone Gulf State Park is built in and around a stunning three-mile long gorge cut into the eastern edge of the Tug Hill Plateau. The gorge has some spectacular scenic vistas. This state park is worth a visit to explore. The park has 56 wooded campsites, some of which have electric, a scenic picnic area along Whetstone Creek, a man-made swimming area and trails for hiking and cross-country skiing, one of which circles the gorge. The most popular hike within the park is the gorge loop. The hike is a moderate 5.6-mile loop.

## Historic and Cultural Resources

### History of the Unit

Prior to European colonization, what was to become known as the Tug Hill region was inhabited by the Haudenosaunee, specifically the people of the *Kanien'kehá:ka* (Mohawk) and *Onyota'a:ka* (Oneida) nations. The plateau's highlands were used by the Haudenosaunee as seasonal hunting and fishing grounds; permanent settlements were located near surrounding wetlands, lakes, and rivers. The Haudenosaunee maintain a unique connection to these lands as exemplified by the *Ohen:ton Korihwotehkwen* (The Words before All Else), which reminds people that they have duties and responsibilities to the entire natural world. We welcome all people to experience these Tug Hill lands while considering the responsibilities they have to maintain nature's beauty and functions.

Four million acres in and around Tug Hill region were initially purchased by colonial land speculator William Constable, which in turn subdivided the land to sell to New Englanders and newly arrived European immigrants, mainly Irish. He also set aside 10,500 acres for regional improvements, such as roads and canals.

Inexpensive land, abundant timber resources and available farmland drove increased settlement in the region from 1820-1880. Expanding railroads and the completion of the Black River Canal in 1851 allowed for increased exports of food and timber products out of the region,

often destined for New York City. Dairy farming and timber-based industries flourished in the region throughout the late 1800s and around 1870, the region's population peaked at 80,000. (ref., https://en.wikipedia.org/wiki/Tug_Hill)

In 1871, Allen, Newton, Ward and McVicker were said to have purchased 14,500 acres in the area of High Market, Township 9. "There was then a large amount of spruce timber upon this tract, estimated by good judges 100,000,000 feet. It began to die off the next year and continued till most of the value of the timber had decayed." (ref. Hough, Franklin B.,) This may have been a spruce bud worm infestation that affected the red spruce health.

The town of Osceola was named by Anna Marie Jay, the granddaughter of John Jay, founding father of the United States, second Governor of New York, Chief Justice of the United States, abolitionist, negotiator, and patriot. Anna Marie Jay found inspiration in naming the town following national outrage over the capture and treatment of Chief Osceola. Osceola (1804-1838, Asi-yahola in Creek language), named Billy Powell at birth in Alabama, became an influential leader of the Seminole people in Florida. Of mixed race, he was reared by his mother in Creek tradition. When he was a child, they migrated to Florida with other Red Stick refugees after their groups defeat in 1814 in the Creek Wars. There they became part of what was known as the Seminole people. In 1836, Osceola led a small group of warriors in the Seminole resistance, when the United States tried to remove the tribe from their lands in Florida to Indian Territory west of the Mississippi River. During this Second Seminole War with the United States, Osceola and 81 warriors were captured under the orders of General Thomas Jessup. The United States General approached the Seminole warriors with a white flag of truce and the guise of peace talks. Osceola's capture by deceit caused a national uproar. General Jessup's treacherous act and the administration were condemned, and this act of betrayal has been described as "one of the most disgraceful acts in American military history". (ref., https://en.wikipedia.org/wiki/Osceola)) Anna Marie Jay intended that the naming of the Town of Osceola would forever keep Chief Osceola in the nation's memory.

### Inventory of Resources

The term cultural resources encompass a number of categories of human created resources including structures, archaeological sites and related resources. DEC is required by the New York State Historic Preservation Act (SHPA) (PRHPL Article 14) and SEQRA (ECL Article 8) as well as Article 9 of Environmental Conservation Law, 6NYCRR Section 190.8 (g) and Section 233 of Education Law to include such resources in the range of environmental values that are managed on public lands. For more information on protection of historic and cultural resources, please see SPSFM page 157 at http://www.dec.ny.gov/lands/64567.html.

As a part of the inventory effort associated with the development of this plan the Agency arranged for the archaeological site inventories maintained by the New York State Museum and the Office of Parks, Recreation and Historic Preservation to be searched in order to identify known archaeological resources that might be located within or near the Unit. The two inventories overlap to an extent but do not entirely duplicate one another. The purpose of this effort was to identify any known sites that might be affected by actions proposed within the Unit and to assist in understanding and characterizing past human use and occupation of the Unit.

- Evidence of several post-colonial homesteads, with stone fences, house and barn foundations have been found scattered through the Unit, proof that people actually lived here. Occasional open wells have also been found near these homesteads. For safety purposes, NYS DEC Operations crews were directed to cap them or fill them in all together. Often a penny with the year the well was filled-in was placed in the bottom of the well for historic reference.

- Starring Road Cemetery is located on Lesser Wilderness State Forest (Lewis 7) on an old town road of the same name. Surrounded wholly by state land, the postage sized, 0.2-acre piece is owned, and periodically maintained, by the Town of Martinsburg.

The following generic cultural resources and archaeological site protection text will be valid only after a Structural Archaeological Assessment Form has been completed for planned site developments scheduled within the first two years of the plan or if you do not have any such developments within the first two years of the plan. Site developments include things such as roads, parking areas and the like.

## Historic and Archaeological Site Protection

The historic and archaeological sites located within the Unit as well as additional unrecorded sites that may exist on the property are protected by the provisions of the New York State Historic Preservation Act (SHPA - Article 14 PRHPL), Article 9 of Environmental Conservation Law, 6NYCRR Section 190.8 (g) and Section 233 of Education Law. No actions that would impact known resources are proposed in this Unit Management Plan. Should any such actions be proposed in the future they will be reviewed in accordance with the requirements of SHPA. Unauthorized excavation and removal of materials from any of these sites is prohibited by Article 9 of Environmental Conservation Law and Section 233 of Education Law. In some cases, additional protection may be afforded these resources by the federal Archaeological Resources Protection Act (ARPA).

## Archaeological Research

The archaeological sites located on this land unit, as well as additional unrecorded sites that may exist on the property, may be made available for appropriate research. Any future archaeological research conducted on the property will only be conducted under the auspices of all appropriate permits. Research permits will be issued only after consultation with the New York State Museum and the Office of Parks, Recreation and Historic Preservation and consultation with Indian Nations under CP-42 as appropriate. Extensive excavations are not contemplated as part of any research program in order to assure that the sites are available to future researchers who are likely to have more advanced tools and techniques as well as more fully developed research questions.

## Real Property

DEC's Bureau of Real Property GIS system contains maps and some deeds for State Forest properties. Original deeds were also consulted to complete the information below.

## Boundary Lines

*Table I.H. – Status of Boundary Lines*

| Facility Name | Length of Boundary (mi.) | Year Last Maintained | Length Needing Survey |
|---|---|---|---|
| East Branch of Fish Creek SF | 2.5 | 2014 | |
| Lesser Wilderness SF (Lewis 25) | 15.4 | 2014 | Lines (63-64) and (64-65) |
| Cottrell SF (Lewis 44) | 5.4 | 2015 | New acquisition, West side of Kirk Road no lines, corners or signs. |
| Forest Preserve Lot 153 | 1.6 | 2015 | |
| Forest Preserve Lot 154 | 2.2 | 2015 | |
| East Branch of Fish Creek SF | 14.0 | 2015 | |
| Lesser Wilderness SF (Lewis 8 & 9) | 29.6 | 2015 | |
| Lesser Wilderness SF (Lewis 23) | 10.1 | 2016 | |
| Line Brook SF (Lewis 41) | 12.2 | 2016 | |
| Forest Preserve Lot 50 | 1.81 | 2016 | |
| Forest Preserve Lot 38 | 2.57 | 2016 | |
| Lesser Wilderness SF (Lewis 7) | 10.6 | 2017 | Lines and corners, (20-21). |
| Lesser Wilderness SF (Lewis 2 & 33) | 17.8 | 2017 | Lines and corners (7-10) and (60-65). |
| Mohawk Springs SF (Lewis 39) | 7.9 | 2017 | |
| Lesser Wilderness SF (Lewis 5) | 8.7 | 2018 | Lines and corners (6-8),(13-14),(15-16),(20-21). |
| East Osceola SF (Lewis 21) | 8.2 | 2018 | |
| East Osceola SF (Lewis 21) | 6.7 | 2018 | |
| Raywood UA | 3.7 | 2018 | |

*Table I.H. – Status of Boundary Lines*

| Facility Name | Length of Boundary (mi.) | Year Last Maintained | Length Needing Survey |
|---|---|---|---|
| Forest Preserve Lot 38 (N Osceola Rd) | 1.25 | 2018 | |
| Forest Preserve Lot 20 | 1.51 | 2018 | |
| Forest Preserve Lot 44 | | 2018 | |
| Forest Preserve Lot 57 | | 2018 | |
| Forest Preserve Lot 98 | 2.24 | 2018 | |
| Forest Preserve Lot 127 | 2.62 | 2018 | |
| Forest Preserve Lot 134 | 1.57 | 2018 | |
| Forest Preserve Lot 69 | 1.24 | 2019 | |
| Forest Preserve Lot 74 | 2.47 | 2019 | |
| Swancott Mill SF | 6.8 | 2019 | |
| Mohawk Springs SF (Lewis 16) | 8.9 | 2019 | |

For more information on boundary line maintenance, please see SPSFM page 171 at http://www.dec.ny.gov/lands/64567.html.

## Exceptions and Deeded Restrictions

*Table I.I. – Exceptions and Deeded Restrictions*

| Facility Name | RA # | Description<br>E.g., deeded ROW, easement, access lane, water rights, cemetery, etc. | Proposal ID Deed Book/Page |
|---|---|---|---|
| **Public ROW access** | | | |
| Stony Brook ROW | Lewis 41 | Deeded ROW<br>Surveyed 2017 – DEC Map 12,651 | Prop D<br>223-67 |
| Collins Trail ROW | Lewis 41 | Deeded ROW<br>Surveyed 2018 – DEC Map 12,651 | Prop E<br>2004-015214 |
| WoodWise ROW | Lewis 41 | Deeded ROW - under review<br>Surveyed 2018 – DEC Map 12,651 | Prop E<br>2004-015214 |
| **Private ROW access** | | | |
| Nob Road Ext. | Lewis 2 | Appears to be an old road | Prop O |
| Freeman Road | Lewis 2 | Appears to be an old road | Prop H |
| Carey Road | Lewis 2 | Appears to be an old road | Prop G |

*Table I.I. – Exceptions and Deeded Restrictions*

| Facility Name | RA # | Description<br>E.g., deeded ROW, easement, access lane, water rights, cemetery, etc. | Proposal ID Deed Book/Page |
|---|---|---|---|
| Dolan Road Ext. | Lewis 5 | Deeded 1 rod ROW | Prop B 186/238 |
| Starring Cemetery Road | Lewis 7 | Appears to be an old road | Prop G |
| Alguire Road | Lewis 8 | Deeded 3 rod ROW | Prop F |
| Hazzard Road | Lewis 25 | Deeded ROW | Prop D 183/484 |
| Poor Road ROW | Lewis 29 | Deeded ROW | Prop C 201/339 |
| Eggsware ROW | Lewis 26 | Deeded 33' wide ROW and use of spring DEC Map 5,615 | Prop B187/58 |
| Raywood Road | Lewis 43 | Deeded 33'wide ROW with restrictions-DEC Map 11,580-file memo 7/8/2008 | Prop A 517/193 |
| | | | |
| K:\DLF\ROW, G:\shared\region6\Lowville\State Forest\2018ROWs | | | |

### *Use and Demand Related to Exceptions and Deeded Restrictions*

## Encroachments

Well-marked boundary lines that are readily identifiable to the public reduce unintentional trespass. However, encroachments onto State Forest lands do sometimes occur. Such issues requiring resolution are listed in the following table.

*Table I.J. – Encroachments*

| Facility Name | RA # | Description | Proposal ID (Surveyor's Reference) |
|---|---|---|---|
| Lesser Wilderness SF | Lewis 8 | Gomer Hill Rd | Prop D,F, S-1 |
| Lesser Wilderness SF | Lewis 23 | West Trail | Prop B |
| Lesser Wilderness SF | Lewis 25 | Smith Rd Ext | Prop C 2012/1784 |
| Cottrell SF | Lewis 44 | Survey Request on new acquisition. West side of Kirk Rd | |

In the case of encroachment issues, deeds research has been conducted and no legitimate legal access has been found. Letters to current property owners will be sent and it will be the

private property owner's responsibility to provide proof of legal access, or if none is provided, to remove the encroachment.

## Land Acquisition

Acquisition of property from willing sellers on the landscape surrounding the Unit may be considered in the following priority areas:

- In-holdings and adjoining properties that would reduce management costs and benefit resource protection and public access goals
- the mineral estate wherever it is split from a State Forest tract
- properties within identified matrix forest blocks and connectivity corridors
- forested lands in underserved areas of the state
- forested lands in areas that are in need of watershed protection
- for other reasons, as identified in the current NYS Open Space Plan

For more information on land acquisition, please see SPSFM page 165 at http://www.dec.ny.gov/lands/64567.html.

## Infrastructure

State Forests are managed with a minimal amount of improvements to accommodate rustic, forest-based recreational opportunities while providing for resource protection; public health and safety; and access for individuals of all ability levels. For more information on infrastructure policies, please see SPSFM page 175 at http://www.dec.ny.gov/lands/64567.html.

DEC's GIS data contains an inventory of public forest access roads, haul roads and multiple-use-trails on the unit, including a representation of the allowable uses along each road or trail segment. Table I.K. contains a summary of roads, trails and related infrastructure on the unit.

ADDITIONAL INFORMATION

**DECinfo Locator** – An interactive online mapper can be used to create custom maps of recreational trails on this Unit to help people plan outdoor activities. Located at DEC's Mapping Gateway: http://www.dec.ny.gov/pubs/212.html

**Google Earth Virtual Globe Data** - Some of DEC's map data, including accessible recreation destinations, boat launches, lands coverage, roads and trails on this Unit can be viewed in Google Maps or Google Earth. (Also located at DEC's Mapping Gateway)

INFRASTRUCTURE

## Roads and Trails

*Table I.K. – List of Roads, Trails and Assets on Tug Hill East*

| Category | | Total Amount | Needing Improvement |
|---|---|---|---|
| **Public Forest Access Roads: 9.6 miles** | | | |
| Apple Mill PFAR | Lewis 16 | 0.7 miles | |
| Malloy Brook PFAR | Lewis 21 | 1.0 miles | |
| Maple Ridge PFAR | Lewis 2 & 33 | 0.4 miles | |
| McGoldrick PFAR | Lewis 8 | 3.0 miles | |
| Nob PFAR | Lewis 2 & 33 | 0.9 miles | 0.9 miles |
| Seelman PFAR | Lewis 5 | 1.3 miles | |
| Seymour PFAR | Lewis 23 | 1.0 miles | 1.0 miles |
| Smith PFAR | Lewis 25 | 0.8 miles | |
| Swancott Mills PFAR | Lewis 26 | 0.9 miles | 0.9 miles |
| **Haul Road: 0.7 miles** | | | |
| Beaver Pond | Lewis 23 | 0.7 miles | 0.7 miles |
| **Foot Trail: 10.4 miles** | | | |
| Brenon Road Ext. Trail | Lewis 7 | 0.2 miles | 0.2 miles |
| Diren Aden Trail | Lewis 45 | 2.7 miles | 2.7 miles |
| East Branch Fish Creek Trail | Lewis 45 | 3.4 miles | |
| Gomer Hill Trail | Lewis 23 | 0.5 miles | 0.5 miles |
| Heron Brook Trail | Lewis 23 | 0.1 miles | 0.1 miles |
| High Ridge Trail | Lewis 23 | 0.9 miles | 0.9 miles |
| Jug Point Ext. Trail | Lewis 23 | 0.1 miles | 0.1 miles |
| Lamplight Trail | Lewis 45 | 0.7 miles | 0.7 miles |
| Six Mile Creek Trail | Lewis 45 | 0.7 miles | 0.7 miles |
| Stoney Brook Trail | Lewis 45 | 0.1 miles | 0.1 miles |
| Wee Trail | Lewis 45 | 0.3 miles | 0.2 miles |
| **Snowmobile Trail: 13.4 miles** | | | |
| Apple Mill Trail | Lewis 16 | 0.4 miles | |
| Apple Mill PFAR Trail | Lewis 16 | 0.7 miles | |
| Bauer Bypass Trail | Lewis 26 | 0.2 miles | |
| C'Ville Trail | Lewis 25 | 0.3 miles | |
| Card Trail | Lewis 26 | 0.4 miles | |
| Driscoll Trail | Lewis 41 | 0.3 miles | |
| Dolan Road | Lewis 5 | 0.7 miles | |
| Dolan-Market Trail | Lewis 5 | 1.3 miles | |
| Dolsee Trail | Lewis 5 | 0.9 miles | 0.9 miles |
| Gallo Trail | Lewis 26 | 0.3 miles | |
| Kiosk Trail | Lewis 26 | 0.1 miles | |

*Table I.K. – List of Roads, Trails and Assets on Tug Hill East*

| Category | | Total Amount | Needing Improvement |
|---|---|---|---|
| McGoldrick PFAR | Lewis 8 | 3.0 miles | |
| McGoldrick Ext. Trail | Lewis 8 | 0.6 miles | |
| Olmstead Trail | Lewis 39 | 0.3 miles | |
| Seelman PFAR | Lewis 5 | 1.3 miles | |
| Smith PFAR | Lewis 25 | 0.8 miles | |
| Swancott's Trail | Lewis 26 | 0.4 miles | |
| Swancott Mill PFAR | Lewis 26 | 0.9 miles | |
| Michgan Mills Ext Road | Lewis 8 | 0.5 miles | |
| **MAPPWD Trails: 2.4 miles** | | | |
| Alder Creek Trail | Lewis 8 | 0.4 miles | 0.4 miles |
| Dolsee Trail | Lewis 5 | 0.9 miles | 0.9 miles |
| Jug Point Trail | Lewis 23 | 0.7 miles | 0.7 miles |
| Stihl Trail | Lewis 26 | 0.4 miles | 0.4 miles |
| **Ski Trails:11 miles** | | | |
| Beaver Pond Trail | Lewis 23 | 0.6 miles | |
| Cone Trail | Lewis 23 | 0.8 miles | |
| Douglas Creek Trail | Lewis 23 | 0.4 miles | |
| Gorge Trail | Lewis 23 | 0.3 miles | |
| Jack's Track Trail | Lewis 23 | 0.8 miles | 0.8 miles |
| Larch Loop Trail | Lewis 23 | 1.1 miles | |
| Malloy Brook Trail | Lewis 21 | 1.0 miles | |
| Mill Creek Trail | Lewis 23 | 1.2 miles | |
| Return Trail | Lewis 23 | 1.0 miles | |
| Shortcut Trail | Lewis 23 | 0.1 miles | |
| Snow Ridge Trail | Lewis 23 | 1.4 miles | 1.4 miles |
| West Loop Trail | Lewis 23 | 2.2 miles | |
| **Road Assets** | | | |
| Motor Vehicle Bridges | | 3 | |
| Ski Trail Bridges | | 10 | |
| Culverts | | 55 | 2 |
| **Other Assets** | | | |
| Parking Areas / Trailheads | | 11 | |
| Gates / Barriers | | 2 | |
| I.D. Signs | | 17 | |
| Kiosks | | 5 | |
| Designated Campsites | | 2 | |
| Trailhead Register | | 2 | |
| | | | |

### *Use and Demand on Roads, Haul Roads and Parking Areas*

- DEC maintains roads to provide access to State lands for a variety of recreational uses including, hunting, fishing, camping, wildlife viewing, and during the winter months snowmobiling and skiing. Roads are also maintained to provide access for timber management. It is expected that these uses will continue and likely increase which will require continued maintenance of these roads.

- Illegal motor vehicle use can cause significant damage to public access roads. Large 4x4 trucks and ATV's cause damage to road surfaces and by driving in ditches. This affects drainage and forces water onto road surfaces. Illegal off-road use can also lead to significant resource degradation.

- There is a demand for off-road parking in winter months for both snowmobilers and for those accessing interior seasonal camps. If areas of concern arise parking areas on State Lands may be identified.

- The SPSFM addresses ATV use on State Forest and does allow for the use of ATV's in certain circumstances. Specifically, it allows for the designation of routes to provide connector trails associated with a legitimate public ATV trail system designated by another entity. Additionally, the SPSFM cites a legal opinion that states in part "that ATV's and regular motor vehicles could not share use on the same public highways except in specific, well-defined instances." Therefore, any decision to open a road or trail on State Forest must comply with both requirements. For a comprehensive discussion of DEC's policy regarding ATV use on State Forests, please refer to page 229 of the SPSFM at www.dec.ny.gov/lands/64567.html.

### *Off-Highway and All-Terrain Vehicle Use*

Currently there are no designated ATV routes on the Unit.

## Communications Facilities

Gomer Hill Radio Facility is a 1.5-acre stand-alone parcel that once had an operational fire tower. The fire tower still stands and is now home to several radio antennas. This parcel is administrative access only, it is not open to the public

NYS DLE owns a 5-acre parcel on Centerville Road that houses a communication tower. This parcel is administrative access only and is not open to the public.

## Formal and Informal Partnerships and Agreements

Conservation and stewardship partnerships are increasingly important, especially for public land management agencies. Considering that resources will always be limited, collaboration across political, social, organizational and professional boundaries is necessary for long-term success and sustainability. Encouraging the development of cooperative and collaborative relationships can be done through volunteer agreements with the Agency.

### *Voluntary Stewardship Agreements*

DEC will invite and encourage individuals and groups to become active supporters of state land management through participation in the Voluntary Stewardship Program. The Agency considers proposals made by individuals and groups through the Program Application process.

Any stewardship activities undertaken through this program must assist DEC in meeting its state land management objectives at minimum cost to the state. Any groups or individuals interested in entering into a Voluntary Stewardship Agreement (VSA) on the Unit should contact the DEC Lowville Office.

### *Temporary Revocable Permits*

Temporary Revocable Permits (TRP) are required for any activity that exceeds normal permissible levels of usage or access. TRP's allow foresters to carefully review and oversee the variety of special events and proposed activities that sometimes occur on State Forest. Through the TRP review process, DEC avoids conflicting uses of state lands and situations that could threaten health, public safety, or integrity of natural resources. TRP authorization does not provide exemption to any existing state laws and regulations. Any group organizing research activity, a competitive or group event or ROW clearing on the Unit must apply for a Temporary Revocable Permit (TRP) with the DEC's Lowville Office.

For more information on these and other partnerships, please see SPSFM page 197 at http://www.dec.ny.gov/lands/64567.html.

***Table I.L. – Current Voluntary Stewardship Agreements on the Unit***

| Organization Name | Land Tract | Expiration Date |
|---|---|---|
| Southern Tug Hill Sno-Riders | Lewis 5, 8, 16, 39, 26, 45 Oneida-Lewis 1, Swancott Hill State Forest, and East Branch of Fish Creek Easement Lands | 5/31/2024 |
| Valley Snow Travelers | Lewis 2, EBFC CE | 5/30/2023 |
| Osceola Snowmobile Club | Osceola Lot # 50, Lewis 21, East Branch Fish Creek Easement | 5/31/2024 |
| Turin Ridge Riders, Inc. | Lewis 7, 8, & 25, Lesser Wilderness State Forest | 5/31/2024 |
| Tramp & trail Club of Utica | Lesser Wilderness State Forest, Lewis #23 | 5/31/2024 |
| ADK-Black River Chapter | EBFC SF, EBFC North and South CEs | 5/30/2026 |

## Recreation

Recreation is a major component of planning for the sustainable use of State Forests on this Unit. DEC accommodates diverse pursuits such as snowmobiling, horseback riding, hunting, trapping, fishing, picnicking, cross-country skiing, snowshoeing, bird watching, geocaching,

mountain biking, and hiking. Outdoor recreation opportunities are an important factor in quality of life. We often learn to appreciate and understand nature by participating in these activities. However, repeated use of the land for recreational purposes can have significant impacts. For further discussion of recreational issues and policies, please see SPSFM page 201 at http://www.dec.ny.gov/lands/64567.html. The following section includes an inventory of recreational opportunities available on this Unit as well as a description of use and demand for each activity. Recreational maps and geographic data are available at DEC's Mapping Gateway http://www.dec.ny.gov/pubs/212.html in Google format or in the DECinfo Locator.

## Wildlife-related Recreation

### *Hunting*

The Unit sits within Wildlife Management Unit 6N and 6K. Hunting opportunity is available throughout the Unit. Deer hunting is the most popular activity, although deer densities are relatively low. Deer can be heavily impacted by severe winter weather conditions within the Unit. The Unit receives high annual snow amounts which can restrict travel for deer and limit access to food sources where deer winter. Therefore, deer numbers can fluctuate frequently from year to year depending on the previous winter's conditions. Hunters looking to pursue big game deer should anticipate a wilderness like setting and variable opportunities.

Other game species can be found in the Unit including black bear, ruffed grouse, migratory waterfowl, snowshoe hare, and various furbearer species. Abundance of any of these species is dependent on habitat conditions that can vary throughout the Unit.

Access to the Unit can also be variable depending on when snowfall occurs. Most of the Unit is inaccessible once snow covers the roads. Most roads in the interior of the Unit are not plowed and only available to those with snowmobiles.

### *Fishing*

East Branch Fish Creek-Fish Creek came by its name ecologically. In 1810, Dewitt Clinton was inspecting the route of the future Erie Canal and noted in his journal on July 13th that:

"*Fish Creek enters Wood Creek, a mile from (Oneida) Lake on the north side. It is much larger and deeper and derives its name from the excellent fish with which it abounds, up to the falls, which are ten miles from its mouth. It is frequented by great numbers of salmon, and we saw Indians with spears after the fish, and met two canoes going on the same business, with their pine knots and apparatus ready for the attack."*

Fish Creek is a great fishing stream and one of the most spectacular streams of the state. http://fishcreeksalmon.org/Fishcreek.htm"http://fishcreeksalmon.org/Fishcreek.htm"

There are a number of fishing opportunities within the Unit, most in cold water streams providing wild brook trout fishing. DEC stocks brook trout, brown trout and rainbow trout within the Unit boundary. Atlantic salmon are stocked by a private fishing club; locations and numbers vary annually dependent on the success of their program. Many of the small streams within the Unit contain wild trout and are considered quite desirable by anglers. There is no information on catch or harvest rates of fish within the Unit; however, it does have a reputation of being a quality fishery. When available, tiger muskies are stocked into Whetstone Marsh Pond.

In general, the Statewide Angling Regulations apply to waters throughout the Unit. Freshwater fishing regulations are found on the DEC website at https://www.dec.ny.gov/outdoor/7917.html.

Approximately 25 miles of Public Fishing Rights (PFR's) exist on private lands within the UMP boundary which greatly extend fishing opportunities. PFR's are permanent easements purchased by DEC from willing landowners, giving anglers the right to fish and walk along the bank (usually a 33' strip on one or both banks of the stream). More information about PFR's in this region can be found on the DEC website at http://www.dec.ny.gov/outdoor/9924.html. Some of the more desirable PFR opportunities are as follows:

- PFR parking off Kotary Road in the Town of Lewis on Broad Brook. Broad Brook is known to have wild trout water. No fish are stocked in this section, but brook trout are stocked in adjacent waters of East Branch Fish Creek. https://www.dec.ny.gov/docs/fish_marine_pdf/pfrebfishcreek.pdf

- The City of Rome Reservoir is accessed through a DEC Public Fishing Access Site south of Swancott Mill State Forest on Swancott Mill Road. DEC provides a parking area and a short trail that leads to the water. Brown trout are stocked in these waters. https://www.dec.ny.gov/docs/fish_marine_pdf/pfrebfishcreek.pdf

- PFR parking on Osceola Road on East Branch Fish Creek. There is also an unimproved gravel parking lot on the corner of Kotary Road and Junction Road. Brown trout, brook trout and rainbow trout are stocked in these sections. https://www.dec.ny.gov/docs/fish_marine_pdf/pfrebfishcreek.pdf.

- PFR parking off Statzer Road on Point Rock Creek. Brown trout are stocked in this section.https://www.dec.ny.gov/docs/fish_marine_pdf/pfrpointrockck.pdf.

- Public Fishing Rights on Alder Creek. There is an unimproved gravel parking lot on Junction Road just north of the stream crossing. Brown trout are stocked in this section.https://www.dec.ny.gov/docs/fish_marine_pdf/pfralderck.pdf

- Public Fishing Rights on Powlish Pond Brook. No trout are stocked in this water as it contains wild trout. https://www.dec.ny.gov/docs/fish_marine_pdf/pfrpowlishpb.pdf

- Public Fishing Rights on Mill Stream on the western border of the unit. No fish are stocked in this water as it contains wild trout. https://www.dec.ny.gov/docs/fish_marine_pdf/r7millstpfr.pdf

- Public Fishing Rights on Prince Brook and Stony Brook. No fish are stocked in these waters as they contain wild trout. https://www.dec.ny.gov/docs/fish_marine_pdf/r7pristopfr.pdf

For more information about fishing and stocking visit the DEC website at:
http://www.dec.ny.gov/outdoor/fishing.html

### *Trapping*

With the exception of American marten, thirteen of the fourteen species of furbearers that have a trapping season are found within the Unit (beaver, bobcat, coyote, fisher, grey fox, long-tailed weasel, mink, opossum, raccoon, red fox, river otter, short-tailed weasel and striped skunk). As

with hunting, the quantity of easily accessible acreage coupled with the quality of the habitat make this Unit a popular destination for trappers. Much of the Unit is only accessible by snowmobile during winter trapping months. Use of the area is moderate and consists of local trappers as well as trappers from further away in New York State and from neighboring states.

### Camping

The public can camp anywhere on the Unit as long as they are 150 feet from roads, marked trails, streams, ponds, lakes and other water bodies. There are limitless possibilities for dispersed, primitive back-country camping. However, a stay of longer than 3 days in one location or camping in groups of 10 or more persons require a permit from the Forest Ranger. There are only 3 designated campsites on the Unit, 2 on McGoldrick Public Forest Access Road and one on EBFC State Forest off Michigan Mills Rd. Ext on the east side of E. Branch Fish Creek.

- The camping demand increases around hunting season as noted with the increase of camping permits requested. The demand is often for roadside campsite that can accommodate a camper trailer. A few more designated campsites might help disperse the hunters and highlight more of the Unit.

### Water-based Recreation

Within the Unit, opportunities for water-based recreation are limited. The upper portion of East Branch Fish Creek within the Unit has limited opportunity for experienced and adventurous kayakers and canoers. But off the Unit Fish Creek is the fabled “River of No Return” for kayakers. Because of cliffs on either side below the put in point, there is no easy egress until you reach Point Rock Creek, the Rome Reservoir or Palmer Road Bridge. The many waterfalls caused by spring freshets coming off the gorge walls give the waterway its mystical character. A trip down this class 2 and 3 river in early spring is an exhilarating experience. It is one of the prettiest rivers in this part of the world, with eighteen waterfalls coming in on top from various creeks. It is cut into the shale 90 feet in places and it is seldom seen by humans, other than boaters (http://fishcreeksalmon.org/Fishcreek.htm). The best, most well-known, kayaking put-in is out of the Unit, with a 9.8-mile paddle from Point Rock to just past Taberg in Oneida County. However, the headwaters of this amazing recourse begin within the Unit.

### Trail-based Recreation

Carpenter Ski Trail system is a good network of looping trails on the Unit which gets moderate use. Most facilities on the trails, such as bridges, were updated from 2017 to 2019. Two trails, Snow Ridge Trail and Jacks Trail, traverse some wetter ground and may need some bridging and/or boardwalks to help keep users from impacting the wet soils.

See Appendix A for a list of assets, such as bridges, culverts and signs for the Carpenter Ski Trail system.

#### *Cross Country Skiing, Hiking and Biking*

The Carpenter Road trail system is located on Lesser Wilderness State Forest just northwest of the Town of Turin. It offers 8 miles of scenic pathways for skiers in the winter and for hikers and bikers during the non-snow season. For cross country skiing, the trails are not groomed but regular use keeps them in good shape. There is a parking lot at the trail head on the Carpenter Road. The Utica Tramp and Trail Club currently has a volunteer stewardship agreement with

DEC and does a lot of the maintenance on the trails. In recent years, they have posted trail maps at every intersection; helping users to navigate the trail network. Trail descriptions are as follows:

Cone Trail, 0.8 miles

The Cone Trail parallels the Seymour Road in a southerly direction. You will pass through areas of planted softwood trees, first Japanese larch, then white spruce and then red pine. These plantations were used for collecting cones. Some of the trees have had their tops cut to stimulate the growth of lower branches and therefore cone production, from which seed can be collected. The cones were sent to DEC's Saratoga Tree Nursery where the seeds were extracted and used for seedling production. The open land to the east is privately owned farmland, with a fine view of the Adirondacks on the eastern horizon. After passing the cone production area, there are other red pines, white spruce and Scotch pine plantations, with interspersed native hardwood trees. The Cone Trail leads to two junctions with the West Loop Trail and one junction with the Crossover Trail to the Slivka Road, an abandoned town road.

Return Trail 0.9 miles

This trail forms an alternative route of accessing or returning from the West Loop trail. From the West Loop trail, you travel northeast upon turning and paralleling the Carpenter Road until you reach the trail register. Due to protection from the prevailing winds and solar exposure, this trail will normally still be snow covered well into the spring, in case the Cone Trail is melted out.

West Loop Trail 2.3 miles

This trail traverses a number of picturesque natural forest areas as well as a white spruce plantation. The southern portion of the loop follows, in part, a woods road leading to private lands.

Short Cut Trail 0.1 miles

As the name implies, this short section of trail begins and ends on the West Loop. It passes through a grove of mixed hardwoods. It enables the user to shorten the trip around the West Loop by ¾ mile.

Beaver Pond Trail 0.5 miles

The main attraction of this trail is the beaver pond near which it travels. One can branch off from the West Loop, traveling through a spacious hardwood stand, until you reach the pond. There, one may stop and ponder the beauty and observe the wildlife of the beaver pond.

Mill Creek Run/Jack Track 1.0 miles

The south fork (Mill Creek Run) of this trail traverses a white spruce plantation and a number of scenic hardwood and softwood areas with a mix of trees species such as sugar maple, red maple, balsam fir, red spruce, white cedar and beech. This provides a scenic view of Mill Creek. After the junction with the North Fork (Jack's Track) the trail is on an abandoned town road. There is a steep gorge just west of the intersection which blocks access from the South along

## RECREATION

Slivka Road. Do not attempt to ski in that direction as the bridge is out. Coming back by way of Jack's Track gives you a loop and a change of scenery.

Snow Ridge Loop 1.2 miles

This includes a short section of the Slivka Road which joins the terminus of the trail loop. Besides access from the Slivka Road, there is access to the Snow Ridge Loop via cross country ski trails coming from property owned by Snow Ridge Ski Resort. Snow Ridge, Inc. also maintains cross country ski trails on their property for public use. If these trails are to be used, Snow Ridge, Inc. regulations should be observed.

Larch Loop/Douglas Creek 1.2 miles

The newest trail in this network can be accessed via the West Loop or by the Carpenter Road parking lot. A steep incline behind the parking area leads to a level trail winding through a mixture of larch and spruce plantations and natural woods. Two wooden bridges cross tributaries to Douglas Creek along this trail.

Overall, the trail system is in good condition; many of the bridges were replaced from 2017 to 2019. However, there are a number of items that need attention:

- The Return Trail could be better marked and upgraded,
- Snow Ridge Loop and Jacks Track Trail have some drainage issues; the two trails could use bridges to cross the low areas that drain water, and
- The Larch Loop Trail should be extended into Stand A-9, to provide access to this unutilized portion of the forest.

### *Long Distance Trail*

The Tug Hill Traverse Trail is a proposed approximately 20-mile trail that would start from the Osceola Road and go north to the Town of Montague, ending in the Tug Hill Wildlife Management Area. The trail would cross through State Forests, Detached Forest Preserve Lots, a Wildlife Management Area and Conservation Easement Lands. This trail is in the process of being developed and the location may be modified as segments are completed. The trail will also provide opportunities for short distance out and back hikes.

It was first proposed and approved in an amendment to the Recreation Management Plan for the East Branch Fish Creek Conservation Easements (EBFC CE) completed in 2016. The southern section of the original trail is proposed to be modified by this plan and the EBFC CE Recreation Management Plan Update. The modified proposed route would be located within or adjacent to the following properties which are included in this plan; East Osceola State Forest (Lewis 21), East Branch Fish Creek State Forest (Lewis 45), and Detached Forest Preserve Lots 74 & 98.

- Within the north parcel of the East Branch Fish Creek State Forest approximately four miles of trail have been constructed between the Michigan Mills Extension Road Parking Area and the Wee Road Parking Area. This section of the trail is open to foot and associated uses.
- The segment of the trail on the East Branch Fish Creek North Conservation Easement is the segment of trail currently being constructed.

- The southern trail location was proposed to cross two detached Forest Preserve Lots which share a common boundary corner. However, the DEC does not have a public recreation easement on either private parcel at this corner, nor could DEC secure an agreement with the private landowners. Therefore, the proposed trailhead has been relocated to avoid this crossing. A trail may still be completed to the beaver pond on the Detached Forest Preserve Lot 57.

### *Mountain Biking*

Currently there are no designated single-track mountain bike trails on the Unit. However, Public Forest Access Roads and foot trails on the Unit are open to mountain biking.

- Currently, there has not been any interest in developing mountain biking trails on the Unit. If interest does arise, the DEC land manager will consider the possibility of establishing a trail network. This would require an amendment to the UMP. with the least amount of impact.

## Motorized Recreation

### *Snowmobiling*

Snowmobiling is a major recreational activity on the Unit and on Tug Hill in general.

- The volume of snowmobile traffic limits alternative activities in the area during the winter. Most minimum maintenance roads and public forest access roads are used as snowmobile trails. This does conflict with any potential logging activity that might need access on these roads. Logging is often halted during winter months because of this, with limited exceptions.

### *All-Terrain-Vehicles*

All-terrain vehicle recreation has exploded over the past 10 years and has historically been a recreational pursuit for many locals in the area. This type of recreation does bring a large influx of visitors to the area and local economy. Lewis County has opened up town and county roads to ATV's under the Vehicle and Traffic Law §2405(1). Lewis County Department of Recreation, Forestry and Parks has developed a successful ATV trail network.

- The Lewis County ATV trail network does lack trail connectors in the Towns of Lewis and Osceola.
- There are no ATV trails on the Unit at this time and few opportunities to connect trail networks through State Forest lands on the Unit.
- Lewis County ATV trail network does have open roads that pass through the Unit.

## Overall Assessment of the Level of Recreational Development

It is important that recreational use is not allowed to incrementally increase to an unsustainable level. DEC must consider the impacts of increased public use on management goals or other recreational uses. DEC must also consider long-term maintenance needs of additional infrastructure development and the competing needs of multiple user groups.

Potential problems that arise from trail user groups that become interested in State Land is the creation of parallel trail networks that suite each individual user group. For example, cross-

country ski trails are often too wide for what mountain bike groups like, so a separate single-track mountain bike trail system is desired. This would then make forest management activity even more challenging trying to avoid several trail systems. Identifying these as conflicts and working with user groups before trails become established would ensure the best use of the resource.

## Accessibility for Persons with Disabilities

DEC has an essential role in providing universal access to recreational activities that are often rustic and challenging by nature, and ensuring that facilities are not only safe, attractive and sustainable, but also compatible with resources. For more information on universal access policies, please see SPSFM page 190 at http://www.dec.ny.gov/lands/64567.html.

### Application of the Americans with Disabilities Act (ADA)

The Americans with Disabilities Act of 1990 (ADA), along with the Architectural Barriers Act of 1968 (ABA) and the Rehabilitation Act of 1973, Title V, Section 504, has a profound effect on the manner by which people with disabilities are afforded equality in their recreational pursuits. The ADA is a comprehensive law prohibiting discrimination against people with disabilities in employment practices, use of public transportation, use of telecommunication facilities, and use of public accommodations.

Consistent with ADA requirements, DEC incorporates accessibility for people with disabilities into siting, planning, construction, and alteration of recreational facilities and assets supporting them. In addition, Title II of the ADA requires, in part, that services, programs, and activities of DEC, when viewed in their entirety, are readily accessible to and usable by people with disabilities. DEC is not required to take any action which would result in a fundamental alteration to the nature of the service, program, or activity, or would present an undue financial or administrative burden. When accommodating access to a program, DEC is not necessarily required to make each existing facility and asset accessible, as long as the program is accessible by other means or at a different facility.

This plan incorporates an inventory of all the recreational facilities and assets on the Unit or area, and an assessment of the programs, services, and facilities provided to determine the level of accessibility. In conducting this assessment, DEC employs guidelines which ensure that programs are accessible, including buildings, facilities, and vehicles, in terms of architecture and design, and the transportation of and communication with individuals with disabilities.
In accordance with the US Department of Justice's ADA Title II regulations, all new DEC facilities, or parts of facilities, that are constructed for public use are to be accessible to people with disabilities. Full compliance is not required where DEC can demonstrate that it is structurally impracticable to meet the requirements [28 CRF § 35.151 (a)]. Compliance is still required for parts of the facility that can be made accessible to the extent that it is not structurally impracticable, and for people with various types of disabilities. In addition, all alterations to facilities, or part of facilities, that affect or could affect the usability of the facility will be made in a manner that the altered portion of the facility is readily accessible to and usable by individuals with disabilities [28 CRF § 35.151 (b:1-4)].

DEC uses the Department of Justice's 2010 Standards for Accessible Design in designing, constructing, and altering buildings and sites. For outdoor recreational facilities not covered

under the current ADA standards, DEC uses the standards provided under the ABA to lend credibility to the assessment results and to offer protection to the natural resource (ABA Standards for Outdoor Developed Areas; Sections F201.4, F216.3, F244 to F248, and 1011 to 1019).

Any new facilities, assets, and accessibility improvements to existing facilities, or assets proposed in this plan, are identified in the section containing proposed management actions. A record of accessibility determination is kept with the work planning record.

For further information, please contact Leah Akins, DEC Statewide ADA Accessibility Coordinator, at accessibility@dec.ny.gov.

The Unit has limits accessible features for persons with disabilities. The following is a list of those features:

- The Unit has approximately 2.8 miles of Motorized Access Program for Persons with Disabilities (MAPPWD) routes.
- East Branch Fish Creek South CE Tract has an accessible wildlife viewing and fishing platform located off the Camp 5 Road on the East Fork Salmon River. No fish are stocked in this section as it contains wild trout.
- The Unit does lack remote, wilderness experiences for people with disabilities.
- The plan should consider suitable areas to expand the Motorized Access Program for Persons with Disabilities (MAPPWD).

## Oil, Gas and Solution Exploration and Development

Oil and gas production from State Forest lands, where the mineral rights are owned by the state, are only undertaken under the terms and conditions of an oil and gas lease. As surface managers, the Division of Lands and Forests will evaluate any concerns as they pertain to new natural gas leases on State Forest lands. Consistent with past practice, prior to any new leases, DEC will hold public meetings to discuss all possible leasing options and environmental impacts. A comprehensive tract assessment will be completed as part of this process. For more information on natural gas and other mineral resource policies, please see SPSFM page 241 at http://www.dec.ny.gov/lands/64567.html.

Existing leases on the Unit:

There are no existing or contemplated oil or gas leases on the Unit.

Active wells on the Unit:

- None

Inactive wells on the Unit:

- There is one well that was plugged and abandoned in 1961 in the Unit.

### Pipelines

Pursuant to ECL § 9-0507, the Agency may lease State lands for the construction and placement of oil and gas pipelines only if a portion of the mineral resource to be transported was extracted from State lands. Pipeline and road development must be in compliance with State

## OIL, GAS AND SOLUTION EXPLORATION AND DEVELOPMENT

Forest tract assessments, the Strategic Plan for State Forest Management, and the Generic Environmental Impact Statement and Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program.

Pipelines would be located immediately adjacent to Public Forest Access Roads. The location of the roads and pipelines would be in compliance with tract assessments. Pipelines may be located in stands managed for closed canopy conditions only along pre-existing roads that intersect such area. Additional surface disturbance associated with such construction will be considered only in areas other than stands which are managed for relatively unbroken canopy conditions. Areas managed for unbroken canopy conditions may be referred to using various terms such as “uneven-aged,” “uneven-aged variable retention,” “all aged,” “high canopy,” “closed canopy” or others.

Pipeline development on State land will not be permitted if the Agency determines that it creates a significant long-term conflict with any management activities or public use of the State Forests, or with other management objectives in this plan. All pipelines would be gated to restrict motorized access, and if necessary hardened crossings or bridges would be installed, to allow heavy equipment access across pipelines. These requirements would be satisfied by the lessee.

Exceptions to the above guidance must be approved by the Division of Lands and Forests, in consultation with the Division of Mineral Resources. Additionally, pipeline construction would only be allowed if DEC determined the activity complied with the state’s Climate Act.

- None

### Mining

Sand and gravel, shale and other surface mines

- There are no active mining contracts, permits or operations located on State lands included in this Unit.
- Although there are no active mines within the state lands comprising this Unit, privately owned and municipal mining operations do exist within the Unit. The six active mining permits in this Unit consist of sand and gravel mining. Most of the mines in the area are small and are permitted by the local municipalities or local construction companies.
- There is a concentration of sand and gravel mines in the Town of Lewis around the areas of Swancott Mill State Forest and Raywood State Forest.
- Surficial geology in this Unit consists mostly of glacial till, ablation moraine, kame, and outwash sand and gravel deposits. Much of the till in the central portion of the Unit was deposited as ablation moraine during downwasting or final melting of the glacier. Glacial outwash and kame deposits occur in the stream valleys in the Unit. The outwash and kame sand and gravel deposits are associated with glacial meltwater fluvial systems and deposition adjacent to the ice.
- The bedrock outcropping and subcropping beneath the unconsolidated surficial deposits throughout most of the Unit is the Oswego Sandstone, with the Utica Shale and Pulaski formation sandstone, siltstone, and shale covering the eastern portion of the Unit.

- A majority of the mine sites located in the Unit are no longer in operation and have undergone reclamation, returning the land to a productive use. Of the reclaimed mine sites, there were a high concentration of shale mines in the northeast corner of the Unit adjacent to the Lesser Wilderness State Forest.
- Under Article 7 of the Public Lands Law, any citizen of the United States may apply for permission to explore and/or extract any mineral on State lands. However, to protect surface resources, current DEC policy is to decline any commercial mining application(s) pertaining to any lands covered by this Management Plan.

## Supporting Local Communities

### Tourism

State Forests can be an economic asset to the local communities that surround them. It is estimated that more than three out of every four Americans participate in active outdoor recreation of some sort each year. When they do, they spend money, generate jobs, and support local communities. For more information, please see SPSFM page 259 at https://www.dec.ny.gov/lands/64567.html

The development of the plan and involvement with interest groups will hopefully shed light on the available recreational opportunities on the Unit. DEC is always willing to work with the Tug Hill Commission, local Chambers of Commerce, Osceola Tug Hill Cross Country Ski Center, snowmobile clubs and others to help foster tourism in the area.

### Taxes Paid

The New York State Real Property Tax Law provides that all reforestation areas are subject to taxation for school and town purposes. Some reforestation areas are also subject to taxation for county purposes. Most unique areas and multiple use areas are exempt from taxation. All of these lands are assessed as if privately owned.

Detailed tax information can be obtained by contacting Lewis, Oneida or Oswego County Tax assessors. The following taxes were projected for State lands in this Unit for the 2019-2020 tax year. The totals may and do include lands from other management units within the same township:

*Table I.M. – 2019-2020 Taxes*

| Law Section | Parcel Count | Acres | County Tax | Town Tax | School Tax | Special Dist Tax |
|---|---|---|---|---|---|---|
| Lewis County | | | | | | |
| Town of Lewis | | | | | | |
| RPTL 532A | 7 | 891.7 | $6,575.01 | $6,686.99 | $12,066.17 | $733.18 |
| RPTL 533 | 0 | 0 | $0.00 | $0.00 | $0.00 | $0.00 |
| RPTL 534 | 11 | 1,824 | $0.00 | $7,066.63 | $12,802.13 | $638.39 |
| RPTL 545 | 0 | 0.00 | $0.00 | $0.00 | $0.00 | $0.00 |
| TOTAL | | $46,891.91 | | | | |
| Town of Martinsburg | | | | | | |

FOREST PRODUCTS

*Table I.M. – 2019-2020 Taxes*

| Law Section | Parcel Count | Acres | County Tax | Town Tax | School Tax | Special Dist Tax |
|---|---|---|---|---|---|---|
| RPTL 532A | 0 | 0 | $0.00 | $0.00 | $0.00 | $0.00 |
| RPTL 533 | 0 | 0 | $0.00 | $0.00 | $0.00 | $0.00 |
| RPTL 534 | 38 | 3,449.0 | $0.00 | $7,306.68 | $15,561.32 | $1,252.42 |
| TOTAL | | $24,120.42 | | | | |
| Town of Osceola | | | | | | |
| RPTL 532A | 7 | 975.8 | $6,074.39 | $6,070.45 | $11,160.76 | $920.36 |
| RPTL 533 | 0 | 0 | $0.00 | $0.00 | $0.00 | $0.00 |
| RPTL 534 | 12 | 3,010.5 | $0.00 | $18,133.25 | $33,240.45 | $2,386.31 |
| RPTL 545 | 0 | 0 | $0.00 | $0.00 | $0.00 | $0.00 |
| TOTAL | | $77,985.97 | | | | |
| Town of Turin | | | | | | |
| RPTL 532A | 4 | 13.2 | $24.40 | $24.97 | $39.85 | $2.99 |
| RPTL 534 | 9 | 1,072.4 | $0.00 | $5,397.86 | $8,553.12 | $540.81 |
| TOTAL | | $17,664 | | | | |
| Town of West Turin | | | | | | |
| RPTL 533 | 0 | 0 | $0.00 | $0.00 | $0.00 | $0.00 |
| RPTL 534 | 86 | 10,885.5 | $0.00 | $32,211.57 | $82,842.92 | $4,125.66 |
| TOTAL | | $119,180.15 | | | | |
| Oneida | | | | | | |
| Town of Ava | | | | | | |
| RPTL 534 | 1 | 73.0 | $0.00 | $0.00 | $0.00 | $0.00 |
| TOTAL | | $0.00 | | | | |
| Oswego | | | | | | |
| Town of Redfield | | | | | | |
| RPTL 532B | 1 | 433.0 | $2,417.88 | $2,522.46 | $4,781.21 | $263.50 |
| TOTAL | | | $9,985.05 | | | |
| | | | | | | |

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## Forest Products

### Timber

Timber management provides a renewable supply of sustainably harvested forest products and can also enhance biodiversity. The products harvested may include furniture-quality hardwoods, softwoods for log cabins, fiber for paper making, firewood, animal bedding, wood pellets, biofuel, and chips for electricity production. For more information, please see SPSFM page 264 at http://www.dec.ny.gov/lands/64567.html.

Information on upcoming timber expected to be produced from timber management activities on the Unit is contained in the land management action schedules in the appendices at the end of this document.

The authority to sell forest products from DEC administered lands is provided by the Environmental Conservation Law. To perpetuate the growth, health and quality of the forest resources, the Agency has implemented a sustained yield timber management program for State Forest lands.

Forest stands being considered for timber harvesting are selected based on the following criteria:

1) Adequate access,
2) Wildlife considerations,
3) Present and future forest health concerns (including invasive plants and pests),
4) Current distribution of vegetative stages within the unit management land area and surrounding landscape, including the ecoregional habitat gaps as per the Strategic Plan for State Forest Management,
5) Ability to regenerate stands (if a regeneration harvest),
6) Existing timber and vegetation management needs from other UMPs,
7) Market conditions,
8) Potential growth response of stands to treatment, and
9) Presence of rare, threatened and endangered species and unique natural communities.

By law, any trees to be removed in a harvest must be designated and paid for prior to removal. Designation (marking) of trees is made by DEC forestry staff. After marking is completed, a fair market appraisal is conducted. No products may be sold at less than the fair market value. Forest stands are selected for harvest based on the criteria outlined above, and the desired future conditions identified by this Unit Management Plan.

The Environmental Conservation Law requires that different procedures be employed based on the appraised value of a timber sale. Sales that are appraised greater than $10,000 are called revenue sales, and sales that are appraised at less than $10,000 are known as local sales. Revenue sales contracts must be approved by DEC's Central Office staff, and revenue sale contracts valued at $25,000 or more must be approved by the Office of the State Comptroller. The Regional Forester has the authority to execute local sale contracts. All sales valued at more than $500 (and those less than $500 which are thought to have substantial public interest) are publicly advertised and competitively bid.

During the creation of this plan the timber markets have continued to be sluggish. Lumber prices never fully recovered from impacts of the "Great Recession" of 2008 where timber markets and prices dropped alongside the global economy. Housing markets have not rebounded which directly affects the forest products industry. However, some hardwood markets did see a steady demand, while not strong prices, from Asian markets. Asian markets were fairly hungry for cheap, light grained wood and ash sawlogs were fulfilling those needs. Ash logs, which were in high supply due to Emerald Ash Borer, were often packed directly into shipping crates right on the log landing to be sent over to China. However, the forest industry was faced with yet another

uncertainty in 2019, the US trade tariffs on China and Canada and subsequent counter tariffs from China on US hardwood logs. Hardwood markets in the second half of 2019 have declined 30-40% and many mills are dropping prices and laying off workers. Local buyers have felt a cooling off of softwood roundwood going to Canada. (Campbell, 2019)

Local hardwood mills such as Ballie Lumber Company are essential markets for high quality hardwood sawtimber. Other high-quality hardwood mills such as, Harden Furniture, Deer River Lumber and Lakewood Forest Products have closed their doors from 2012-2018. 3-B Timber Co. and Johnsons Lumber are important mills for our softwood sawtimber products, HDK Lumber was once an important mill but closed in 2014. While a lot of softwood sawtimber still finds its way on log trucks headed to Canada, some loggers sell to local Amish mills and for small softwood sawtimber there is a market as far away as Angelica Mill in western New York. Low grade pulp is usually shipped to Finch Paper mill in Glens Falls, New York and International Paper Mill in Ticonderoga, New York. A lot of low-grade material is chipped and shipped to the Re-energy Cogeneration facility at Ft. Drum, Watertown, New York, though the Re-Energy co-gen plant in Lyons Falls closed in 2018. Low-grade is also shipped to the New England Pellet plant in Schuyler, NY. There are some smaller local markets for low grade forest products such as the Deer River Deer Farm for wood mulch, and South Lewis Junior/Senior High School, Griffiss Technology Park and Hamilton College for wood energy chips. Small markets that make shavings for animal bedding have also become a component of today's local wood products economy. While the area's local markets are not as robust as they once were, their steady presence in the area has allowed the forest industry to survive in this very sluggish wood products economy. These markets are a vital component of the economy of the North Country and provide support for managing healthy forests.

Timber markets will always be shifting, with consumer preferences changing, oversees market fluctuations and mill turnover. However, even with these fluctuations State Forest management has been little effected. Within a timber marking year, the strategy is to manage a range of forest types to keep a variety of forest products for sale. Timber products for sale off State Forests will range from hardwood, pine, spruce and sawtimber, pulp, firewood and chips. Historically there has rarely been a problem selling timber but there has been ups and downs in the value of these products.

### Non-Timber Forest Products

Non-Timber forest products are renewably harvested forest goods other than logs sold for a commercial value. Products include, but are not limited to, boughs, bryophytes, burls, fungi, medicinal herbs and tree sap. Many wildflowers and medicinal herbs may be protected species unavailable for commercial harvest on State Lands. Others may be available for harvest if populations can recover from harvesting and a proper forest products sale contract is provided.

## Forest Health

Forest health is pursued with the goal of maintaining biodiversity. Any agent that decreases biodiversity can have a deleterious effect on the forest as a whole and its ability to withstand stress. Forest health in general should favor the retention of native species and natural communities or species that can thrive in site conditions without interrupting biodiversity. For more information on forest health, please see SPSFM page 298 at http://www.dec.ny.gov/lands/64567.html.

## Invasive Species

As global trade and travel have increased, so have the introduction of non-native species. While many of these non-native species do not have adverse effects on the areas in which they are introduced, some become invasive in their new ranges, disrupting ecosystem function, reducing biodiversity and degrading natural areas. Invasive species have been identified as one of the greatest threats to biodiversity, second only to habitat loss. Invasive species can damage native habitats by altering hydrology, fire frequency, soil fertility and other ecosystem processes.

*Table I.N. – Invasive Species, Pests and Pathogens, reported in i-MapInvasives*

| State Forest | Plants | Status |
|---|---|---|
| Lewis 2 | Purple Loosestrife (*Lythrum salicaria)*<br>Giant Hogweed *(Heracleum mantegazzianum)* | Confirmed |
| Lewis 7 | Purple Loosestrife (*Lythrum* salicaria),<br>Common Reed *(Phragmites australis ssp*.) | Confirmed |
| Lewis 8 | Japanese Barberry (Berberis thunbergii)<br>Common Reed *(Phragmites australis ssp*.)<br>Japanese knotweed, (Reynoutria japonica var.)<br>Garlic Mustard *(Alliaria petiolate)* | Unconfirmed<br>Confirmed |
| Lewis 9 | Japanese knotweed, (Reynoutria japonica var.) | Confirmed |
| Lewis 16 | Purple Loosestrife (*Lythrum salicaria)*<br>Japanese knotweed, (Reynoutria japonica var.) | Confirmed |
| Lewis 21 | European fly honeysuckle (*Lonicera xylosteum)*<br>Garlic Mustard *(Alliaria petiolate)* | Unconfirmed<br>Confirmed |
| Lewis 23 | Japanese knotweed (Reynoutria japonica var.) | Confirmed |
| Lewis 25 | Common Buckthorn *(Rhamnus cathartica)*<br>Garlic Mustard *(Alliaria petiolate)* | Confirmed |
| Lewis 39 | Garlic Mustard *(Alliaria petiolate)* | Confirmed |

| *Table I.N. – Invasive Species, Pests and Pathogens, reported in i-MapInvasives* | | |
|---|---|---|
| Lewis 41 | Japanese knotweed, (Reynoutria japonica var.) | Confirmed |
| Lewis 43 | Glossy Buckthorn *(Frangula alnus)* | Confirmed |
| Lewis 45 | Common Reed *(Phragmites australis ssp.)* | Confirmed |
| | **Insects** | **Status** |
| | Hemlock Woolly Adelgid (Adelges tsugae) | Presently, the adelgid has not caused any significant damage to hemlock trees in Lewis County. |
| | Emerald Ash Borer | Unconfirmed in Lewis county |
| | Gypsy Moth | Not a high threat in Lewis County |
| | Spotted Lantern Fly | Not currently a threat in Lewis County |
| | **Diseases** | **Status** |
| | Beech Leaf disease | Not spotted in Lewis County |
| | **Animals** | **Status** |
| | None | N/A |

The majority of the data on invasive species on the Unit is contained in *i*MapInvasives 3.0 which is managed by Natural Heritage Program. *i*MapInvasives is New York's on-line all-taxa invasive species database and mapping tool. The comprehensive database can be used for documenting and sharing invasive species observations, survey, assessment and treatment data. It also can be used to coordinate early detection and rapid response efforts though email alerts, data analysis and summaries in the web interface and GIS.

The St. Lawrence-Eastern Lake Ontario (SLELO) PRISM (Partnership for Regional Invasive Species Management) has designated the Tug Hill Invasive Species Prevention Zone (ISPZ) around what is mainly the Core Tug Hill. This area covers portions of Jefferson, Lewis, Oneida and Oswego counties. The variety of habitats, including mixed forestlands, wetlands and farmlands make this area unique, sustaining native plant and animal species and exceptional biodiversity. Contained within the ISPZ, are wildlife management areas, a preserve owned by The Nature Conservancy and state forest lands. With this Invasive Species Prevention Zone designation, the SLELO PRISM has developed management strategies for the entire area such as:

- Identify, monitor, and prevent invasive species pathways
- Encourage growth of desired native species

- Provide education on invasive species
- Establish early detection surveillance
- Provide rapid response control efforts for invasive species

## Managing Wildlife Impacts

**White-tailed Deer** – Deer abundance in the Unit varies depending on proximity to agriculture lands. Within the interior of the Unit where little to no agriculture exists, deer densities are quite low with populations being driven primarily by winter severity. Typical buck harvests for Wildlife Management Unit (WMU) 6N have varied between 1.0 – 1.5 bucks harvested per square mile over the last decade. By comparison, surrounding WMU's have buck takes exceeding 2.0 bucks per square mile. Antlerless deer harvest opportunity is limited in the Unit and is confined to areas at the perimeter of WMU 6N. DEC does not issue deer management permits (DMP's) nor allow the take of antlerless deer during the muzzleloader season.

State Forests in the Tug Hill Unit do not see significant damage to regenerating forests from deer. Deer traditionally move from summer range to winter range within the Unit. Winter range is typically found in stands of softwood species such as spruce and balsam fir. The softwood provides thermal protection to deer. Browse damage is noted primarily within these deer yarding areas where deep snow can restrict deer movement, thereby putting pressure on vegetation within the yard. This heavy damage to vegetation can put deer at risk during severe winters. To the extent possible, deer yarding areas will be protected from timber harvest to protect important overstory trees, although deer yards do benefit from small patch clear cuts to enhance regeneration of spruce and other browse species and opportunities to enhance habitat quality will be evaluated for these areas.

**Black Bears** – Bears are not new to the Tug Hill, but sightings of bears are more common in recent years than they had been in past decades. It is not uncommon to see signs of bears while out hiking or recreating in the form of tracks, droppings and feeding damage in trees. Nuisance bear activity is on the increase in agricultural areas outside the forest management unit and Wildlife staff respond to complaints of damage to cornfields primarily. Management of bears on Tug Hill, according to the 2014 – 2024 Black Bear Management Plan for New York State, is to maintain generally low population densities. Black bears are a wonderful addition to the Tug Hill ecosystem and some increase in population is acceptable, however as bear numbers increase the numbers of complaints and amount of damage associated with these animals also increases.

Bear hunting opportunity was opened statewide in 2014 which included the Tug Hill Plateau. The harvest of bears in Wildlife Management Unit 6N has ranged from 6 that first year to 18 animals in 2019. The number of bears harvested on state forests is unknown.

For more information on big game harvest see https://www.dec.ny.gov/docs/wildlife_pdf/bbrpt2019.pdf,

**Moose** – Due to the semi-remote nature of portions of the forest management unit, DEC staff are asked if moose are present on Tug Hill. Currently, there are no known resident moose living on the Hill. Almost all of New York's moose population resides in the Adirondack Park, but occasionally wander onto to the Hill. Generally, these are bulls that are moving about the

landscape during the September-October rut period. This phenomenon of random moose sightings is not as prevalent as in decades past as moose abundance and distribution grows in the Adirondack Park, but almost every year a member of the public reaches out to DEC about an animal sighted somewhere on the Tug Hill or associated foothills.

For more information on Moose in New York see https://www.dec.ny.gov/animals/74663.html.

### Wildlife Grant Studies Relevant to the Unit

Effective conservation of migratory birds and bats, including many species of greatest conservation need, requires better information on their migration patterns through New York State. This information is needed to help plan wind energy developments (or other tall structures) to prevent significant mortality of migratory species. This project will assess the utility of various techniques, including radar studies, acoustic monitoring and thermal imaging for documenting timing, altitude, corridors or stopover habitats of birds and bats migrating through New York State and possibly using State Forest Land.

### The Climate Act and Climate Mitigation Efforts on State Forest lands

A key element of the Climate Act is achieving net zero greenhouse gas emissions across New York State by 2050. Section 7 of the Climate Act requires all New York State Agencies to consider climate change in management decision making and approvals processes. The Scoping Plan, which was based on strategies developed by sector-specific advisory panels, forms a framework for how the State as a whole would address the Climate Act's objectives. Highlighted in the *Existing Sectoral Mitigation Strategies* section of the Scoping Plan is the on-going dual forest certification that the State Forest program has maintained over the last 15 years. Following best management practices for State Forest lands helps continue to ensure that management actions release minimal greenhouse gas emissions, and that State Forests continue to effectively sequester and store carbon – contributing to climate mitigation and the Climate Act's 2050 requirement of 85% reduction in GHG emissions from 1990 levels, with a goal of net-zero emissions. The Scoping Plan's Chapter 15 on Agriculture and Forestry continues by mentioning, "Management of New York's forests, to promote tree health, recreation, wildlife habitat, and wood products, among other reasons, also has many implications for long-term carbon storage and sequestration." (pg. 274) Forests are the only natural, large-scale, and continuous means (on land) for removing CO2 from the atmosphere; and they have the greatest potential for storing that carbon long-term, as the sequestered carbon stays locked up in the standing timber and the durable wood products that come from the harvested timber. The value of carbon sequestration and storage is additive - it is a benefit that forests and forest products naturally provide, in addition to all other social, health, environmental, and economic benefits. This means the total value of healthy forests is much higher than any one unique aspect. It also means the same strategies that preserve healthy forests are strategies for maintaining carbon sequestration and storage. Active management of State Forests through climate smart forestry practices will continue to be a critical tool for adapting to climate change, mitigating its effects, producing resilient ecosystems and fulfilling the objectives of the Climate Act. The Agency will continue to look for ways to maintain and expand the forest cover across the State through public land ownership and supporting responsible forest management practices.

Section 7(3) of the Climate Act requires the Agency to consider whether its decisions disproportionately burden identified disadvantaged communities (DACs). Furthermore, DEC shall prioritize actions that look to reduce greenhouse gas emissions and co-pollutants in DACs. Since DEC does not expect overall greenhouse gas emissions or co-pollutants to change due to the implementation of this plan, and the plan overall benefits users of the State Forest lands by providing increasing access to free and safe outdoor recreational spaces, drinking watershed protection, and healthier overall ecosystems through the removal of invasive species, there should be no disproportionate impacts to DACs expected. As has been previously highlighted throughout the plan, the State Forest lands of New York will continue to provide varied and invaluable services to the ecosystems and communities across a diverse landscape.

For more information on how State Forest lands will be managed in accordance with the CLCPA, please refer to the CLCPA portion of the Carbon Sequestration section starting on page 127 of the Strategic Plan for State Forest Management.

### Potential Climate Vulnerability and Resilience

Climate change will continue to impact tree species and forests through higher temperatures, frost and phenology changes, increased precipitation, droughts, and flooding, and more frequent and intense ice, wind, and other storm events. Some of these impacts may not become evident for decades since mature trees can be resistant to environmental stressors. In the meantime, habitat quality will decline for many tree species, impacting forest health.

| Expected Change | Forest impacts | Timeframe |
|---|---|---|
| **Higher temperatures** | Higher temperatures will increase tree stress and mortality, especially in upland mesic forests (red maple, sugar maple, basswood), increase susceptibility to forest pests and diseases, and lower productivity | Already occurring |
| | Species compositional changes over the long-term (may be decades for changes) including an increase in warm-adapted, southern species (oak/pine, oak/hickory) and a decrease in cold-adapted, northern species (spruce/fir, boreal forests) | Longer-term |
| | Higher winter survival rate and range expansion of forest pests and diseases such as white-tailed deer, HWA, SPB, SLF, and oak decline will increase tree stress, mortality, and regeneration challenges | Already occurring |
| **Frost and phenology changes** | Increased spring and fall freezing damage to roots will increase tree stress and lower productivity and regeneration and planting success | Already occurring |
| | Increased spring and fall freezing damage to buds, flowers will lower seed and cone production and regeneration | Already occurring |
| | Loss of pollinator synchrony will lower seed and cone production and regeneration for pollinator-reliant species | Already occurring |
| | Increased competitiveness of invasive plants such as kudzu vine, honeysuckle, reed canary grass, and common buckthorn will increase the need for treatments and lower regeneration success | Already occurring |
| | Extended spring, summer, and fall recreation will increase forest impacts during spring and fall “mud seasons” and impacts from summer recreation | Already occurring |

| | | |
|---|---|---|
| | Less snow, frost, and ice cover during winter timber harvest operations will lower the cutting window for forests traditionally harvested during the winter | Already occurring |
| **Increased precipitation, droughts, and flooding** | Altered hydrologic cycles will increase tree damage and mortality in forested wetlands, floodplain forests, and other lowland riparian forests | Already occurring |
| | Increased summer drought stress will increase damage and mortality, especially in upland mesic forests (red maple, sugar maple, basswood), susceptibility to forest pests and diseases and shift species compositions towards more drought-tolerant species (oak/pine, oak/hickory) | Already occurring |
| | Increased summer wildfire risk will increase damage and mortality, especially to non-fire adapted species | Already occurring |
| | Lower winter soil snowpack insulation will increase damage and mortality to fine roots and lower productivity | Already occurring |
| **More frequent and intense ice, wind, and other storm events** | Increased storm events will increase damage and mortality to residual trees following harvests | Already occurring |
| | Increased inundation, erosion, flooding, and saltwater intrusion from storm events will increase damage and mortality to coastal forests, forested wetlands, and floodplain forests | Longer-term |
| **References for the information provided on this table include Wolfe et al 2011; Tetra Tech 2013; Horton et al 2015; Swanston et al 2019** | | |

The majority of stands within these forests are dominated by American beech, black cherry, eastern hemlock, European larch, Japanese larch, Norway spruce, red maple, red oak, red pine, sugar maple, white ash, and white pine. Of these species, American beech, eastern hemlock, European larch, Japanese larch, Norway spruce, red pine, and white pine are expected to decline both near and long-term with climate change (under low and high emissions scenarios), and black cherry, red maple, sugar maple, and white ash are expected to decline in the long term. Forest stands dominated by these species are expected to be especially vulnerable to climate change.

Promoting long-term forest adaptation to climate change through resilience and transition strategies is important when incorporating climate goals and considerations – as healthy forests sequester and store the most carbon and are more likely to remain as forests. Resistance may still be considered when there is a desire to maintain resources with high economic, cultural, or ecological value as is, for forest ecosystems with low vulnerability to climate change, and areas that are expected to be buffered from severe climate change impacts (ex: refugia) however this strategy may be unrealistic to maintain in the long-term.

Specific resilience and transition strategies that should be considered for these forests include:

- Use silvicultural strategies to increase species diversity, especially in declining plantations and forests dominated by climate-vulnerable species
- Monitor regeneration and implement plantings and deer exclosures in areas showing regeneration failure 2-5 years after harvests
- Retain species more adapted to drier conditions, higher temperatures, and a wider range of growing conditions such as hickories and oaks.

Further quantifying the carbon tradeoffs and benefits of these practices will help foresters balance forest carbon considerations with the many other management objectives that are required of State lands. BFRM's newly created Carbon Forestry and Climate section will help provide the necessary resources to regional staff on forest management effects on forest carbon storage and sequestration, as well as the impacts of climate change on our forests, while providing tools to help integrate those considerations into on the ground management and planning.

## Summary of Ecoregion Assessments

To practice ecosystem management, foresters must assess the natural landscape in and around the management unit. State Forest managers utilized The Nature Conservancy Ecoregion Assessments to evaluate the landscape in and around this management unit. The Tug Hill East falls within the Northern Appalachian-Acadian Ecoregion.

### Ecoregion Summary

The Northern Appalachian-Acadian (NAP) Ecoregion extends over large ecological gradients from the boreal forest to the north and deciduous forest to the south (The Nature Conservancy n.d.). The Gaspe' Peninsula and higher elevations support taiga elements. At lower elevations and latitudes, there is a gradual shift toward higher proportions of northern hardwood mixed-wood species which marks the transition into the Acadian forest. It also supports local endemic species, as well as rare, disjunct and peripheral populations of artic, alpine, Alleghenian and coastal plain species that are more common elsewhere. In New York, the primary portion of the NAP Ecoregion consists of the Adirondack Forest Preserve and Tug Hill Plateau.

The forest is a heterogenous landscape containing varying proportions of upland hardwood and spruce-fir types. It is characterized by long-lived, shade-tolerant conifer and deciduous species, such as red spruce, balsam fir, yellow birch, sugar maple, red oak, red maple and American beech, while red and eastern white pine and eastern hemlock occur to a lesser significant degree.

There has been a historical shift away from the uneven-aged and multi-generational "old-growth" forest toward early successional forest types due to human activities. This mirrors the historical trends toward mechanized and industrialization within the forest resources industry over the past century and shift from harvesting large dimension lumber to smaller dimension pulpwood.

For vertebrate diversity, the NAP ecoregion is among the twenty richest ecoregions in the continental United States and Canada and is the second-richest ecoregion within the temperate broadleaf and mixed forest types. The forests also contain fourteen species of conifers, more than any other ecoregion within its habitat type, except for the Southern Appalachian-Blue Ridge Forests and the Southeastern Mixed Forest

Characteristic mammals include moose, black bear, red fox, snowshoe hare, porcupine, fisher, beaver, bobcat, lynx, marten, muskrat and raccoon, although lynx and marten are not present on Tug Hill. White-tailed deer have expanded northward in the ecoregion, displacing (or replacing) the woodland caribou from the northern realms where the latter were extirpated in the

late 1800s by hunting. Coyotes have recently replaced wolves, which were eradicated from this region in historical times, along with the eastern cougar.

A diversity of aquatic, wetland, riparian and coastal ecosystems are interspersed between forest and woodland habitats, including floodplains, marshes, estuaries, bogs, fens and peatlands. The ecoregion has many fast-flowing, cold water rocky rivers with highly fluctuating water levels that support rare species and assemblages.

## Ecoregion Assessment

*Table II.A. Land Use and Land Cover for the Landscape Surrounding Tug Hill East Unit*

| Land Use and Land Cover | Approximate Acreage | Percent of Landscape |
|---|---|---|
| Shrub and Brush Land (includes seedling/sapling type) | 9729 | 24% |
| Forested Wetland | 8714 | 22% |
| Deciduous Forest | 5689 | 14% |
| Conifer Forest | 5060 | 13% |
| Mixed Forest | 3720 | 9% |
| Crop Land and Pasture | 3111 | 8% |
| Open Water | 2172 | 5% |
| Wetlands | 1367 | 3% |
| Mixed Urban/Built-up Land | 982 | 2% |
| Rockout Crops | 21 | <1% |
| Lakes | 0 | |
| Old Growth | 0 | |
| **Total** | **40,565** | **100** |

## Local Landscape Conditions

Forty-five percent of the Unit is labeled by the Nature Conservancy as Core Tug Hill Forest, a large area of Tug Hill that is contiguous forest land with little development and large roadless areas. Due to efforts by the DEC and Nature Conservancy through land acquisitions and conservation easements, this land should remain in forest cover. Much of the land in conservation easement, while still forested, has seen significant changes in age class structure over the last 15 years. In the chart above, 24% of the landscape is in shrub land/sapling stage forest. The mature contiguous forest canopy is gone and has been replaced with mainly closed canopy sapling/small pole timber. This type of forest habitat has limited appeal for much of the wildlife on the Hill. It is neither brushy nor mature canopy enough to provide good feeding or escape cover for wildlife. Moreover, this transformation in forest structure, along with historical

logging practices, has reduced the percentage of spruce-fir cover in the landscape. In the landscape, only 13% is considered conifer forest. The spruce-fir forest cover present is found mainly in low laying forest wetland areas. Furthermore, the spruce-fir forest type is expected to decline in the Northeast as a result of climate change. These several factors are affecting the abundance of spruce-fir cover type. Another thing to note in the Landscape Land Cover chart is that 30% of the land is identified as either forested wetlands, wetlands, or open water. This is very characteristic of Tug Hill and what makes the region unique. In the Unit there are some very extensive wetland complexes that provide unique habitat for wildlife and help to maintain the excellent water quality of streams and rivers that originate in the area. However, wetlands and open water does make access and forest management activities very challenging, often bisecting large upland forest blocks. Future climate change may affect the condition and characteristics of these precious wetland resources, so it will be something to monitor.

## Management Challenges on the Unit

Climate Change - With current climate change models predicting more severe weather patterns and warmer, wetter winters, managing at the landscape level will help ensure our forests are able to be resilient and healthy through these changes. Species diversity may be threatened as we see warmer temperatures, specifically a loss of red spruce as a component in the forest. However, we are seeing some of these changes today, and they are already presenting challenges. Winter logging on Tug Hill normally guaranteed frozen harvesting conditions and snow amounts that inhibited logging on Tug Hill in the winter. That has not been the case over the last 8 years. Timber harvests on wet ground that was set aside for winter harvesting may no longer have consistent frozen conditions because of frequent freeze-thaw rain events. Furthermore, parts of the Unit that historically received amounts of snow that prevented harvesting may now be possible to harvest but are often inaccessible because of limited access on minimum maintenance town roads in the winter. Also, recreational trails see similar challenges with respect to winter conditions. Previously, small bridges or corduroy for wet crossings would not be needed to facilitate cross-country ski or snowmobile trails. Now, because these sections often do not stay frozen all winter, we are seeing the need to install these structures to keep trails usable and to protect the water and soil on the trails., Another challenge is replacing culverts on roads. As we experience stronger, more frequent storms, culverts larger culverts are needed to handle additional storm flow.

Forest Management - Managing forests on a landscape level will hopefully help mitigate the impacts of climate change and maintain stable forest ecosystems. The main focus on the Unit is to maintain amore late successional forest, which will enhance the Matrix Forest Block. While this is the broad playbook, we do not want to chance the risk of doing the same thing everywhere and possibly making the same mistake everywhere. Forest inventory and monitoring will help us evaluate which management actions should be implemented on a particular location. While actively managing forests systems through timber harvesting, we are challenged to keep species diversity high, the forest healthy and promote desirable natural forest regeneration. One more recent concern for the health of the forest is the Emerald Ash Borer, an imminent threat to the forests on Tug Hill. We have not seen a wide infestation on Tug Hill and dread the day we do, but management decisions we make must now take that into account. Changing markets for forest products will always be a challenge for the forest industry. As forest managers we will need to remain flexible in the species and quality of forest products we produce and put up for bid while following the UMP harvest plan.

## LOCAL LANDSCAPE CONDITIONS

Wildlife Management - The management approach on the Unit does favor more late successional forest habitat which may limit the wildlife species diversity on the Unit. There are State Forests on the periphery of the Unit that may be considered for creating more early successional habitat. This is a challenge which will need to be monitor.

Recreation – Current New York State budgetary constraints affect the likelihood of proposed actions being carried out in the near term. During this time of fiscal uncertainty, the DEC cannot responsibly recommend significant new recreational facilities. However, it is our goal to provide continued levels of support thru recommendations to maintain and repair existing facilities. Moreover, the DEC is willing to work with user groups that show interest in helping to maintain recreation on state forest lands thru agreements such as the current Voluntary Stewardship Agreement. Finally, we will work to identify new areas of possible recreational opportunity on the Unit, especially as use of state forest lands continues to increase.

Maintenance of Facilities - As the Lowville DEC Operations workforce decreases, we are challenged with maintaining existing facilities. Greater reliance on public-private partnerships may be needed to avoid deterioration of administrative and recreational facilities.

# Management Goals and Actions

## Land Management Goals and Actions

## Ecosystem Management

**Implement the Strategic Plan for State Forest Management in Unit Management Plans**

Management Actions - Develop and subsequently adopt this UMP with future amendments as needed and periodic updates at least every ten years.

Management Actions - Create/update the web page for each State Forest in this Unit, including an electronic, printable map showing the location of recreational amenities.

**Sustainably Manage Forest Resources on State Forest Lands**

Management Actions - Manage the forest resource through the extraction of forest products. The forest resource will be managed through timber harvests to create conditions that improve and enhance tree growth and forest habitat while maintaining diversity and water quality. The timber harvest schedule will be followed, and the best sound silvicultural practices will be used.

**Maintain Forest Matrix Blocks and Connectivity Corridors where Applicable**

The landscape scale management of the Unit will be guided through ecosystem management. The landscape is a mosaic of habitat patches across which organisms move, feed, reproduce, die and eventually return to the soil. Ecosystem management is identifying the patterns these patches create and then managing in a way that enhances the diversity and connectivity of this patchwork. Ecosystem management considers three main components of the landscape: the matrix, patches and corridors (*Thomas G. Barnes, 2010)*

Management Action - The uniqueness of the Unit and the role of State Forests on the landscape as a Core Matrix Forest Block and a Connectivity Corridor is to provide large blocks of unbroken forest cover. The Natural Heritage Program has identified large blocks of unbroken forest as important component of biodiversity conservation, climate change resistance and forest ecosystem protection. Changes in both the landscape cover and climate will stimulate a change of movement patterns and range shifts for many species as they respond to the changes in habitat availability, temperature, precipitation and the distribution of other species. The matrix of a large block of unbroken forest will hopefully buffer the pressures these species will encounter. It is important that management actions keep these large blocks as forest to maintain the capability of landscapes to recover from major natural disturbances. These large blocks of forest canopy cover provide benefit to a broad spectrum of species for diversity.

Most management decisions will be based largely on uneven-aged management techniques. Active intentional management (Carey, A 2007) that leads to structural complexity (Keaton 2020) while keeping a late-successional forest may involve some innovative silvicultural techniques such as irregular shelterwood method, variable retention harvesting and gap-based silviculture. These techniques may lead to more development in crown-class differentiation, decadence, structural complexity and understory development that can keep our forest healthy while also providing for large blocks of mature forest condition. Yet there may be circumstances where even-aged silviculture is desired or needed. The landscape adjoining State Forest is providing plenty of young forest habitat, so the greatest need for State Forest on a landscape scale is to provide more mature forest structure in the landscape.

**Practice Sound Resource Management Strategies**

Management Action – Strategic forest management for the Unit will follow four broad guidelines. First, while we have an overall landscape management goal, it is crucial not to do the same thing everywhere because conditions vary across the Unit and to minimize the risk from

potentially erroneous management decisions. Managers must take an active adaptive management approach to how we manage state forest lands. The most recent scientific data will be used to monitor and evaluate how effective the management strategies are. Second, we need to think in terms of managing for both species and ecosystems. While this seems very idealistic and hard to implement on the ground, it is important because the two are dependent upon one another. Third, we must manage at multiple scales. Adopting a single tactic at a single scale will only accomplish a narrow set of goals. The plan sets strategic goals at the landscape level, but the field applications need to incorporate stand level decision making. Multiple management scales are needed because there are multiple ecological scales, not only for different ecological processes but for different species and for the same species (Wu, 2007). Fourth, we must always allow for a contingency plan.

As we monitor the on the ground applications, foresters and wildlife managers need to be able to take that data and see what has worked and what has not. Questions need to be asked and investigated, such as, are corridors established for habitat connectivity functioning as such? Does a shelterwood harvest result in better hardwood regeneration than a seed tree harvest on moderately well drained soils? In general, the plan develops landscape goals and management actions try to meet those goals but need to be flexible enough to change those actions to best enhance the resource.

**Apply Sound Silvicultural Practices**

Management Action - Generally, management will be through uneven-aged silviculture, which will provide a more contiguous and mature forest cover. Practices most closely replicating a natural forest, that provides a deep forest habitat needed for certain plant and animal species and favoring certain shade tolerant tree species. Uneven-aged silviculture is a system for maintaining and regenerating forest stands with at least three distinct age classes. This system favors shade tolerant species such as sugar maple, eastern hemlock and American beech. This system also creates a stratified stand structure with trees of different heights represented in all levels of the forest canopy. Regeneration and development of uneven-aged stand structure will be accomplished using individual tree and/or group selection harvests using a 20 to 30 year cutting interval. Most plantation stands in the Unit are currently even-aged, making conversion to an uneven-aged condition a long-term commitment to develop the multiple age classes. As these stands come up on the harvest schedule, several factors will be considered in the management decision because they are in the Core Tug Hill. Treatment will consider incorporating an extended rotation or allowing for longer recovery periods between management entries. It is understood that understory species and ground litter layer may be able to develop a complex species richness with longer periods between entries. Treatments may also incorporate variable density thinning to emulate natural stand development that creates heterogeneity and more late-successional stand conditions. There may also be a need to do gap-based silviculture, which does create larger openings in the canopy, but can benefit species diversity, wildlife habitat and forest health. Even-aged management will be used as needed to achieve management goals and may be utilized more on the eastern half of the Unit where the forest is more fragmented and canopy openings will complement the landscape. The Division's Policy on stand retention will also guide these management decisions.

**Identify Stands that are High Conservation Value Forests and Representative Sample Areas**

Management Action - Protection areas already identified in the Unit as Representative Sample Areas and High Conservation Value Forests will be managed as such during timber harvest planning, recreation planning and facilities maintenance to ensure the areas will not be negatively impacted. Natural Heritage Program and Regional Wildlife staff will be consulted on any management actions proposed for these communities or in immediately adjacent areas.

Management Action - Be observant during forest inventory and other routine operations for newly found areas that may be considered High Value Conservation Forest due to rare communities, Special Treatment, cultural heritage, watershed values and Forest Preserve lands.

Management Action - Be observant during forest inventory and other routine operations for Representative Sample Areas which represent common ecological communities of high or exceptional quality in their natural state. Stands to look for are spruce-fir stands, northern hardwood-hemlock, balsam swamps and upland stands with native red spruce, but any natural community could be categorized as an RSA. High quality stands of significant size should be identified, mapped and specific management guidelines developed for each stand which sustains/stabilizes the community. The Tug Hill Core Forest may provide opportunity to develop more extensive areas of HCVF and RSA in both wetland and upland types over the long term.

**Develop a Sustainable Harvest Schedule**

Management Action - Complete a sustainable timber harvest schedule for the entire Unit, with even-aged softwood stands having a thinning cycle of approximately 15 years, even-aged hardwood stands a scheduled treatment about every 30 years, and uneven-aged stands a scheduled treatment generally every 20-30 years.

**Harvest Layout Should Use Existing Infrastructure**

Management Action - Using existing infrastructure like skid trails and landings may lessen the impacts regarding the development and maintenance of forest soils and composition and condition of non-tree forest understory. The Division's guidelines on rutting and special management zone rules will also help to minimize negative impact.

**Maintain at Least 25%-30% Conifer Cover**

Management Action - At the landscape level, state forests provide the majority of softwood cover, while private/industrial lands are hardwood or in the process of converting to hardwood forests. Currently, 50% of the Unit's forest canopy contains a softwood component. Softwoods are an important player in wildlife habitat and as commercial timber species. On the snowy Tug Hill, wildlife relies on the winter cover and protection that dense softwood stands provide. In Table 11.B below, there is a Wildlife cover type listed. This is generally a natural softwood stand with wetter soils that would be best managed for protection of wildlife habitat instead of timber production. The natural stands of hemlock and spruce-fir will most likely persist as the dominant softwood forest type, while most softwood plantation species as they mature are replaced with hardwoods. It will require more intensive management such as planting, direct seeding or herbicide spraying, to keep the plantations in softwood species. In the core forest, softwood cover will most likely be left to the low-lying wetland areas where it regenerates naturally. From

the landscape perspective it is important to maintain a higher percentage of pine and spruce on state forest to ensure its place in the landscape. This means keeping more mature plantations to hold the softwood component in the overstory.

**Manage for High Quality Sawtimber**
Management Action - Any forest management action taken will also have the objective of improving the quality and health of the forest. Firewood thinning and intermediate harvests are tools used to increase the quality of trees within the stand. These are performed to remove some of the poorly formed trees, trees with disease or decay, undesirable species and to release the better-quality trees in the stand.

## Resource Protection

*Table II.B. –Land Management Goals and Actions*

| **Forest Cover** | **Acres** |
|---|---|
| **Management Action Intervals (0-5 years)** | |
| **Hardwood** | 1,410 |
| **Plantation** | 1,856 |
| TOTAL | 3,266 |
| **Management Action Intervals (6-10 years)** | |
| **Hardwood** | 1,606 |
| **Plantation** | 907 |
| TOTAL | 2,513 |
| **Limit Management** | |
| **Wildlife** 4,095 | |
| **Access limitations** 2,604 | |
| TOTAL 6,699 | |
| **Protection with No Management** | |
| **Wetlands** | 4,316 |
| TOTAL | 4,316 |

**Monitor and Manage Invasive Species**
Management Action - Follow the actions in the Strategic Plan for State Forest Management for using Integrated Pest Management (IPM) to control particular invasive species.

Management Action - Continue to build the GPS database as new infestations become known. Encourage the public to “be on the lookout” and upload any new infestations into https://www.imapinvasives.org/. This is a public sourced web-based database to track invasive species occurrences in New York State. Information about iMaps should be included on any kiosks along with information on the possible invasive plants that they might run into.

Management Action - Conduct rapid response and eradication of small and manageable populations of invasive species. The newest Japanese Knotweed patch identified is on Seymour Road, Lewis 23. Areas of Japanese Knotweed that have been treated on the parking area on Mohawk Springs SF and the end of the Dolphin Road should continue to be treated as long as the herbicide treatment is effective. Future patches should be identified and treated, like the location on the Seymour Road.

Management Action - Management entries and road work tend to be the biggest threat to spreading invasive plant species into the forest. Monitoring recently harvested stands and road work for the first years after completion will lead to a more rapid response for identification and eradication.

Management Action - Institute a clean equipment protocol for timber harvesting, construction and maintenance equipment. Educate and stress the importance of inspecting and cleaning equipment to be free of dirt, mud or other material that may harbor invasive seed and plant material before moving onto a new site.

**Collect Forest Inventory Data**

Management Action - Continue to collect forest inventory data at a 10-year rotation and at the same intensity level. Forest inventory data has been collected on State Forests for over 40 years. This historical biological data tells us the story of our forests. Continuing to collect inventory data not only helps to guide our management decisions with current raw data, it also helps spot trends and changes in the forest. Importance should be placed on retaining this legacy data for institutional knowledge but also future research possibilities.

**Identify Stands That May be Considered for Producing Maple Sap**.

Management Action - Through the forest inventory process it has been determined that there are not any readily accessible and suitable stands to set aside to produce maple sap. The limited winter access along with high erodibility of the soils makes this Unit not ideal for leasing for maple syrup production. Sap is generally collected during spring break up when soils and road are most vulnerable.

## Fish and Wildlife Goals and Actions

The comprehensive Wildlife Conservation Strategy (CWSC) was completed by DEC's Division of Fish and Wildlife in 2005 and updated in 2015 to address the wildlife species in greatest need of conservation in the state. The CWCS utilizes the best available data on the status of fish and wildlife species to define a vision and establish a strategy for state wildlife conservation and funding. The CWCS is a collaborative effort among agencies, organizations and individuals with an interest in New York's wildlife. Conservation actions are developed and implemented within watershed basins and the Tug Hill East Unit is located within three basins. The majority of the Unit is in the Southeast Lake Ontario Basin with smaller portions in the Northwest Lake Ontario and Upper Hudson basins. The management actions in this UMP correspond with the management actions made in the basin-wide strategies and actions. Similar actions include maintaining and increasing the amount of early successional forest in the basin through timber harvesting; maintain habitat suitability of grasslands through properly timed mowing; maintain or enhance habitats for Species of Greatest Conservation Needs (SGCN) that occur on existing

public lands; and limit seasonal use of wheeled off-road vehicles in specific areas where SGCN may be adversely affected.

**Habitat Improvement in Forest Stands Labeled as "Wildlife" in the Timber Harvest Schedule**

Management Action - The stands identified in the harvest table as "wildlife" have been identified as a higher benefit to wildlife habitat than timber management. These stands may be treated in a way that would best improve the wildlife habitat function of the stand. DEC Wildlife Biologists will be consulted on the best habitat structure to keep in these stands.

**Improve Winter Cover for White-tailed Deer, Ruffed Grouse and Varying Hare through Softwood Corridor Stands**

Management Action - Increasing the winter cover habitat for these species requires an increase in young, dense, softwood understory. Timber harvests need to be planned carefully to maximize softwood regeneration and minimize hardwood competition. Acadian Forest Ecological Restoration Cuts have been shown to successfully regenerate red spruce naturally. This method along with expanding gap shelterwoods should be tried in stands that have a red spruce component. However, monitoring will need to take place to ensure there is adequate softwood regenerating. If the stocking is not sufficient in softwood, reforestation efforts will be needed.

Management Actions - Collaborate with DEC wildlife biologists on timber harvests with wildlife objectives. DEC wildlife biologists will have the opportunity to comment on prescriptions of clearcut, patch-clearcut or group selection that may provide key habitat.

**Assess Suitability of Habitat for American Marten and Possibly Reintroduce the Species**

Management Action - Bureau of Wildlife staff have considered Tug Hill as a potential location to establish a population of American marten outside the Adirondack Park. A formal project has not been proposed at the time of this writing.

**Ensure Fisheries Management Activities Promote Ecological Enhancement and Protection of Fisheries and Water Bodies and Provide Anglers with a Variety of Fishing Opportunities.**

Management Action - Conduct biological and chemical surveys of waters within the Unit.

Management Action - When habitat deficiencies are identified, Bureau of Fisheries, sportsman, and conservation groups work to implement stream restoration projects where feasible and consistent with DEC Fisheries management policies.

Management Action - Continue fish stocking, compliant with DEC policy, and expand or remove stocking efforts as appropriate.

Management Action - Ensure fishing regulations are consistent with Fisheries Management Plans

## Soil and Water Goals and Actions

The sustainability of the core Tug Hill forest ecosystem largely depends on the quality and functionality of the area's soil and water resources. Wildlife and plant diversity are linked with landscape diversity; the landscape diversity on this Unit is owed in part to the abundant wetlands of the Unit. Aquatic, riparian and wetland ecosystems provide food, breeding areas and cover for numerous wildlife species. These water resources are an integral part of the larger hydrologic cycle (the route water takes from rainfall to evaporation) providing sediment filters, regulating runoff and recharging aquifers. Reducing and preventing soil erosion (the movement of soil) and sedimentation (the movement of soil into a waterbody) throughout the Unit and its surrounding landscape is of critical importance. The water quality throughout the Unit is high because of the buffering forest land cover and the many filtering wetlands.

**The Primary Soil and Water Goal of the Plan is to Ensure Watershed Protection, Wetlands Protection and Perennial and Intermittent Stream Protection.** Additional goals and recommendations follow.

**Implement Proper Best Management Practices when Conducting Land Management Activities on the Unit.**

Management Action- Timber harvesting and construction projects are not a major cause of erosion and sedimentation if properly planned. When minimally disturbed, forest soils retain their capacity to absorb and filter tremendous amounts of water. Removing or heavily disturbing the forest litter layer increases the potential for erosion and sedimentation. Erosion and sedimentation increase when surface waters flow over exposed soil on steep slopes for long distances. Sedimentation and turbidity (cloudiness) is caused when eroded soils get into a stream, wetland or pond. This condition can damage fish habitat, spawning areas and degrades water quality for downstream uses. Severe erosion can move large quantities of soil and can damage or destroy natural resources and personal property.

The key to protecting water quality is the proper planning and consistent use of Best Management Practices (BMP's). BMPs are a technique or combination of techniques that are determined to be an effective and practicable means of preventing or greatly reducing the amount of pollution generated by a non-point source to a level compatible with water quality goals. The wise placement of haul roads and skid trails, road layout that makes use of gentle grades, water diversion techniques and soil stabilization at stream crossings are all methods employed to minimize the chance of disturbing water quality.

**Evaluate Current Wetland and Stream Conditions and Revise Classifications.**

Management Action – There are currently no plans by DEC to update wetland and stream classifications within the watersheds that fall within the Tug Hill East unit. Current stream classifications are from 1999 and 2005. Wetlands in particular change over time, so updated wetland classification based upon current data would be desirable to improve our knowledge of and extend proper protection to the wetlands within the Unit.

**Monitor Wetlands for Signs of Climate Change Impacts.**

The water cycle of the Northeast is already changing, sometimes in unexpected ways. Long-term data from more than two dozen rivers and dozens of ice monitoring locations show that the Region is experiencing earlier snowmelt, earlier spring flows, higher flood flows and shorter periods of ice cover. Future temperature increases are likely to shift more winter precipitation to rain leading to higher-than-average winter flows, greater likelihood of ice-jam flooding, reduced summer streamflow and longer periods of summer drought. (Rustad, Campbell, et. al)

Management Action - Without funds for scientific research, the best monitoring efforts will be through forest inventory data collection. Collecting and retaining forest inventory data long-term can help to show trends and changes in forested wetland species composition, health and acreages. Collecting this data on a ten-year cycle will build a solid base of data to monitor impacts of climate change.

**Place East Branch of Fish Creek State Forest in HVCF for Watershed Protection**
Management Action - One of the major reasons East Branch Fish Creek State Forest was removed from the conservation easement and established as a State Forest was to ensure the protection of the Fish Creek waters. No timber harvesting will occur on this State Forest to maintain watershed protection.

## Infrastructure and Access Goals and Actions

Public Forest Access Roads provide access for the continued increase in public demand to use State Forest Lands. All the while, the cost of maintaining this important infrastructure is increasing. With a limited labor force and monetary funding, the maintenance and upkeep of DEC roads will be based on prioritization of needs.

**Continue Maintenance on Public Forest Access Roads**
Management Action - Brush, rake and grade Public Forest Access Roads annually or at a minimum, once every 3 years. There is a total of 8 miles of PFARs on the Unit. At a minimum, 2.6 miles of roads would need maintenance on a 3-year cycle.

Management Action - Seymour PFAR, Nob PFAR, Swancott Mills PFAR and Dolsee Trail PFAR, a total of 3.7 miles, all need more than just routine maintenance. The four roads need cross drainage culverts and significant gravel. Beaver Pond Road, 0.7 miles of haul road, also needs more than just routine maintenance and could be upgraded to a PFAR.

Management Action - Bridge replacement is needed at the end of the Seelman PFAR on Lewis RA# 5.

Management Action - No new PFARs are planned in this UMP.

**Right Sizing and Replacing Culverts**
Management Action **-** When the time comes to replace road culverts, direct replacement may not be the best management practice. In the light of climate change, with more frequent and more intense weather events, larger culverts may be needed. Also, aquatic connectivity needs to be factored in when installing new culverts. Boxed culverts, arched culverts or partially buried culverts all need to be considered in order to protect the passage of aquatic species. Properly placement of culverts will result in a smooth transition from the downstream end of the culvert to the stream, versus improper placement that results in the downstream end being perched above the stream, thereby inhibiting upstream travel by stream residents.

## Recreational Goals and Actions

The Unit is primarily known for winter recreation, hunting, trapping and fishing. There are many winter opportunities for public recreation on the Unit. With plentiful snowfall, this area will be an attractive place to recreate, seek solace and solitude, and contribute to the local and regional communities. Snowmobiling, cross-country skiing and snowshoeing are the traditional draws to the Unit.

According to the Tug Hill Commission, approximately 17% of land on Tug Hill is open to the public for hunting, trapping and fishing through State Forests and Conservation Easements. This large amount of land area, albeit a patchwork, does make it a destination of hunters and anglers.

The primary recreational goal for the Tug Hill East Unit is to work with the local community, recreation groups and sportsman groups to continue to maintain and enhance the existing recreational facilities and consider new opportunities while protecting the wild and remote character of the Unit and minimizing effects on the resource. Additional goals and recommendations follow.

**Use natural materials when maintaining and creating new facilities.**
Management Action - Natural materials such as wood and stone will be used for most structures, such as kiosks, observation and fishing deck structures, etc. including using barriers such as large boulders to line parking lots and block roads (the latter instead of gates where administrative access is not regularly needed).

**Keep the State Forest Web-pages Current for the Unit**.
Management Action - As facilities change or are created, the web page will be updated including the electronic printable map showing the location of recreational amenities on the State Forest.

**Provide Better Camping Experience**
Management Action - Develop a network of drive-up campsites distributed evenly throughout the Unit. This will help direct hunters who are looking for places to legally set up long term hunting camps by permit during the season. Seven campsites will be designated initially. Most of these sites are located on old landings because a cleared hardened surface already exists. However, if a timber harvest needs to reuse any of these landings, the campsite will temporarily be closed. If camping pressures continue to increase additional sites may be developed throughout the Unit.

- TH #1 -Located on Lewis RA# 9 on the north side of Plumber Road.
- TH #2 - Located on Lewis RA# 8 on the east side of the North Road.
- TH #3 - Located on Lewis RA# 8 at the end of the Dolphin Road.
- TH #4 – Located on Lewis RA# 16 on the northeast end of the Apple PFAR.
- TH #5 – Located on Lewis RA#21 on the south side of Osceola Road.
- TH #6 – Located on Lewis RA#26 on the DEC haul road off Swancott Mill Road.
- TH #7 – Located on Lewis RA#41 on the west side of North Osceola Road.

Management Action – Additional suitable camping may be available with NYS Ranger permits during Big Game Season.

**Develop Primitive Campsites**
Management Action - Install two primitive backcountry campsites on the Unit. These campsites would be located off the road and the user would be required to walk into the site.

- TH-A - Located on Lewis RA# 41 down the DEC owned ROW on the west side of Stony Brook.

- TH-B – Located on Lewis RA#45 on the long- distance foot trail between Michigan Mills Road and Lamplight Road.

**Install Additional Off-road Parking to Access the Unit**

Management Action- Additional parking areas will be developed to give the public better access to the Unit and additional proposed facilities.

- Parking area near the Stony Brook ROW on Lewis RA# 41. This will provide parking for the proposed backcountry campsite. The 2-3 car parking area may need to be across the road from the trail head to the campsite.
- Parking area at the end of Camp 2 Road on State Forest just before EBFC Conservation Easement. There really is not a good location for a parking area on state land but there is a need for a public turn around and parking to access this public land. Ideally, moving the gate down Camp 2 Road 0.2 miles and placing public parking on the CE would be a more ideal location. However, if that is not possible, a small 1 car parking space maybe constructed on the west side of Camp 2 Rd before the gate.
- Parking area on the northeast end of Lewis RA# 26, on Gallo Road. This parking would be mainly for winter access to EBFC Conservation Easement. Development of this parking area would only be considered if an agreement with the Town could be reached on plowing the parking area in the winter.
- Parking area on Lewis 21 off Osceola Road

**Maintain Existing MAPPWD routes**

Management Action - Clearly sign all the accessible routes on the Unit. The trails should have MAPPWD signage that allows vehicle traffic by permit only.

Management Action- 2.4 miles of existing MAPPWD routes need to be raked, graded and brushed out.

**Provide a More Wilderness Experience to the MAPPWD Access Program**

Management Action- Develop a MAPPWD experience on the Unit. Create an accessible campsite for persons with mobility impairments. Convert an old skid trail network on East Osceola State Forest into ATV trails for those with the MAPPWD permits. This would provide a destination experience for those with mobility impairments.

**Monitor and Maintain the Multi-use Trails at Carpenter Ski Trails**

Management Action - Every year the trails should be cleared of brush and debris. Signage and station maps should be maintained.

Management Action – Upgrade Jacks Trail, Mill Creek Trail and Snow Ridge Trails. Between the three trails a maximum of three-foot bridges could be installed, three boardwalks with maximum total length of 110 feet, three culverts, several spots for corduroy and reshaping the trails to address the drainage troubles and keep water off the trail. Before work can begin another assessment of work needed is required.

Management Action – Create a new trail to the west of the Return Trail and ends at Beaver Pond Trail. This new trail will avoid a severely rutted section of trail that is not fixable.

Management Action – Extend Larch Loop trail into stand A-9 for another 0.6-mile loop. This would also maintain clear ownership of this less accessible piece of State Forest.

Management Action – If the opportunity presents itself, relocate the Gomer Hill Fire tower to the Carpenter Hill Ski Trails. The new location may be off the West Loop Trail at the highest point of elevation or at the best location logistically.

**Develop New Trails as Demand Develops**

Management Action – Regional interests have developed a non-motorized long-distance trail across the Tug Hill Region. Parts of the trail are established. The southern trailhead, off Osceola Road, will need to be rerouted because there is no access further than Forest Preserve Lot-57. Several alternate routes will be considered.

- Trailhead and parking area located on EBFC CE continue north through East Osceola State Forest through Forest Preserve Lot-98 through EBFC CE through Forest Preserve Lot-74 to connect back with the original trail location, or a similar route.

**Provide Designated Snowmobile Trails at Existing Levels.**

Management Action - Continue the AANR/VSA agreements with local snowmobile clubs on the existing trails. Routine trail maintenance will be performed by volunteers in cooperation with DEC foresters and the Division of Operations. Funding for these activities may be provided by DEC Environmental Protection Fund monies and the Snowmobile Trail Fund administered by the New York State Office of Parks, Recreation and Historic Preservation (OPRHP).

Management Action - Foster a good working relationship with local clubs and the Lewis County trail coordinator. Look for opportunities for trail connections on state forest lands to get snowmobiles off plowed roads, to provide connections between trail systems and to enhance the recreational experience on the Unit and adjacent private and other government lands.

**Consider ATV Opportunities on State Forest Roads that Connect County Trail Networks**

Management Action – ATV trails may be considered to accommodate “connector trails” through the Unit that provide critical linkages for the Lewis County ATV Trail Network. During the development of the Tug Hill East UMP Lewis County proposed five potential routes they would like to see open to enhance their ATV trail system. All five routes were evaluated against the criteria of the SPSFM. Two of the proposals may potentially meet the criteria for designation as a route open for ATV use, each is addressed below.

Private ROW on Goodhines Road

- This is a private ROW across Lewis 43, Raywood Unique Area. The deeded ROW allows for recreational use of the route to the private land parcel. DEC agrees to allow ATV access, as part of the Lewis County Trail System, on this route so long as it does not result in resource impacts or damage to State lands.

Mohawk Springs SF-Lewis 16

- This proposal would open the Apple Mill PFAR between the Apple Mill Road (Town Road) and the Esche Road (Town Road). Currently neither Town road is open to public ATV use as part of the public trail system. At the Esche Road end of the Apple Mill PFAR there is a private parcel proposed to be open to public ATV use. Should that parcel be opened to ATV uses as well as the Esche Road and the Apple Mill Road then

opening the Apple Mill PFAR could occur without an amendment to the plan if it meets all other the requirements of the SPSFM.

DEC will continue to work with the Lewis County Trail Coordinator to review proposed routes that meet the criteria set forth in the SPSFM. Should routes be identified that meet the requirements of the SPSFM, meet legal requirements and pose no natural resource impacts, they may be opened in the future by an amendment to the Plan.

**Install a Wildlife Viewing Platform**
Management Action – Install an elevated viewing platform to observe birds and wildlife across the large wetland between North Road and the Whetstone Reservoir. The ideal place would be on North Road, Lewis RA# 8, or at the best location possible.

## Mineral and Alternate Energy Goals and Actions

There has been a regional movement on the Tug Hill to invest in alternative energy sources to fossil fuels. The Tug Hill Plateau is thought to have one of the largest roadless areas in the state at 121,000 acres. The area has one of the largest wind farms east of the Mississippi River. Businesses and researchers are building facilities to capitalize on woody biomass for biofuels and agricultural lands are starting to install solar farms. All these investments are to meet the State's goal of reducing greenhouse gas emissions by 70% by 2030 outlined in the Climate Leadership and Community Protection Act (CLCPA). An important benefit of the forest resources on the Unit would be the long-term sequestration of carbon through the growth of healthy and resilient forests. In growing these forests, a supply of low-grade forest products can support the biomass markets.

**Utilize the Energy Resources on the Unit**
Management Action - Presently there is no interest in gas or oil exploration on the Unit. In the event an entity desires to use the surface estate to conduct geophysical (such as a seismic survey), geochemical and/or surface sampling procedures on DEC lands, a detailed analysis of the Unit will be conducted. At that time, a detailed tract assessment would be developed to determine areas that may or may not be suitable for exploration and assure compliance with the requirements of the CLCPA.

**Managing Stands for Carbon Sequestration**
Management Action- Forested land sequesters more carbon than other land uses. The fastest rates of carbon sequestration occur in young, vigorously growing trees while older forests sequester higher amounts of carbon. Regardless of the age of the stand(s), any given stand will sequester carbon at a greater rate if it is healthy and growing well. The silvicultural strategies for highest carbon sequestration focus on ways to increase rates of leaf area production and maintain canopy cover. Over the long term, this requires active management of young forest stands with successive cycles of growing, thinning, harvesting and putting wood into either long-lived carbon storing wood products (such as lumber, furniture, CLT), products amenable to recycling (such as paper, cardboard) or energy production (firewood or cogeneration). The recommendation which best serves this goal is to follow the harvest schedule to ensure healthy and vigorously growing trees on the Unit.

**Provide Biomass for the Production of Biofuels**

Management Action - Pursue markets for woody biomass. Include new biomass brokers for the area on the DEC's timber sales bidding lists. This market may help accomplish prescriptive timber stand improvements and move sales of un-thinned spruce and pine stands. Staff foresters should reach out to this segment of the wood products industry and solicit their involvement in our bid sales. Developing a good relationship with the buyers in this market may help increase demand for our "Certified" biomass.

## Open Space Goals and Actions

Protecting and managing open space is a key part of the DEC's mission. This philosophy is shaped not just by the number of citizens who wish to participate in outdoor activities, but also on the value of the natural resources themselves to present and future generations.

The overall framework of land conservation in New York is identified in the 2016 New York State Open Space Conservation Plan. The plan was prepared by the Office of Parks, Recreation and Historical Preservation and the Department of Environmental Conservation, in consultation with nine regional Advisory Committees appointed by county governments and the State, representing a spectrum of open space advocates, natural resource and recreation professionals, local governments and concerned citizens. The plan ensures that the State of New York conserves its cherished open space resources as a critical part of efforts to improve the economy and the quality of life in New York communities.

The 2016 New York State Open Space Conservation Plan lists conservation projects identified by the Region 6 Open Space Advisory Committee that encompass exceptional ecological, wildlife, recreational, scenic and historic values. There are four priority projects in the Plan that support acquisition of lands for adding to or enhancing the existing State Forests of the Tug Hill East Unit. First, the Tug Hill Core Forests and Headwaters Streams Project stresses protecting the forested headwaters of several watersheds that provide exceptional quality drinking water, large tracts managed for forest products as well as ecological and recreational benefits. Second, the Working Forest Lands project identifies the need to acquire easements on large tracts of timber producing lands to assure long term sustainable forestry, to minimize development and to provide public recreational opportunities where appropriate. Third, the State Forest, Unique Area & Wildlife Management Area Protection project emphasizes acquisition to improve access, eliminate inholdings that complicate management, and provide buffers to protect resources, as well as enhance recreational opportunities. The fourth priority project is the Statewide Small Projects which provides for the acquisition of parcels less than 200 acres in size and less than $250,000 in cost which could be a stand-alone parcel or adjacent to existing state land. All projects in these categories are eligible for land acquisition funding from the State's Environmental Protection Fund established by ECL Article 54.

**Continue to Identify and Evaluate Land Acquisition Opportunities as They Arise**

Management Action – Certain acquisition projects will be given high priority when being considered. Highest priority will be given to acquisitions that protect unique natural communities, rare, threatened, or endangered species, eliminate private in-holdings, improve access to State lands, create a more contiguous Unit and protect or enhance the State's natural resources. Acquisitions must qualify in at least one of the priority project categories listed above.

## Enforcement and Protection Goals and Actions

The primary enforcement and protection goal for the Unit is to preserve, protect and enhance the state's forest resources and provide for the safety and well-being of the public using these resources.

**Resolve Encroachment Issues**

Management Action - Certified letters will be delivered to the landowners that are encroaching on state lands of the Unit. The letter will ask for proof from the landowner of their rights to have property on and/or over state land. If the landowner provides no documentation, then the landowner will be asked to end the encroachment or legal actions will be pursued. Newly found violations will be added to the list and similar action will be taken.

**Execute Priority Survey Requests**

Management Actions - There are several areas on the Unit that need surveys to clarify the location of boundary lines, including some cases where there may also be ongoing encroachments. Priority for surveying should go to these boundary lines. The best-case scenario would involve researching all acquisition deeds for the Unit and completing surveys on exterior boundaries. If approximately 8 miles of exterior boundary lines were surveyed every year the Unit could be completed in 20 years, though at current staffing and funding this is not a realistic expectation.

Management Action - The Division of Lands & Forest and the Division of Fish and Wildlife staff will work with the Division of Operations to identify any missing boundary lines or survey work identified during annual boundary line maintenance. An updated annual survey request will then be submitted to the Division of Real Property.

Management Action - The boundary lines on the Unit will be maintained on a minimum 7-year cycle. There is approximately 155 miles of exterior boundary lines which means 22 miles/year needs to be maintained. State Forest signs will be maintained along roads and property boundaries spaced at a distance of 300 feet. This is critical for protecting state lands from encroachment, littering and other inappropriate uses. It is also essential for recreationist's safety and for preventing trespass onto private land from state lands.

**Identify Potential Helicopter Landing Sites**

Management Action **–** The remoteness of the Unit often presents obstacles to first responders and law enforcement in the event of an emergency. This is even more critical in winter months when first responder vehicles are unable to access much of the area due to unplowed roads. Lands & Forests, Rangers and local first responders should have a dialog to see if designated helispot areas would be beneficial. Minimum helispot dimensions would be 100 ft X 100ft. If suitable locations are found, maps of these locations should be widely distributed to first responding units.

## Local Community Goals Actions

There is a long history of the DEC forestry staff working with the local community to provide opportunities in the Tug Hill East Unit, whether it is timber sales marked for local and regional markets or working with community members and organizations to develop trails providing

opportunities for recreation by local residents and visitors from afar that spend money in the local community. Through the sale of timber products, recreational activities, hunting, fishing and other activities state forest lands enhance local economies and quality of life. Additional goals and recommendations follow.

The primary local community goal of the Tug Hill East Unit is to be an asset to the local communities that surround it by continuing to provide revenue to New York State, economic stimulus and jobs for local communities and businesses, and a place to recreate for residents and visitors.

Management Action - Work with Lewis County trail coordinators to determine if state forest lands can provide connector trails to county trails systems.

Management Action - Provide town and other local government, agencies and other regional development councils information about State Forests and the opportunities they present.

Management Action - Contact town highway supervisors when winter logging may affect town roads to determine if road plowing is possible.

## Ten-Year List of Management Actions

### Year 1:

- Establish a legal, practical and agreed upon location for the southern trailhead of the Tug Hill Traverse Trail,
- Develop drive-up campsites TH #1, 2, and 3 on Plumber, North, and Dolphin Roads,
- Designate primitive campsite TH-B on East Branch Fish Creek State Forest or do so once the EBFC CE recreation plan is approved,
- Upgrade Jacks Trail, Mill Creek Trail and Snow Ridge Trails,
- Upgrade Seymour PFAR to a Class B Forest Road, 1.0 miles,
- Identify East Branch Fish Creek State Forest as a High Value Conservation Forest,
- Sign, brush and grade 2.4 miles of MAPPWD routes,
- Brush and Grade 2.6 miles of PFARs (3-year cycle),
- Maintain about 22 miles of boundary lines on state forest/DFP lots (7-year cycle),
- Rapid response with current invasive species eradication and any new occurrences,
- Mark/sell 280 acres of intermediate/uneven-aged hardwood harvest, and
- Mark/sell 370 acres of softwood thinning/harvest.

### Year 2:

- Develop drive-up campsite TH #4 on Apple PFAR,
- Determine the best parking lot location on Camp 2 Road and build it,
- Resurface Nob PFAR 0.9 miles,
- Rapid response with current invasive eradication and any new occurrences,
- Brush and Grade 2.6 miles of PFAR (3-year cycle),
- Maintain about 22 miles of boundary lines on state forest/FP lots (7- year cycle),
- Mark/sell 280 acres of intermediate/uneven-aged hardwood harvest, and
- Mark/sell 370 acres of softwood thinning/harvest.

### Year 3:

- Develop drive-up campsite TH#6 on Swancott Mill PFAR,
- Upgrade Swancott Mill PFAR with culverts and gravel, 1.0 miles,
- If an agreement for plowing can be reached with the Town, construct a new parking area on Gallo Road,
- Rapid response with current invasive eradication and any new occurrences,
- Brush and Grade 2.6 miles of PFAR (3-year cycle),
- Maintain about 22 miles of boundary lines on state forest/FP lots (7-year cycle),
- Mark/sell 280 acres of intermediate/uneven-aged hardwood harvest, and
- Mark/sell 370 acres of softwood thinning/harvest.

### Year 4:

- Develop drive-up campsite #5 on East Osceola State Forest,
- Develop off road parking area on East Osceola State Forest on Osceola Road,
- Develop ADA campsite and MAPPWD trail network on East Osceola State Forest,
- Sign, brush and grade 2.4 miles of MAPPWD routes,
- Rapid response with current invasive eradication and any new occurrences,
- Brush and Grade 2.6 miles of PFAR (3-year cycle),
- Maintain about 22 miles of boundary lines on state forest/DFP lots (7- year cycle),
- Mark/sell 280 acres of intermediate/uneven-aged hardwood harvest, and
- Mark/sell 370 acres of softwood thinning/harvest.

### Year 5:

- Develop drive-up campsite TH#7 on Line Brook State Forest,
- Install parking area on Line Brook State Forest,
- Designate primitive campsite TH-A on Line Brook State Forest;
- Design loop trail on Carpenter Trails into stand A-9,
- Rapid response with current invasive eradication and any new occurrences,
- Brush and Grade 2.6 miles of PFAR (3-year cycle),
- Maintain about 22 miles of boundary lines on state forest/FP lots (7-year cycle),
- Mark/sell 280 acres of intermediate/uneven-aged hardwood harvest, and
- Mark/sell 370 acres of softwood thinning/harvest.

### Year 6:

- Replace bridge at end of Seelman PFAR,
- Rapid response with current invasive eradication and any new occurrences,
- Brush and Grade 2.6 miles of PFAR (3-year cycle),
- Maintain about 22 miles of boundary lines on state forest/FP lots (7-year cycle),
- Mark/sell 320 acres of intermediate/uneven-aged hardwood harvest, and
- Mark/sell 180 acres of softwood thinning/harvest.

### Year 7:

- Rapid response with current invasive eradication and any new occurrences,
- Brush and Grade 2.6 miles of PFAR (3-year cycle),
- Maintain about 22 miles of boundary lines on state forest/FP lots (7-year cycle),
- 320 acres of intermediate/uneven-aged hardwood harvest, and
- 180 acres of softwood thinning/harvest.

### Year 8:

- Start Forest Inventory for Tug Hill East Unit,
- Rapid response with current invasive eradication and any new occurrences,
- Sign, brush and grade 2.4 miles of MAPPWD routes,
- Brush and Grade 2.6 miles of PFAR (3-year cycle),
- Maintain about 22 miles of boundary lines on state forest/FP lots (7-year cycle),
- Mark/sell 320 acres of intermediate/uneven-aged hardwood harvest, and
- Mark/sell 180 acres of softwood thinning/harvest.

### Year 9:

- Continue Forest Inventory for Tug Hill East Unit,
- Rapid response with current invasive eradication and any new occurrences,
- Brush and Grade 2.6 miles of PFAR (3-year cycle),
- Maintain about 22 miles of boundary lines on state forest/FP lots (7-year cycle),
- Mark/sell 320 acres of intermediate/uneven-aged hardwood harvest, and
- Mark/sell 180 acres of softwood thinning/harvest.

### Year 10:

- Finish Forest Inventory for Tug Hill East Unit,
- Rapid response with current invasive eradication and any new occurrences,
- Brush and Grade 2.6 miles of PFAR (3-year cycle),
- Maintain about 22 miles of boundary lines on state forest/FP lots (7-year cycle),
- Mark/sell 320 acres of intermediate/uneven-aged hardwood harvest, and
- Mark/sell 180 acres of softwood thinning/harvest.

FOREST TYPE CODES

## Forest Type Codes

### Natural Forest Types

10 Northern Hardwood
11 Northern Hardwood-Hemlock
13 Northern Hardwood-Spruce-Fir
12 Northern Hardwood-White Pine
14 Pioneer Hardwood
15 Swamp Hardwood
16 Oak
17 Black Locust
18 Oak-Hickory
19 Oak-Hemlock
20 Hemlock
21 White Pine
22 White Pine-Hemlock
23 Spruce-Fir
24 Spruce-Fir-Hemlock-White Pine
25 Cedar
26 Red Pine
27 Pitch Pine
28 Jack Pine
29 Tamarack
30 Oak-Pine
31 Transition Hardwoods (NH-Oak)
32 Other Natural Stands
33 Northern Hardwood-Norway Spruce
97 Seedling-Sapling- Natural
99 Non-Forest
-99 Null

### Plantation Types

40 Plantation: Red Pine
41 Plantation: White Pine
42 Plantation: Scotch Pine
43 Plantation: Austrian Pine
44 Plantation: Jack Pine
45 Plantation: Norway Spruce
46 Plantation: White Spruce
47 Plantation: Japanese Larch
48 Plantation: European Larch
49 Plantation: White Cedar
50 Plantation: Douglas Fir
51 Plantation: Balsam Fir
52 Plantation: Black Locust
53 Plantation: Pitch Pine
54 Plantation: Misc. Species (Pure)
60 Plantation: Red Pine-White Pine
61 Plantation: Red Pine-Spruce
62 Plantation: Red Pine-Larch
63 Plantation: White Pine-Spruce
64 Plantation: White Pine-Larch
65 Plantation: Scotch Pine-Spruce
66 Plantation: Scotch Pine-Larch
67 Plantation: Larch-Spruce
68 Plantation: Bucket Mixes
70 Plantation: Pine-Natural Species
72 Plantation: Misc. Hardwood
98 Plantation: Seedling-Sapling

## Treatment Type

Harvest (HV)
Irregular Gap Shelterwood w/ Reserves (IGSwR)
Overstory Removal (OSR)
Pre-Commercial Thinning (PCT)
Patch Clear Cuts
Release (RL)
wa Salvage (white ash Salvage)
Firewood Thinning (FW)
Habitat Management (HM)
Wildlife (WL)

## Size Class

Seedling/Sapling <5” DBH (S-S)
Pole Timber 6”-11” DBH (PT)
Small Saw Timber 12”-17” DBH (SST)
Medium Saw Timber 18”-23” DBH (MST)
Large Saw Timber > 24” DBH (LST)Land Management Action Schedules

## Land Management Action Schedule for the First Five Years

*Table III.F. -Land Management Action Schedule for First Five-Year Period Beginning 2020* **(by State Forest)**

| State Forests | Stand | Acres | Size Class | Forest Type | Action Interval | Treatment Type |
|---|---|---|---|---|---|---|
| Lewis 26 | A-1.0 | 22.94 | SST | Natural Forest | 0-5 | FW Thinning |
| Lewis 26 | A-2.0 | 18.84 | SST | Plantation | 0-5 | Thinning |
| Lewis 26 | A-3.0 | 3.79 | PT | Plantation | 0-5 | Thinning |
| Lewis 26 | A-4.0 | 10.49 | PT | Plantation | 0-5 | Thinning |
| Lewis 26 | A-12.0 | 10.65 | SST | Natural Forest | 0-5 | FW Thinning |
| Lewis 26 | A-15.0 | 13.34 | PT | Natural Forest | 0-5 | Selection |
| Lewis 26 | A-16.0 | 50.79 | PT | Natural Forest | 0-5 | Selection |
| Lewis 26 | A-17.0 | 35.12 | SST | Natural Forest | 0-5 | Selection |
| Lewis 2, 33 | A-6.0 | 17.94 | SST | Plantation | 0-5 | Thinning/OSR |
| Lewis 2, 33 | A-11.0 | 4.59 | SST | Plantation | 0-5 | Thinning/OSR |
| Lewis 2, 33 | A-12.0 | 14.45 | SST | Plantation | 0-5 | Thinning |
| Lewis 2, 33 | A-13.0 | 8.73 | MST | Plantation | 0-5 | Thinning |
| Lewis 2, 33 | A-14.0 | 4.45 | PT | Plantation | 0-5 | Thinning |
| Lewis 2, 33 | A-15.0 | 2.17 | SST | Plantation | 0-5 | Thinning |
| Lewis 2, 33 | A-17.0 | 29.24 | SST | Plantation | 0-5 | Thinning/Access |
| Lewis 2, 33 | A-18.0 | 8.72 | SST | Plantation | 0-5 | Thinning |
| Lewis 2, 33 | A-22.0 | 24.35 | SST | Plantation | 0-5 | Thinning |
| Lewis 2, 33 | B-27.0 | 28.01 | PT | Plantation | 0-5 | Thinning |
| Lewis 2, 33 | B-31.0 | 16.88 | MST | Plantation | 0-5 | Thinning |
| Lewis 2, 33 | B-32.0 | 3.43 | SST | Natural Forest | 0-5 | Thinning |
| Lewis 2, 33 | B-33.0 | 12.60 | MST | Plantation | 0-5 | FW Thinning |
| Lewis 2, 33 | B-42.0 | 21.03 | PT | Plantation | 0-5 | Thinning |
| Lewis 2, 33 | A-17.0 | 5.47 | PT | Natural Forest | 0-5 | FW Thinning |

LAND MANAGEMENT ACTION SCHEDULE FOR THE FIRST FIVE YEARS

| | | | | | | |
|---|---|---|---|---|---|---|
| Lewis 2, 33 | A-18.1 | 36.76 | MST | Plantation | 0-5 | Thinning |
| Lewis 2, 33 | A-24.0 | 97.60 | PT | Natural Forest | 0-5 | FW Thinning |
| Lewis 2, 33 | A-25.0 | 4.58 | PT | Natural Forest | 0-5 | FW Thinning |
| Lewis 2, 33 | A-26.0 | 9.76 | PT | Plantation | 0-5 | Thinning |
| Lewis 7 | A-2.0 | 22.99 | SST | Plantation | 0-5 | FW Thinning |
| Lewis 7 | A-3.0 | 6.71 | PT | Plantation | 0-5 | OSR |
| Lewis 7 | A-4.1 | 5.49 | SST | Natural Forest | 0-5 | Thinning |
| Lewis 7 | A-4.2 | 6.65 | PT | Plantation | 0-5 | FW Thinning |
| Lewis 7 | A-7.1 | 6.07 | PT | Plantation | 0-5 | Thinning |
| Lewis 7 | A-15.0 | 52.78 | SST | Natural Forest | 0-5 | FW Thinning |
| Lewis 7 | A-21.0 | 17.63 | PT | Natural Forest | 0-5 | Wildlife |
| Lewis 7 | A-22.0 | 4.27 | SST | Plantation | 0-5 | Wildlife-HM |
| Lewis 7 | A-23.0 | 14.63 | PT | Natural Forest | 0-5 | Thinning |
| Lewis 7 | A-24.0 | 15.04 | PT | Plantation | 0-5 | Thinning |
| Lewis 7 | A-25.0 | 46.57 | SST | Plantation | 0-5 | OSR with Legacy WP |
| Lewis 7 | A-27.0 | 19.40 | PT | Plantation | 0-5 | Thinning |
| Lewis 7 | A-34.0 | 11.52 | SST | Plantation | 0-5 | Thinning |
| Lewis 8 | B-10.0 | 11.12 | SST | Natural Forest | 0-5 | Wildlife-HM |
| Lewis 8 | B-17.0 | 88.25 | SST | Natural Forest | 0-5 | Wildlife-HM |
| Lewis 8 | C-20.0 | 10.84 | PT | Natural Forest | 0-5 | wa Salvage |
| Lewis 8 | D-29.1 | 50.33 | SST | Plantation | 0-5 | wa Salvage |
| Lewis 8 | A-37.0 | 3.08 | MST | Plantation | 0-5 | Thinning |
| Lewis 8 | A-40.0 | 6.94 | SST | Plantation | 0-5 | Thinning |
| Lewis 8 | A-43.0 | 18.97 | SST | Plantation | 0-5 | Thinning |
| Lewis 8 | A-46.0 | 55.16 | SST | Plantation | 0-5 | Thinning |
| Lewis 8 | B-27.0 | 13.38 | PT | Plantation | 0-5 | Thinning |

| | | | | | | |
|---|---|---|---|---|---|---|
| Lewis 8 | C-24.0 | 16.44 | SST | Plantation | 0-5 | Thinning |
| Lewis 8 | C-25.0 | 17.71 | PT | Plantation | 0-5 | Thinning |
| Lewis 8 | D-3.0 | 82.34 | SST | Plantation | 0-5 | Thinning |
| Lewis 8 | D-30.0 | 26.99 | SST | Plantation | 0-5 | Thinning |
| Lewis 8 | D-42.0 | 13.51 | PT | Plantation | 0-5 | Thinning |
| Lewis 8 | D-26.0 | 28.98 | SST | Plantation | 0-5 | Selection w Legacy WP |
| Lewis 8 | A-39.0 | 23.50 | PT | Natural Forest | 0-5 | Selection |
| Lewis 8 | B-9.0 | 17.45 | SST | Plantation | 0-5 | Selection |
| Lewis 8 | B-15.0 | 9.22 | SST | Natural Forest | 0-5 | Selection |
| Lewis 8 | B-16.0 | 8.08 | SST | Natural Forest | 0-5 | Selection |
| Lewis 8 | D-7.0 | 89.68 | PT | Natural Forest | 0-5 | Selection |
| Lewis 8 | A-32.0 | 18.16 | PT | Natural Forest | 0-5 | PCT |
| Lewis 8 | D-4.0 | 30.88 | PT | Plantation | 0-5 | Patch Clear Cuts |
| Lewis 8 | B-14.0 | 29.64 | PT | Plantation | 0-5 | OSR w Legacy WP |
| Lewis 8 | C-3.1 | 22.43 | SST | Plantation | 0-5 | OSR w Legacy WP |
| Lewis 8 | C-9.0 | 24.81 | PT | Plantation | 0-5 | OSR w Legacy WP |
| Lewis 8 | D-5.0 | 50.51 | PT | Plantation | 0-5 | OSR w Legacy WP |
| Lewis 8 | A-36.0 | 18.13 | PT | Plantation | 0-5 | IGSwR |
| Lewis 8 | B-28.0 | 2.02 | PT | Natural Forest | 0-5 | FW Thinning |
| Lewis 8 | B-31.0 | 16.16 | SST | Natural Forest | 0-5 | FW Thinning |
| Lewis 8 | D-2.0 | 6.57 | PT | Plantation | 0-5 | FW Thinning |
| Lewis 8 | D-9.0 | 2.74 | SST | Natural Forest | 0-5 | FW Thinning |
| Lewis 8 | D-27.0 | 8.40 | PT | Natural Forest | 0-5 | FW Thinning |
| Lewis 9 | A-16.0 | 11.09 | MST | Plantation | 0-5 | Thinning |
| Lewis 9 | A-20.0 | 70.57 | SST | Plantation | 0-5 | OSR w Legecy WP |
| Lewis 9 | A-21.0 | 9.82 | SST | Natural Forest | 0-5 | Selection |

| | | | | | | |
|---|---|---|---|---|---|---|
| Lewis 9 | A-29.0 | 21.89 | SST | Plantation | 0-5 | Thinning |
| Lewis 9 | A-30.0 | 76.80 | PT | Plantation | 0-5 | Patch Clear Cuts |
| Lewis 9 | A-34.0 | 16.00 | SST | Natural Forest | 0-5 | FW Thinning |
| Lewis 16 | A-15.0 | 8.67 | SST | Plantation | 0-5 | Thinning |
| Lewis 16 | A-16.0 | 23.65 | SST | Plantation | 0-5 | Thinning |
| Lewis 16 | A-25.0 | 6.11 | SST | Plantation | 0-5 | Access |
| Lewis 16 | A-27.0 | 11.92 | SST | Plantation | 0-5 | Selection |
| Lewis 16 | A-28.0 | 85.85 | MST | Plantation | 0-5 | Thinning |
| Lewis 21 | A-11.0 | 18.01 | SST | Plantation | 0-5 | Thinning |
| Lewis 21 | A-27.0 | 123.27 | PT | Natural Forest | 0-5 | Selection |
| Lewis 21 | A-28.0 | 75.01 | SST | Natural Forest | 0-5 | Selection |
| Lewis 21 | A-30.0 | 12.93 | PT | Natural Forest | 0-5 | Selection |
| Lewis 21 | A-33.0 | 95.07 | PT | Natural Forest | 0-5 | Selection |
| Lewis 21 | B-1.0 | 3.61 | SST | Natural Forest | 0-5 | FW Thinning |
| Lewis 21 | B-2.0 | 6.48 | PT | Plantation | 0-5 | Thinning |
| Lewis 21 | B-21.0 | 15.42 | SST | Natural Forest | 0-5 | Selection |
| Lewis 21 | B-22.0 | 28.99 | SST | Natural Forest | 0-5 | IGSwR |
| Lewis 21 | B-23.0 | 6.20 | PT | Natural Forest | 0-5 | Selection |
| Lewis 21 | B-24.0 | 18.88 | SST | Natural Forest | 0-5 | Selection |
| Lewis 21 | B-27.0 | 3.68 | SST | Plantation | 0-5 | Thinning |
| Lewis 21 | B-30.0 | 8.83 | SST | Natural Forest | 0-5 | IGSwR |
| Lewis 21 | B-32.0 | 14.46 | PT | Natural Forest | 0-5 | FW Thinning |
| Lewis 23 | A-8.0 | 14.92 | PT | Plantation | 0-5 | Thinning |
| Lewis 23 | A-17.0 | 3.66 | PT | Natural Forest | 0-5 | FW Thinning |
| Lewis 23 | A-18.0 | 15.61 | SST | Natural Forest | 0-5 | FW Thinning |
| Lewis 23 | A-20.0 | 4.98 | SST | Natural Forest | 0-5 | FW Thinning |
| Lewis 23 | A-21.0 | 16.85 | PT | Plantation | 0-5 | Thinning |

| | | | | | | |
|---|---|---|---|---|---|---|
| Lewis 23 | A-22.0 | 14.10 | PT | Plantation | 0-5 | Thinning |
| Lewis 25 | A-10.0 | 25.87 | SST | Plantation | 0-5 | OSR w Legacy |
| Lewis 25 | A-13.0 | 35.51 | MST | Plantation | 0-5 | OSR w Legacy |
| Lewis 25 | A-30.0 | 103.15 | SST | Natural Forest | 0-5 | FW Thinning |
| Lewis 25 | A-32.0 | 17.22 | SST | Plantation | 0-5 | Thinning |
| Lewis 25 | A-33.0 | 13.19 | PT | Natural Forest | 0-5 | Thinning |
| Lewis 25 | A-34.0 | 51.10 | SST | Plantation | 0-5 | Thinning |
| Lewis 25 | A-40.0 | 14.13 | SST | Plantation | 0-5 | Thinning |
| Lewis 25 | A-60.0 | 43.48 | MST | Plantation | 0-5 | Thinning |
| Lewis 25 | A-63.0 | 21.28 | PT | Plantation | 0-5 | Selection |
| Lewis 25 | A-64.0 | 16.03 | SST | Plantation | 0-5 | Thinning |
| Lewis 39 | A-23.0 | 2.58 | PT | Plantation | 0-5 | Thinning |
| Lewis 39 | A-24.0 | 33.75 | SST | Plantation | 0-5 | Thinning |
| Lewis 39 | A-25.0 | 57.63 | SST | Plantation | 0-5 | OSR w Legacy WP |
| Lewis 39 | A-11.0 | 105.92 | SST | Plantation | 0-5 | Thinning |
| Lewis 41 | A-3.0 | 6.76 | PT | Natural Forest | 0-5 | FW Thinning |
| Lewis 41 | A-12.0 | 6.36 | SST | Plantation | 0-5 | OSR |
| Lewis 41 | A-22.2 | 9.57 | PT | Natural Forest | 0-5 | wa Salvage |
| Lewis 41 | A-27.0 | 12.12 | SST | Natural Forest | 0-5 | FW Thinning |
| Lewis 43 | A-13.0 | 6.12 | SST | Plantation | 0-5 | FW Thinning |
| Lewis 43 | A-14.0 | 4.49 | SST | Plantation | 0-5 | Thinning |
| Lewis 43 | A-17.1 | 3.59 | PT | Plantation | 0-5 | Thinning |
| Lewis 43 | A-18.0 | 3.26 | SST | Plantation | 0-5 | Thinning |
| Lewis 43 | A-16.0 | 2.74 | PT | Plantation | 0-5 | Thinning |
| Lewis 43 | A-8.2 | 1.12 | PT | Plantation | 0-5 | Thinning |
| Lewis 44 | A-7.0 | 36.05 | SST | Natural Forest | 0-5 | FW Thinning |

| | | | | | | |
|---|---|---|---|---|---|---|
| Lewis 44 | A-15.0 | 37.58 | S-S | Natural Forest (Seedling/Sapling) | 0-5 | Apple Tree Release |
| Lewis 44 | A-19.0 | 31.82 | PT | Natural Forest | 0-5 | FW Thinning |
| Lewis 44 | A-20.0 | 14.09 | PT | Natural Forest | 0-5 | FW Thinning |
| Lewis 44 | A-21.0 | 34.03 | PT | Natural Forest | 0-5 | Selection |
| Lewis 5 | A-15.0 | 17.55 | PT | Natural Forest | 0-5 | PCT |
| Lewis 5 | A-16.0 | 7.09 | PT | Natural Forest | 0-5 | PCT |
| Lewis 5 | A-17.0 | 24.41 | SST | Plantation | 0-5 | Thinning |
| Lewis 5 | A-19.0 | 15.72 | SST | Plantation | 0-5 | Thinning |
| Lewis 5 | A-20.0 | 5.44 | SST | Plantation | 0-5 | OSR w/ Legacy Spruce |
| Lewis 5 | A-32.0 | 7.27 | SST | Natural Forest | 0-5 | FW Thinning |
| Lewis 5 | A-33.0 | 3.32 | SST | Plantation | 0-5 | Thinning |
| Lewis 5 | A-42.0 | 3.84 | PT | Natural Forest | 0-5 | FW Thinning |
| Lewis 5 | A-43.0 | 39.14 | MST | Plantation | 0-5 | Thinning |

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## Glossary of Acronyms

**ADAAG**: Americans with Disabilities Act Accessibility Guidelines

**AANR**: Adopt a Natural Resource program

**ADA**: Americans with Disabilities Act

**ARPA**: Archaeological Resources Protection Act

**ATV**: All-Terrain Vehicle

**BA/AC**: Basal Area per Acre

**BBA**: Breeding Bird Atlas

**BFRM**: Bureau of Forest Resource Management

**BMP**: Best Management Practices

**DEC**: Department of Environmental Conservation

**DLF**: Division of Lands and Forests

**ECL**: Environmental Conservation Law

**EIS**: Environmental Impact Statement

**FSC®**: Forestry Stewardship Council®

**GEIS**: Generic Environmental Impact Statement

**GIS**: Geographic Information Systems

**GPS**: Global Positioning System

**HCVF**: High Conservation Value Forest

**IPM**: Integrated Pest Management

**MAPPWD**: Motorized Access Program for People with Disabilities

**NYCRR**: New York Codes, Rules and Regulations

**OPRHP**: Office of Parks, Recreation, and Historical Preservation

**PFAR**: Public Forest Access Road

**PFD**: Personal Floatation Device

**ROW**: Right-of-Way

**RSA**: Representative Sample Area

**SEQR**: State Environmental Quality Review

# GLOSSARY OF ACRONYMS

**SEQRA**: State Environmental Quality Review Act

**SFI®**: Sustainable Forestry Initiative®

**SGCN**: Species of Greatest Conservation Need

**SHPA**: State Historic Preservation Act

**SMZ**: Special Management Zone

**SPSFM**: Strategic Plan for State Forest Management

**TRP**: Temporary Revocable Permit

**UMP**: Unit Management Plan

**UTV**: Utility Task Vehicle

**VSA**: Volunteer Stewardship Agreement

**WMA**: Wildlife Management Area

**WMU**: Wildlife Management Unit

## Glossary of Terms

**Access trails** - Temporary, unpaved roads which do not provide all weather access within the unit. They are not designed for long term and repeated use by heavy equipment. These corridors were originally constructed for the seasonal removal of forest products by skidding to landings or other staging areas. Constructed according to best management practices, these trails may be used to support other management objectives such as recreational access corridors. Maintenance is limited to activities which minimally support seasonal access objectives.

**Aesthetics** - Forest value, rooted in beauty and visual appreciation and providing a distinct visual quality.

**Age Class** - Trees of a similar size originating from a single natural event or regeneration activity. see cohort.

**All-Aged** - A condition of a forest or stand that contains trees of all or almost all age classes.

**Allowable Cut** - The amount of timber considered as available for cutting during a specified planned period of operation.

**Basal Area** - The cross-sectional area, measured in square feet, of a single stem, including the bark, measured at breast height (4.5 ft above the ground).

**Basal Area/Acre** - A measure of forest density, the sum total of the basal areas of all trees on one acre.

**Best Management Practices** - A practice or a combination of practices that are designed for the protection of water bodies and riparian areas and determined to be the most effective and practicable means of controlling point and non-point source water pollutants.

**Biomass** - the weight of organic matter in a tree, stand, or forest, in units such as living or dead weight, wet or dry weight, etc.

**Biological Diversity (Biodiversity)** - The variety of life on earth. The variety of things and the variability found within and among them. Biodiversity also encompasses processes –both ecological and evolutionary that allow organisms to keep adapting and evolving. Includes genetic diversity (unique combinations of genes found within and among organisms), species diversity (numbers of species in an area), ecological diversity (organization of species into natural communities and the interplay of these communities with the physical environment – interactions among organisms and between organisms and their environment is the key here), Landscape diversity (refers to the geography of different ecosystems across large areas and the connections between them.

**Biological Legacy** - an organism, living or dead, inherited from a previous ecosystem; biological legacies often include large trees, snags and down logs left after timber harvesting. (E)an organism, living or dead, inherited from a previous ecosystem; biological legacies often include large trees, snags and down logs left after timber harvesting.

**Blowdown** - Tree or trees felled or broken off by wind.

**Buffer Zone/Buffer Strip** - A vegetation strip or management zone of varying size, shape, and character maintained along a stream, lake, road, recreation site, or different vegetative zone to

mitigate the impacts of actions on adjacent lands, to enhance aesthetic values, or as a best management practice.

**Cavity Tree/Den Tree** - A tree containing an excavation sufficiently large for nesting, dens or shelter; tree may be alive or dead.

**Clear Cut** - A harvesting and regeneration technique that removes all the trees, regardless of size, on an area in one operation. This practice is done in preparation of the re-establishment of a new forest through reforestation, stump sprouting, or changing habitats, i.e., from forest to brush or grass cover.

**Climax Forest** - An ecological community that represents the culminating stage of a natural forest succession for its locality/environment.

**Coarse Woody Debris (CWD)**- Any piece(s) of dead woody material on the ground in forest stands or in streams.

**Cohort** - A population of trees that originate after some type of disturbance. The disturbance makes growing space available.

**Community** - An assemblage of plants and animals interacting with one another, occupying a habitat, and often modifying the habitat; a variable assemblage of plant and animal populations sharing a common environment and occurring repeatedly in the landscape.

**Conversion** - A change from one silvicultural system to another or from one tree species to another.

**Coppice** - Stems originating primarily from vegetative reproduction, e.g., the production of new stems from stumps, roots or branches. see low forest.

**Corridor** - A linear strip of land identified for the present or future location of a designed use within its' boundaries. Examples: recreational trails, transportation or utility rights-of-way.

- When referring to wildlife, a corridor may be a defined tract of land connecting two or more areas of similar management or habitat type through which a species can travel from one area to another to fulfill any variety of life-sustaining needs.

**Cover type** - The plant species forming a majority of composition across a given area.

**Crown** - the part of a tree or woody plant bearing live branches and foliage.

**Crown Class** - A category of tree based on its crown position relative to those of adjacent trees.

- dominant - receives full light from above and partial to full light from the sides.
- co-dominant -a tree whose crown helps to form the general level of the main canopy and receives full light from above and comparatively little from the sides.
- intermediate -a tree whose crown extends into the lower portion of the main canopy and receives little direct light from above and none from the sides.
- suppressed/ -a tree whose crown is completely overtopped by the crowns of one or more overtopped neighboring trees and receives little or no direct sunlight.

**Crown Closure** - The point at which the vertical projections of crown perimeters within a canopy touch.

**Cull** - Any item of production, e.g., trees, logs, lumber, or seedlings, rejected because it does not meet certain specifications of usability or grade.

**Cultural Resources** - Significant historical or archaeological assets on sites as a result of past human activity which are distinguishable from natural resources.

**Cutting Interval** - The number of years between harvest or regeneration cuts in a stand.

**Deciduous** - Tree and shrub species that lose their foliage in autumn.

**Defoliation** -The partial or complete loss of foliage, usually caused by an insect, disease, or drought.

**Diameter Breast Height (DBH)** -The diameter of the stem of a tree (outside bark) measured at breast height (4.5 ft) from the ground.

**Diameter-Limit Cut** - A timber harvesting treatment in which all trees over a specified diameter may be cut. Diameter-limit cuts often result in high-grading.

**Disturbance** - An event that causes significant change from the normal pattern in an ecosystem. A disturbance can be endogenous, or part of the developmental process that weakens, for example, a tree, making it susceptible to physical or biological forces. Disturbance can also be exogenous, or external to the developmental process, such as intense winds or fires.

**Disturbance Regime** - Describes a repeating pattern of disturbance in a community or across a landscape, such as seasonal flooding, daily tidal flooding, insect outbreaks, periodic fires, windthrow, erosion, and ice scouring/ice storms.

**Ecosystem** - A spatially explicit, relatively homogeneous unit of the earth that includes all interacting organisms and components of the abiotic environment within its boundaries. (note: an ecosystem can be of any size, e.g., a log, pond, field, forest or the earth's biosphere.)

**Ecosystem Management** -The appropriate integration of ecological, economic, and social factors in order to maintain and enhance the quality of the environment to best meet our current and future needs. Means keeping natural communities of plants, animals, and their environments healthy and productive so people can benefit from them year to year.

**Edge** - The more or less well-defined boundary between two or more elements of the environment, e.g., a field adjacent to a woodland or the boundary of different silvicultural treatments.

**Endangered Species** - Any species of plant or animal defined through the Endangered Species Act of 1976 as being in danger of extinction throughout all or a significant portion of its range and published in the Federal Register.

**Even-Aged** - A class of forest or stand composed of trees of about the same age. The maximum age difference is generally 10-20 years.

**Even-Aged System** - A program of forest management directed to the establishment and maintenance of stands of trees having relatively little (10-20 years) variation in ages. The guidelines to be applied in using this system at all stages of tree development are uniquely different from the uneven-aged system.

**Exotic** -Any species that is not native to a particular geographic region or ecosystem.

**Flood Plain** - The level or nearly level land with alluvial soils on either or both sides of a stream or river that is subject to overflow flooding during periods of high-water level.

**Forest** - An assemblage of trees and associate organisms on sites capable of maintaining at least 60% crown closure at maturity.

**Forestry** - The profession embracing the science, art, and practice of creating, managing, using, and conserving forests and associated resources for human benefit and in a sustainable manner to meet desired goals, needs, and values.

**Forest Management** - The application of business methods and technical forestry principles to the operation of a forest property.

**Forest Succession** -The gradual replacement of one community of plants by another. Example: an area of open grass becoming shrub which then becomes shade intolerant trees (pioneer species) and finally climax forest of mostly shade tolerant trees.

**Forested Wetland** - An area characterized by woody vegetation where soil is periodically saturated with or covered by water.

**Fragipan** - A dense and brittle layer of soil. Its hardness results mainly from extreme density or compactness rather than from high clay content. The material may be dense enough to restrict root, nutrient, and water penetration.

**Fragmentation** - A biophysical process of breaking forests into dispersed blocks separated by non-forest, or in some areas, dispersed blocks of mature forest separated by young forest.

**Gaps** - Communities, habitats, successional stages, or organisms which have been identified as lacking in the landscape.

**Geocaching** - A high-tech, hide and seek, outdoor activity for utilizing the Global Positioning System (GPS) where an item is “cached” on the landscape.

**Grassland** -Land on which the vegetation is dominated by grasses, grass like plants, or forbs.

**Green Tree Retention** - The practice of retaining live trees after a release cut. This practice creates higher levels of structural diversity providing varied wildlife habitat and future downed wood. The residual overstory trees also moderate the microclimate of the site and provide continuity of habitat for plant and animal species between uncut forest areas. These residual trees are left through the next rotation.

**Habitat** - The geographically defined area where environmental conditions (e.g., climate, topography, etc.) meet the life needs (e.g., food, shelter, etc.) of an organism, population, or community.

**Harvest/Cut/Logging** - Altering a forest by removing trees and other plants so as to control the composition and form of forest stands.

**Haul roads** - Permanent, unpaved roads which are not designed for all weather travel but may have hardened or improved surfaces with artificial drainage. They are constructed according to best management practices primarily for the removal of forest products, providing limited access within the unit by log trucks and other heavy equipment. These roads may or may not be open for public motor vehicle use, depending on management priorities and objectives. They may serve as recreational access corridors but are not maintained according to specific standards or schedules. The design standards for these roads are below those of the Class B access roads as provided in the Unpaved Forest Road Handbook.

**Header** - See Log Landing.

**High Forest** - A forest originating mainly from natural reproduction.

**High-Grading** - The removal of the most commercially valuable trees (high-grade trees), often leaving a residual stand composed of trees of poor condition or species composition.

**Improvement Cut** - The removal of less desirable trees of any species in a stand of poles or larger trees, primarily to improve composition and quality.

**Indicator Species** - Species with such specialized ecological needs that they can be used for assessing the quality, condition, or extent of an ecosystem based on their presence and density, or the accumulation and effect of materials in their tissues.

**Intermediate Treatment** - Any silvicultural treatment designed to enhance growth, quality, vigor, and composition of the stand after establishment or regeneration and prior to final harvest.

**Invasive** - Species that, after they have been moved from their native habitat to a new location, or following disturbance in their native habitat, spread on their own, displacing other species, and sometimes causing environmental damage.

**Large Poles** - Trees 9-11 inches in diameter at breast height.

**Large Sawtimber** - Trees 18 inches or greater diameter at breast height.

**Log Landing/Log Deck** - A cleared area in the forest to which logs are skidded and are temporarily stored before being loaded onto trucks for transport.

**Low Forest** -A forest produced primarily from vegetative regeneration, i.e. coppice.

**Mast** - All fruits of trees and shrubs used as food for wildlife. Hard mast includes nut-like fruits such as acorns, beechnuts, and chestnuts. Soft mast includes the fleshy fruits of black cherry, dogwood and serviceberry.

**Mature Stand** - Pertaining to an even-aged stand that has attained most of its potential height growth or has reached merchantability standards -note within uneven-aged stands, individual trees may become mature but the stand itself consists of trees of diverse ages and stages of development.

**Medium Sawtimber** - Trees 15-17 inches in diameter at breast height.

**Mesic** - Of sites or habitats characterized by intermediate moisture conditions, i.e., neither decidedly wet nor dry.

**Multiple Use** - A strategy of land management fulfilling two or more objectives, e.g. forest products removal and recreation.

**Multiple Use Area** - Lands acquired pursuant to Article 15, Section 15.01 (b) of the Parks and Recreation Land Acquisition Bond Act. Multiple Use Areas are acquired to provide additional opportunities for outdoor recreation, including public camping, fishing, hunting, boating, winter sports, and, wherever possible, to also serve multiple purposes involving the conservation and development of natural resources, including the preservation of scenic areas, watershed protection, forestry and reforestation.

**Native** - Species believed to have existed in a particular geographic region or ecosystem of the Northeast prior to European settlement and subsequent large-scale alteration of the landscape.

The state reference for native species is Mitchell. 1997 Revised Checklist of New York State Plants.

**Natural Area** - These areas are not managed for the production of wood products. A physical and biological area left in a natural condition, usually without direct human intervention, to attain and sustain a climax condition, the final stage of succession.

**Natural Regeneration** - The establishment of a forest stand from natural seeding, sprouting, suckering or layering.

**Non-Commercial Forest** - Areas of a forest permanently inoperable due to conditions such as inaccessibility, altitude and poor growing conditions. Meyer, Arthur H. and Others. 1961. Forest Management. New York: Ronald Press.

**Neo-Tropical Migratory Birds** - Bird species which migrate between the Northern and Southern hemispheres. These species represent more than 50% (340 of the 600 species) of North American birds.

**Northern Hardwood Forest Type** - A forest type usually made up of sugar and red maple, American beech, yellow birch, and to a lesser extent black cherry and white ash. This type represents about 70 percent of all forests in New York State.

**Old Growth Forest** - The definition of "Old Growth Forest" involves a convergence of many different, yet interrelated criteria. Each of these criteria can occur individually in an area that is not old growth, however, it is the presence of all of these factors that combine to differentiate" Old Growth Forest." from other forested ecosystems. These factors include: An abundance of late successional tree species, at least 180 - 200 years of age in a contiguous forested landscape that has evolved and reproduced itself naturally, with the capacity for self-perpetuation, arranged in a stratified forest structure consisting of multiple growth layers throughout the canopy and forest floor, featuring (1) canopy gaps formed by natural disturbances creating an uneven canopy, and (2) a conspicuous absence of multiple stemmed trees and coppices. Old growth forest sites typically (1) are characterized by an irregular forest floor containing an abundance of coarse woody materials which are often covered by mosses and lichens; (2) show limited signs of human disturbance since European settlement; and (3) have distinct soil horizons that include definite organic, mineral, illuvial accumulation, and unconsolidated layers. The understory displays well developed and diverse surface herbaceous layers.

**Overstory** - That portion of the trees in a forest forming the upper or uppermost canopy layer.

**Parcelization** - The subdivision of land into smaller ownership blocks. This intrudes new features and activities into the forest and changes its character but does not necessarily fragment it in biophysical terms. Richards, N.A., Forest Resources of Central NY, NY Forest Owner 9/93

**Pioneer** - A plant capable of invading bare sites (newly exposed soil) and persisting there or colonizing them until supplanted by successional species.

**Plantation** - A stand composed primarily of trees established by planting or artificial seeding - a plantation may have tree or understory components that have resulted from natural regeneration.

**Poletimber** - Trees that are generally 6-11 inches in diameter at breast height.

**Protection Forest** - Forest land excluded from most active management including wood product management, oil and gas exploration and development, and some recreational activities to protect sensitive sites. These sites most often include steep slopes, wet woodlands and riparian zones along stream corridors.

**Public Forest Access Roads** - Permanent, unpaved roads which may be designed for all-weather use depending upon their location, surfacing and drainage. These roads provide primary access for administration and public use within the unit. The design standards for these roads are those of the Class A and Class B access roads as provided in the Unpaved Forest Road Handbook (8/74). As a general guideline, sufficient access is typically achieved when 1 mile of PFAR is developed for each 500 acres of state land, and no position within the unit lies more than 1 half mile from a PFAR or public highway.

**Public Roads** - Permanent, paved or unpaved roads primarily designed for motor vehicle travel which are maintained by federal, state or local government. These roads may. Or may not provide year-round access.

**Pulpwood** - Low grade or small diameter logs used to make paper products, wood chips, etc.

**Recreational Trail** - Unpaved recreational corridors that do not provide all weather access within a unit and are designed to achieve specific recreational access objectives. Constructed according to best management practices, and following accepted regional standards for design, these trails may be used to support multiple types of seasonal recreation access. Maintenance is limited to activities which minimally support the access objectives and design.

**Reforestation** - The re-establishment of forest cover by natural or artificial means.

**Regeneration** - Seedlings or saplings of any origin. The Society of American Foresters. 1958. Forest Terminology, 3rd edition. Washington, DC.

**Release** - 1.) A treatment designed to free trees from undesirable, usually overtopping, competing vegetation. 2.) A treatment designed to free young trees not past the sapling stage from undesirable competing vegetation that overtops or closely surrounds them.

**Residual Stand** - A stand composed of trees remaining after any type of intermediate harvest. (H)

**Rights-Of-Way** - Permanent, paved or unpaved roads or trails which allow the Department access to state Forest properties while crossing private land, or permanent, paved or unpaved roads or trails across state Forests allowing access to private lands.

**Riparian zone** - Areas of transition between terrestrial and aquatic ecological systems. They are characterized as having soils and vegetation analogous to floodplains, or areas transitional to upland zones. These areas help protect the water by removing or buffering the effects of excessive nutrients, sediments, organic matter, pesticides, or pollutants.

**Rotation** - The period of years between stand establishment and timber harvest as designated by economic or natural decisions.

**Salvage Cutting** - Recovery of the values represented by damaged trees or stands. Smith, David M. 1962, The Practice of Silviculture. New York: John Wiley & Sons.

**Sapling** - A small tree, usually defined as being between 1 and 5 inches in diameter at breast height.

**Sawtimber** - Trees that are generally 12 inches and larger diameter at breast height.

**Second Growth** - The forests re-established following removal of previously unharvested or old -growth stands. Most northeastern forests are either second or third growth.

**Seedling** - A young tree originating from seed that is less than 4 feet tall.

**Seedling/Sapling** - Trees less than 6 inches in diameter at breast height.

**Seed Tree Cut/Method** - The removal of the mature timber in one cutting, except for a small number of trees left singly, or in small groups, as a source of seed for natural regeneration.

**Significant Natural Community** - Communities that are either rare in New York State or are determined by New York Natural Heritage Program staff to be outstanding examples of more common natural communities.

**Selective Cut** - High Grade (Replaces Selective Thinning) -A type of exploitation cutting that removes only certain species (a) above a certain size, (b) of high value; Known silvicultural requirements and/or sustained yields being wholly or largely ignored or found impossible to fulfill. Society of American Foresters. Ford-Robertson, F. C., editor. 1971. Terminology of Forest Science, Technology, Practice and Products. Cambridge: England

**Shade Tolerance** - The ability of a tree species to germinate and grow at various levels of shade.

- Shade tolerant: having the capacity to compete for survival under shaded conditions.
- Shade intolerant: having the capacity to compete for survival only under direct sunlight conditions; light demanding species.

**Shelterwood Cut/Method** - A regeneration action designed to stimulate reproduction by implementing a series of cuts over several years that will gradually remove the overstory trees. Gradual reduction of stand density protects understory trees and provides a seed source for the stand.

**Shrub (replaces Brush)** - Shrubs and stands of scrubby tree species that do not reach a merchantable size. The Society of American Foresters. 1958. Forest Terminology, 3rd edition. Washington, DC.

**Silviculture** - The application of art, science and practice to influence long term forest development.

**Even-aged Silviculture** - A system for maintaining and regenerating forest stands in which trees are approximately the same age (cohort). This system favors shade intolerant species such as aspen, white ash and black cherry.

**Uneven-aged Silviculture** - A system for maintaining and regenerating forest stands with at least three distinct age classes (cohorts). this system favors shade intolerant species such as sugar maple, hemlock and beech. Uneven aged silviculture creates a stratified stand structure with trees of different heights represented in all levels of the forest canopy.

**Site** - The area in which a plant or forest stand grows, considered in terms of its environment, particularly as this determines the type and quality of the vegetation the area can support.

**Site Index** - A species-specific measure of actual or potential forest productivity, expressed in terms of the average height of trees included in a specified stand component at a specified age.

**Site Preparation** - Hand or mechanized manipulation of a site, designed to enhance the success of regeneration.

**Site Quality** - The sum of soil and topographic factors of a particular place for growth of a particular species.

**Skid Trail** - A temporary or permanent trail used to skid or forward felled trees from the stumps to the log landing.

**Small Poles** - Trees 6-8 inches in diameter at breast height.

**Small Sawtimber** - Trees 12-14 inches in diameter at breast height.

**Snags** - Standing, dead trees, with or without cavities; function as perches, foraging sites and/or a source of cavities for dens, roosting and/or nesting for wildlife.

**Species Richness** - The number of different species present within an area

**Stand** - A contiguous group of trees sufficiently uniform in species composition, arrangement of age classes, and condition to be a homogeneous and distinguishable unit.

**Stand Treatment** - Work done in a stand which is directed towards the management of the stand.

**State Forest** - The collective term applied to lands administered by the Division of Lands and Forests which are located outside the forest preserves. State forests include acreage acquired and classified as Reforestation Areas, Multiple Use Areas and Unique Areas.

**State Reforestation Area** - Lands acquired by the Department pursuant to Title 3 Article 9-0501 of the Environmental Conservation Law. Reforestation Areas are adapted for reforestation and for the establishment and maintenance thereon of forests for watershed protection, the production of timber and other forest products, and for recreation and kindred purposes.

**Stocking** - The number of trees per unit area in relation to the desired number for optimum growth and management. Guides and tables have been developed that illustrate the optimum number of trees per acre based on the average diameter.

**Succession** - The natural series of replacements of one plant community (and the associated fauna) by another over time and in the absence of disturbance.

**Sustainable Forest Management** - Management that maintains and enhances the long-term health of forest ecosystems for the benefit of all living things, while providing environmental, economic, social and cultural opportunities for present and future generations.

**Sustained Yield** - The achievement and maintenance in perpetuity of a reasonable regular periodic output of the various renewable resources without impairment of the land's productivity.

**Temporary Revocable Permit (TRP)** - A Department permit which authorizes the use of state land for a specific purpose for a prescribed length of time.

**Thinning** - Intermediate cuttings that are aimed primarily at controlling the growth of stands through adjustments in stand density.

**Threatened Species** - A species likely to become endangered in the foreseeable future, throughout all or a significant portion of its range, unless protected.

**Timber Stand Improvement (TSI)** - Pre-commercial silvicultural treatments, intended to regulate stand density and species composition while improving wood product quality and fostering

**Understory** - The smaller vegetation (shrubs, seedlings, saplings, small trees) within a forest stand, occupying the vertical zone between the overstory and the herbaceous plants of the forest floor.

**Uneven-Aged Group Selection** - A type of uneven-aged forest management used to create openings in the forest canopy. Trees are removed and new age classes are established in small groups.

**Uneven-Aged System** - A planned sequence of treatments designed to maintain and regenerate a stand with three or more age classes.

**Uneven-Aged Stand/Forest** - A stand with trees of three or more distinct age classes, either intimately mixed or in small groups.

**Unique Area** - Lands acquired pursuant to Sections 45-0101, 51-0701, 51-0705, 54-0303, 56-0307 & 49-0203 of the Environmental Conservation Law.

**Watershed** - A region or area defined by a network of stream drainage. A watershed includes all the land from which a particular stream or river is supplied.

**Water Quality Classes** - A system of classification in ECL Article 17 which presents a ranked listing of the state's surface waters by the letters AA, A, B, C or D according to certain quality standards and specifications. AA is the highest quality rank and has the greatest suitability for human usage.

**Wetland** - A transitional area between aquatic and terrestrial ecosystems that is inundated or saturated for periods long enough to produce hydric soils and support hydrophytic vegetation.

**Wetland Classes** - A system of classification set forth in ECL Article 24, section 664.5 which ranks wetlands "I" through "IV" based upon wetland functions and benefits, "I" being the highest rank.

**Wildlife Management Areas** - Lands acquired by the Department pursuant to Title 21 Section 11-2103 of the Environmental Conservation Law. Wildlife Management Areas are managed by the Division of Fish, Wildlife and Marine Resources for the purpose of establishing and maintaining public hunting, trapping and fishing grounds.

**Windthrow** - Trees that have been broken, uprooted, or felled by strong winds

# Appendices & Figures

## Appendix A – Assets on Carpenter Ski Trail System

| *– Carpenter Ski Trail Assets, Lesser Wilderness State Forest, Lewis RA# 23* | | | |
|---|---|---|---|
| **Facility Name** | **Asset** | **Description** | **Updated** |
| CARPENTER ROAD CROSS COUNTRY SKI TRAIL CULVERT | CULVERT | picture 0390 | 3/16/2017 |
| CARPENTER ROAD CROSS COUNTRY SKI TRAIL GATE | GATE | METAL GATE picture 0391 | 3/16/2017 |
| CARPENTER ROAD CROSS COUNTRY SKI TRAIL PARKING LOT | UNPAVED PARKING LOT | picture 0389 | 3/16/2017 |
| CARPENTER ROAD CROSS COUNTRY SKI TRAIL REGISTER | TRAILHEAD REGISTER | picture 0392 | 3/16/2017 |
| CARPENTER ROAD CROSS COUNTRY SKI | TRAILHEAD REGISTER | picture 0405 | 3/16/2017 |
| CARPENTER ROAD CROSS COUNTRY SKIL TRAIL ID SIGN | FACILITY ID SIGN | | 3/23/2016 |
| CARPENTER ROAD SNOWMOBILE PARKING ID SIGN | FACILITY ID SIGN | | |
| CARPENTER ROAD SNOWMOBILE PARKING LOT | UNPAVED PARKING LOT | 10 VEHICLE CAPACITY | |
| CULVERT | CULVERT | 20X18 STEEL CULVERT | |
| DOUGLAS CREEK BRIDGE | BRIDGE | 16'X8' WOOD BRIDGE picture 0396 & 0395 | 1/31/2019 |
| JACK TRACK BRIDGE | BRIDGE | 20'X5' WOOD BRIDGE | 1/31/2019 |
| JACK TRACK CULVERT | BRIDGE | 30'X5' WOOD BRIDGE | 12/27/2017 |
| LARCH LOOP BRIDGE | BRIDGE | 20'X8' WOOD BRIDGE picture 0393 & 0394 | 1/31/2019 |
| MILL CREEK EAST BRIDGE | BRIDGE | 30'X8' WOOD BRIDGE | 1/31/2019 |
| MILL CREEK WEST BRIDGE | BRIDGE | 16'X4' WOOD BRIDGE | 12/27/2017 |
| PART OF THE LESSER WILDERNESS STATE FOREST | FACILITY ID SIGN | | |
| SEYMOUR ROAD CROSS COUNTRY SKI PARKING LOT | UNPAVED PARKING LOT | 5-6 VEHICLE CAPACITY picture 0401 | 3/16/2017 |
| SEYMOUR ROAD KIOSK | KIOSK | | 4/9/2014 |
| SNOW RIDGEW CULVERT | CULVERT | 14 " aluminum smashed in, washed out | 12/27/2017 |
| WEST CULVERT | CULVERT | 20'X16" STEEL CULVERT | |
| WEST CULVERT | CULVERT | 20'X14" STEEL CULVERT | |
| WEST CULVERT | CULVERT | 20'X14" IRON (DOUBLE) | |
| WEST LOOP MIDDLE BRIDGE | BRIDGE | 20'X8' WOOD BRIDGE | 1/31/2019 |
| WEST LOOP NORTH BRIDGE | BRIDGE | 20'X8' WOOD BRIDGE | 1/31/2019 |
| WEST LOOP SOUTH BRIDGE | BRIDGE | 16'X5' WOOD BRIDGE | 1/31/2019 |
| WEST LOOP WEST BRIDGE | BRIDGE | 16'X5' WOOD BRIDGE picture 0399 & 0400 | 1/31/2019 |

## Appendix B - Responsiveness Summary to Public Comments

Comments on the 2021 Public Draft of Tug Hill East

No public meeting was held for the draft release of Tug Hill East because of the spread of the Novel Coronavirus. Instead, a press release, letter to interested parties and adjacent landowners was sent out. The comments were received through letters, phone calls, emails, in person meetings from stakeholders and through an on-line survey. Some comments have been paraphrased to summarize similar comments from different stakeholders.

**General Comments**

- **Remove F86 and Tin Shanty/New Mt Road gate.**

Response: The gates mentioned are on East Branch of Fish Creek Conservation Easement. This plan does not include recommendations for the EBFC Conservation Easement.

**Motorized Recreation Comments**

- **Legalize a connector trail/trails from the existing trail system in the High market area, through the Tug Hill East UMP, to the Osceola Trail System. This would be a financial and recreational benefit to both geographic areas, as well as the clubs involved. It would open up and legalize riding opportunities for residents and seasonal camp members alike. These secondary and seasonal roads are utilized by automobiles, motorcycles, and seasonally by snowmobiles in the winter. Providing legal ATV access makes common and financial sense, as it is another form of outdoor recreation enjoyed by thousands.**
- **Designate a "connector trail" from the existing ATV trail system in High Market through the Tug Hill East UMP over existing roadways to Swancott Mills area to connect to a growing ATV System in the Osceola area. These roads have and continue to have motorized traffic, log trucks, cars, snowmobiles but ATVs are not allowed. Why is this? These dirt roads already exist. As an ATVer and disabled veteran I believe it is time for myself and others to be allowed the opportunity to ride.**
- **Open up the North-South Trail and Page Road as connectors for ATVs and Motor Vehicles to access the Lamplight Rd and East Branch of Fish Creek areas. (24 similar comments)**

Response: This Unit Management Plan only covers the State Forest Lands within the planning area. The public use of ATVs on these lands is guided by the Strategic Plan for State Forest Management, as well as relevant Environmental Conservation and Vehicle & Traffic Law, which can allow for ATV connections on these lands, so long as the routes meet certain criteria. Specific routes providing missing connections to existing legal ATV routes are addressed on an individual basis. None of the routes listed in the comments above meet the criteria to be open for ATV use.

Several specific routes mentioned are located on the East Branch Fish Creek Conservation Easement. Those lands are not part of this UMP but instead have their own Recreation Management Plan (RMP), which is currently under revision. Any new recreational uses on those lands would need to be addressed in that RMP and must be permitted by the rights acquired in the easement.

- **ATV trails to connect Redfield and Osceola to the rest of Tug Hill. (49 similar comments)**

Response: ATV use on State Forest Lands must comply with guidelines found in the Strategic Plan for State Forest Management (approved 2010), as well as relevant Environmental Conservation and Vehicle & Traffic Law. Connector trails may be allowed across state forests if specific conditions are met. See also P.75, for ATV opportunities on State Forests as connector trails.

- **The Tug Hill East UMP does not address use of All-Terrain Vehicle (ATV) on state forest land when used as a community connector trail. (35 similar comments)**

Response: Pages 49 and 75 speak to the current use of ATV's and planned recommendations.

- **Recreation is considered for horseback riding, hikers, snowmobilers, hunters, trappers and campers but none for ATV use.**
- **ATVers are not being recognized or treated fairly for the rights or opportunities that can be available to them.**

Response: The plan addresses the current use of ATVs on page 49 and proposed recommendations on page 75.

- **Create ATV trail system similar to Vermont and New Hampshire.**

Response: This Unit Management Plan only covers the State Lands within the planning area. The public use of ATVs on these lands is guided by the Strategic Plan for State Forest Management, which can allow for ATV connections on these lands, so long as the routes meet certain criteria. New Hampshire ATV trails program has an official designated trail fund to support their system.

- **Open existing snowmobile trails to ATV use. (3 similar comment)**

Response: Response: This Unit Management Plan only covers the State Lands within the planning area. The public use of ATVs on these lands is guided by the Strategic Plan for State Forest Management, which can allow for ATV connections on these lands, so long as the routes meet certain criteria. Pages 49 and 75 speak to the current use of ATV's and planned recommendations. Also, many times snowmobile trails are located on ground that will not sustain ATV use.

- **Create dirt bike trails.**

Response: Response: This Unit Management Plan only covers the State Lands within the planning area. The public use of ATV's/dirt bikes on these lands is guided by the Strategic Plan for State Forest Management, which can allow for ATV connections on these lands, so long as the routes meet certain criteria. Pages 49 and 75 speak to the current use of ATV's and planned recommendations

- **Do not allow ATV use down the Camp 4 Road.**

Response: Camp 4 Road is a private road on the East Brach Fish Creek Conservation Easement. Recommendations for the Conservation Easement are not included in this plan.

- **Do not allow ATV use on Swancott Mill State Forest.**

Response: The plan does not recommend any ATV trails on Swancott Mill State Forest.

- **Jeep and 4X4 trail access and regulations should be provided.**

Response: Jeeps and 4x4 vehicles are allowed on any of our Public Forest Access Roads that are signed as open to motor vehicles. Jeeps and 4x4's are not allowed other than on roads

signed for public motor vehicle use. The rules and regulations for state forests can be found on the following DEC website. http://www.dec.ny.gov/regulations/regulations.html

**Non-motorized Recreation Comments**

- **I am against any type of motorized vehicles on the XC and hiking trails on Carpenter Hill Trail System.**

Response: There are no plans to allow motorized recreation on Carpenter Hill Trail System.

- **I would like to see the bridges upgraded. A better marked and upgraded Return Trail that connects to the Cone Trail. The section of that Return Trail that parallels the road near the restaurant is especially difficult to navigate. A few bridges on the Snow Ridge Loop would be helpful as well as on Jacks Track Trail. I would rather see that work done before creating new trails.**

Response: Appendix A has a list of the Carpenter Hill Trail System assets. Many of these features have been upgraded during the writing of this plan. Appendix A also shows the year assets were upgraded. Additional trail improvements have been identified and will be addressed as funding becomes available.

- **A hiking/backpacking trail connecting the Salmon River corridor across the Tug Hill to the Adirondacks.**

Response: The proposed Tug Hill Traverse trail should help provide a major component of such a trail. However, the Plan only makes recommendations for State Forest within the Unit.

- **Create a foot trail connecting the Direen Aiden Rd and the proposed Tug Hill Traverse trail.**

Response: The proposed Tug Hill Traverse trail will connect to the Direen Aiden Road to the north at Michigan Mills Ext and Joes Road intersection.

- **Create a mountain bike trail system.**

Response: Mountain bikes are allowed on the Carpenter Hill Ski trails as well as all public motor vehicle roads.

- **Separate biking trails from hiking trails**.

Response: The plan calls to consolidate trails for multiple use.

- **More camping sites are needed on the Unit.**

Response: This need was addressed in the Plan. Under Recreation Goals and Actions, page 73; 7 pull up campsites and 2 primitive sites are recommended. Additionally, “at-large” camping is permitted on State lands if it complies with 6 NYCRR Part 190.8.

- **Create remote campsites on Whetstone Reservoir.**

Response: Whetstone Reservoir is located on NYS Department of State Parks, Recreation and Historic Preservation property. This UMP only addresses recommendations on DEC State Forests lands within the Unit.

**Wildlife Comments**

- **The UMP states that all of the unit falls in the WMU 6N. This is incorrect. The majority of the East Osceola State Forest lies in WMU 6K**.

Response: This is corrected.

- **Allow for antlerless tags.**
- **The artificial road boundary between 6N and 6K has a negative effect on the portion of the Whitetail Deer herd in 6N that winter in 6K along Salmon River and elsewhere in that unit when the first heavy snow falls during hunting season. I have argued for years that the northern boundary of 6K needs to be modified to protect the antlerless deer in 6N.**

Response: Wildlife Management Unit (WMU) boundary lines are created for multiple reasons:

1- To delineate areas with differing ecozones or habitat types (e.g., core Tug Hill vs. St. Lawrence River valley)
2- Delineate areas with differing regulatory authority (e.g., northern zone vs. southern zone).
3- WMU boundaries are set with consideration of all game species, not just big game
4- DEC tends to choose primary roads which are easy to follow, well maintained, and available on all maps.

DEC is aware that not all boundary lines satisfy all the above objectives perfectly. There can be variation in climate, land use, and habitat types within a single WMU, but DEC has strived to create units where game species can be managed without undue negative impacts across the full range of the unit. The issue of deer wintering areas being exposed to late season hunting is not unique to the Tug Hill East unit. DEC is aware of other locations in the Adirondacks where heavy snow conditions can force deer into yards earlier than usual. While this does happen some years, those conditions that force deer to initiate migration early do not happen frequently and vary in severity.

Antlerless deer are adequately protected in WMU 6N where DEC cannot issue Deer Management Permits (DMP) by statute and does not authorize the take of female deer during the October muzzleloader season. Winter weather conditions in WMU 6N is a far more important driver of deer populations than the occasional removal of antlerless deer in an adjacent unit.

- **Stop all hunting and trapping**

Response: Hunting and trapping are traditional DEC programs and there are no plans to curtail either.

**Forestry Comments**

- **Leave a 300 foot no-cut buffer along streams to promote old growth habitat for flying squirrels and marten and help maintain the coolest summer water temperatures.**

Response: The DEC has Rules for Establishing Special Management Zones on State Forests. They can be found at: https://www.dec.ny.gov/docs/wildlife_pdf/yfismzrules.pdf . The rules specify leaving a 50 foot no cut buffer around perennial streams with the next 50 feet only 25% of the canopy trees can be removed. The plan also calls for leaving 6,699 acres of no management along with 9,756 acres in a Matrix Forest Block, see pages 68 and 29 respectively. These areas of reserve can be managed for old growth characteristics.

- **Create more small game cover through small clearcut blocks.**

Response: The Land Management Goals and Actions along with the timber harvest schedule recommends maintaining at least 25-30% in conifer cover which can often be achieved through small patch clearcuts.

- **Money generated from sale of forest products on State Forest should be used to fund land improvements, wildlife management and conservation of values and uses.**

Response: Revenue generated from the sale of timber products off State Forest goes into the Natural Resources Special Revenue Account. That account pays for both staff positions and State land improvements.

- **Collect more data on the unique ecology of the core Tug Hill forest.**

Response: State Forest crews conduct forest inventory of State Forests approximately every 10 years. The inventory data collected shows forest growth, health and changes with the state forest. The plan does not call for any more detailed data collection but may be a consideration in the future. In addition, the New York Natural Heritage Program does continuous sampling and tracking of rare plants, animals, and sensitive ecological communities on the unit.

- **I am under the understanding, through NYS DEC, that a unit management can be seen as a guideline and not something that is black and white and cast in stone. If this fact is true, why is that not mentioned more clearly in this unit management plan. I saw little or nothing on the availability to use Temporary Revocable Permits (TRP), Voluntary Stewardship Agreement (VSA), or the ability and process to submit proposed request for uses that are not mentioned in this unit management plan.**

Response: A section on VSAs and TRPs has been added as response to this comment. Please see page 42

- **There is the 2019 – 2020 Legislation that passed titled the Outdoor Rx Act- (S6706A / A8094A) that "requires the New York State Division of Veterans' Service in consultation with the Office of Parks, Recreation and Historic Preservation, the Department of Environmental Conservation, the Department of Health and the Office of Mental Health to review issues relating to veteran' abilities to access state parks, lands and facilities." Why is not this option mentioned in the Unit Management Plan? This is something that this UMP will be/should be dealing with but is not mentioned in this plan. Access opportunities for others with limited abilities should also be listed as possible considerations in this plan.**

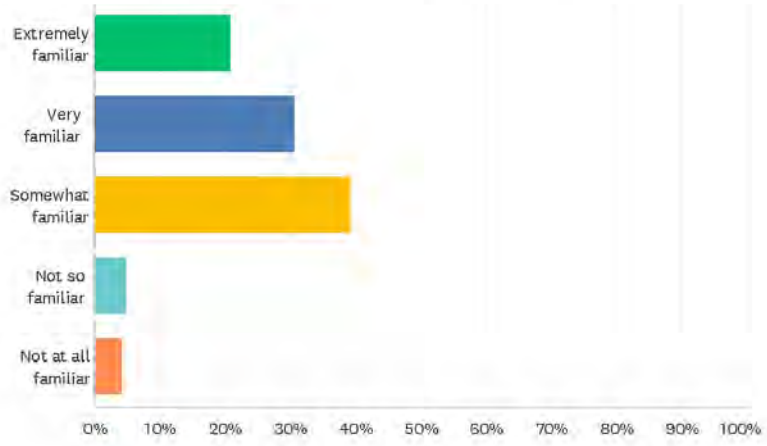
Response: There are accessible features on the Unit that are open to the public, see page 54 for their description. There is also a recommendation to create an ATV trail network for the Motorized Access Permit for Persons with Disabilities that would be open to disabled Veterans' and the disabled community as a whole. As for the Outdoor Rx Act (S6706A/A8094A), DEC is participating in the planning process led by the NYS Division of Veteran's Services and will integrate any policies developed by this initiative into our accessibility planning process..

## Appendix C – Responses to On-line Survey

Tug Hill East UMP

### Q1 DEC is asking the public for input on proposed management activities on the Tug Hill East Unit Management Plan (UMP). How familiar are you with the Tug Hill East Unit?

Answered: 143 Skipped: 1



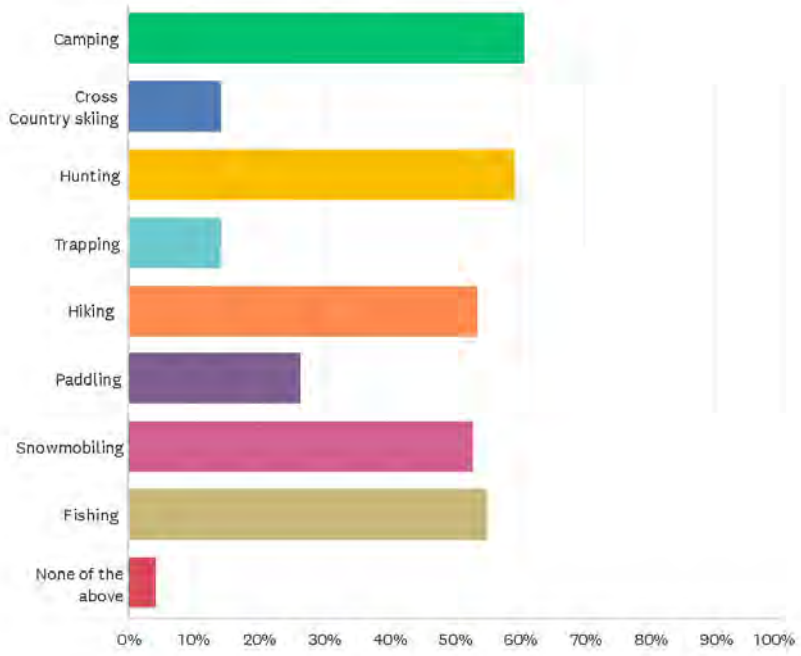

| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Extremely familiar | 20.98% | 30 |
| Very familiar | 30.77% | 44 |
| Somewhat familiar | 39.16% | 56 |
| Not so familiar | 4.90% | 7 |
| Not at all familiar | 4.20% | 6 |
| TOTAL | | 143 |

1 / 7

Tug Hill East UMP

## Q2 What types of outdoor activities do you enjoy? (Check all that apply)

Answered: 140 Skipped: 4

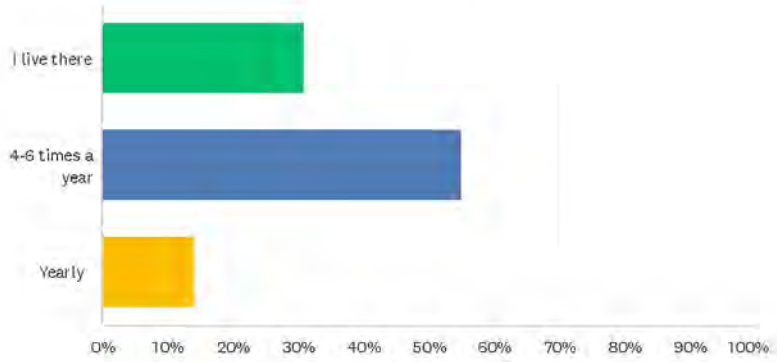



| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Camping | 60.71% | 85 |
| Cross Country skiing | 14.29% | 20 |
| Hunting | 59.29% | 83 |
| Trapping | 14.29% | 20 |
| Hiking | 53.57% | 75 |
| Paddling | 26.43% | 37 |
| Snowmobiling | 52.86% | 74 |
| Fishing | 55.00% | 77 |
| None of the above | 4.29% | 6 |
| Total Respondents: 140 | | |

Tug Hill East UMP

## Q3 How often do visit the Tug Hill East area?

Answered: 100 Skipped: 44

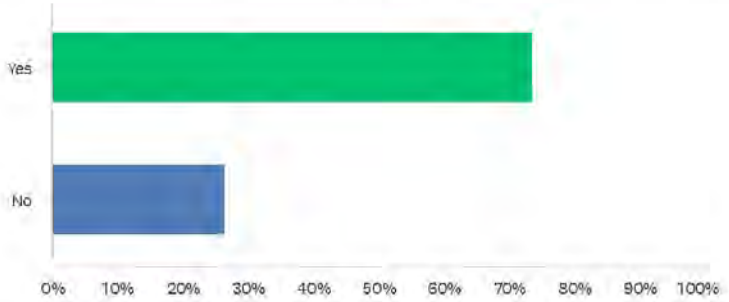



| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| I live there | 31.00% | 31 |
| 4-6 times a year | 55.00% | 55 |
| Yearly | 14.00% | 14 |
| TOTAL | | 100 |

Tug Hill East UMP

## Q4 Tug Hill East recreational opportunities currently include:hunting, trapping, snowmobiling, cross country skiing, wildlife observation, hiking and mountain biking. Are additional recreational opportunities needed?

Answered: 140 Skipped: 4

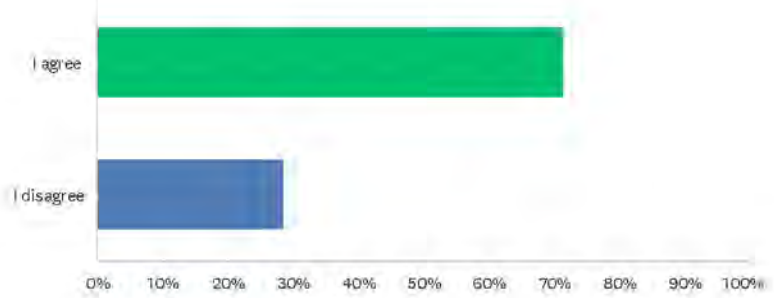



| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| Yes | 73.57% | 103 |
| No | 26.43% | 37 |
| TOTAL | | 140 |

Tug Hill East UMP

## Q5 Do you agree or disagree with the amount of forest management the DEC currently conducts on the Tug Hill East Unit?

Answered: 136 Skipped: 8




| ANSWER CHOICES | RESPONSES | |
|---|---|---|
| I agree | 71.32% | 97 |
| I disagree | 28.68% | 39 |
| TOTAL | | 136 |

## Appendix D - State Environmental Quality Review (SEQR)

**State Environmental Quality Review (SEQR)**

This Plan and the activities it recommends will be in compliance with State Environmental Quality Review (SEQR), 6NYCRR Part 617. The State Environmental Quality Review Act (SEQRA) requires the consideration of environmental factors early in the planning stages of any proposed action(s) that are undertaken, funded, or approved by a local, regional or state agency. The Strategic Plan for State Forest Management (SPSFM) serves as the Generic Environmental Impact Statement (GEIS), regarding management activity on State Forests. To address potential impacts, the SPSFM establishes SEQR analysis thresholds for each category of management activity.

Management actions in this Plan are within the thresholds established in the SPSFM, therefore these actions do not require additional SEQR. Any future action that does not comply with established thresholds will require additional SEQR prior to conducting the activity.

The following boilerplate can only be used if the plan does not cross any of the thresholds outlined within the text.

**STATE ENVIRONMENTAL QUALITY REVIEW ACT**

This Unit Management Plan (UMP) does not propose pesticide applications of more than 40 acres, any clearcuts of 40 acres or larger, or prescribed burns in excess of 100 acres. Therefore, the actions in the plan do not exceed the thresholds set forth in the Strategic Plan/Generic Environmental Impact Statement for State Forest Management**.**

This Unit Management Plan also does not include any of the following:

1. Forest management activities occurring on acreage occupied by protected species ranked S1, S2, G1, G2 or G3

2. Pesticide applications adjacent to plants ranked S1, S2, G1, G2 or G3

3. Aerial pesticide spraying by airplane or helicopter

4. Any development of facilities with potable water supplies, septic system supported restrooms, camping areas with more than 10 sites or development in excess of other limits established in this plan.

5. Well drilling plans

6. Well pad densities of greater than one well pad in 320 acres or which does not comply with the limitations identified through a tract assessment

7. Carbon injection and storage or wastewater disposal

Therefore, the actions proposed in this UMP will be carried out in conformance with the conditions and thresholds established for such actions in the Strategic Plan/Generic

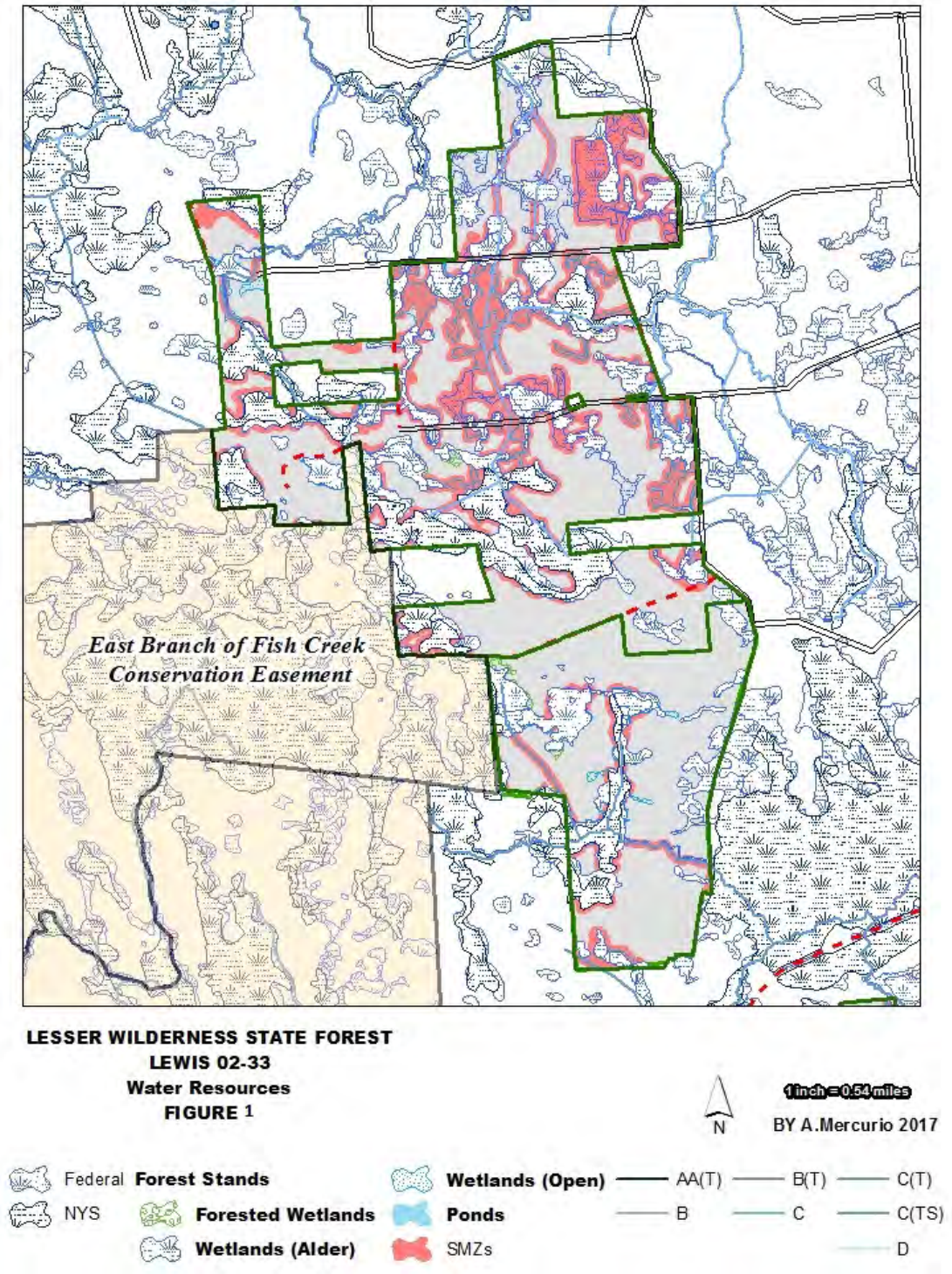
Environmental Impact Statement, and do not require any separate site-specific environmental review (see 6 NYCRR 617.10[d]).

Actions not covered by the Strategic Plan/Generic Environmental Impact Statement

Any action taken by the Department on this Unit that is not addressed in this Unit Management Plan and is not addressed in the Strategic Plan/Generic Environmental Impact Statement may need a separate site- specific environmental review.

FIGURE 1 – WATER RESOURCES, SPECIAL MANAGEMENT ZONES MAPS

## Figure 1 – Water Resources, Special Management Zones Maps



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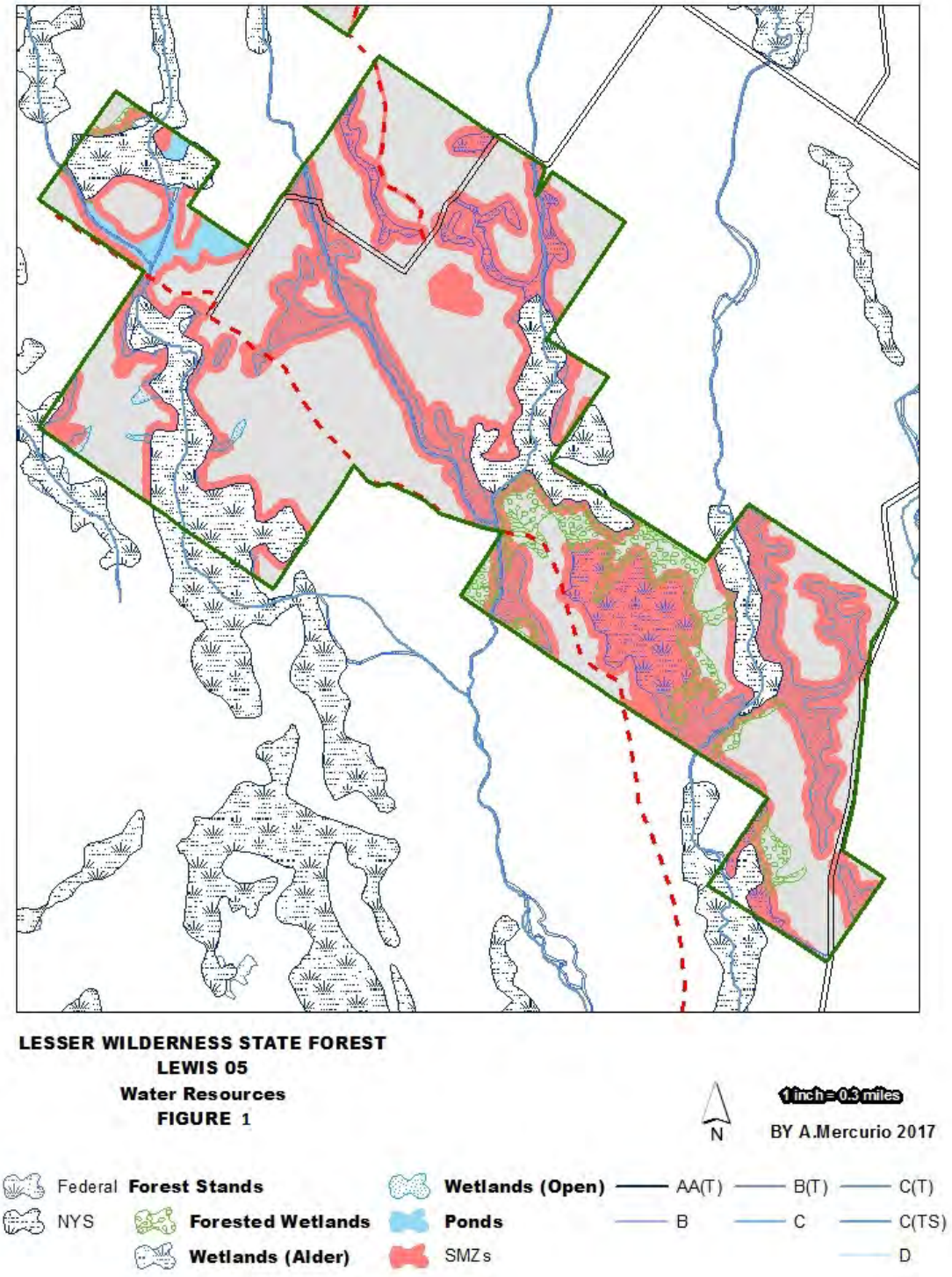

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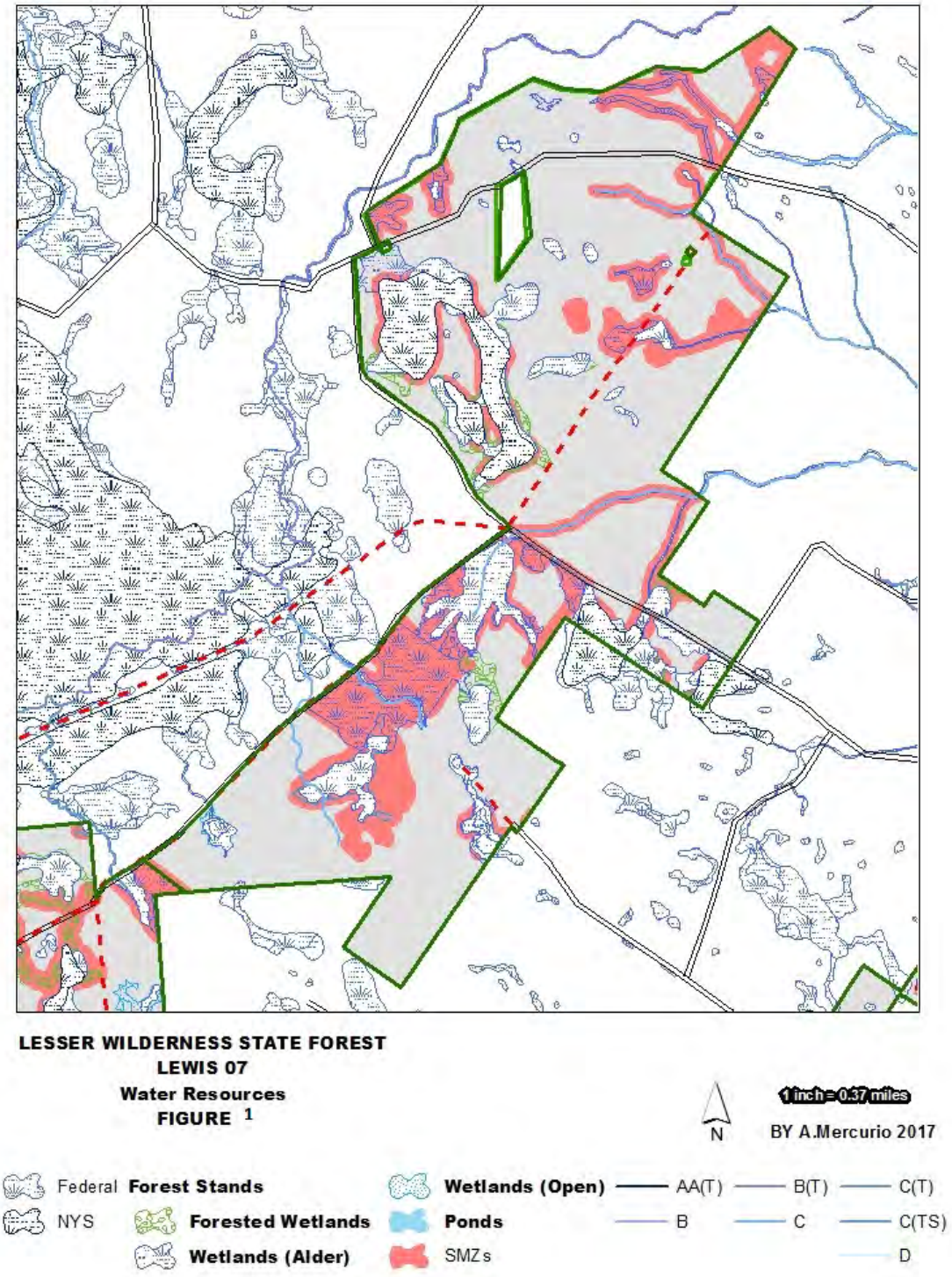

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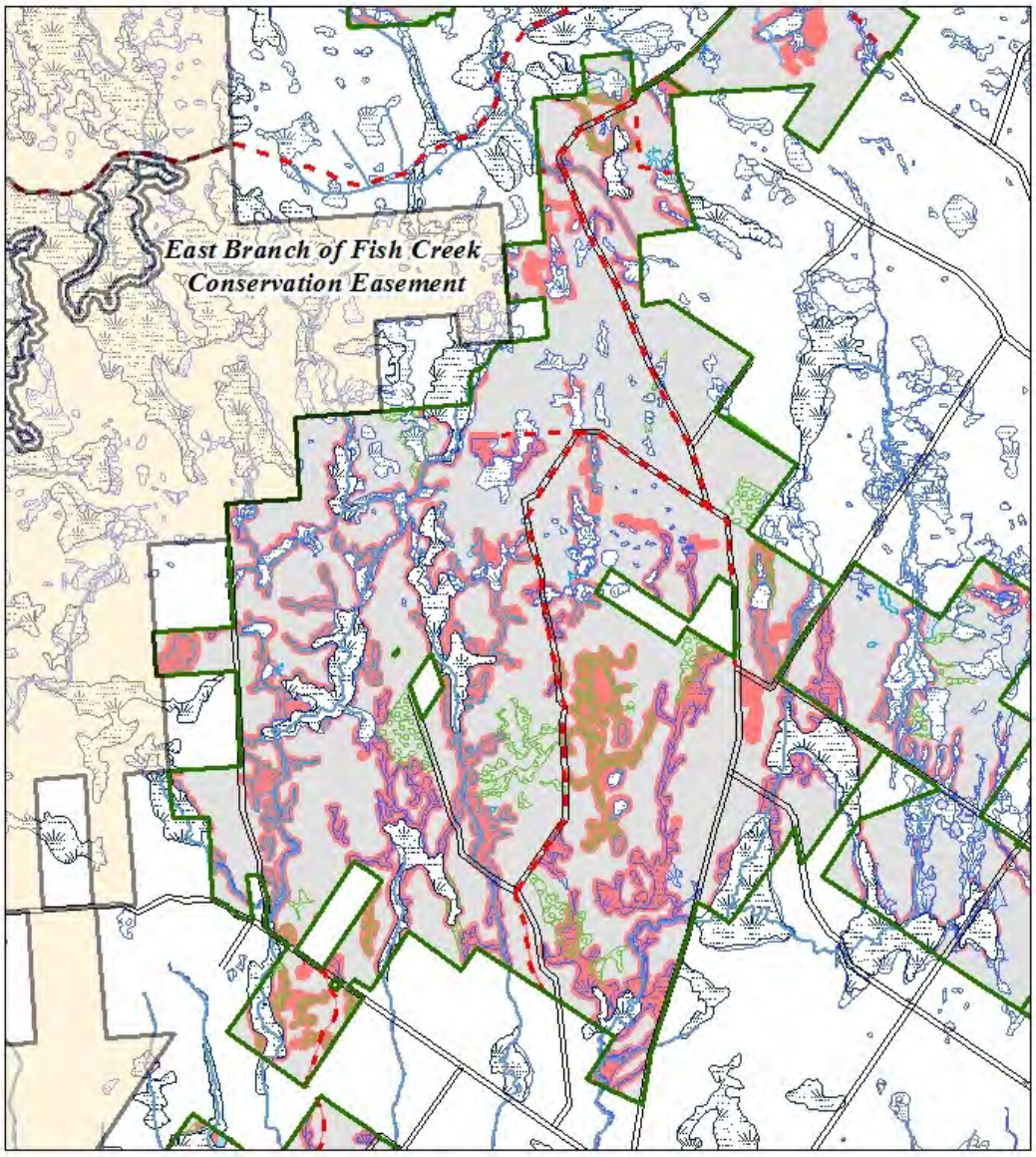



**LESSER WILDERNESS STATE FOREST**
**LEWIS 08**
**Water Resources**
**FIGURE 1**

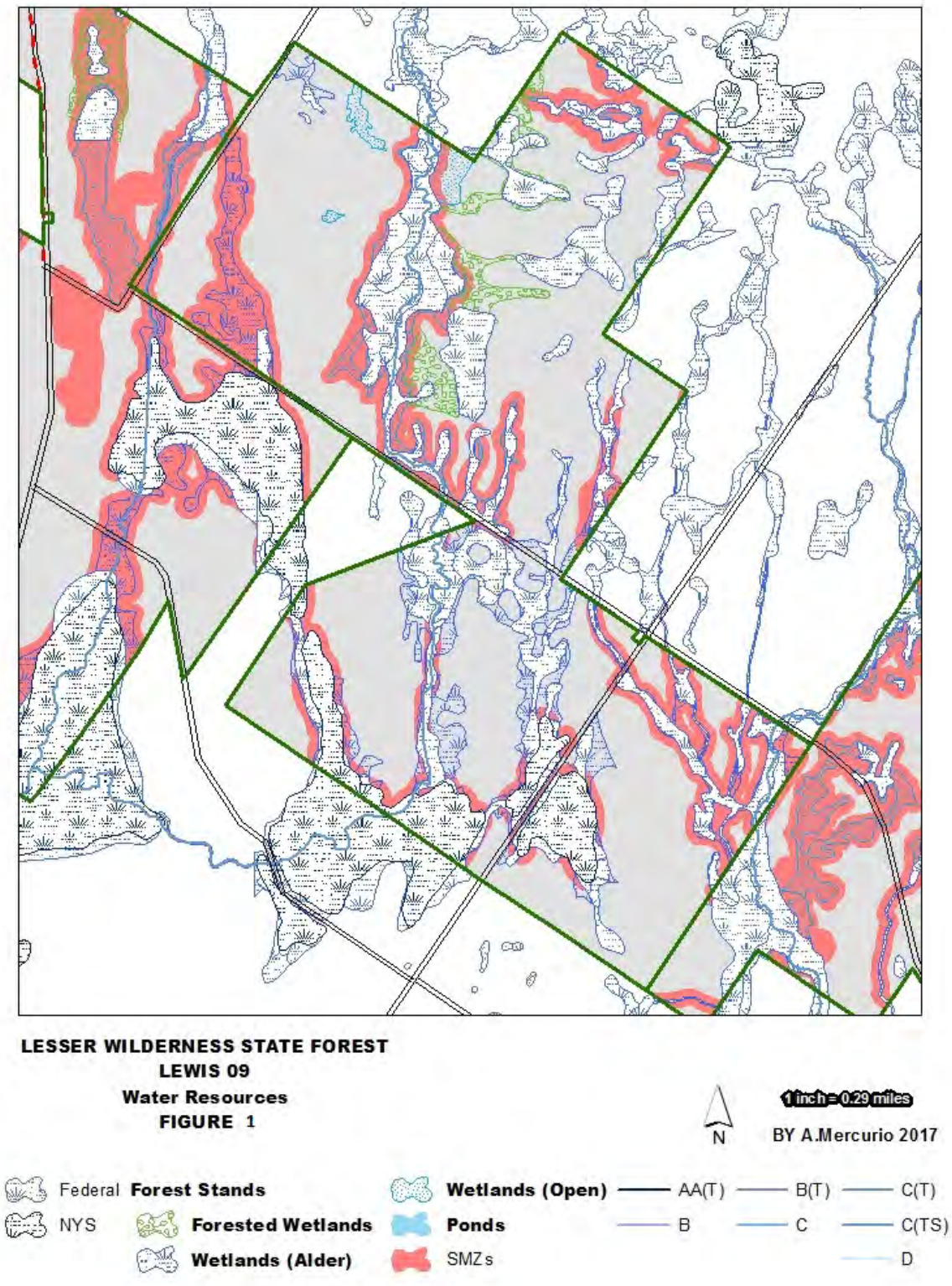
N

1 inch = 0.69 miles

BY A.Mercurio 2017

Federal **Forest Stands**
NYS **Forested Wetlands**
**Wetlands (Alder)**
**Wetlands (Open)**
**Ponds**
SMZs
AA(T) B(T) C(T)
B C C(TS)
D

## FIGURE 1 – WATER RESOURCES, SPECIAL MANAGEMENT ZONES MAPS



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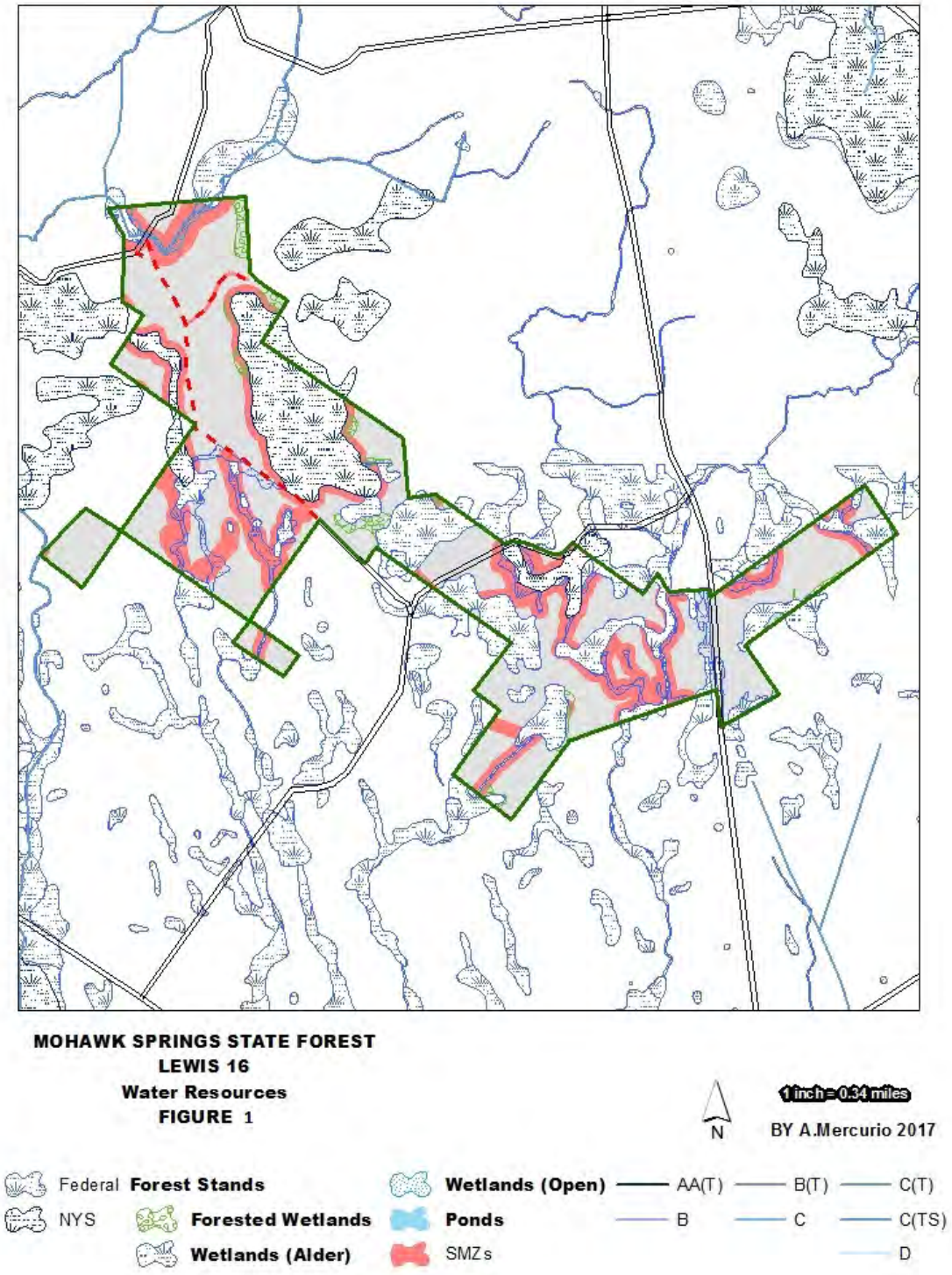

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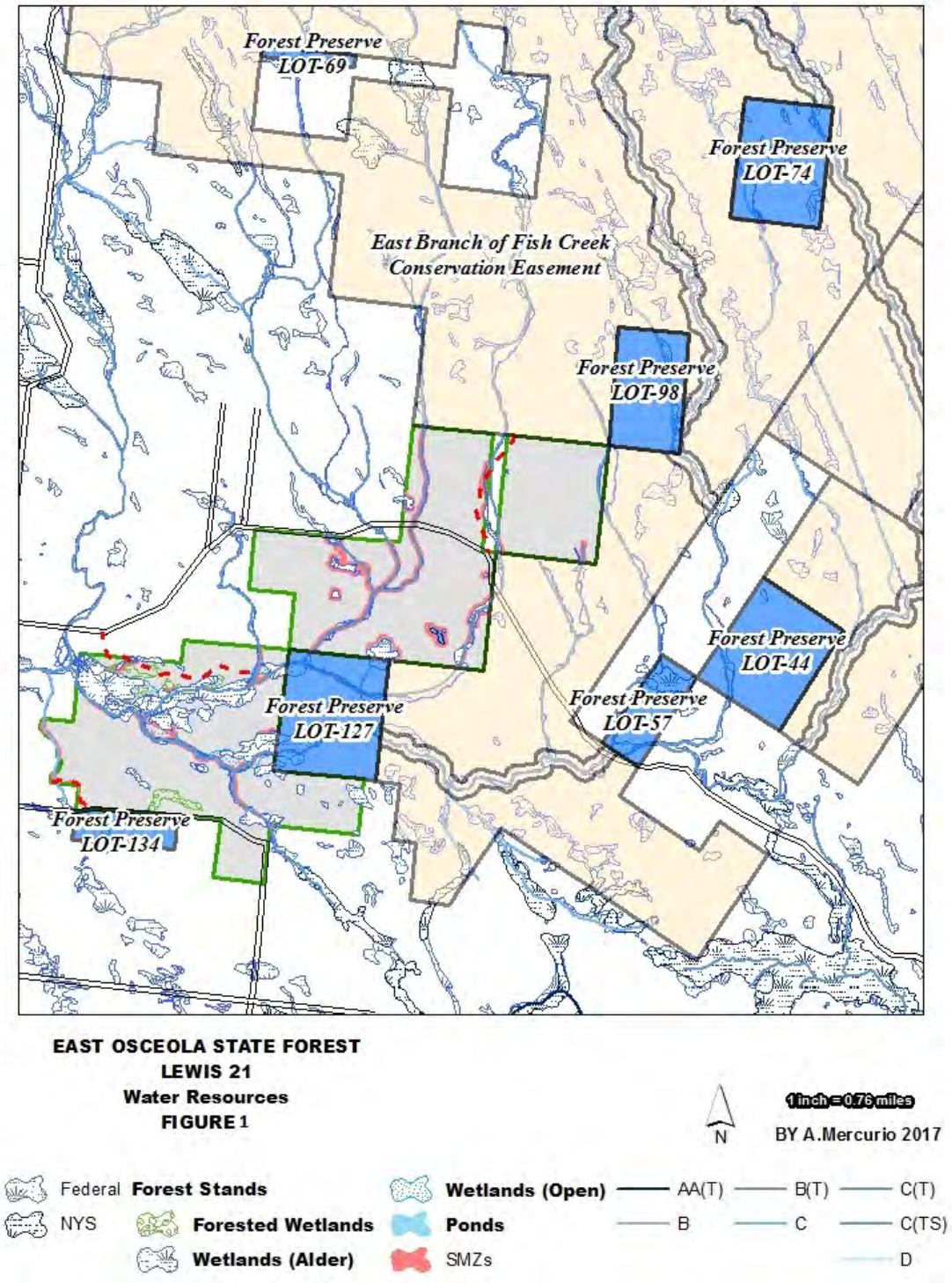

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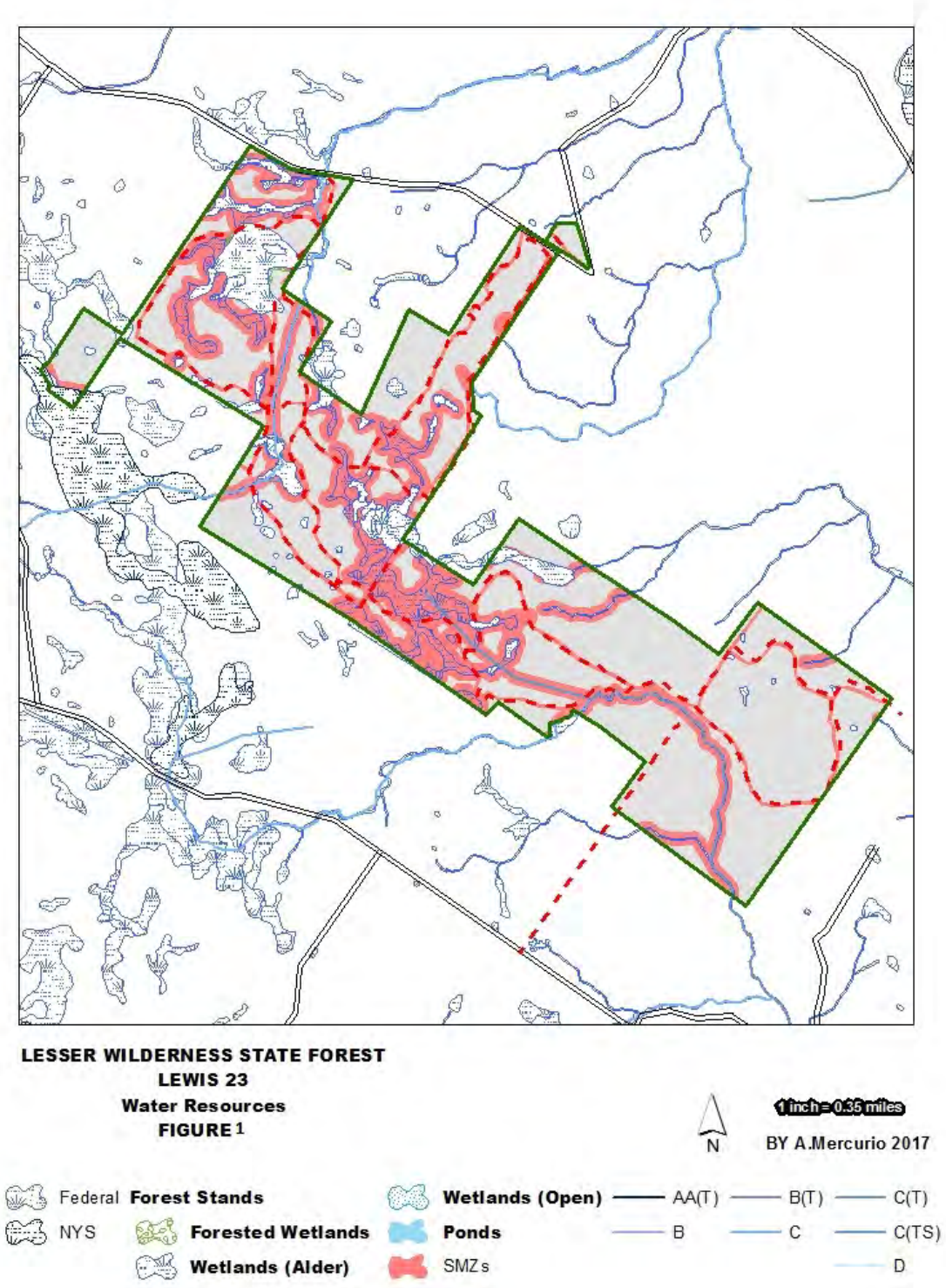

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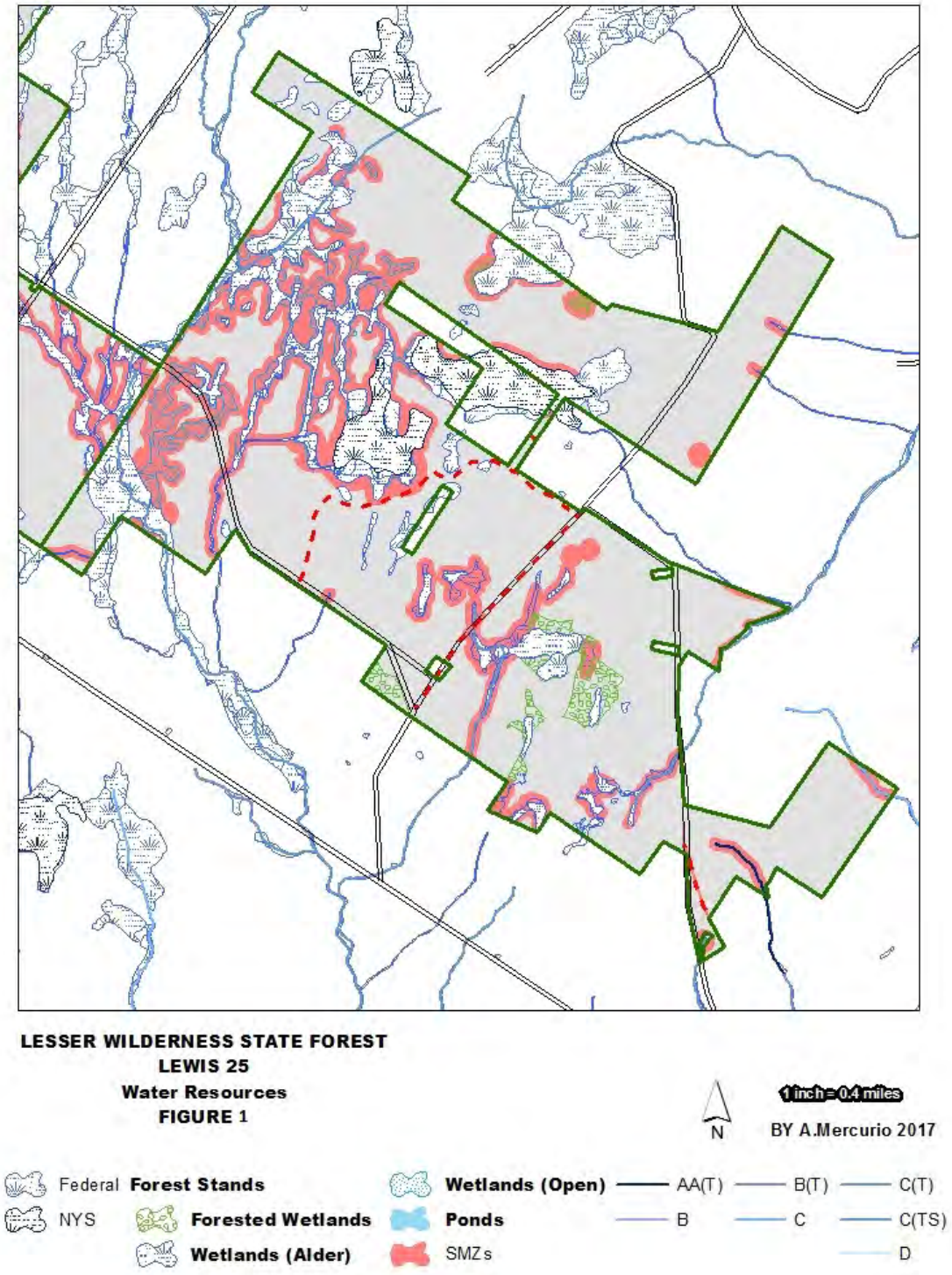

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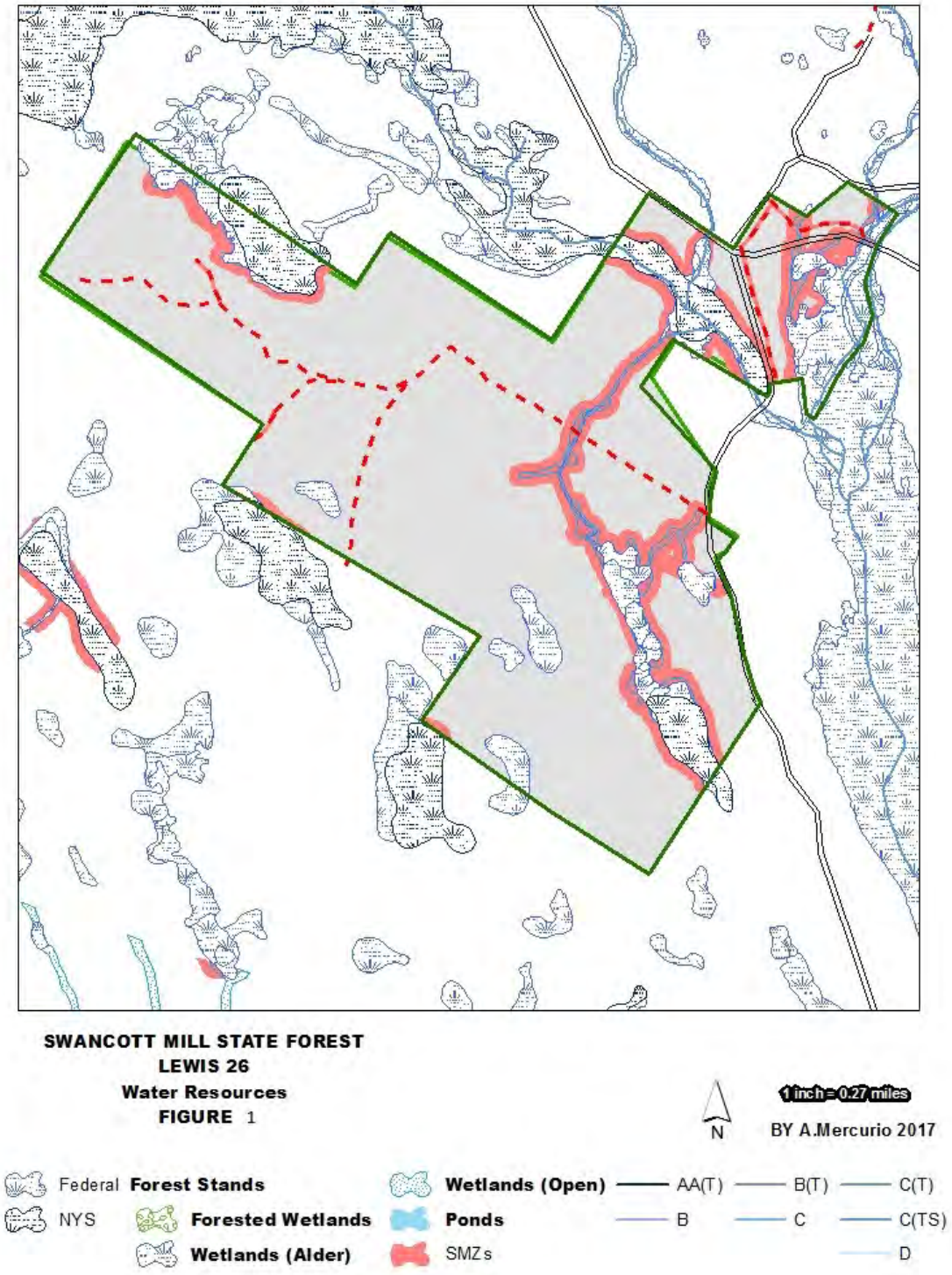

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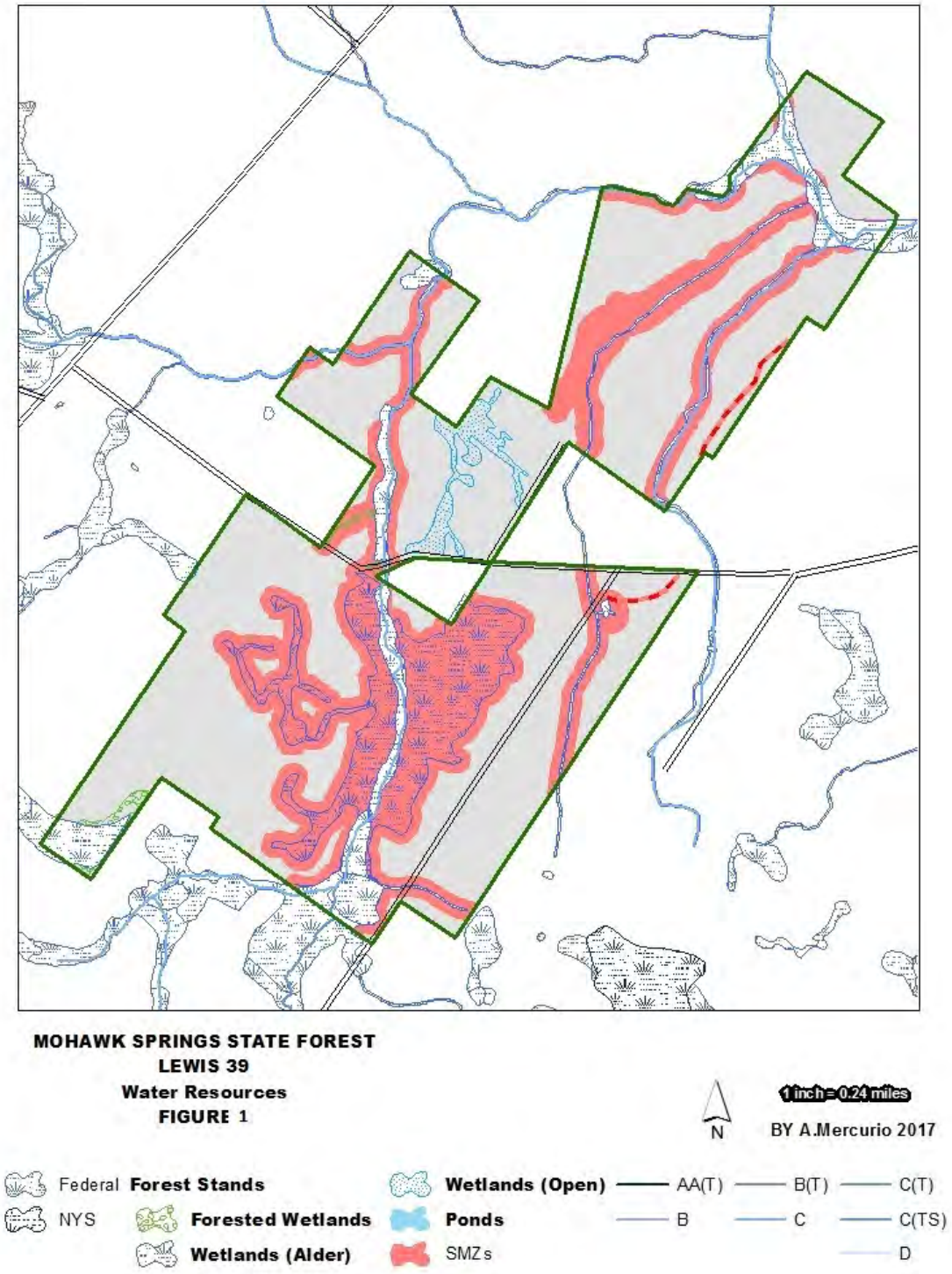

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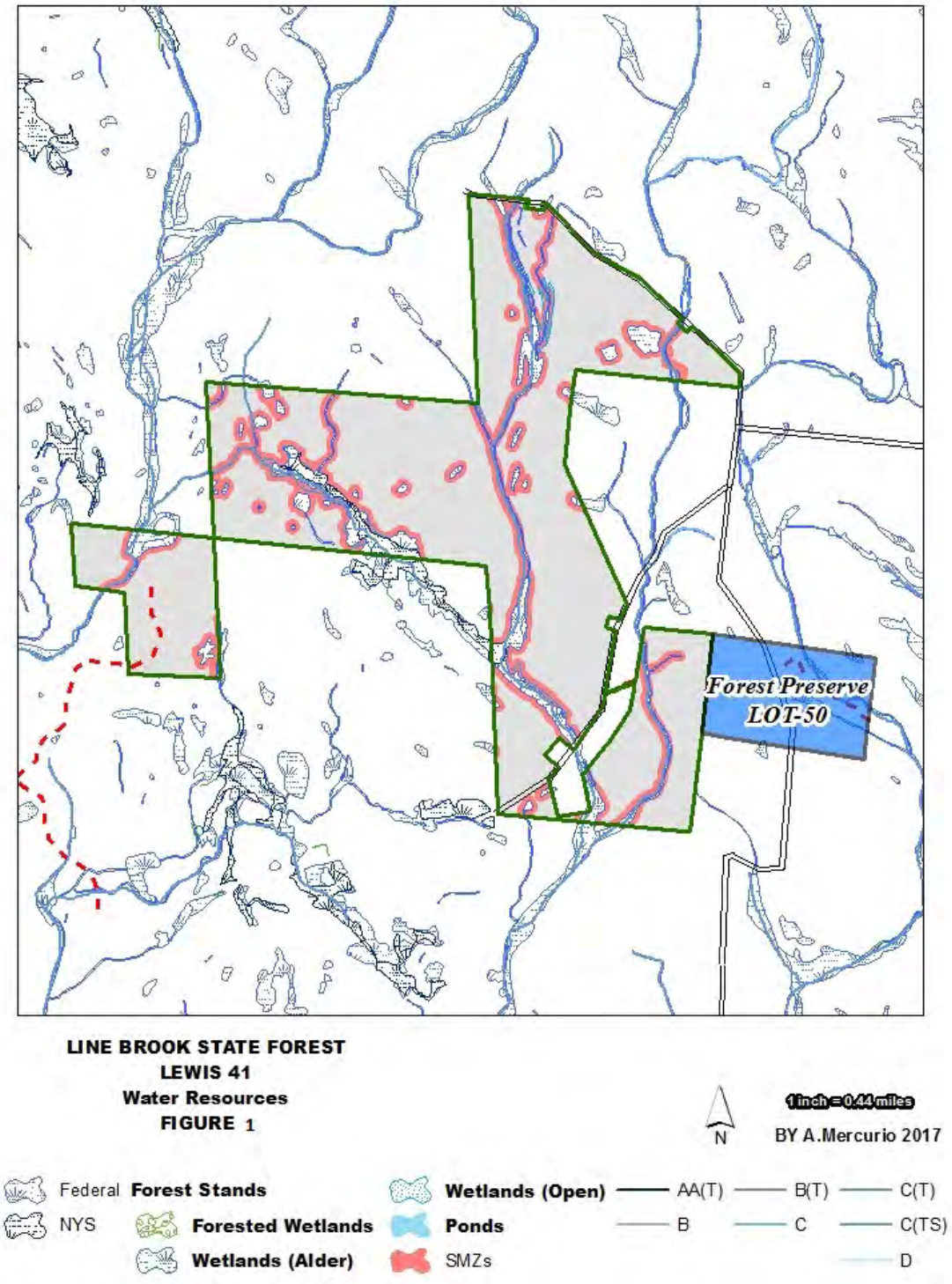

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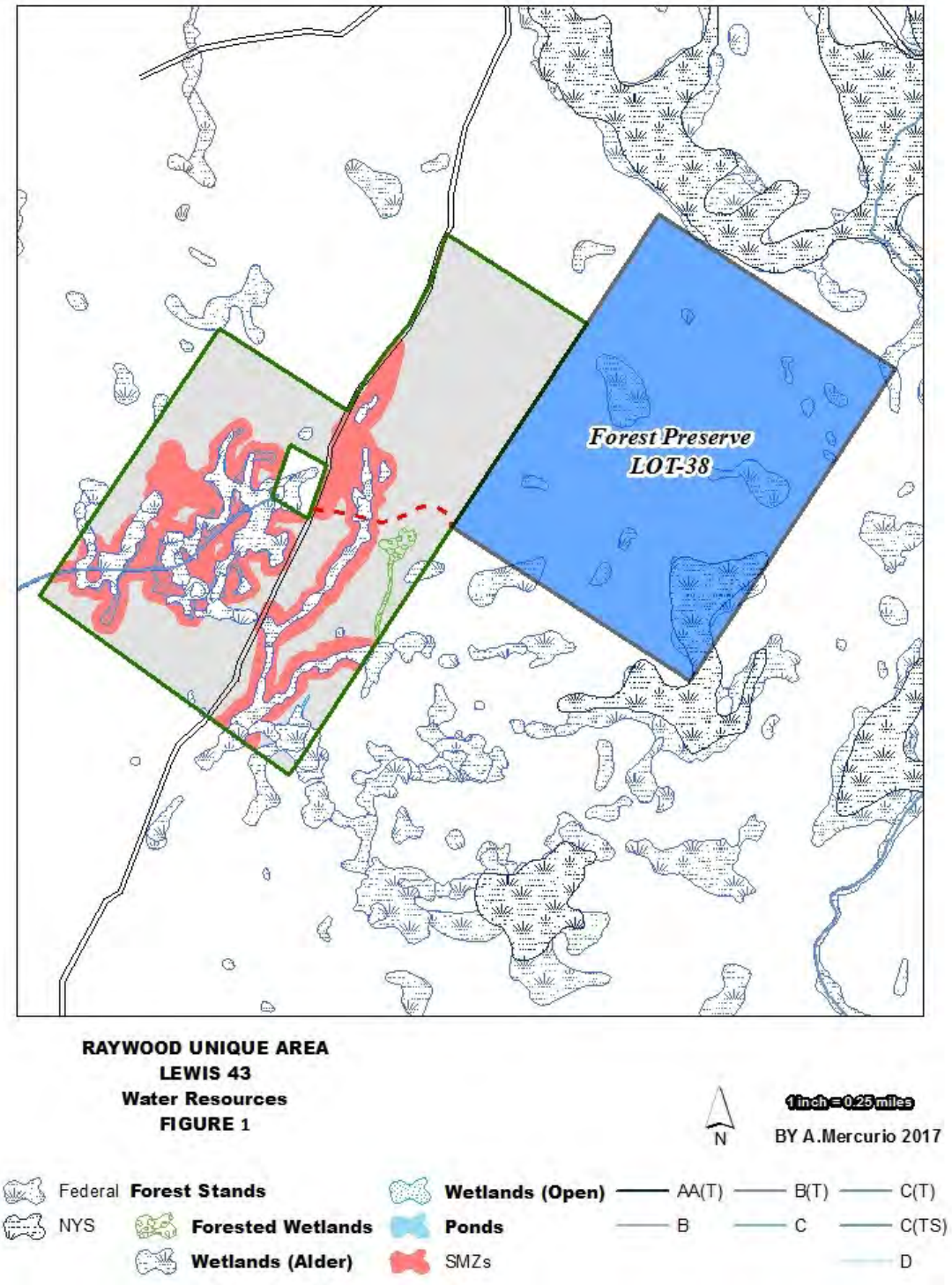
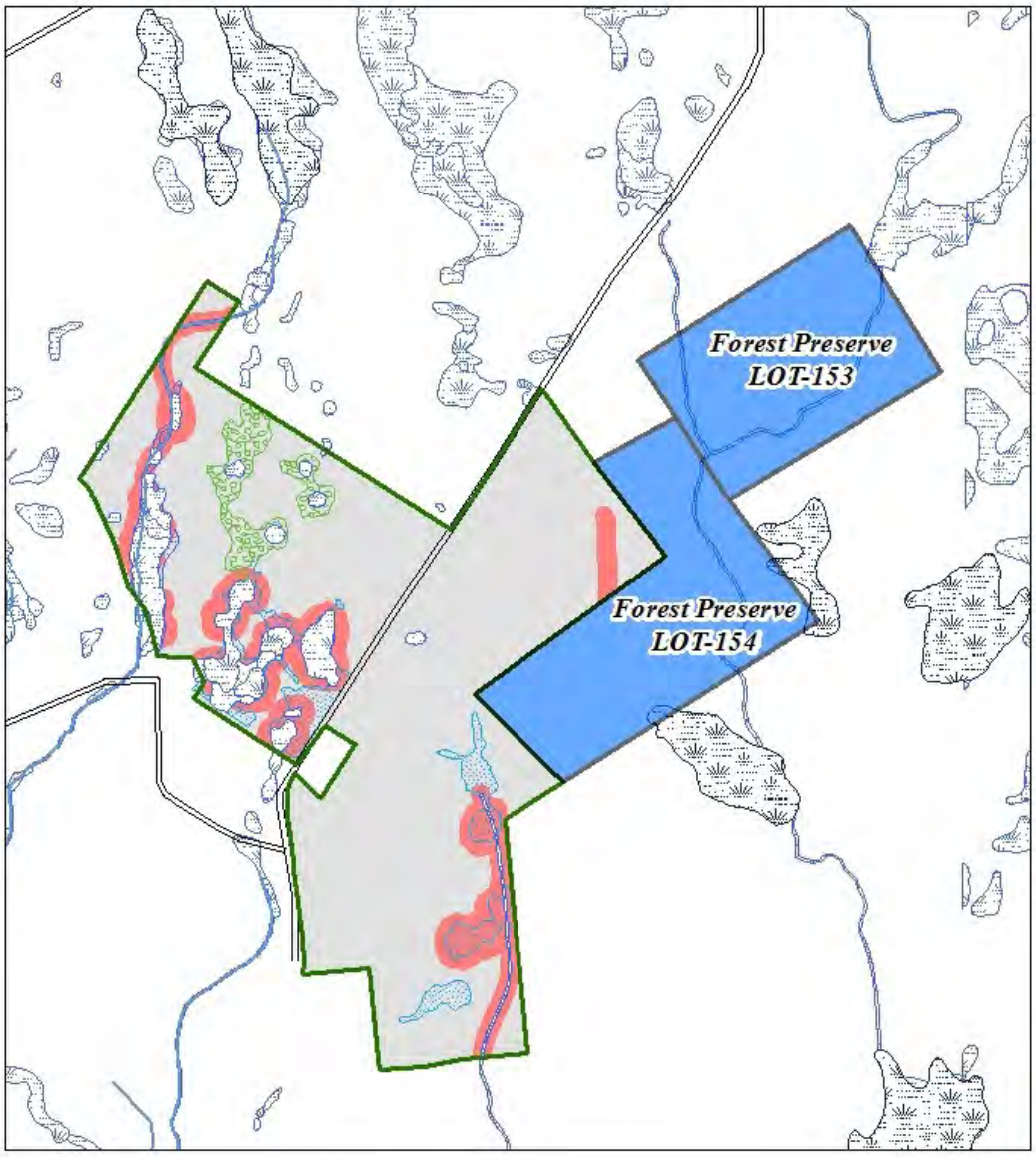


FIGURE 1 – WATER RESOURCES, SPECIAL MANAGEMENT ZONES MAPS




**COTTRELL STATE FOREST**
**LEWIS 44**
**Water Resources**
**FIGURE 1**

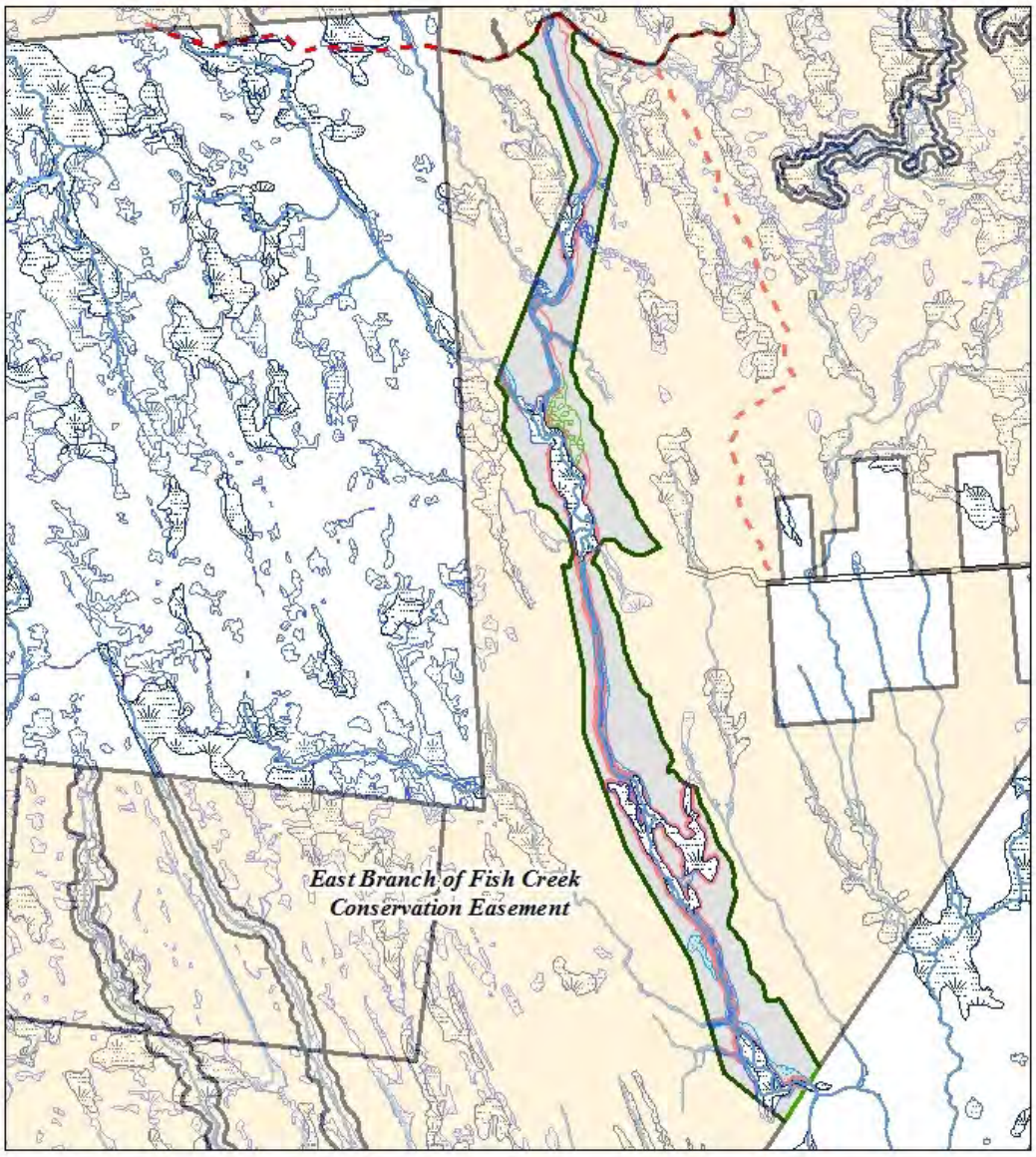
N

1 inch = 0.23 miles

BY A.Mercurio 2017

Federal **Forest Stands**
NYS
**Forested Wetlands**
**Wetlands (Alder)**
**Wetlands (Open)**
**Ponds**
SMZs
AA(T) B(T) C(T)
B C C(TS)
D

## FIGURE 1 – WATER RESOURCES, SPECIAL MANAGEMENT ZONES MAPS




**EAST BRANCH FISH CREEK STATE FOREST**
**LEWIS 45 n**
**Water Resources**
**FIGURE 1**

N

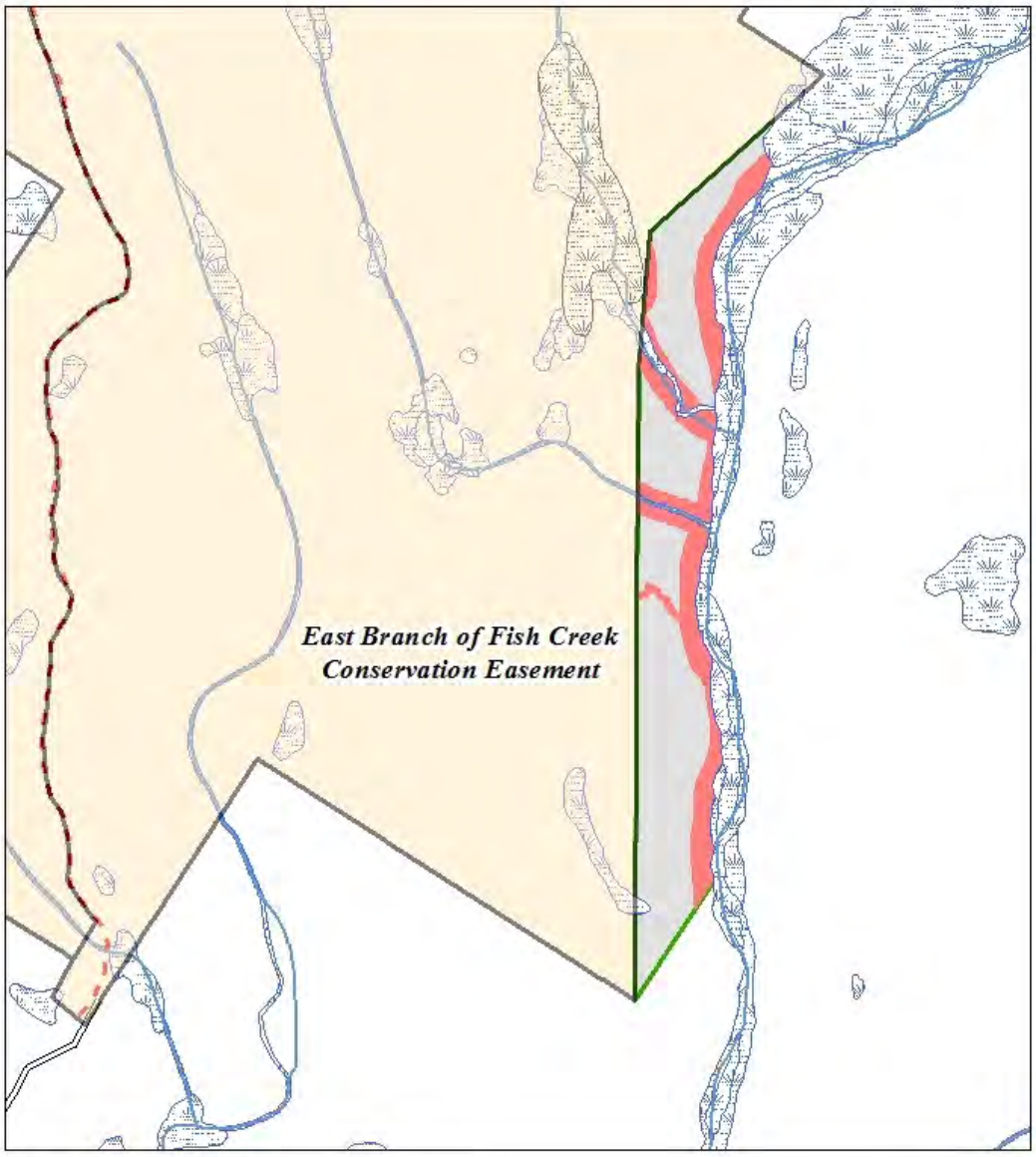
1 inch = 0.79 miles

BY A.Mercurio 2017

Federal **Forest Stands**
NYS
**Forested Wetlands**
**Wetlands (Alder)**
**Wetlands (Open)**
**Ponds**
SMZs

AA(T) B(T) C(T)
B C C(TS)
D

FIGURE 1 – WATER RESOURCES, SPECIAL MANAGEMENT ZONES MAPS




**EAST BRANCH FISH CREEK STATE FOREST**
**LEWIS 45 s**
**Water Resources**
**FIGURE 1**

N

1 inch = 0.19 miles

BY A.Mercurio 2017

Federal **Forest Stands**
NYS
**Forested Wetlands**
**Wetlands (Alder)**
**Wetlands (Open)**
**Ponds**
SMZs
AA(T) B(T) C(T)
B C C(TS)
D

FIGURE 2. – INFRASTRUCTURE AND RECREATION MAPS

## Figure 2. – Infrastructure and Recreation Maps

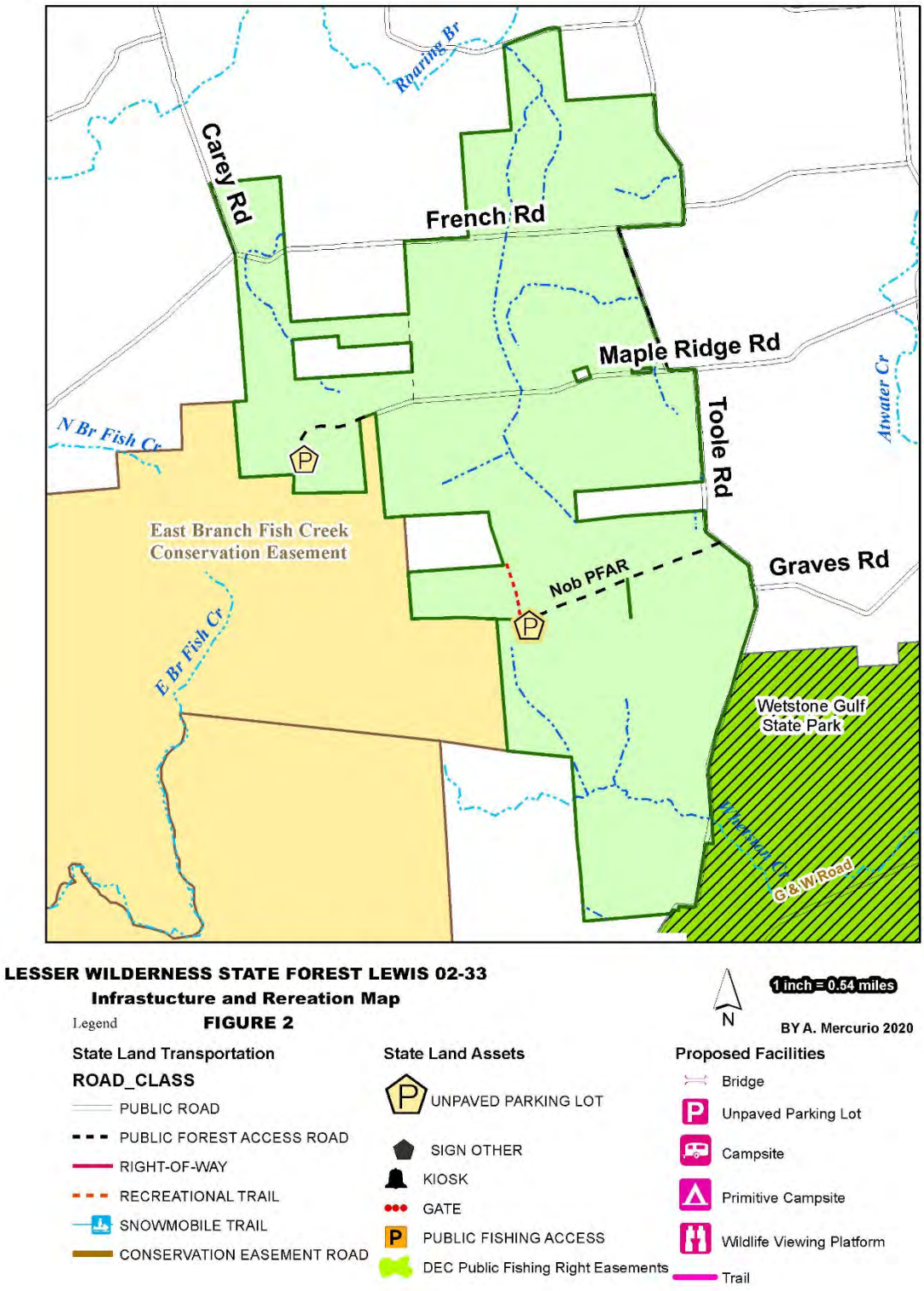
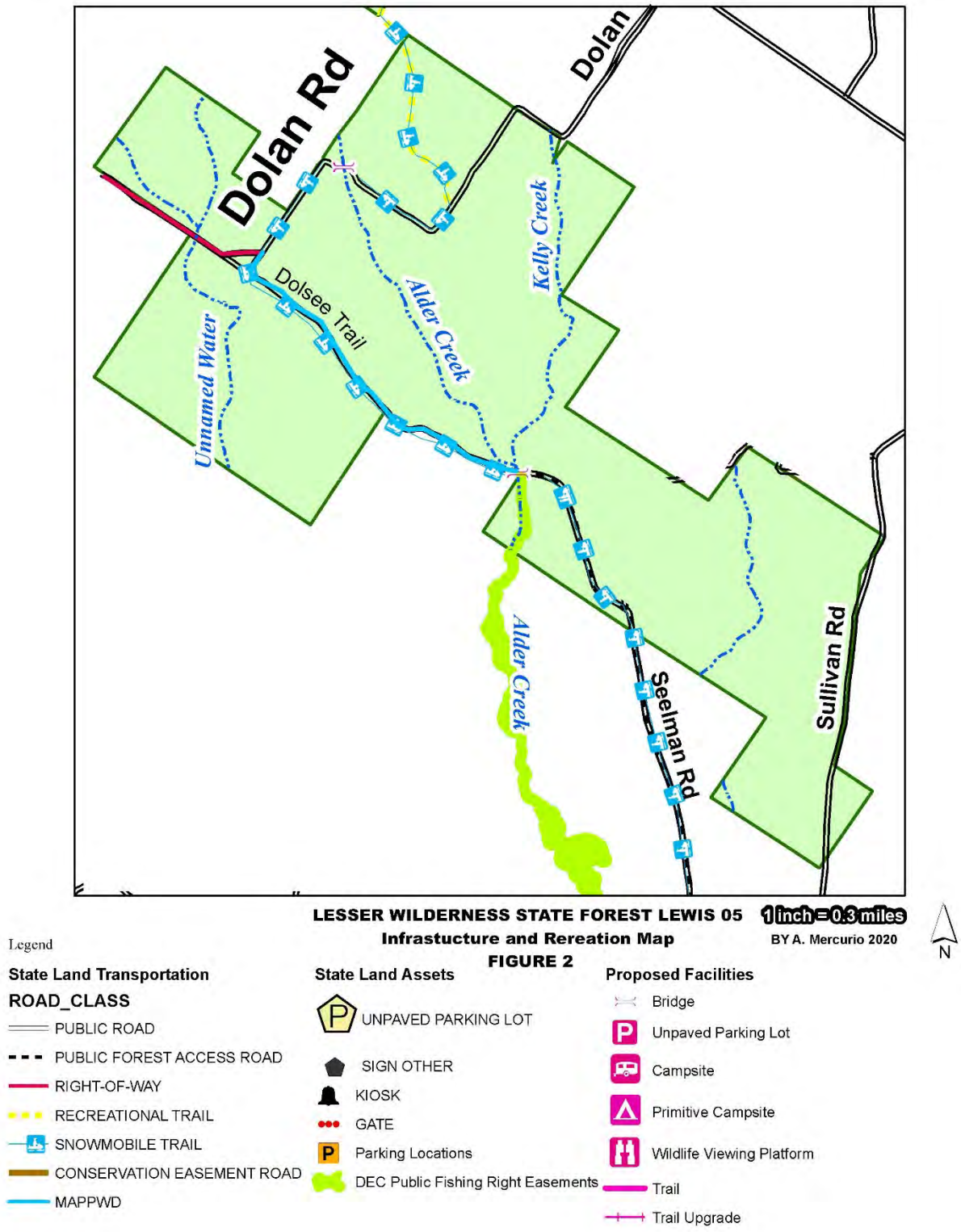


FIGURE 2. – INFRASTRUCTURE AND RECREATION MAPS



## FIGURE 2. – INFRASTRUCTURE AND RECREATION MAPS

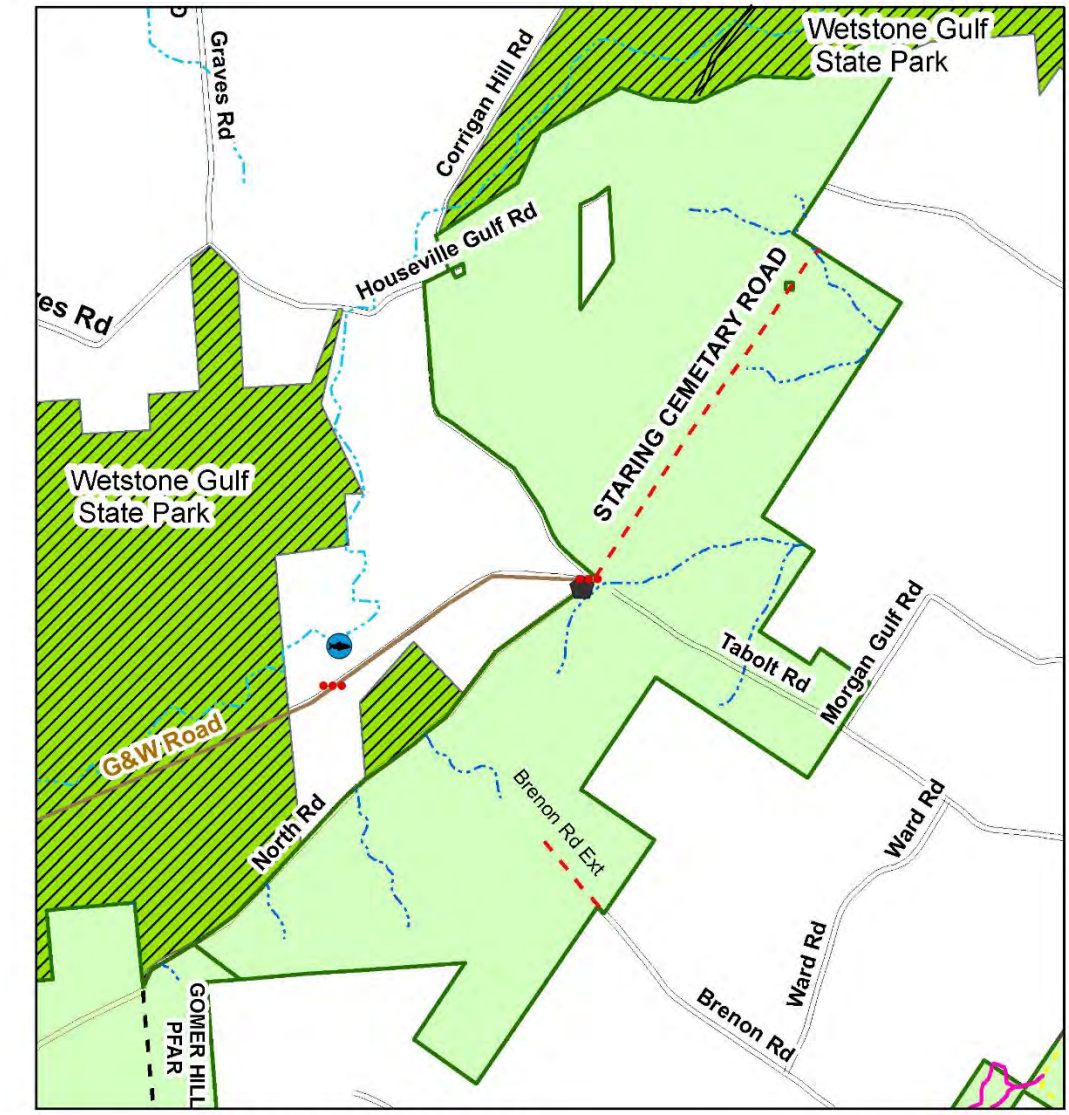


FIGURE 2. – INFRASTRUCTURE AND RECREATION MAPS

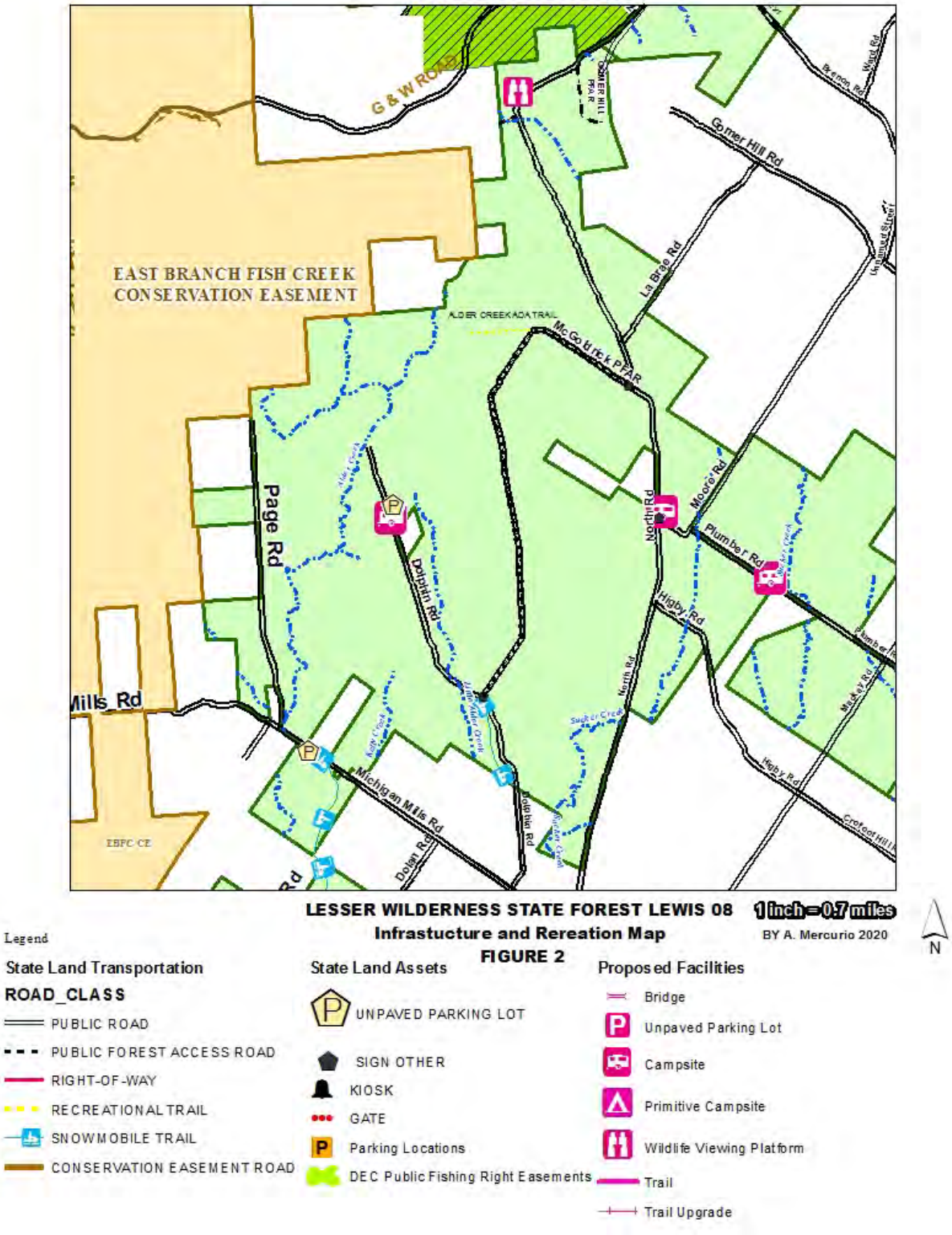


FIGURE 2. – INFRASTRUCTURE AND RECREATION MAPS

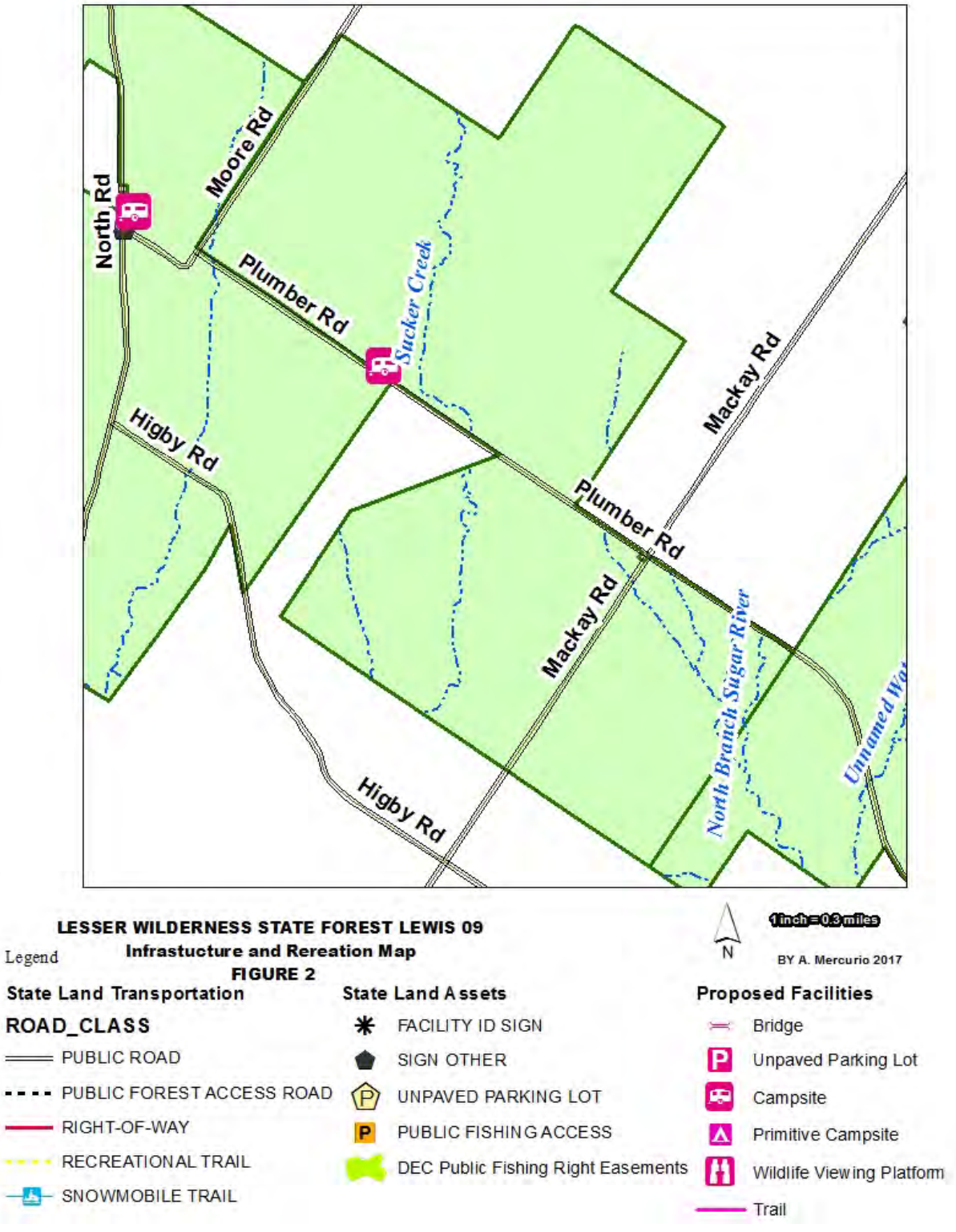


FIGURE 2. – INFRASTRUCTURE AND RECREATION MAPS

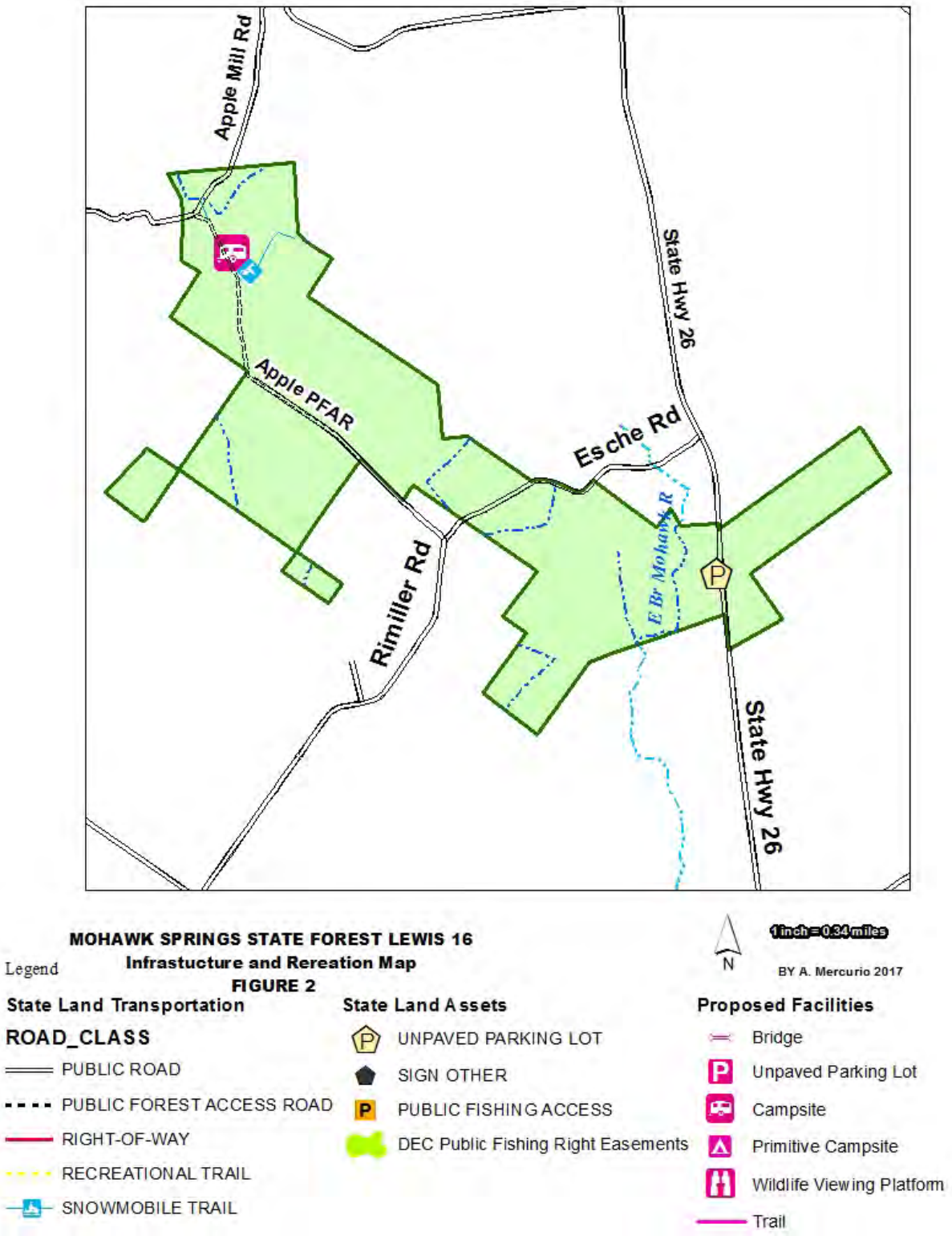


FIGURE 2. – INFRASTRUCTURE AND RECREATION MAPS

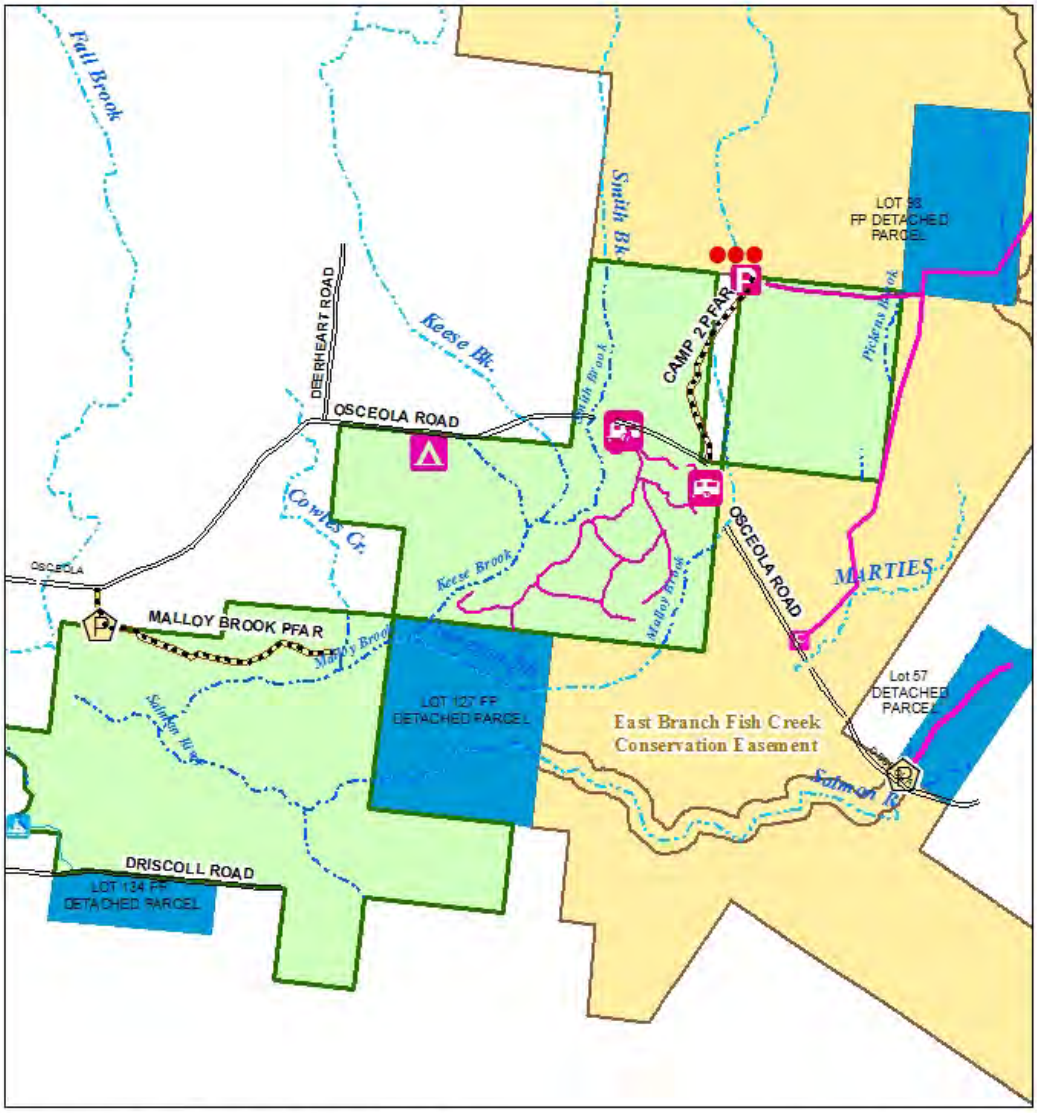


FIGURE 2. – INFRASTRUCTURE AND RECREATION MAPS

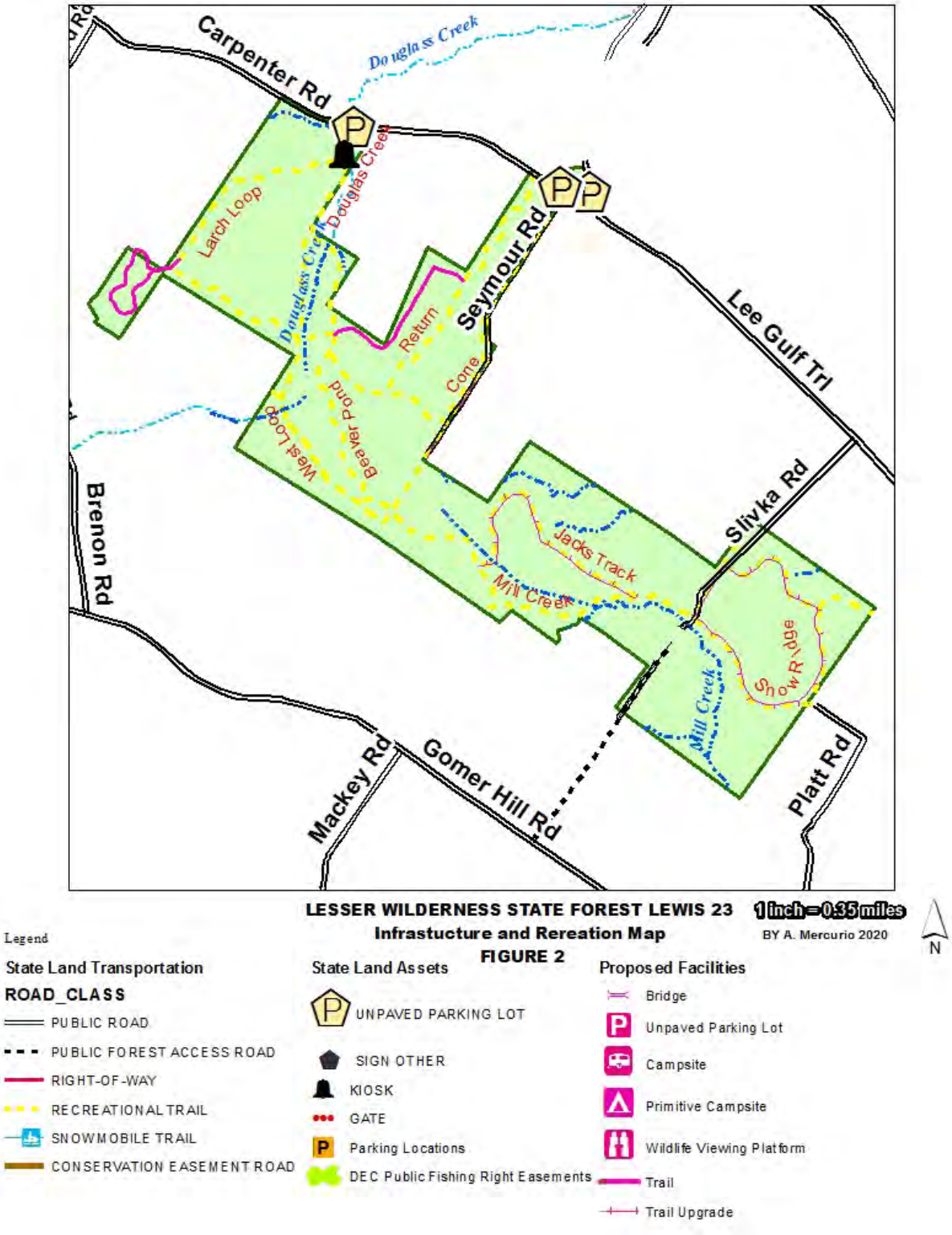
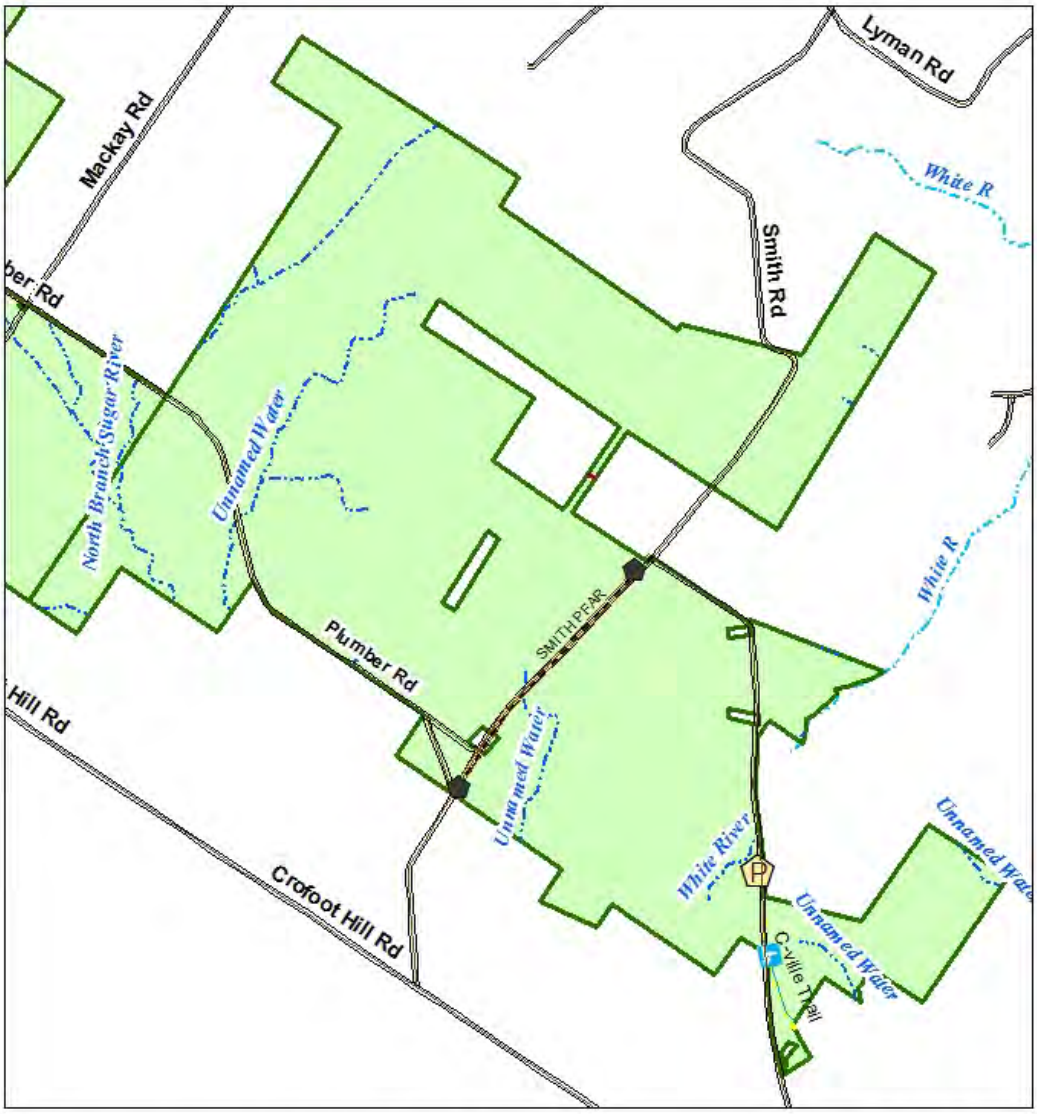


FIGURE 2. – INFRASTRUCTURE AND RECREATION MAPS




**LESSER WILDERNESS STATE FOREST LEWIS 25**

Legend **Infrastucture and Rereation Map**

**FIGURE 2**

1 inch = 0.4 miles

N

BY A. Mercurio 2017

**State Land Transportation**

**ROAD_CLASS**

- PUBLIC ROAD
- PUBLIC FOREST ACCESS ROAD
- RIGHT-OF-WAY
- RECREATIONAL TRAIL
- SNOWMOBILE TRAIL

**State Land Assets**

- FACILITY ID SIGN
- SIGN OTHER
- UNPAVED PARKING LOT
- PUBLIC FISHING ACCESS
- DEC Public Fishing Right Easements

**Proposed Facilities**

- Bridge
- Unpaved Parking Lot
- Campsite
- Primitive Campsite
- Wildlife Viewing Platform
- Trail

FIGURE 2. – INFRASTRUCTURE AND RECREATION MAPS

FIGURE 2. – INFRASTRUCTURE AND RECREATION MAPS

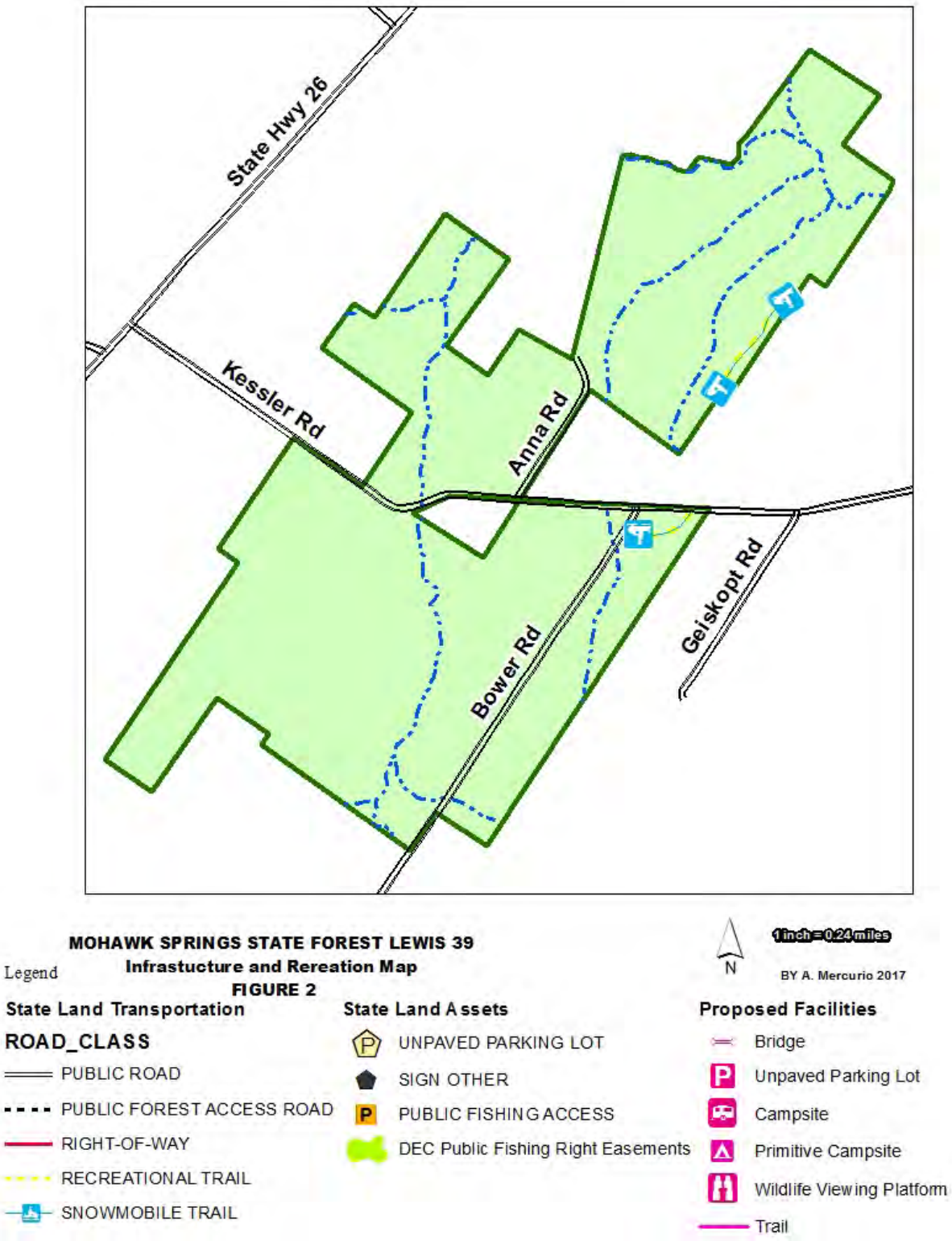
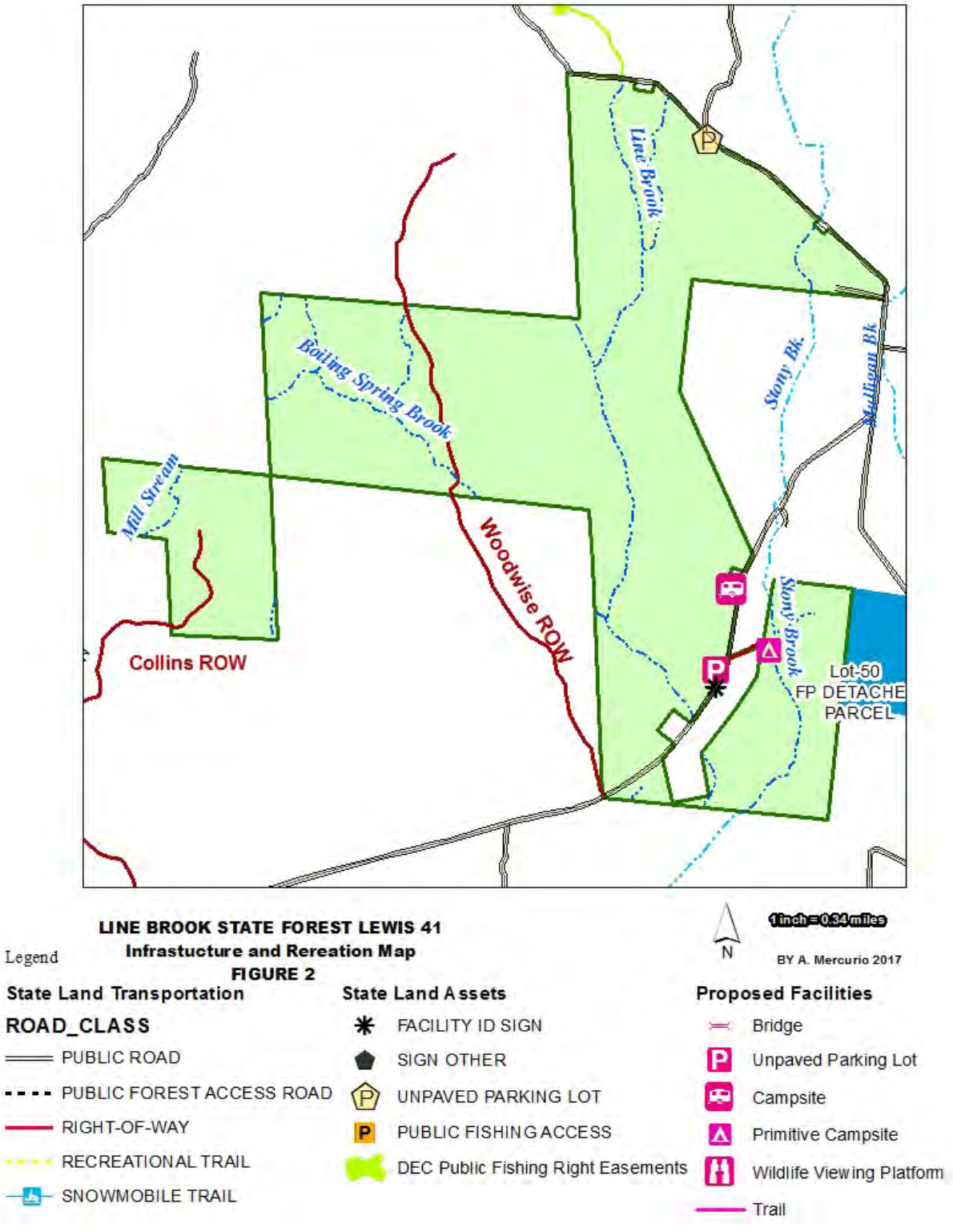
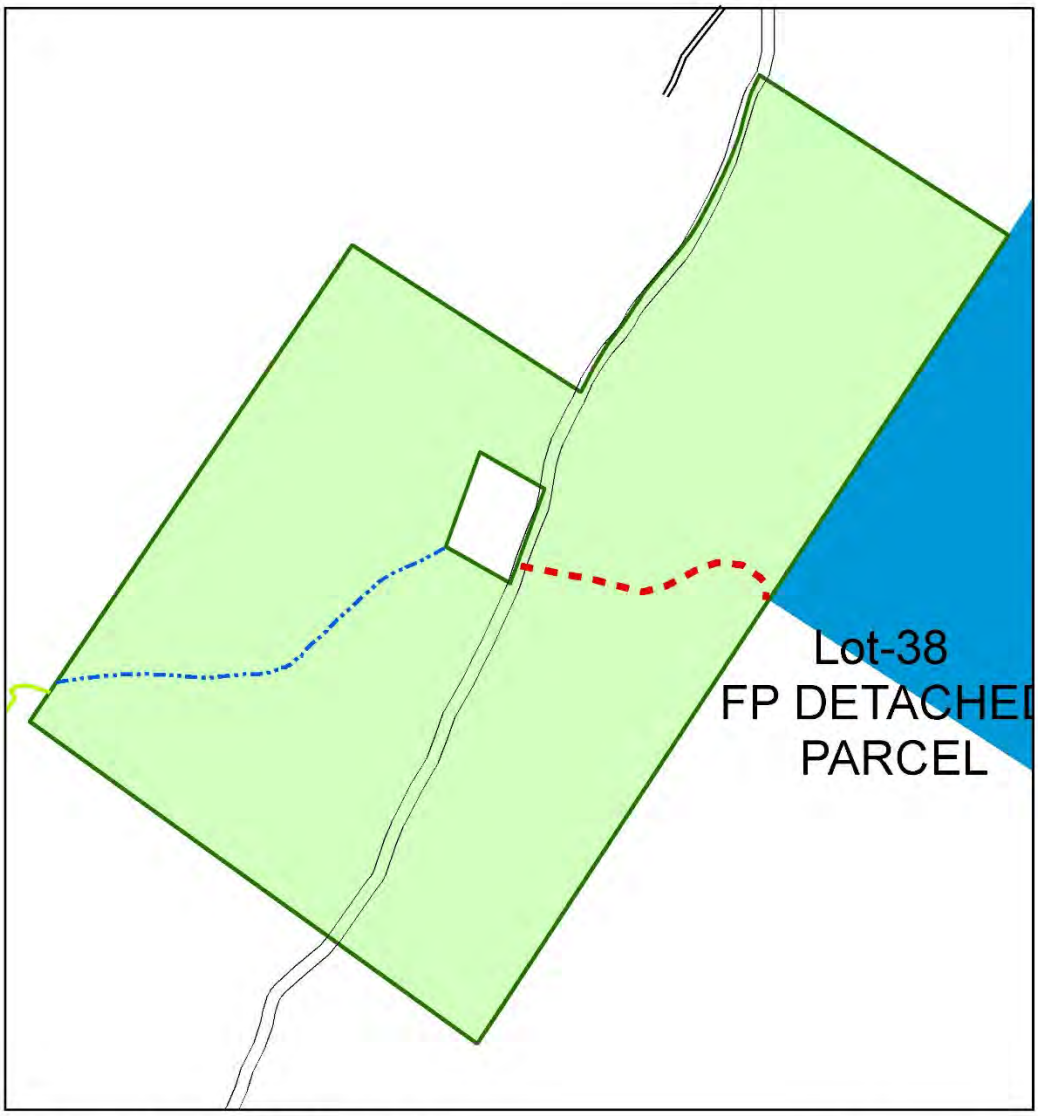


FIGURE 2. – INFRASTRUCTURE AND RECREATION MAPS



## FIGURE 2. – INFRASTRUCTURE AND RECREATION MAPS




**RAYWOOD UNIQUE AREA LEWIS 43**
**Infrastucture and Rereation Map**
Legend **FIGURE 2**

N

1 inch = 0.16 miles

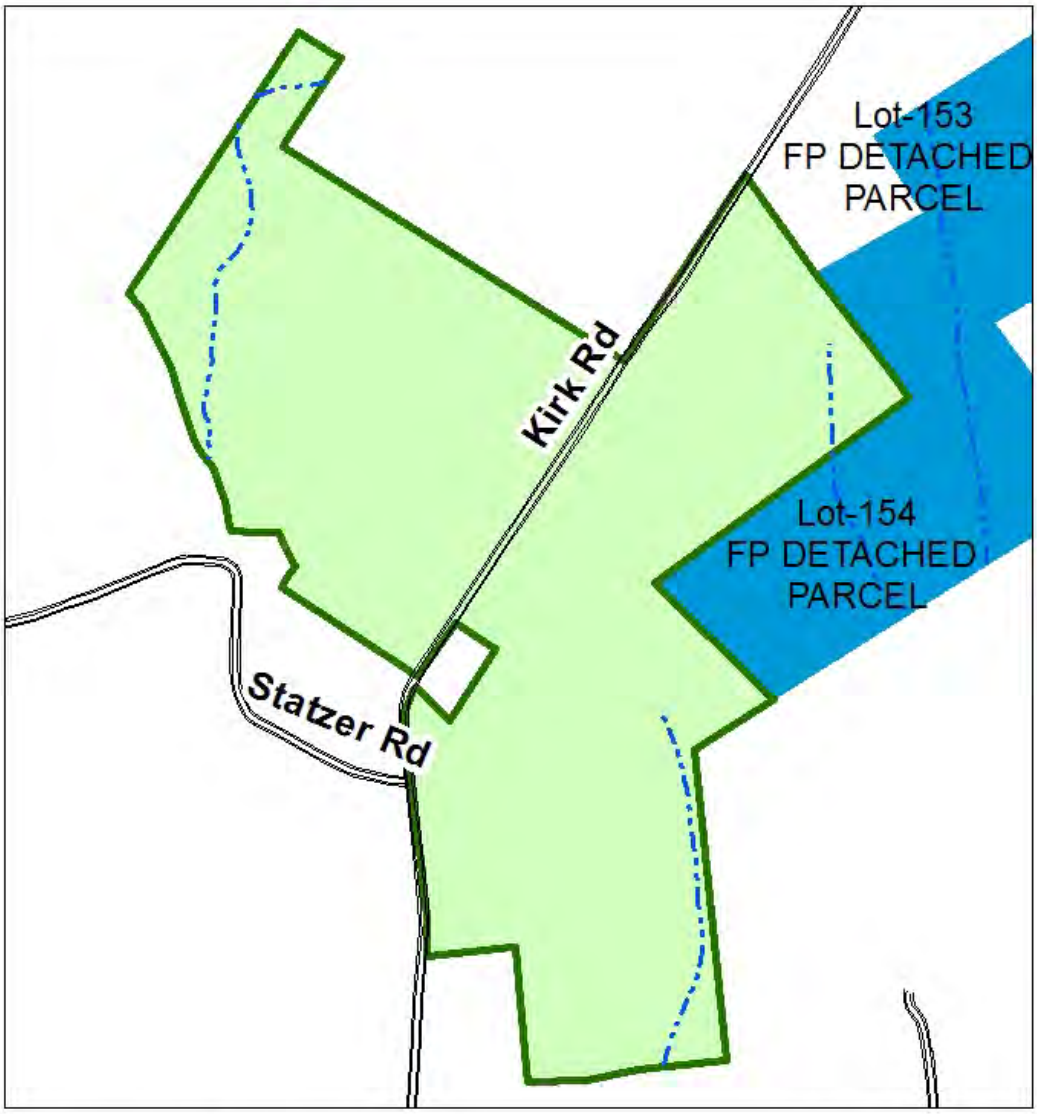
BY A. Mercurio 2020

**State Land Transportation**
**ROAD_CLASS**
- PUBLIC ROAD
- PUBLIC FOREST ACCESS ROAD
- RIGHT-OF-WAY
- RECREATIONAL TRAIL
- SNOWMOBILE TRAIL
- CONSERVATION EASEMENT ROAD

**State Land Assets**
- UNPAVED PARKING LOT
- SIGN OTHER
- KIOSK
- GATE
- PUBLIC FISHING ACCESS
- DEC Public Fishing Right Easements

**Proposed Facilities**
- Bridge
- Unpaved Parking Lot
- Campsite
- Primitive Campsite
- Wildlife Viewing Platform
- Trail

FIGURE 2. – INFRASTRUCTURE AND RECREATION MAPS




**COTTRELL STATE FOREST LEWIS 44**
**Infrastucture and Rereation Map**
**FIGURE 2**

N

1 inch = 0.21 miles

BY A. Mercurio 2017

Legend

**State Land Transportation**

**ROAD_CLASS**

- PUBLIC ROAD
- PUBLIC FOREST ACCESS ROAD
- RIGHT-OF-WAY
- RECREATIONAL TRAIL
- SNOWMOBILE TRAIL

**State Land Assets**

- FACILITY ID SIGN
- SIGN OTHER
- UNPAVED PARKING LOT
- PUBLIC FISHING ACCESS
- DEC Public Fishing Right Easements

**Proposed Facilities**

- Bridge
- Unpaved Parking Lot
- Campsite
- Primitive Campsite
- Wildlife Viewing Platform
- Trail

FIGURE 2. – INFRASTRUCTURE AND RECREATION MAPS

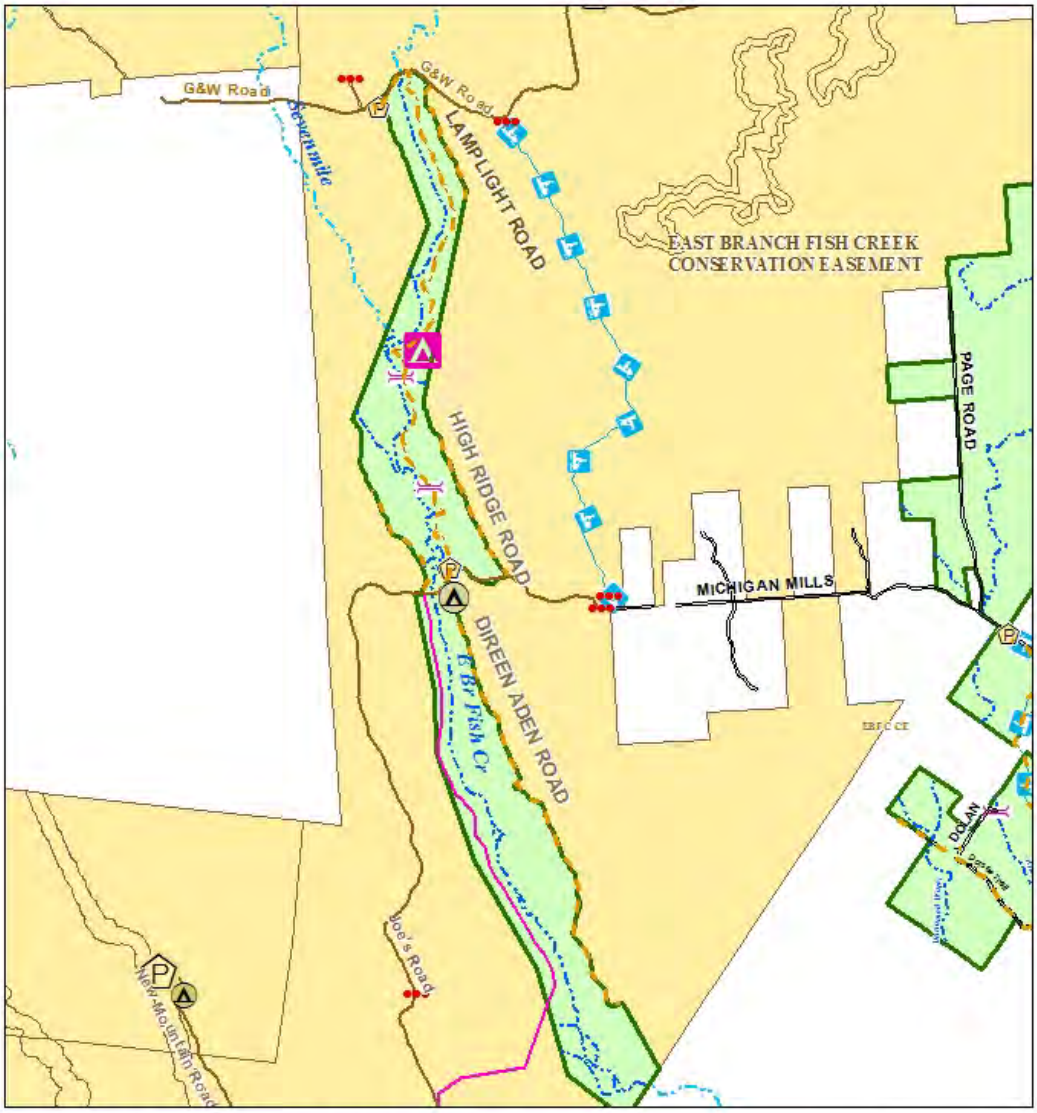


FIGURE 2. – INFRASTRUCTURE AND RECREATION MAPS

FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS

## Figure 3. – Current Forest Type and Forest Stand Identification Number Maps

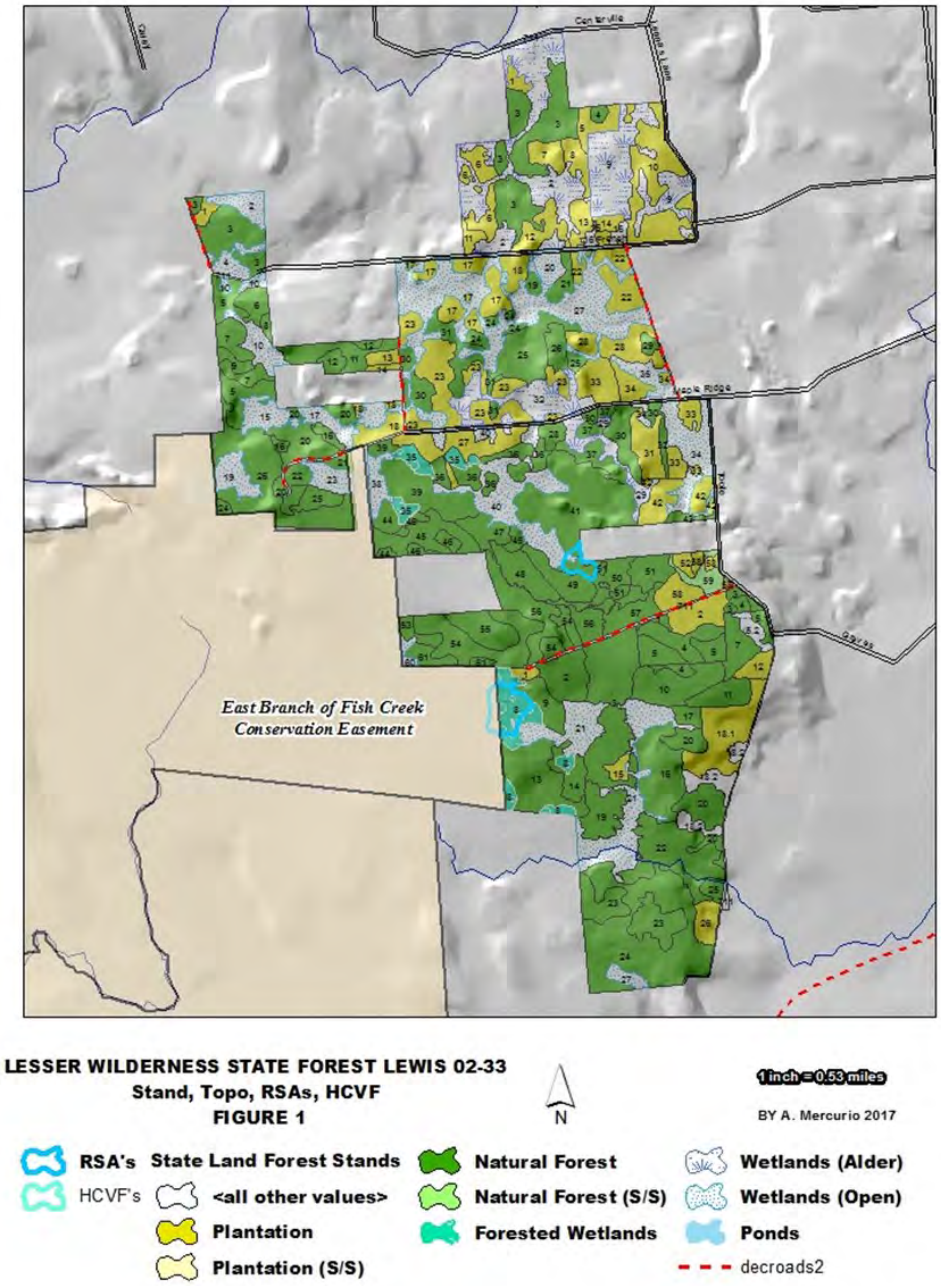


FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS

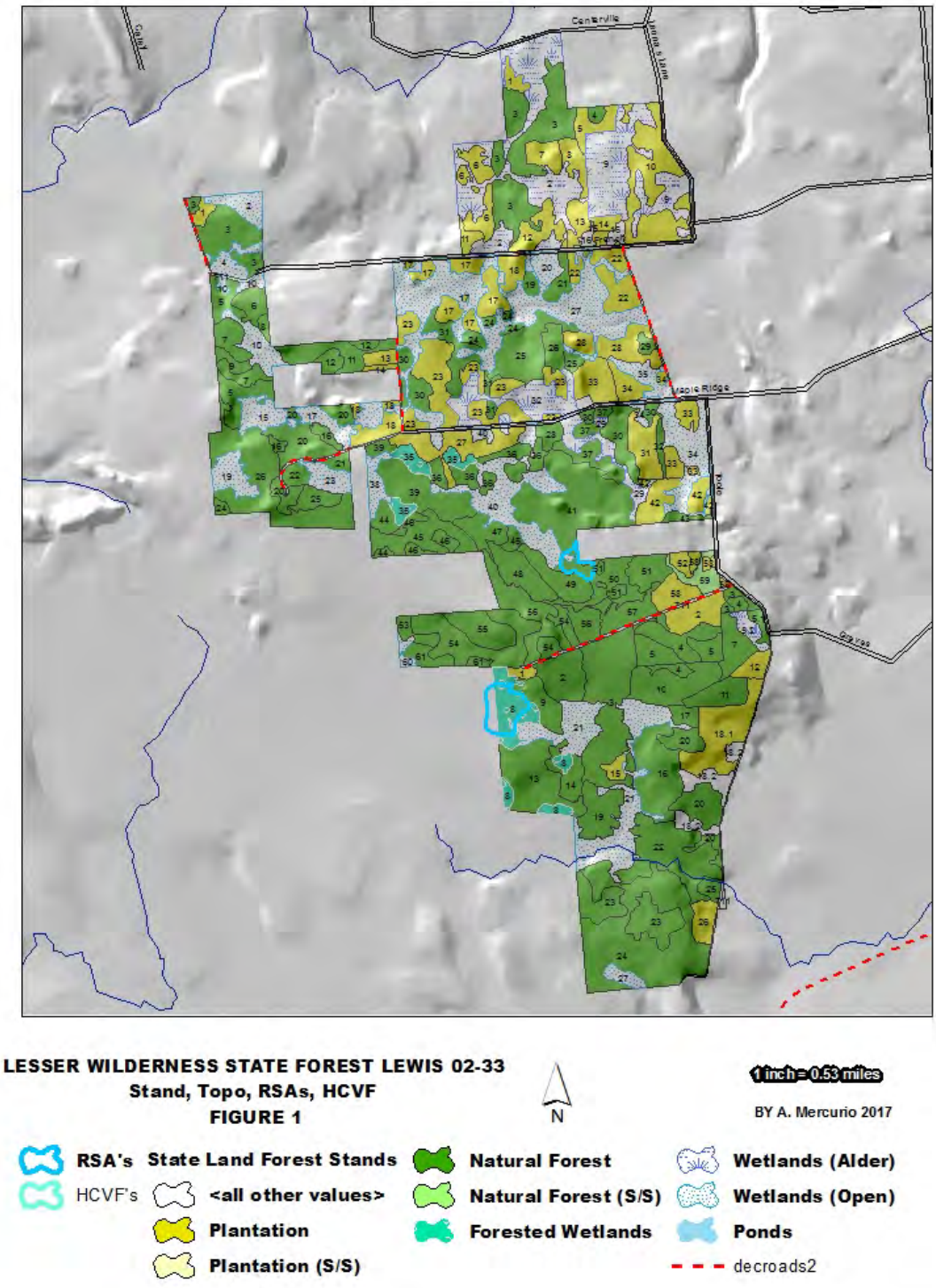


FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS

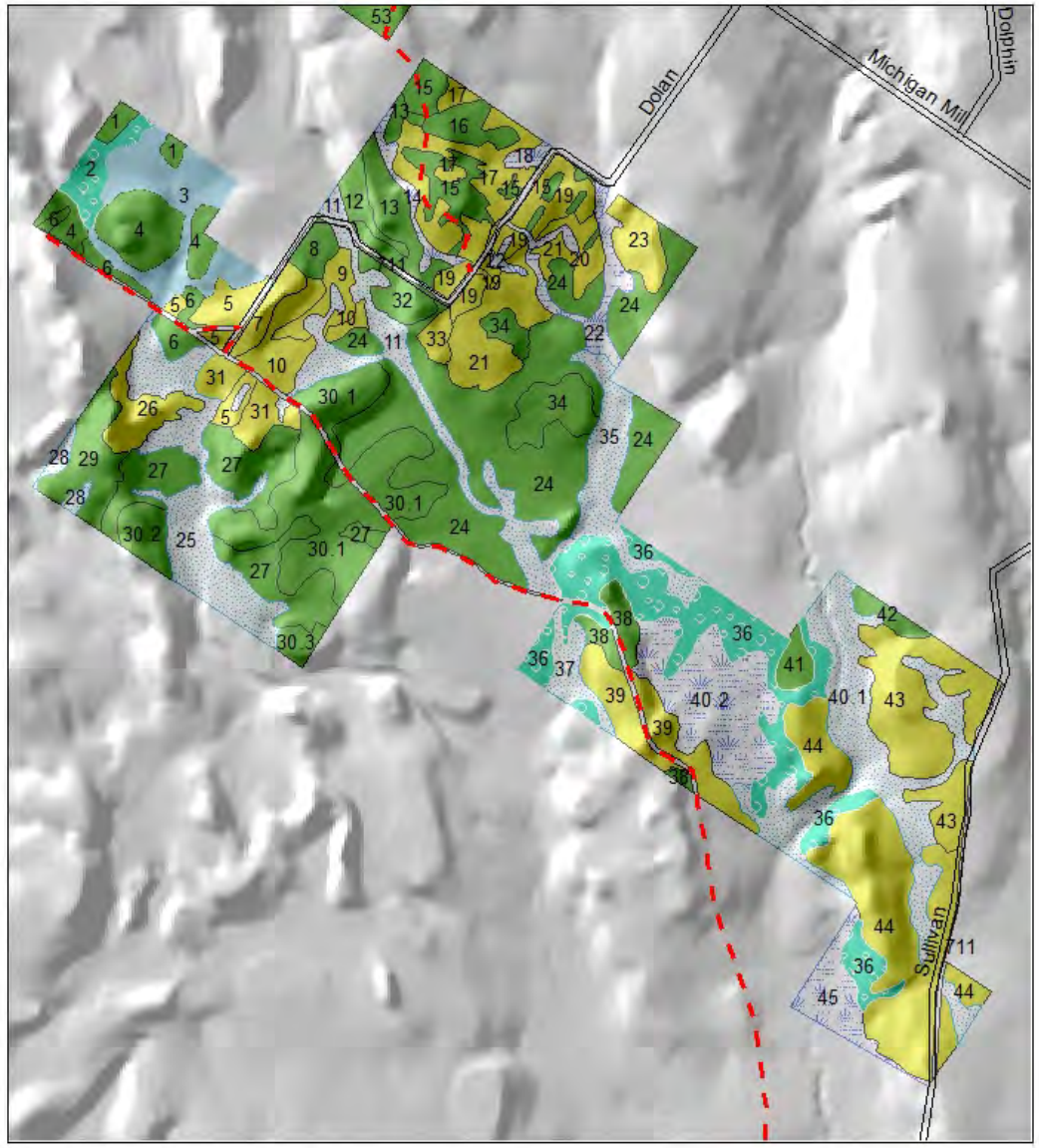
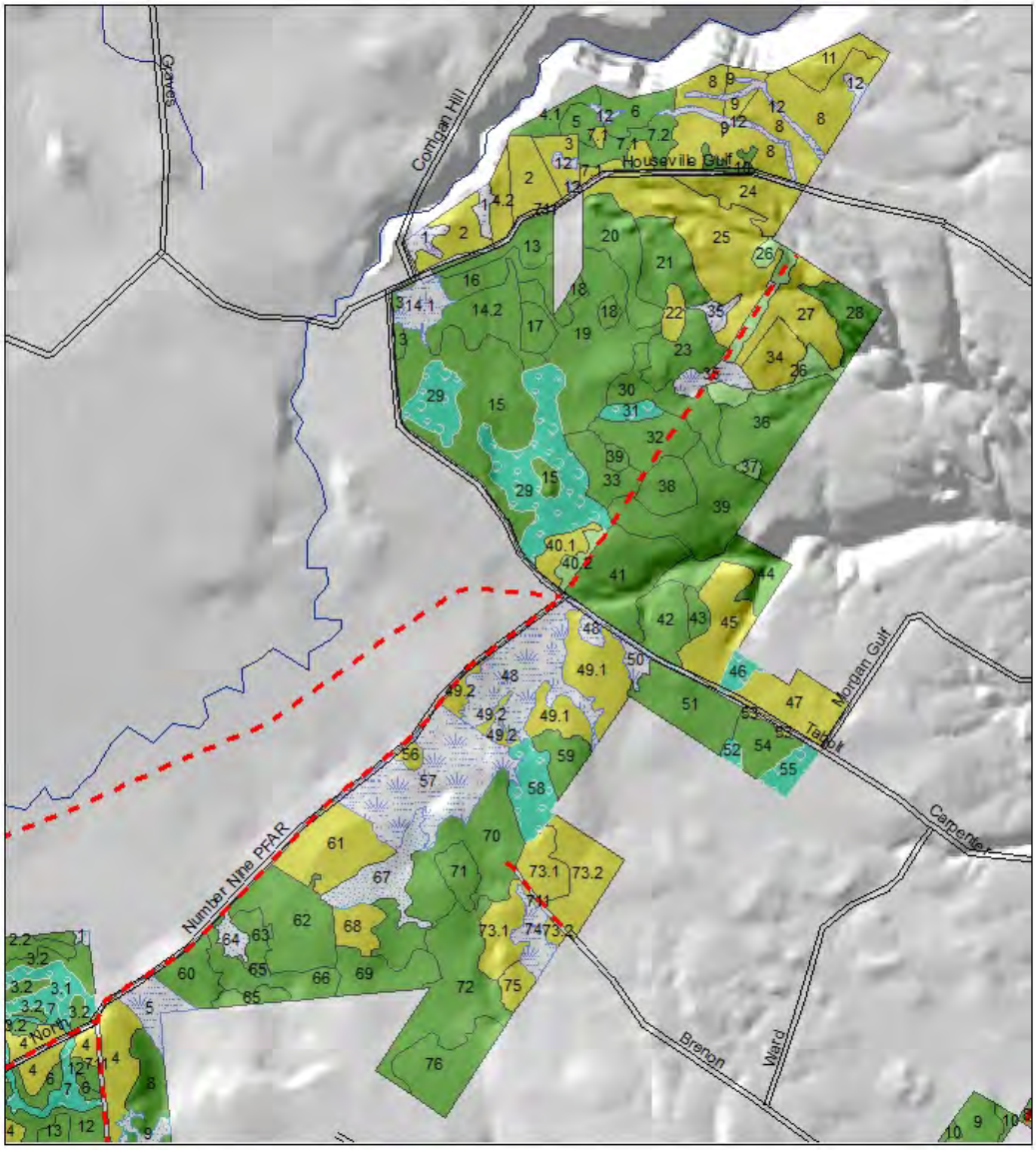


FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS




**LESSER WILDERNESS STATE FOREST LEWIS 07**
**Stand, Topo, RSAs, HCVF**
**FIGURE 1**

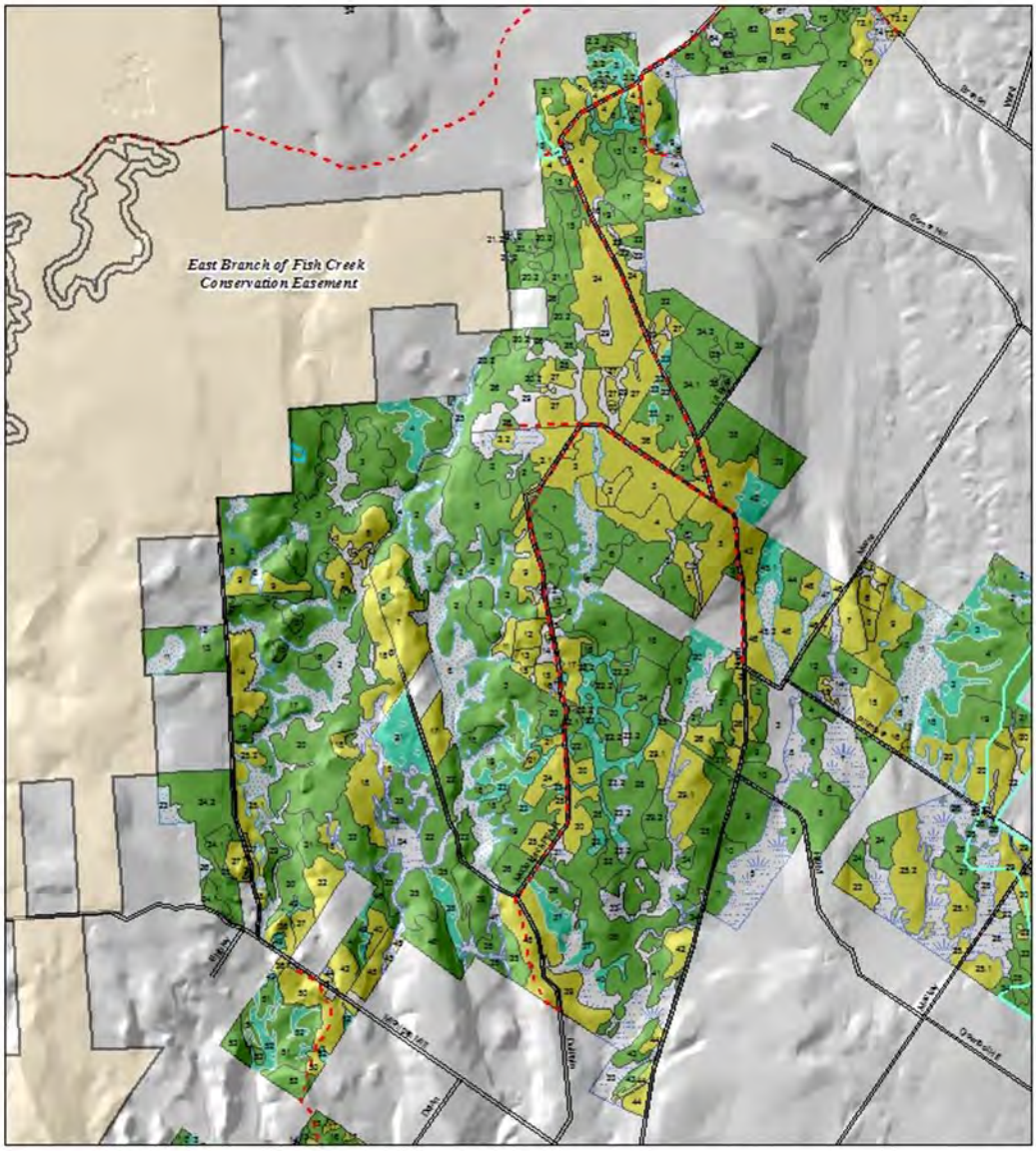
N

1 inch = 0.37 miles

BY A. Mercurio 2017

- RSA's
- HCVF's
- State Land Forest Stands
- <all other values>
- Plantation
- Plantation (S/S)
- Natural Forest
- Natural Forest (S/S)
- Forested Wetlands
- Wetlands (Alder)
- Wetlands (Open)
- Ponds
- decroads2

FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS




**LESSER WILDERNESS STATE FOREST LEWIS 08**
**Stand, Topo, RSAs, HCVF**
**FIGURE 1**

N

1 inch = 0.67 miles

BY A. Mercurio 2017

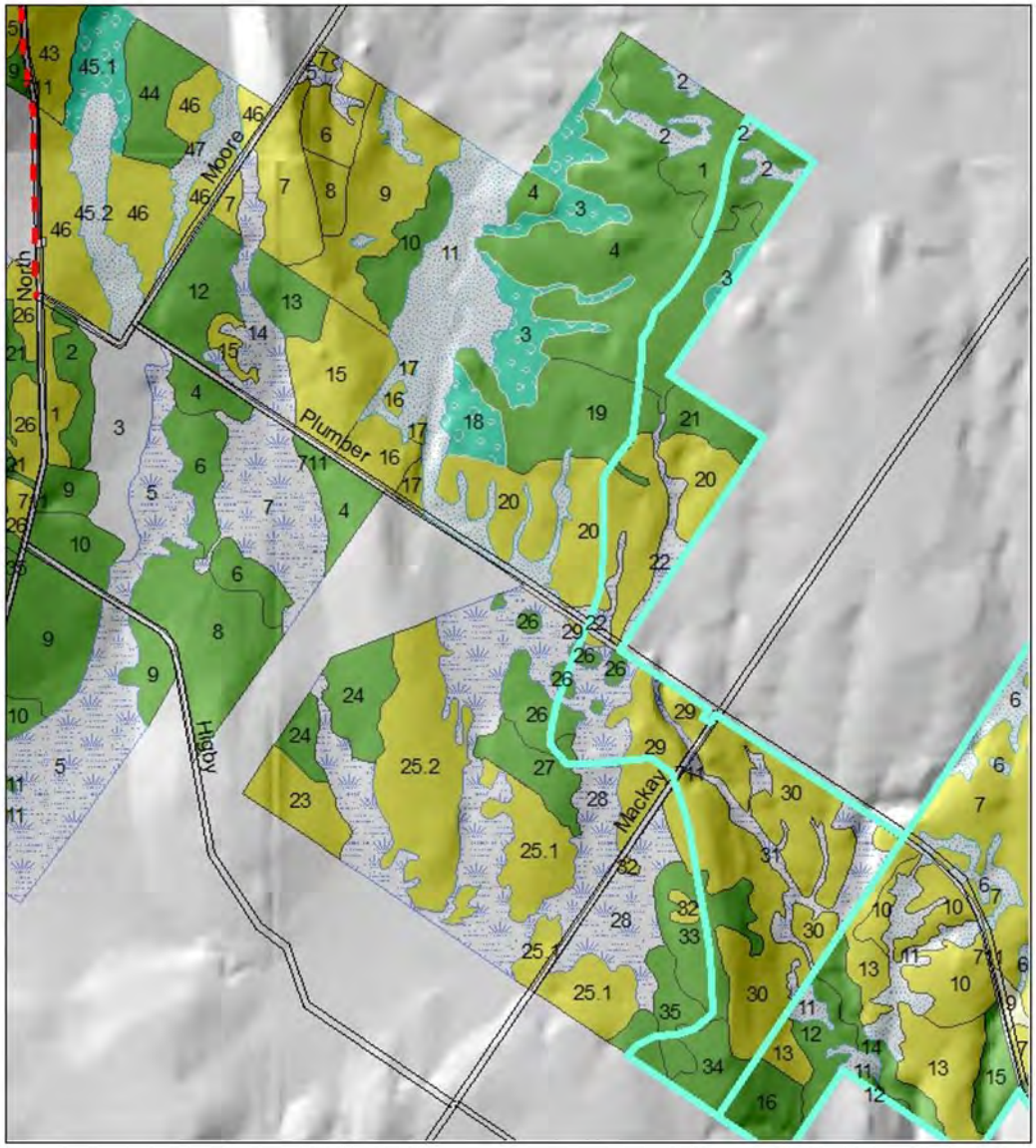
**RSA's** HCVF's

**State Land Forest Stands**
**<all other values>**
**Plantation**
**Plantation (S/S)**

**Natural Forest**
**Natural Forest (S/S)**
**Forested Wetlands**

**Wetlands (Alder)**
**Wetlands (Open)**
**Ponds**
decroads2

FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS




**LESSER WILDERNESS STATE FOREST LEWIS 09**
**Stand, Topo, RSAs, HCVF**
**FIGURE 1**

N

1 inch = 0.29 miles

BY A. Mercurio 2017

**RSA's** HCVF's

**State Land Forest Stands**
**<all other values>**
**Plantation**
**Plantation (S/S)**

**Natural Forest**
**Natural Forest (S/S)**
**Forested Wetlands**

**Wetlands (Alder)**
**Wetlands (Open)**
**Ponds**
decroads2

FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS

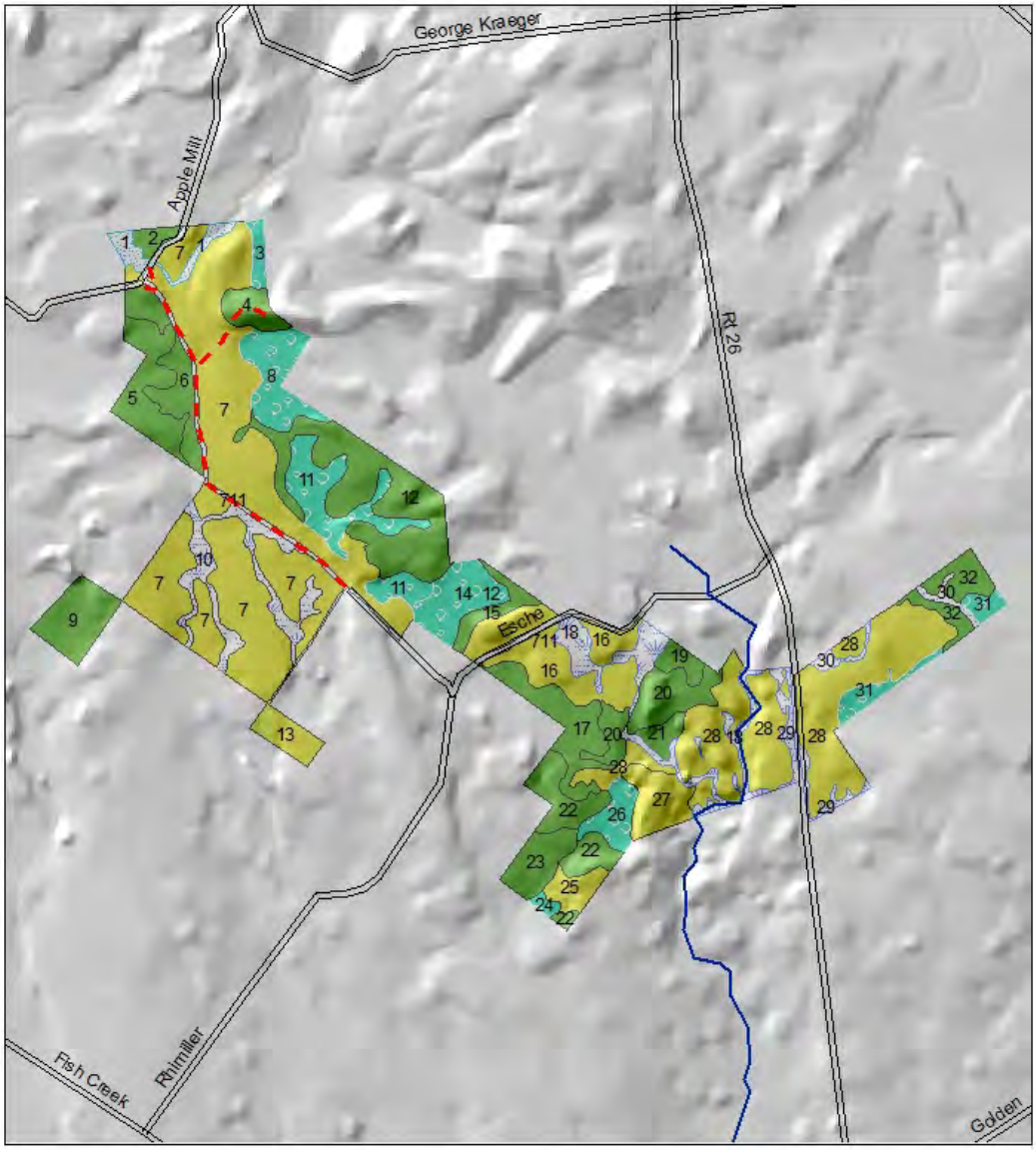


FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS

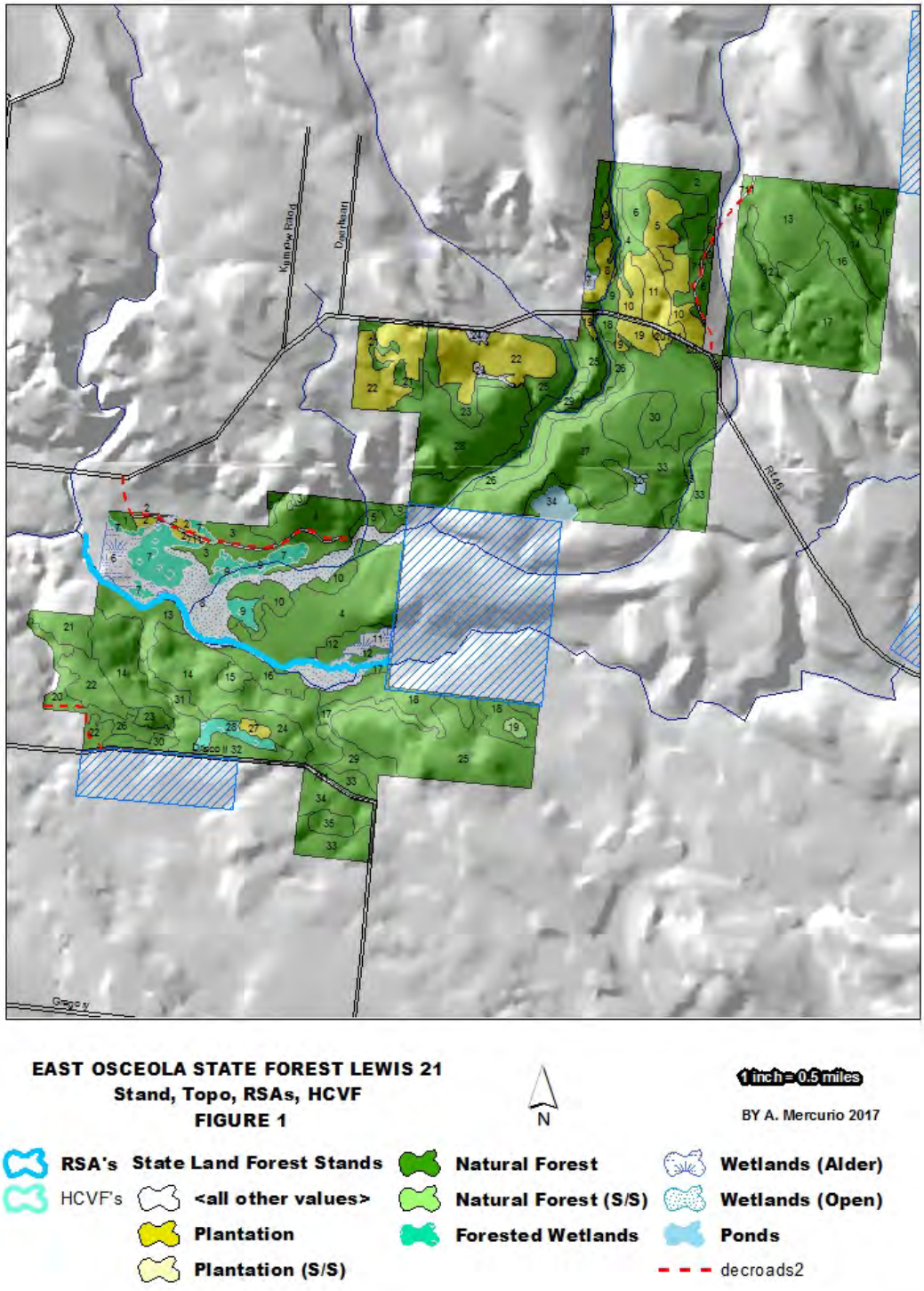
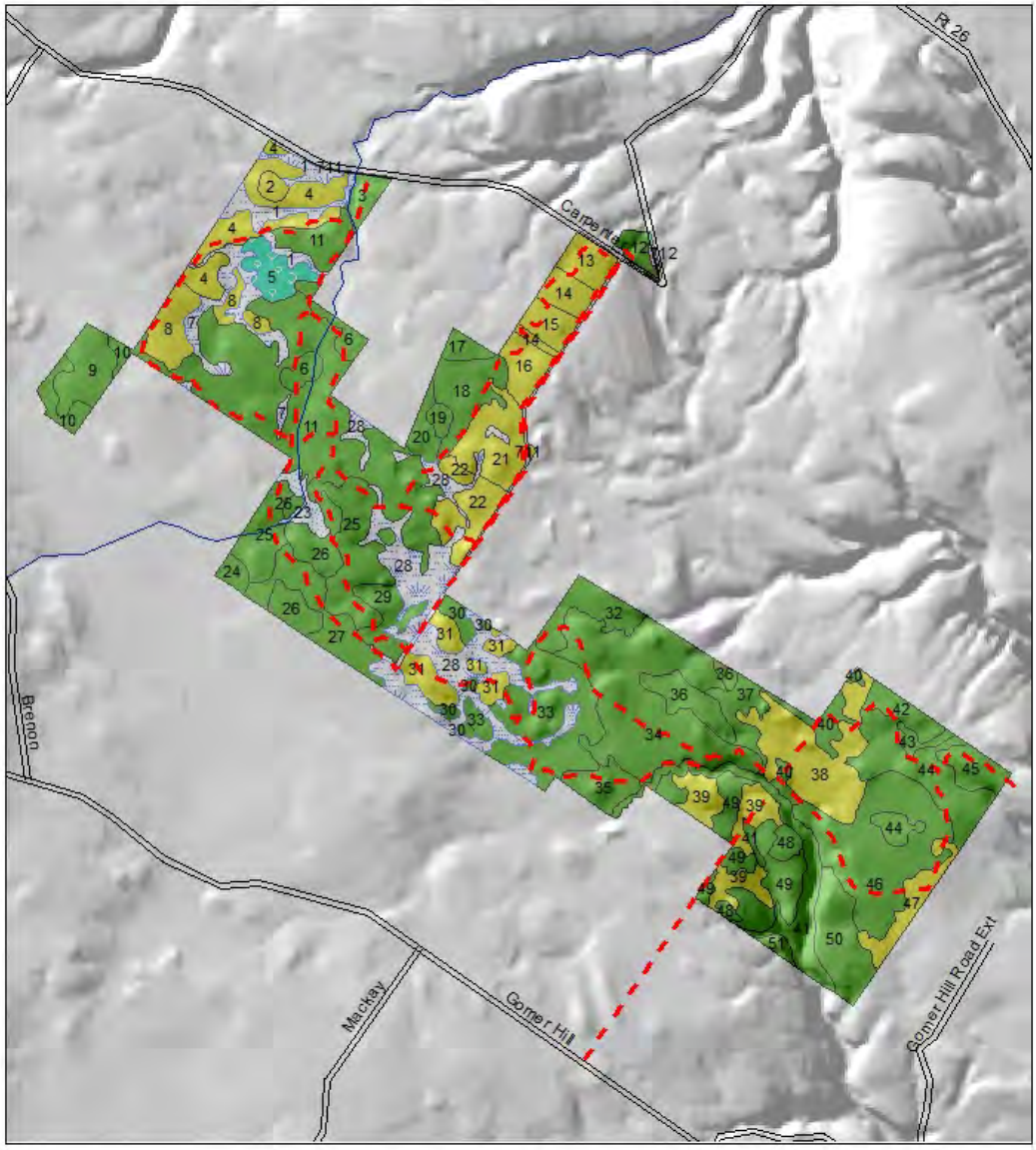


FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS




**LESSER WILDERNESS STATE FOREST LEWIS 23**
**Stand, Topo, RSAs, HCVF**
**FIGURE 1**

N

1 inch = 0.35 miles

BY A. Mercurio 2017

- RSA's
- HCVF's
- State Land Forest Stands
- <all other values>
- Plantation
- Plantation (S/S)
- Natural Forest
- Natural Forest (S/S)
- Forested Wetlands
- Wetlands (Alder)
- Wetlands (Open)
- Ponds
- decroads2

FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS

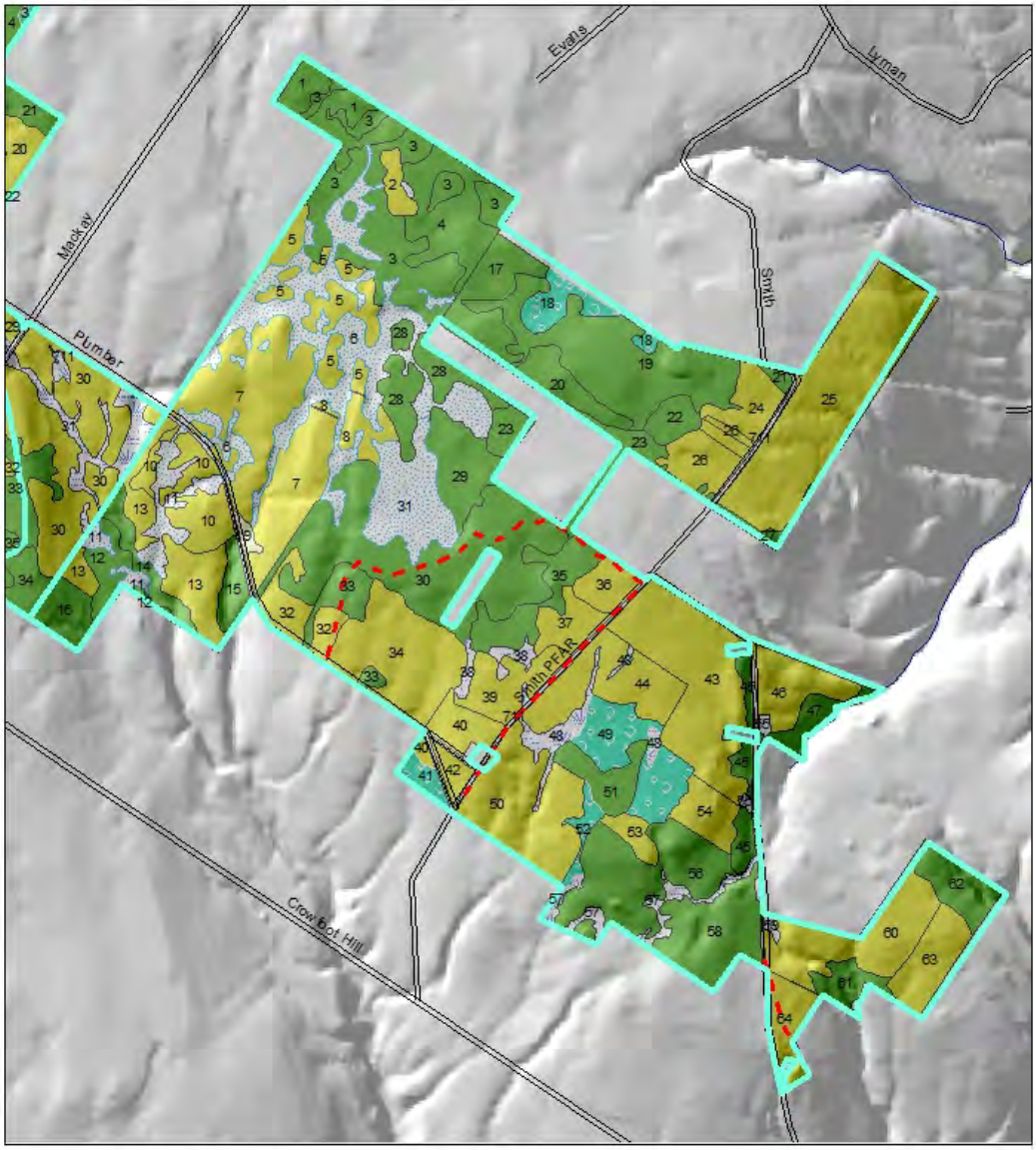


FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS

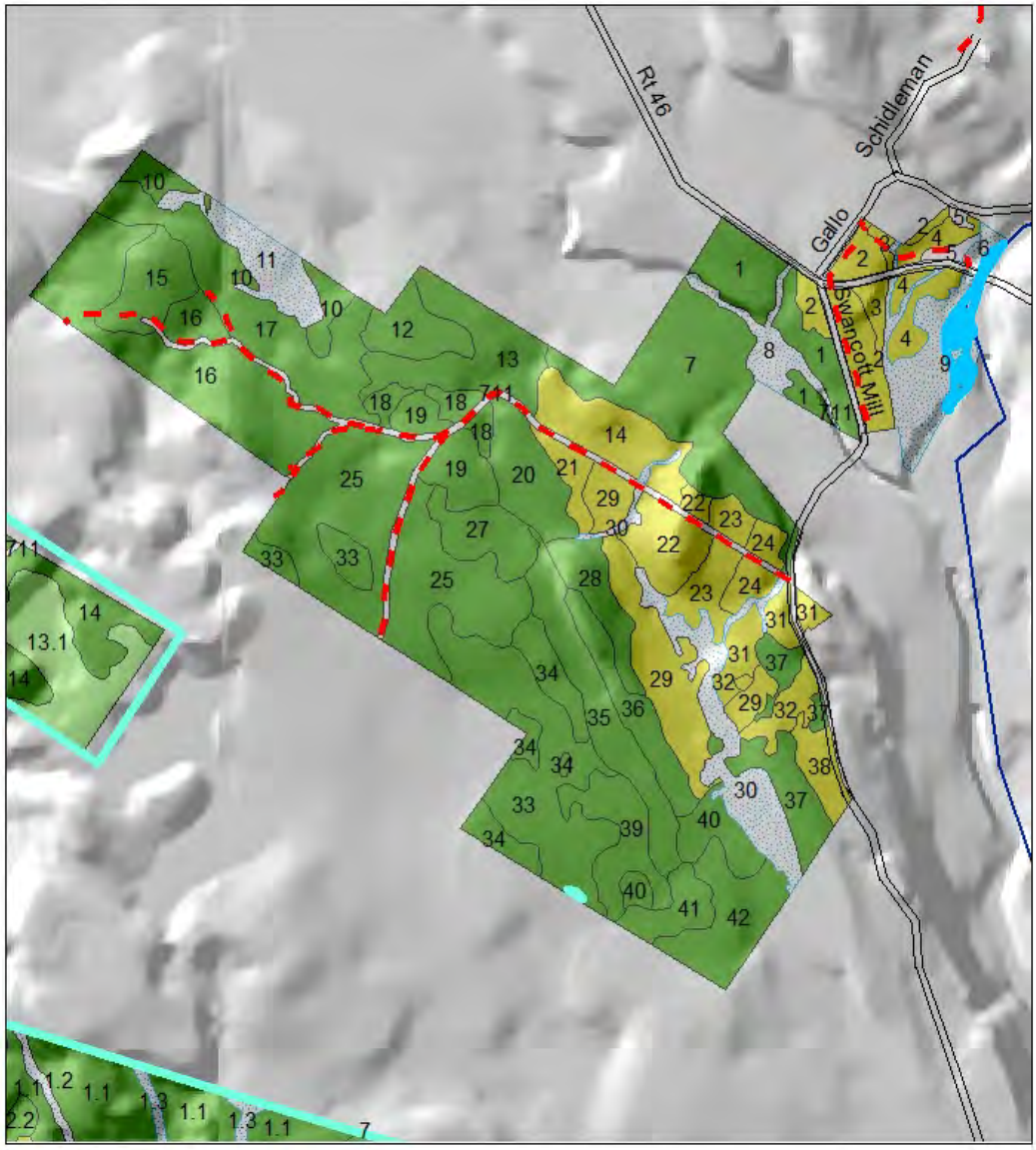


FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS

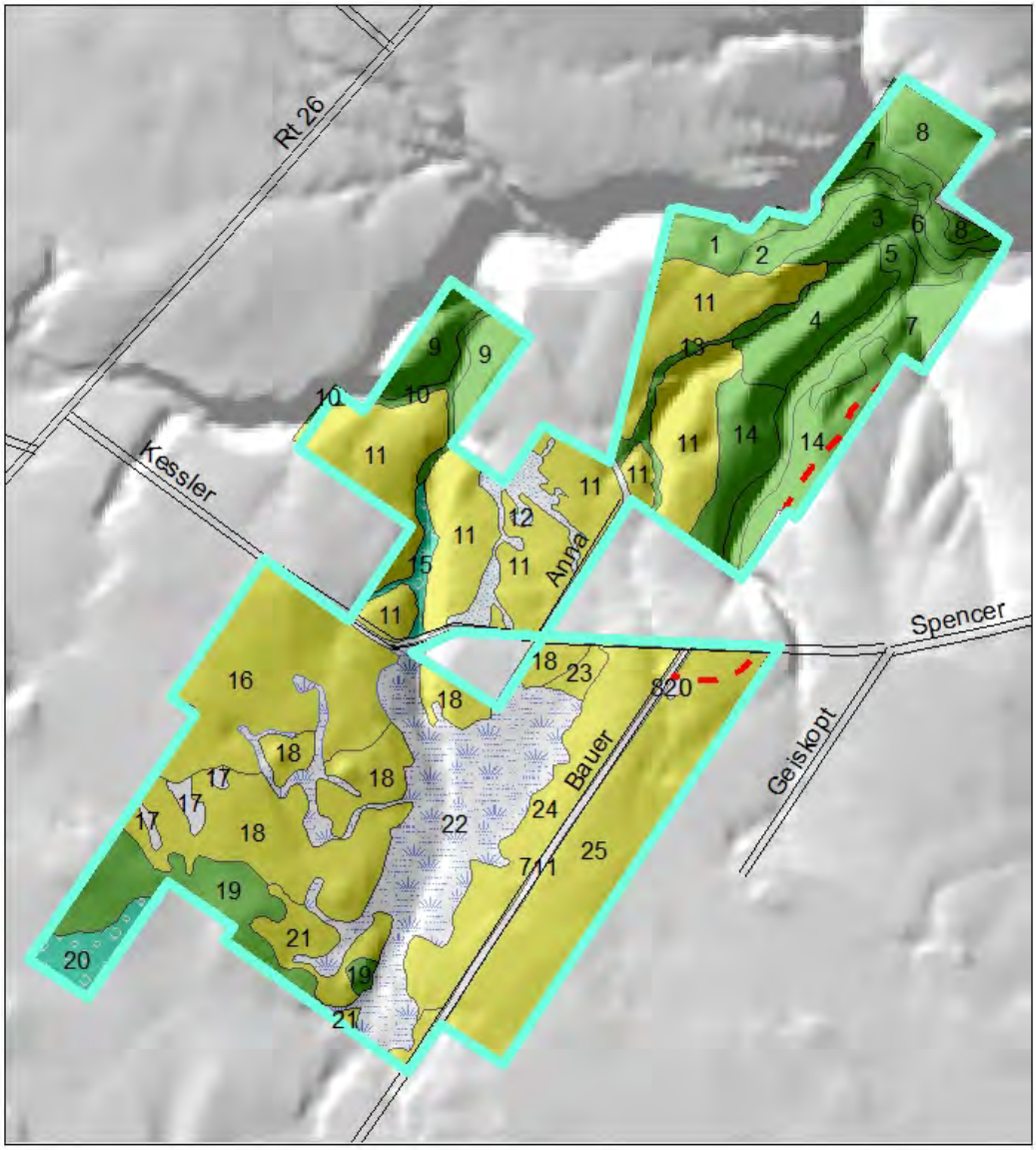
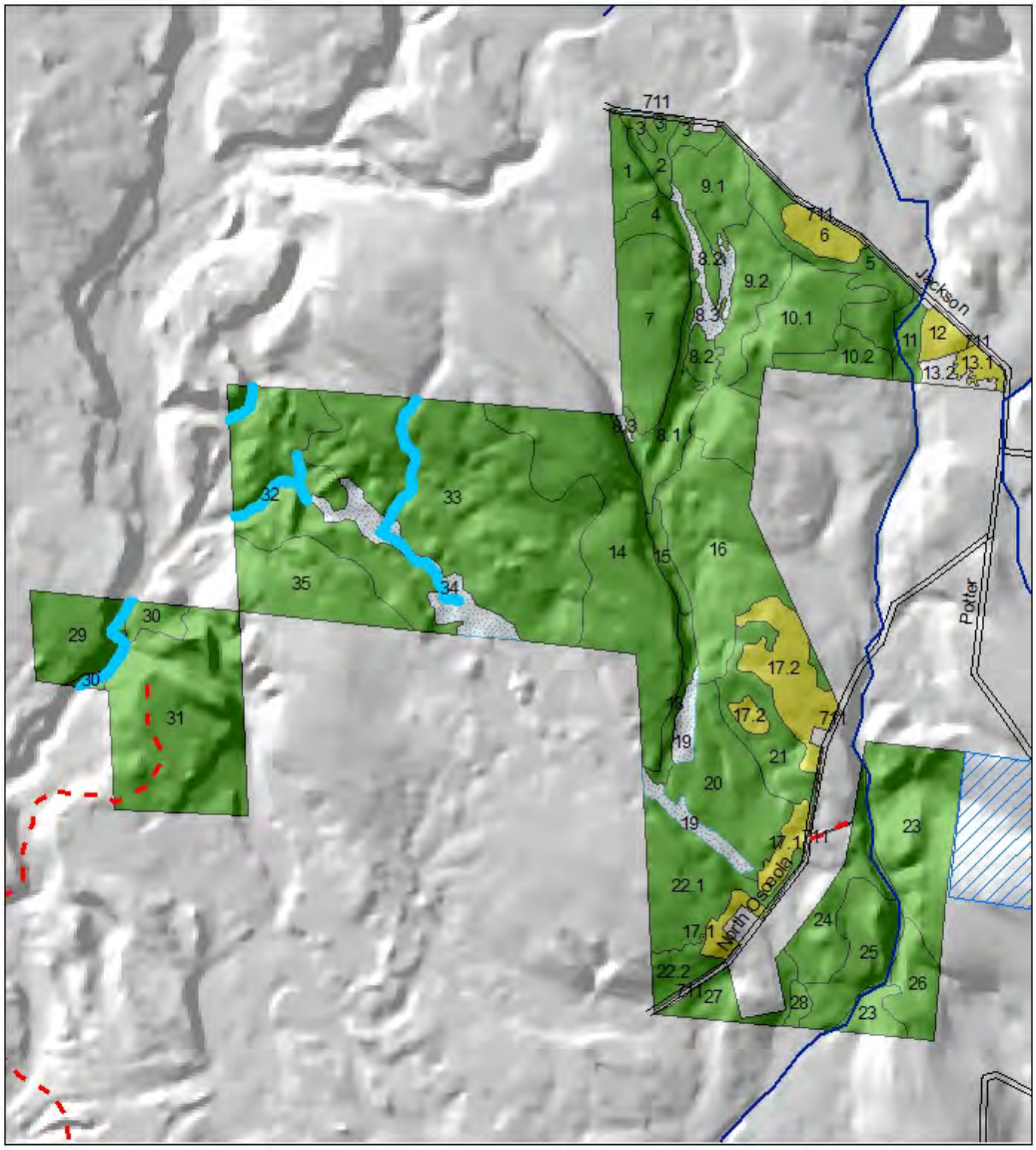


FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS




**LINE BROOK STATE FOREST LEWIS 41**
**Stand, Topo, RSAs, HCVF**
**FIGURE 1**

N

1 inch = 0.34 miles

BY A. Mercurio 2017

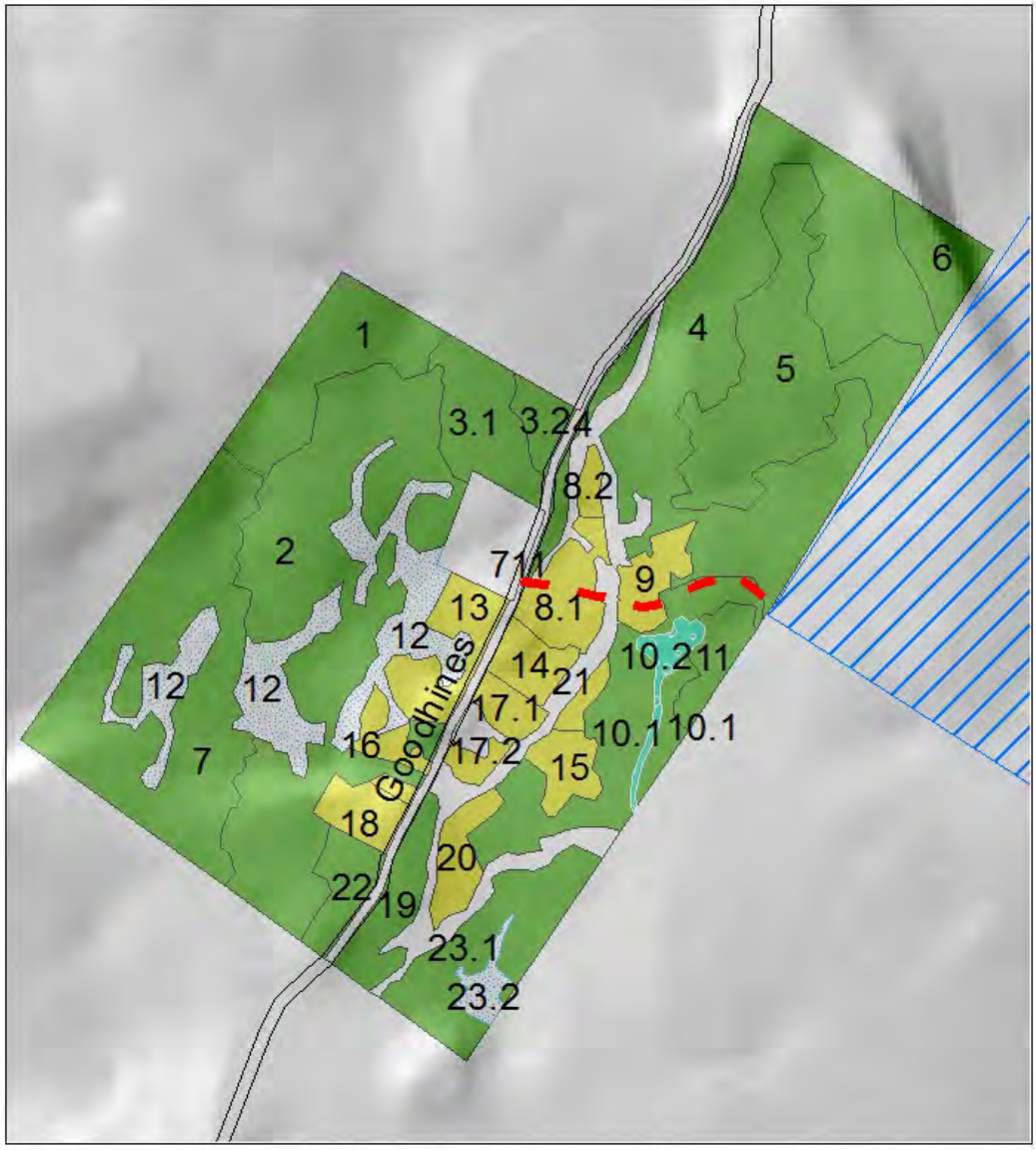
**RSA's** HCVF's

**State Land Forest Stands**
**<all other values>**
**Plantation**
**Plantation (S/S)**

**Natural Forest**
**Natural Forest (S/S)**
**Forested Wetlands**

**Wetlands (Alder)**
**Wetlands (Open)**
**Ponds**
decroads2

FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS




**RAYWOOD UNIQUE AREA LEWIS 43**
**Stand, Topo, RSAs, HCVF**
**FIGURE 1**

N

1 inch = 0.16 miles

BY A. Mercurio 2017

RSA's
HCVF's
State Land Forest Stands
<all other values>
Plantation
Plantation (S/S)
Natural Forest
Natural Forest (S/S)
Forested Wetlands
Wetlands (Alder)
Wetlands (Open)
Ponds
decroads2

FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS

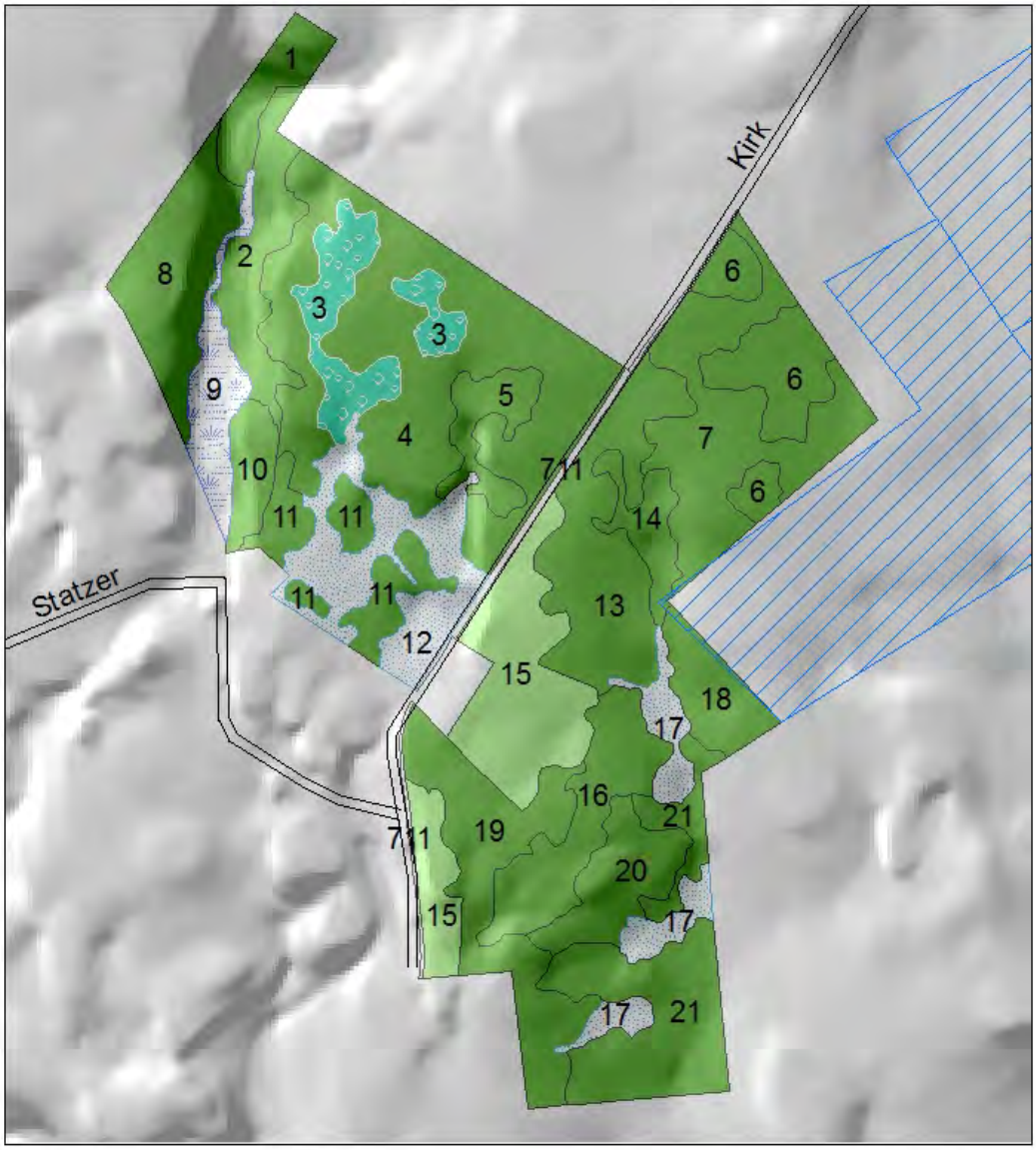


FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS

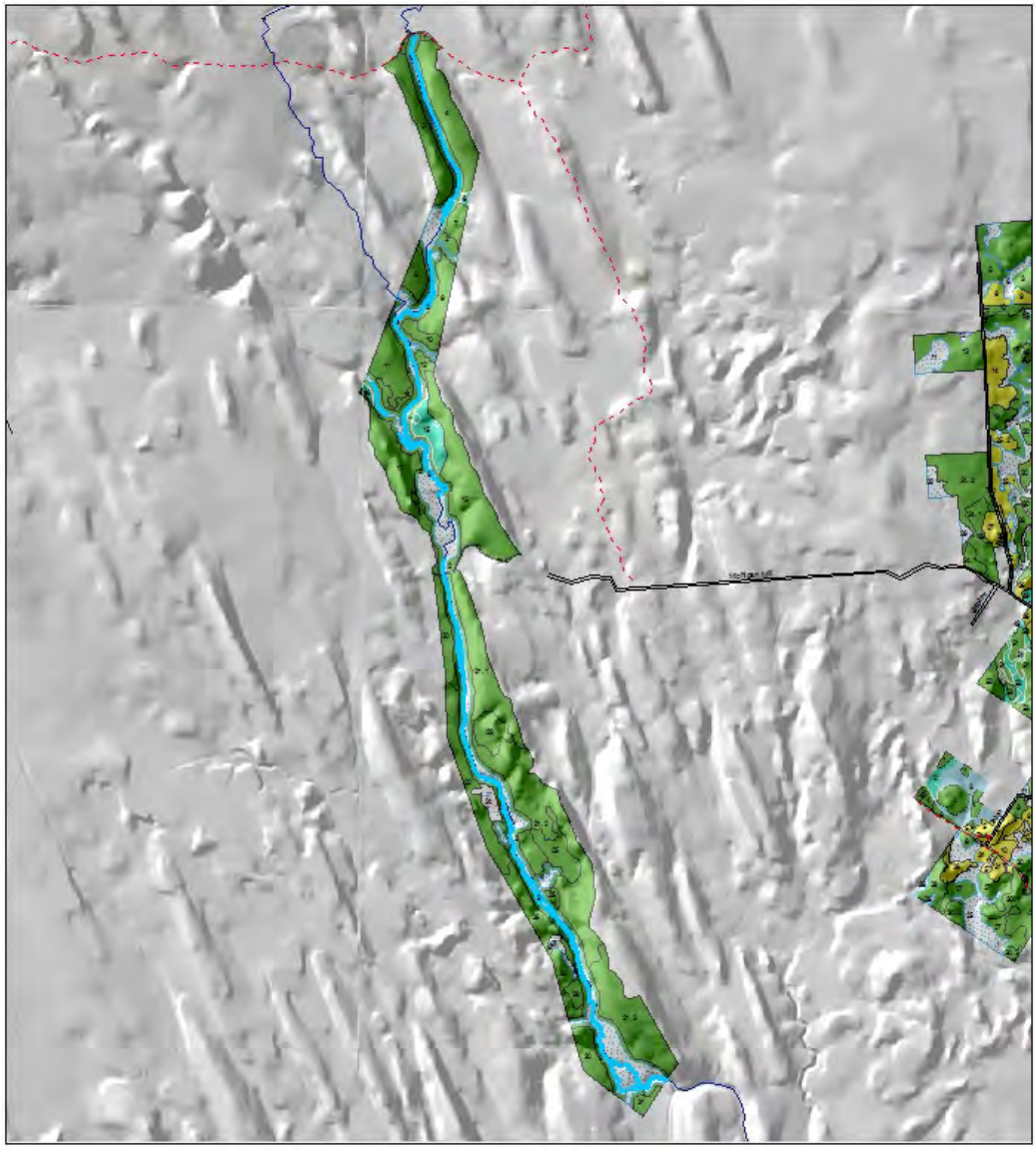


FIGURE 3. – CURRENT FOREST TYPE AND FOREST STAND IDENTIFICATION NUMBER MAPS


**EAST BRANCH FISH CREEK STATE FOREST LEWIS 45 s**
**Stand, Topo, RSAs, HCVF**
**FIGURE 1**

N

1 inch = 0.16 miles

BY A. Mercurio 2017

**RSA's**
HCVF's

**State Land Forest Stands**
**<all other values>**
**Plantation**
**Plantation (S/S)**

**Natural Forest**
**Natural Forest (S/S)**
**Forested Wetlands**

**Wetlands (Alder)**
**Wetlands (Open)**
**Ponds**
decroads2

## Figure 4. – Current Management Maps

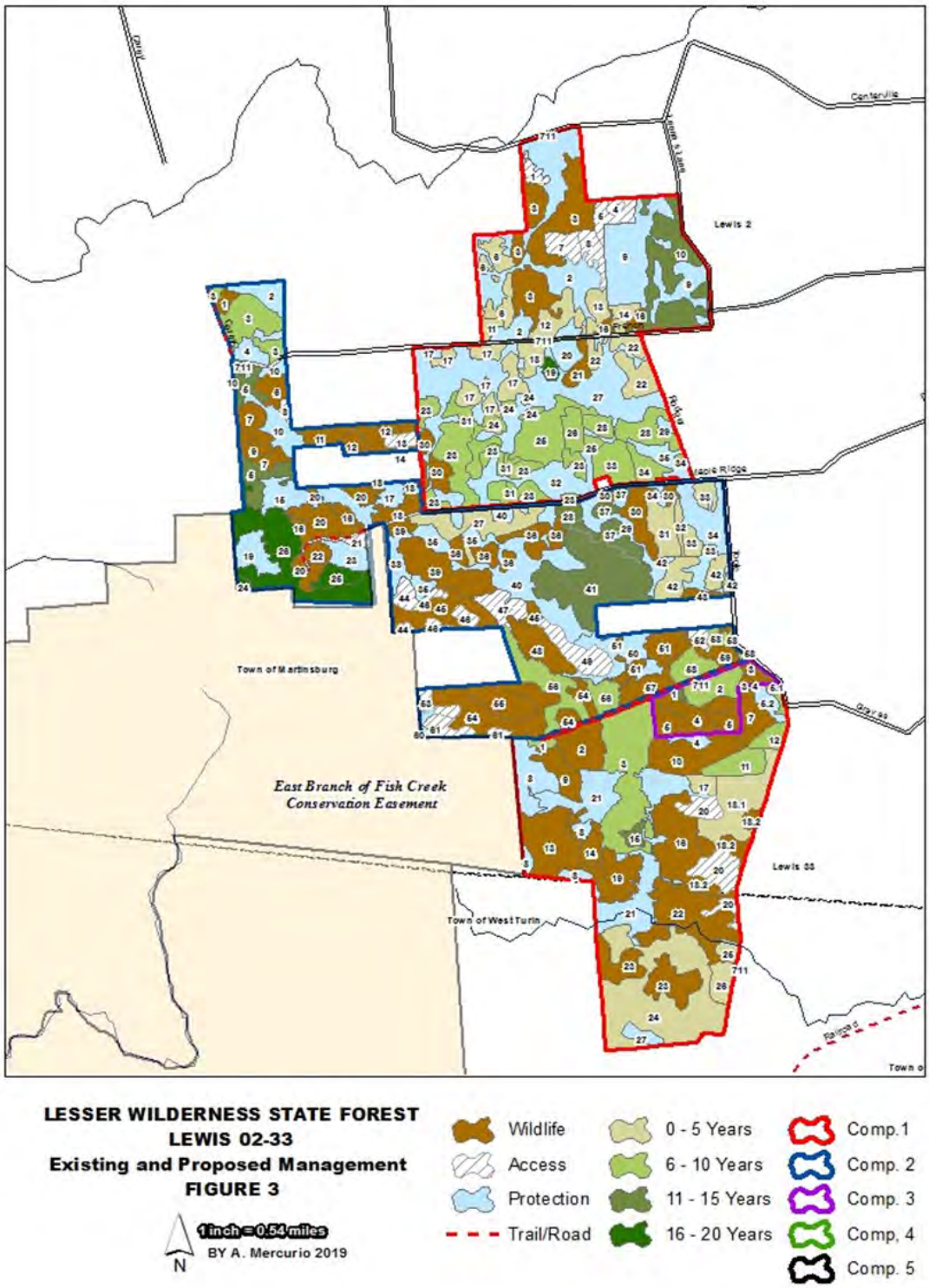


FIGURE 4. – CURRENT MANAGEMENT MAPS

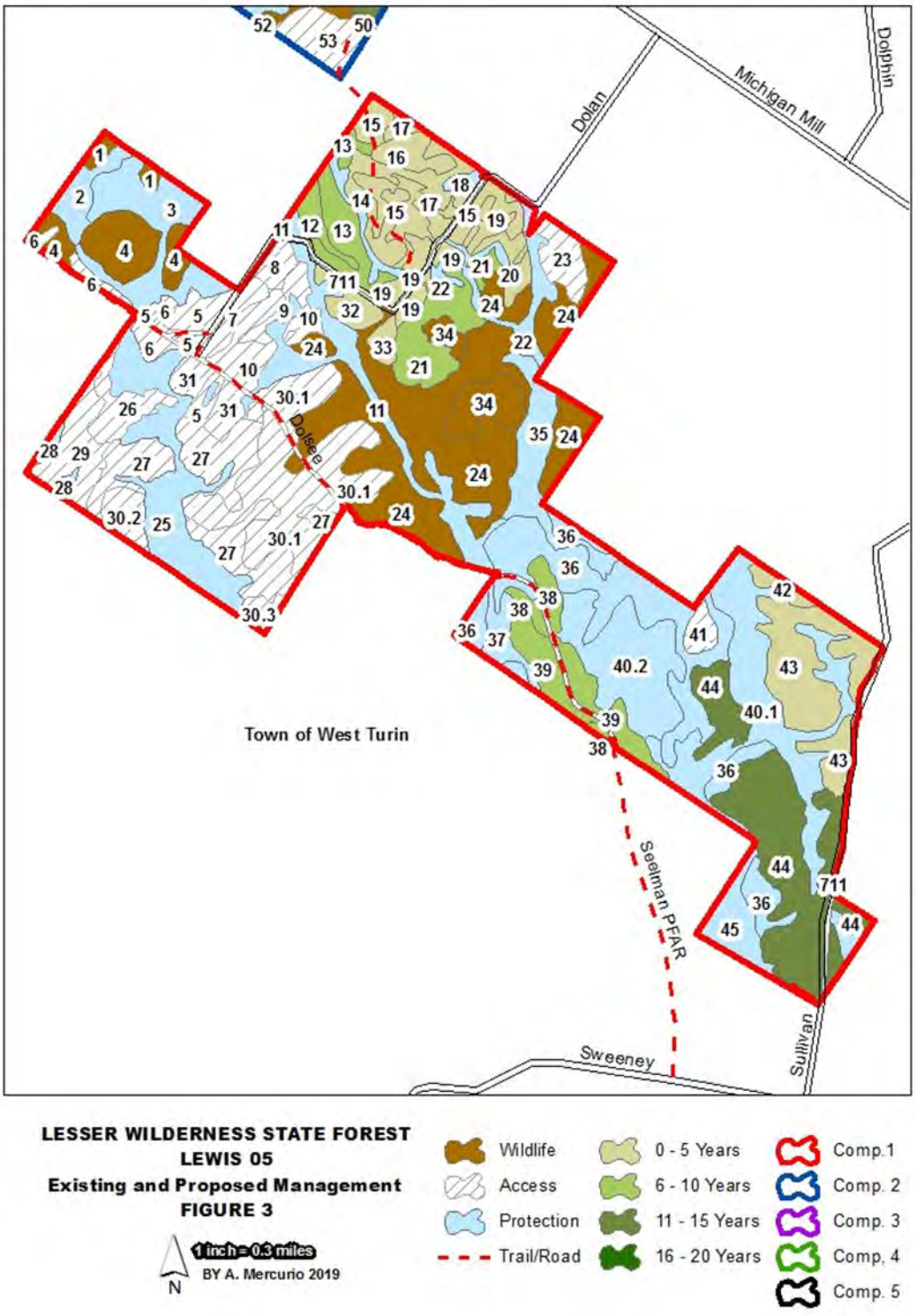


FIGURE 4. – CURRENT MANAGEMENT MAPS

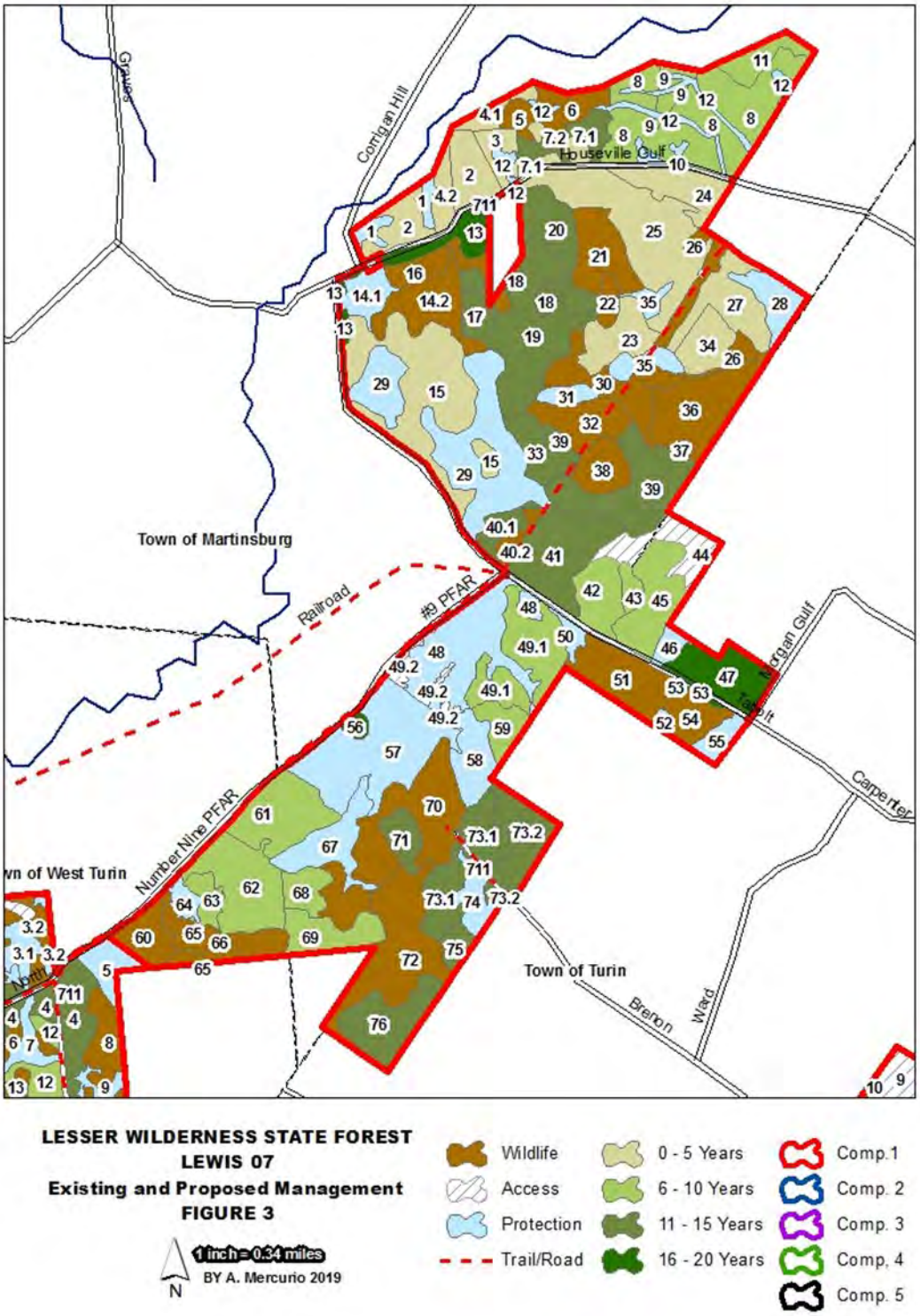


FIGURE 4. – CURRENT MANAGEMENT MAPS

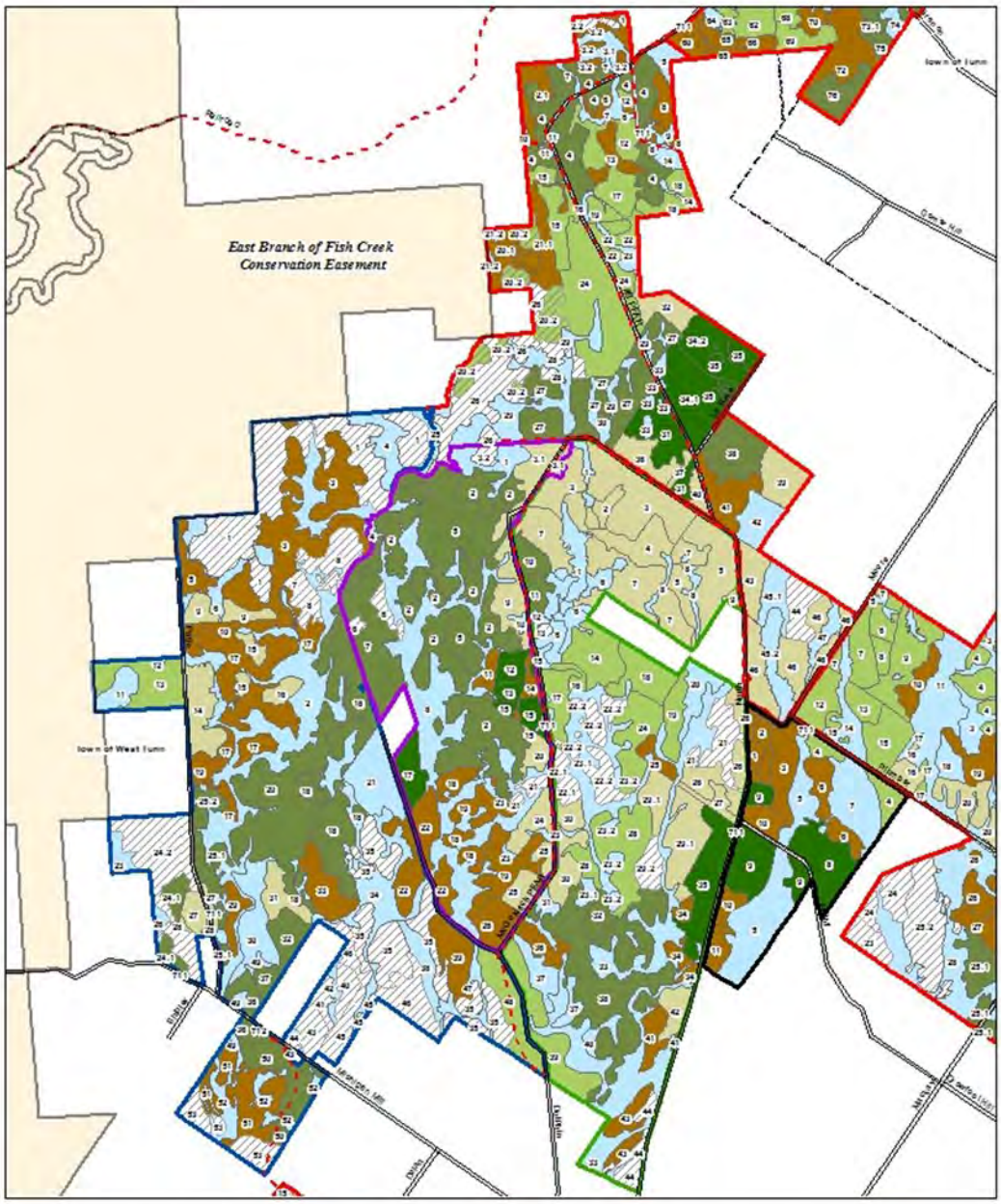


FIGURE 4. – CURRENT MANAGEMENT MAPS

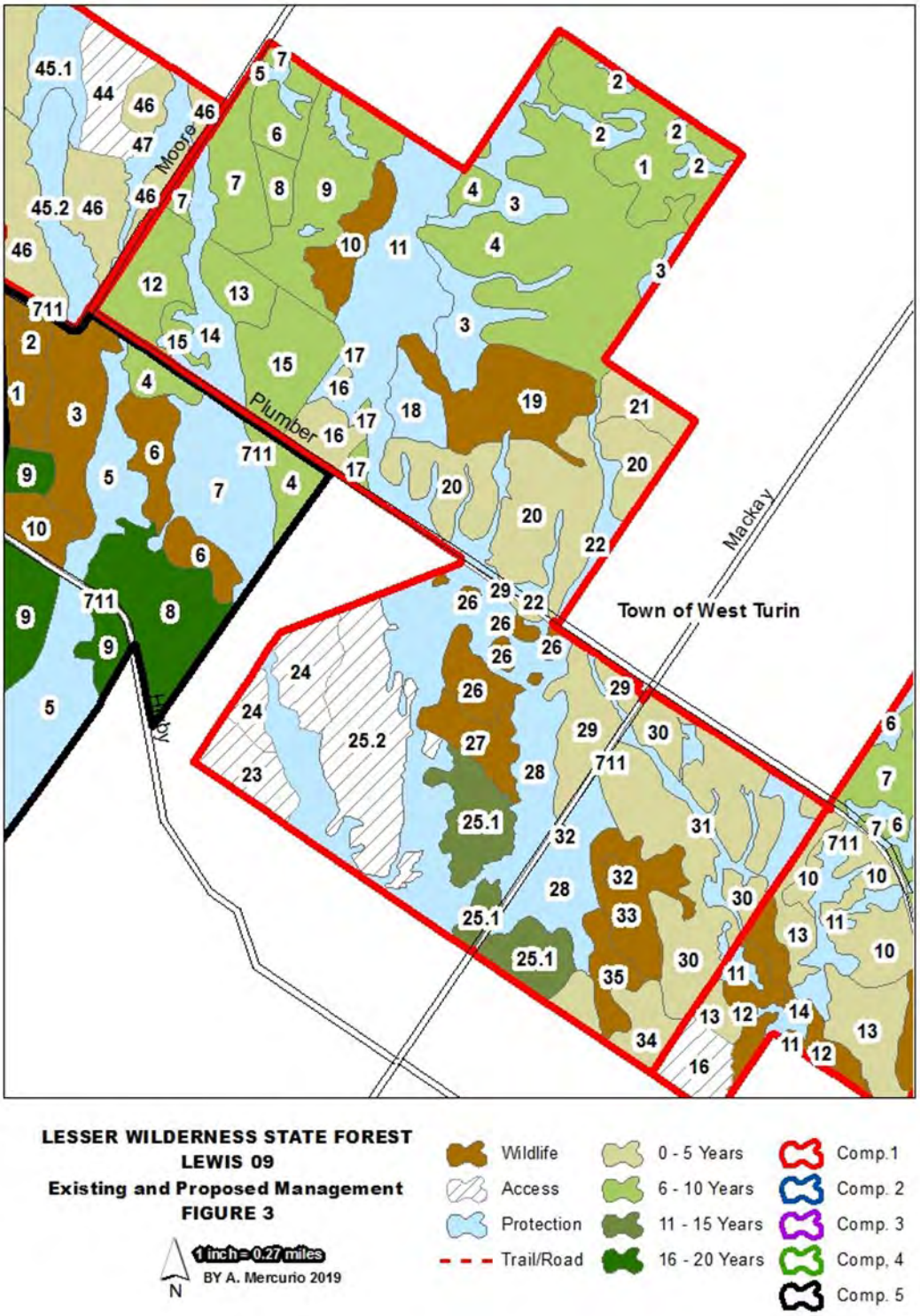


FIGURE 4. – CURRENT MANAGEMENT MAPS

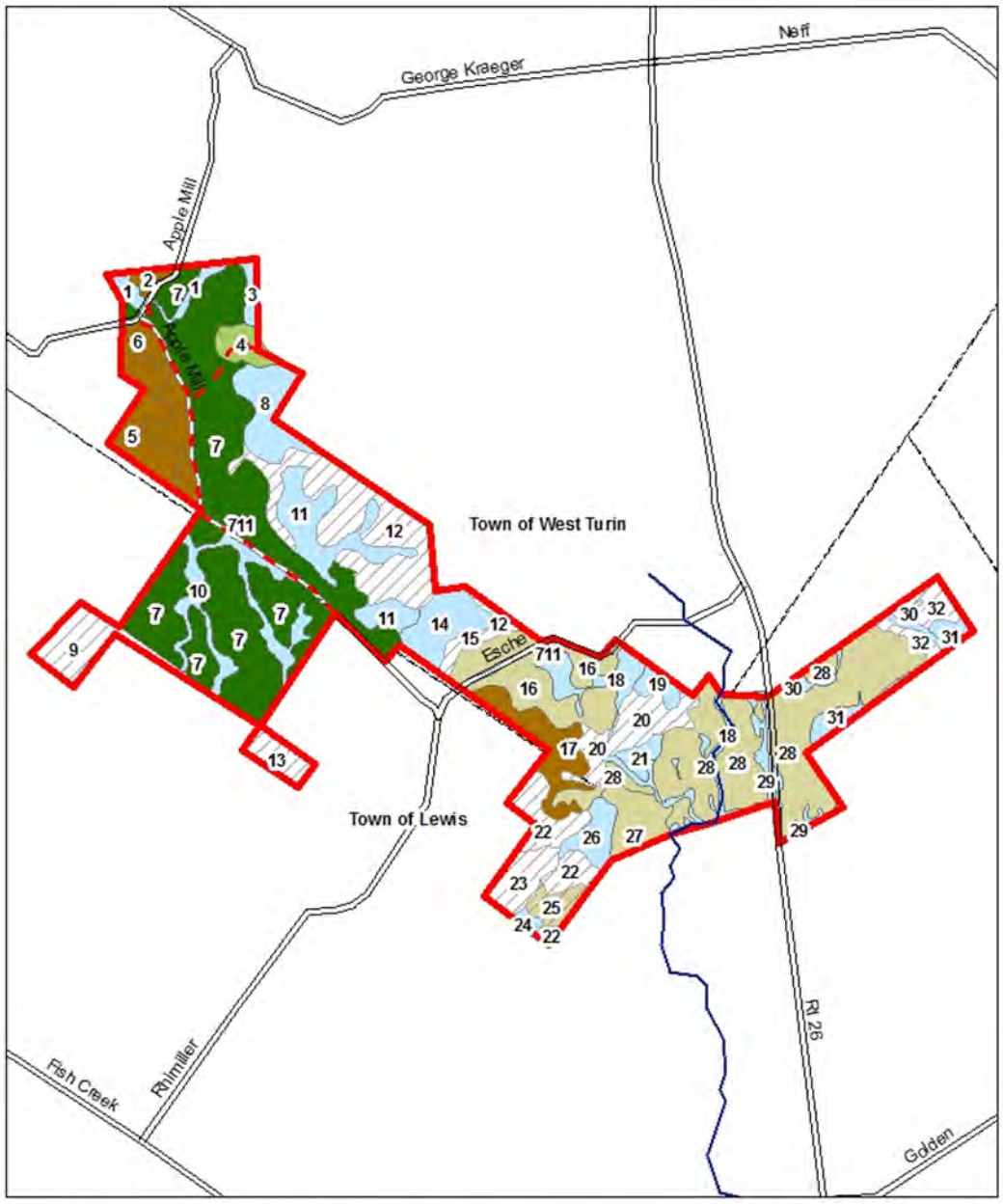


FIGURE 4. – CURRENT MANAGEMENT MAPS

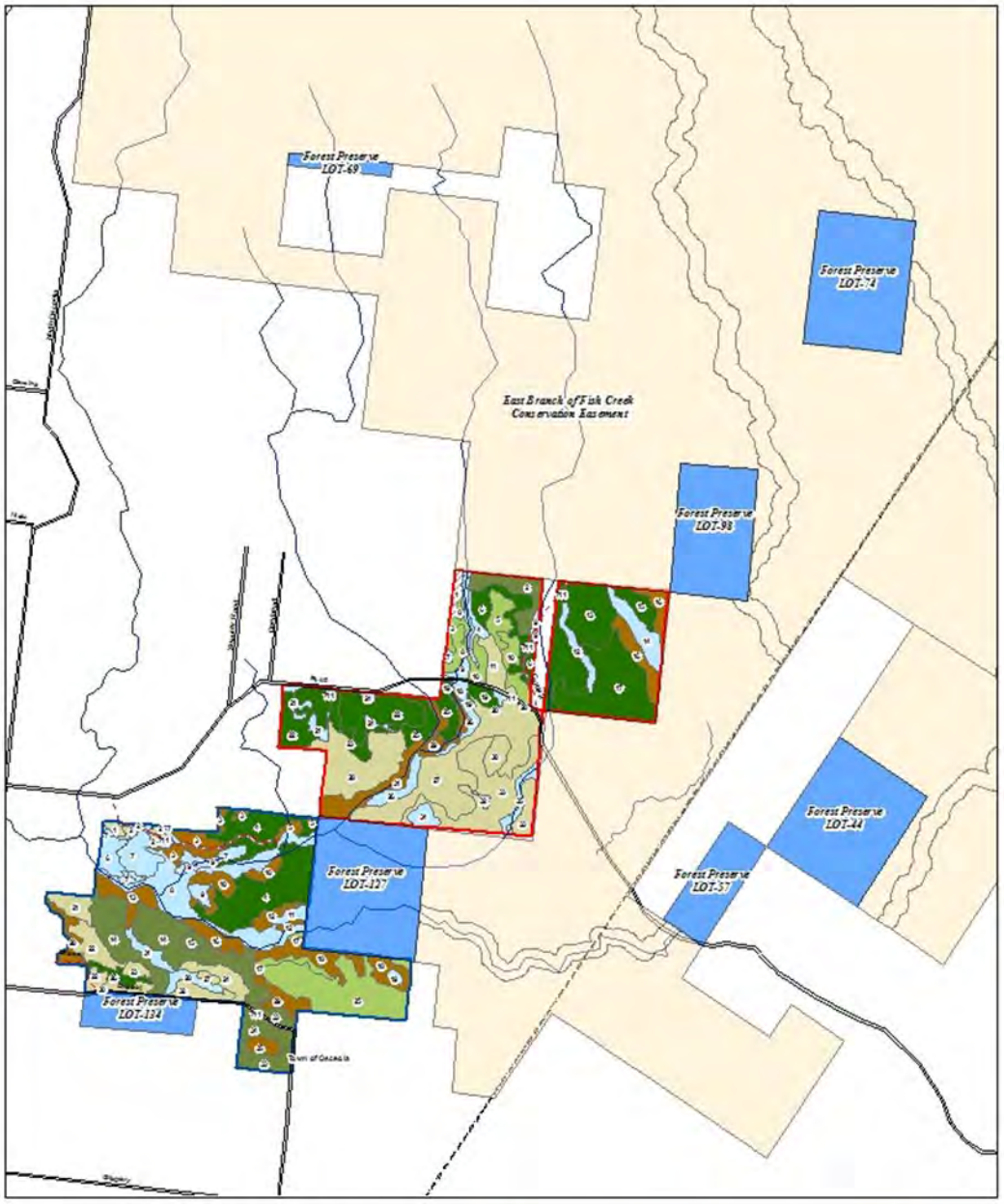


FIGURE 4. – CURRENT MANAGEMENT MAPS


**LESSER WILDERNESS STATE FOREST**
**LEWIS 23**
**Existing and Proposed Management**
**FIGURE 3**

1 inch = 0.35 miles
BY A. Mercurio 2019
N

Wildlife
Access
Protection
Trail/Road

0 - 5 Years
6 - 10 Years
11 - 15 Years
16 - 20 Years

Comp.1
Comp. 2
Comp. 3
Comp. 4
Comp. 5

FIGURE 4. – CURRENT MANAGEMENT MAPS

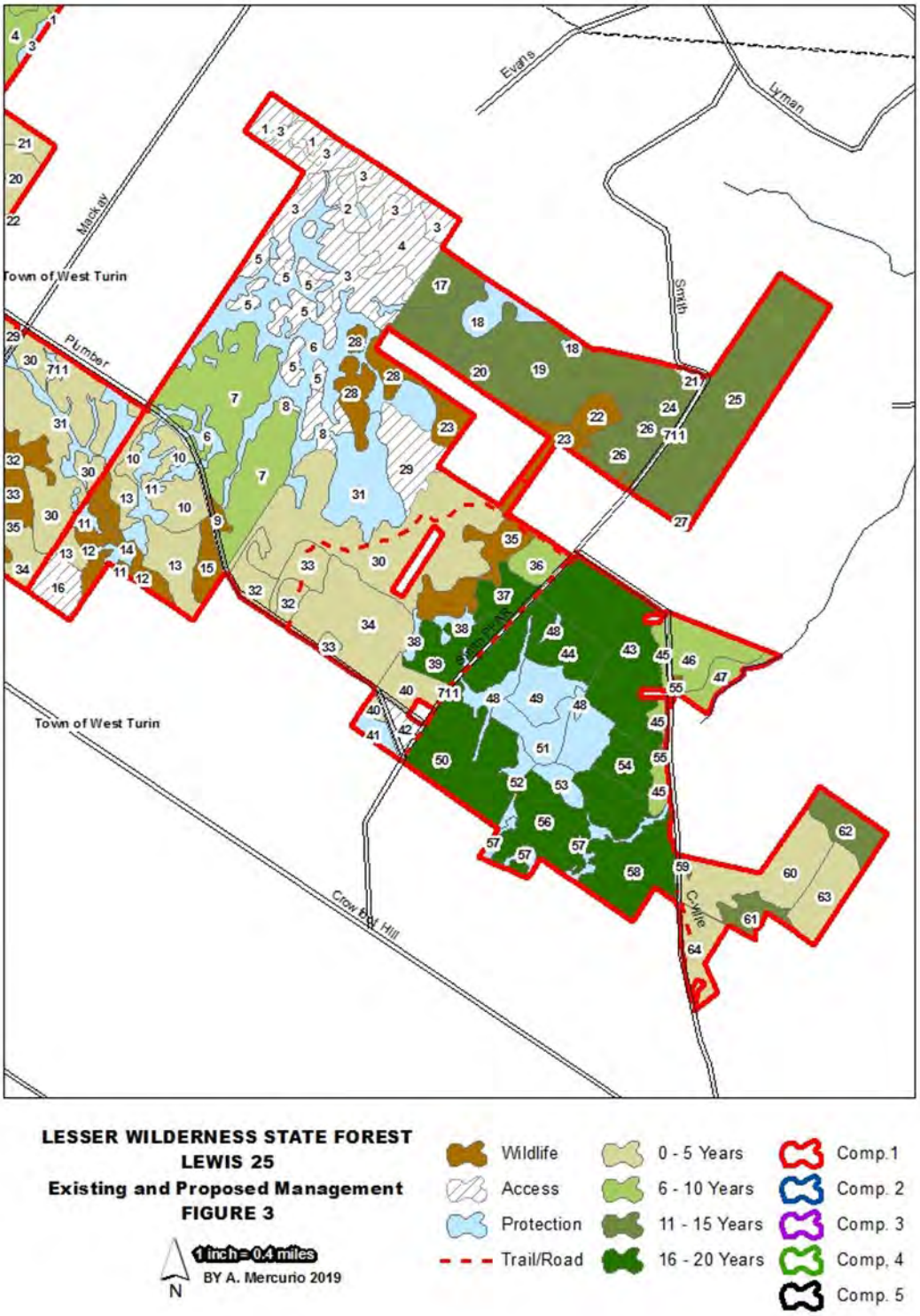


FIGURE 4. – CURRENT MANAGEMENT MAPS

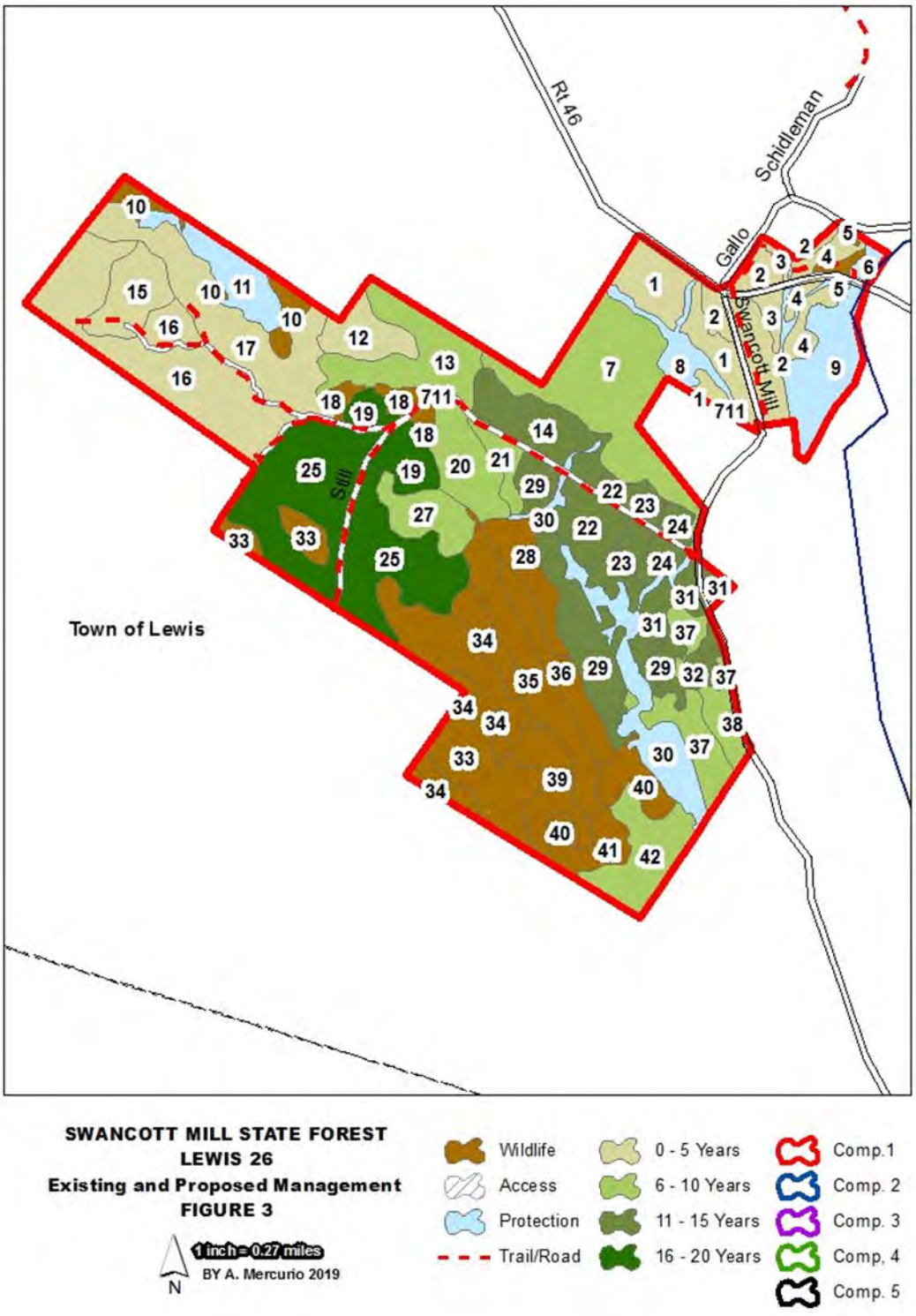


FIGURE 4. – CURRENT MANAGEMENT MAPS

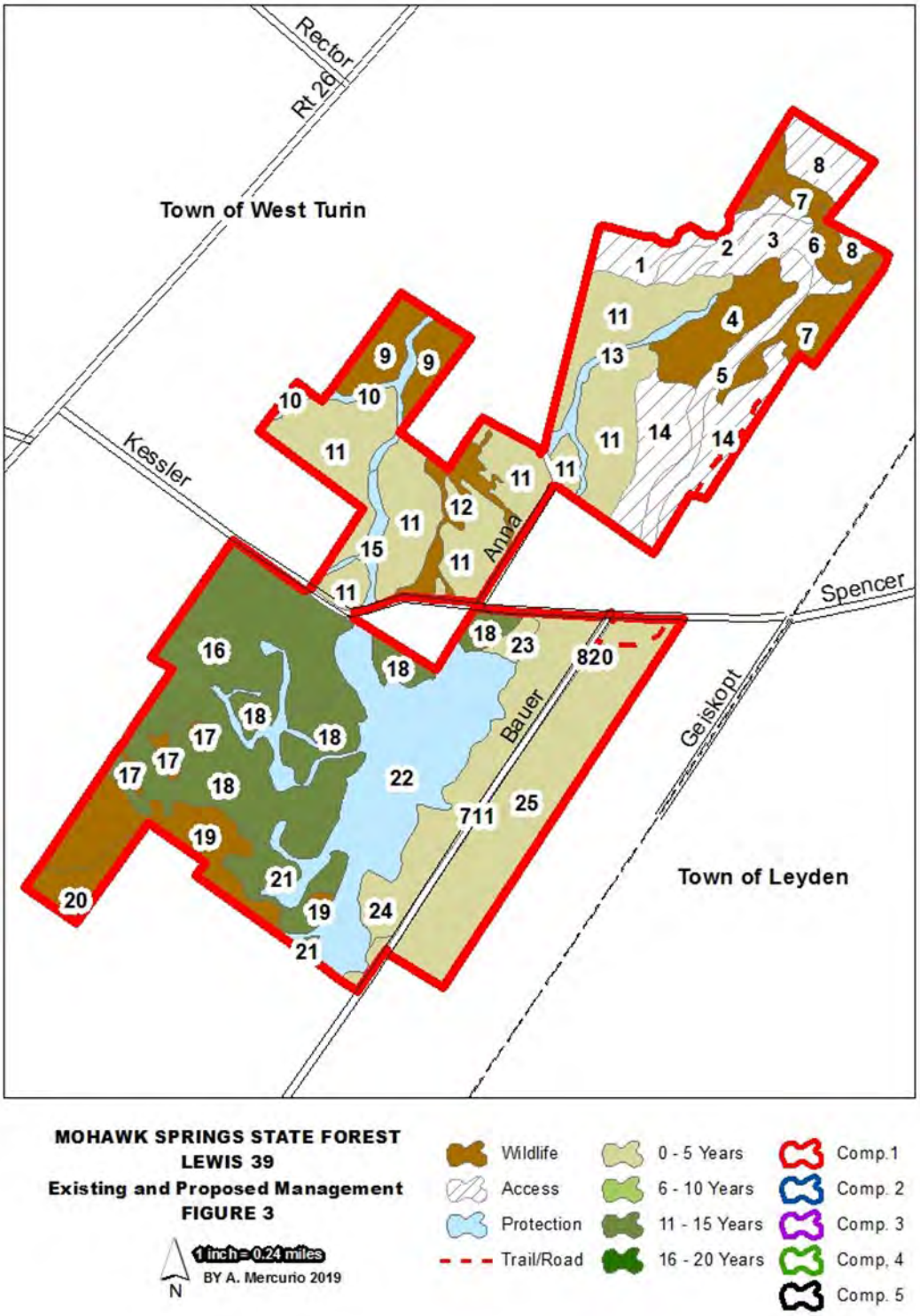


FIGURE 4. – CURRENT MANAGEMENT MAPS

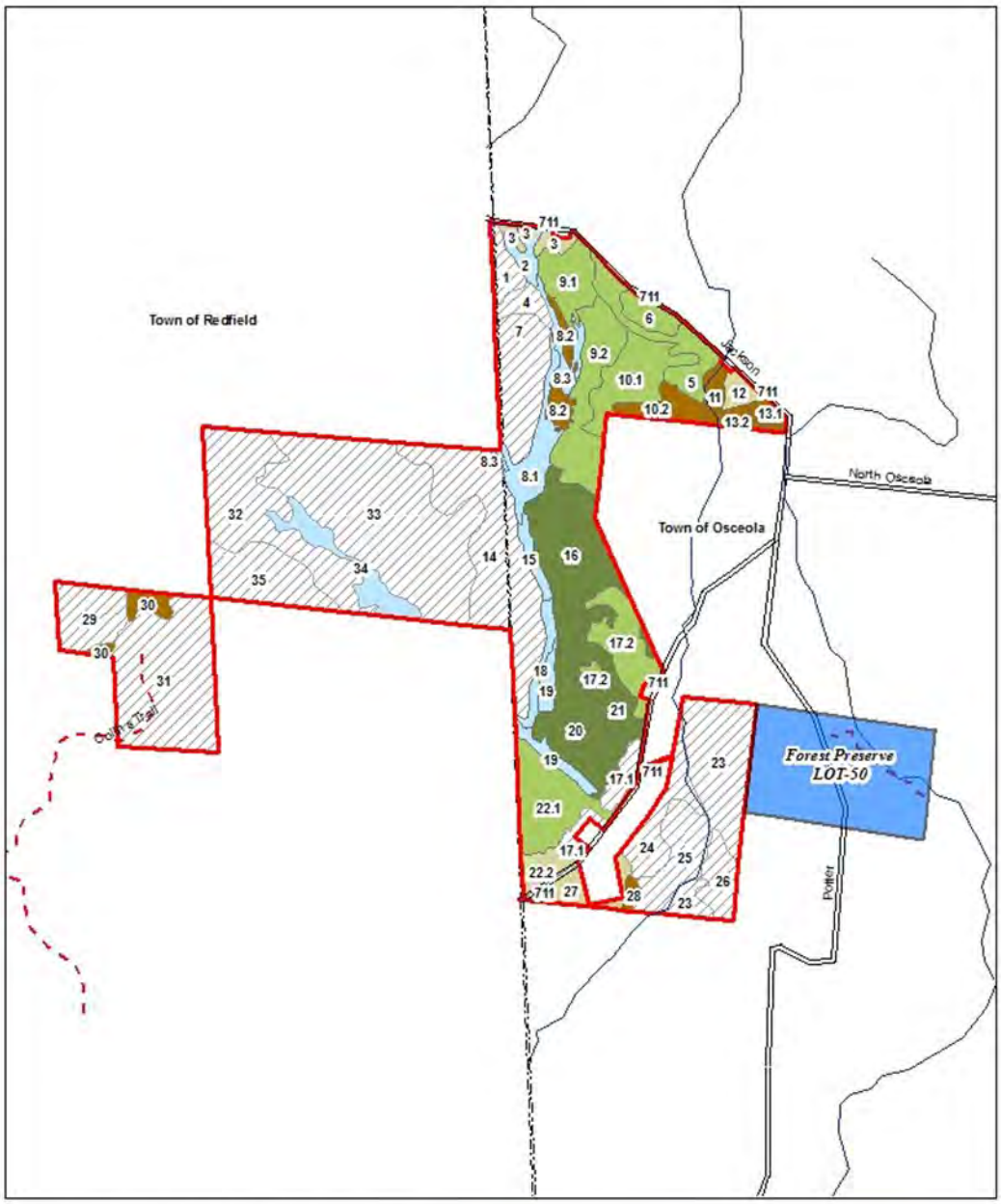


FIGURE 4. – CURRENT MANAGEMENT MAPS

FIGURE 4. – CURRENT MANAGEMENT MAPS

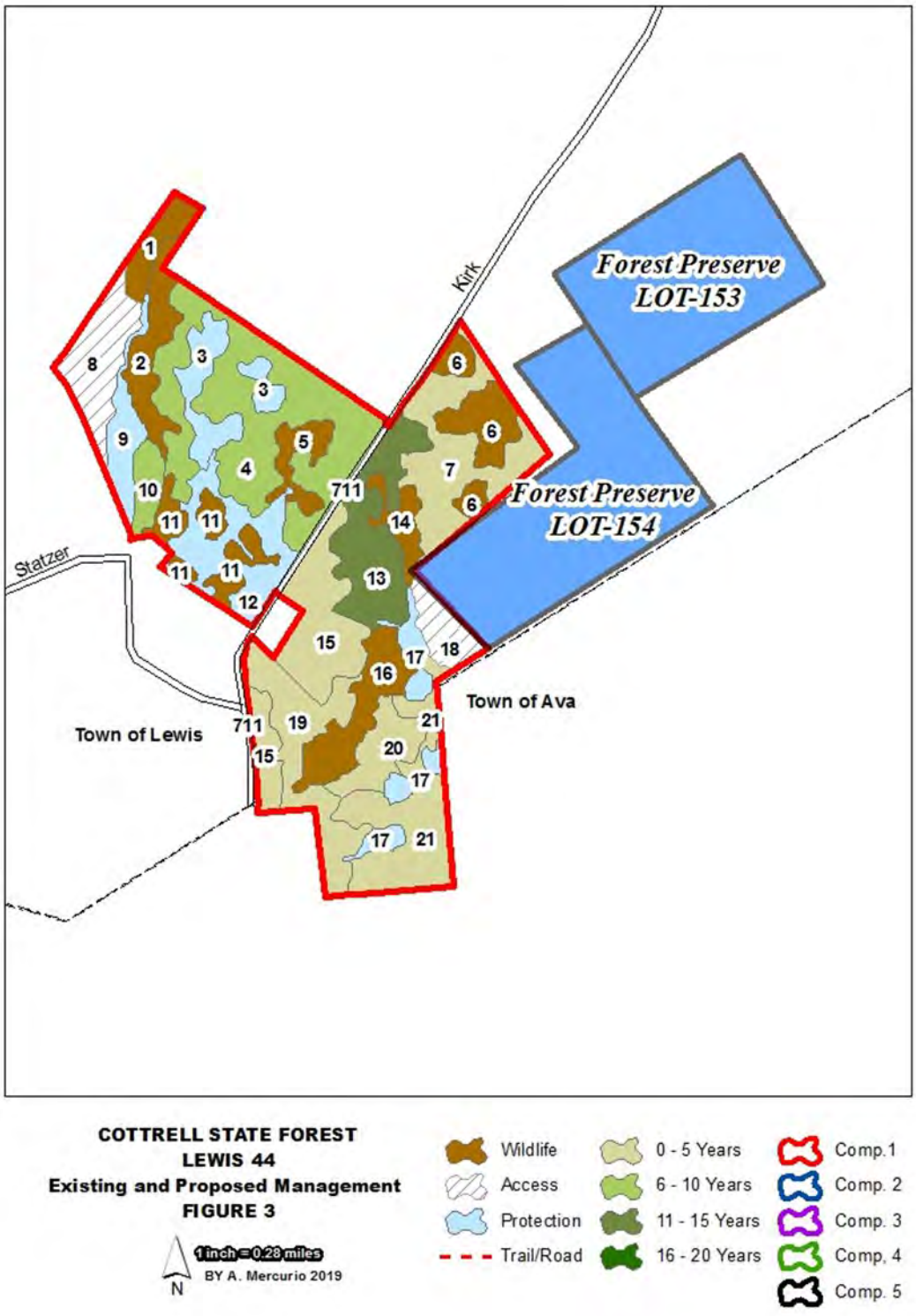
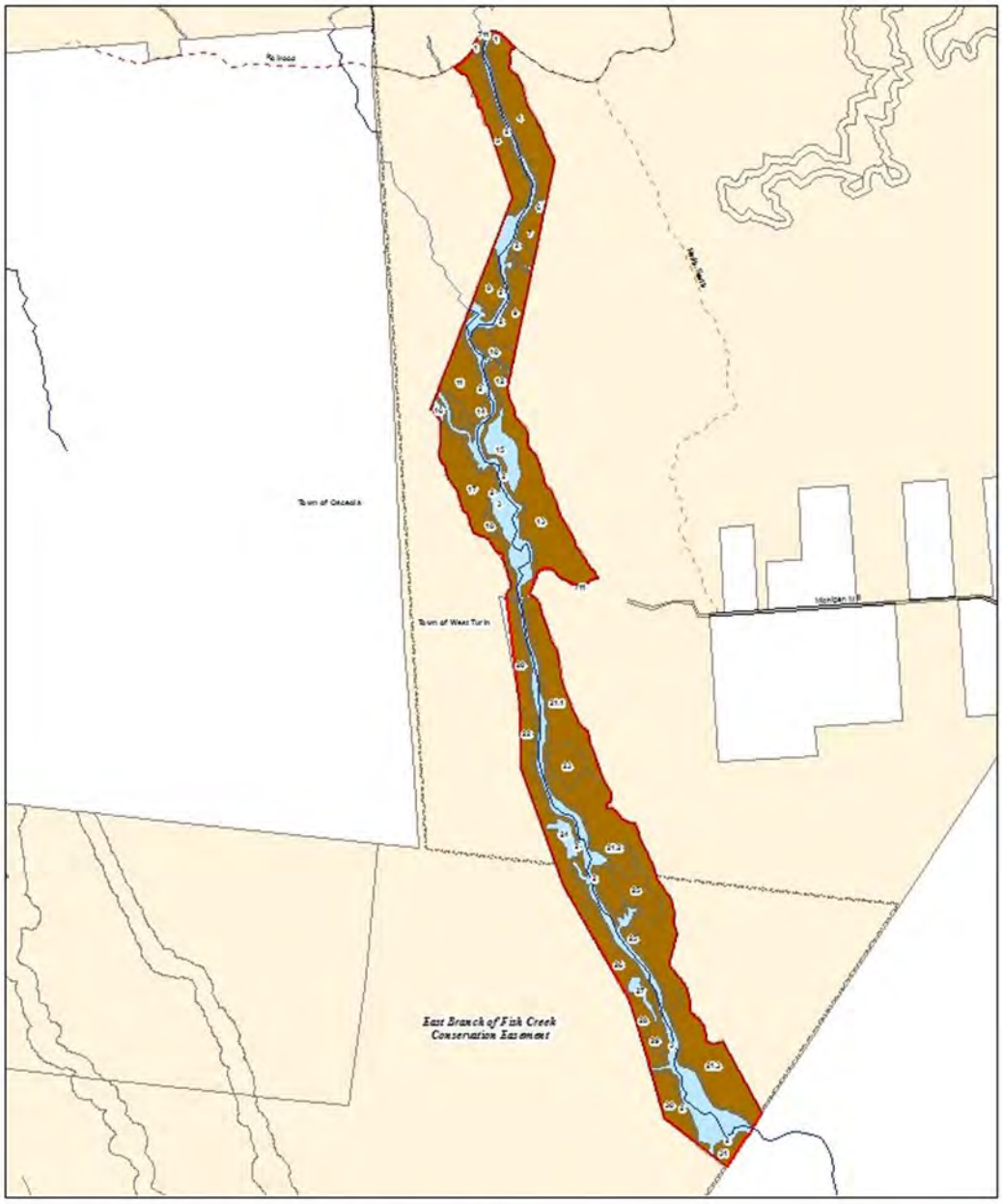


FIGURE 4. – CURRENT MANAGEMENT MAPS




**EAST BRANCH FISH CREEK STATE FOREST**
**LEWIS 45 n**
**Existing and Proposed Management**
**FIGURE**

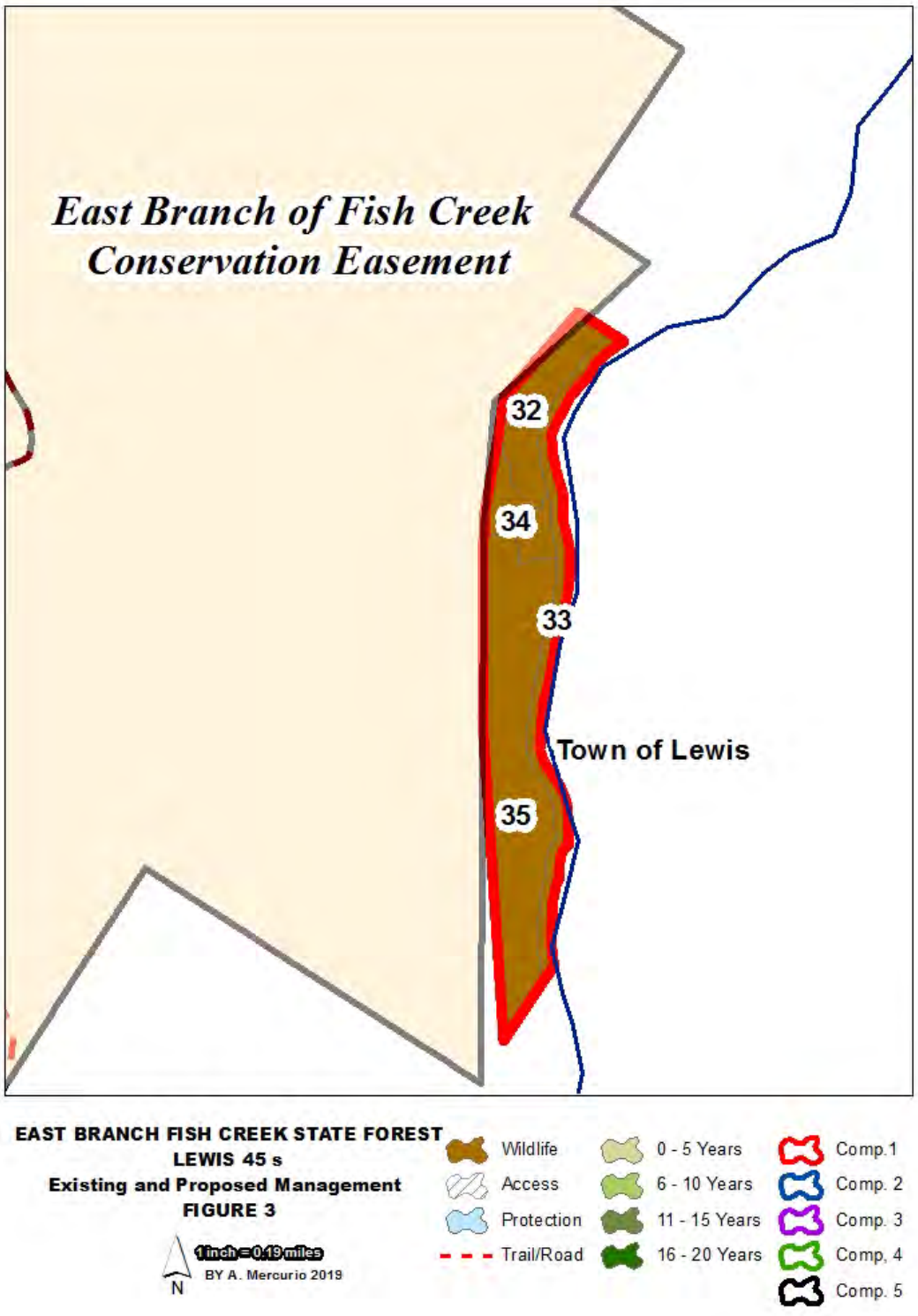
1 inch = 0.74 miles
BY A. Mercurio 2019
N

Wildlife
Access
Protection
Trail/Road

0 - 5 Years
6 - 10 Years
11 - 15 Years
16 - 20 Years

Comp.1
Comp. 2
Comp. 3
Comp, 4
Comp. 5

FIGURE 4. – CURRENT MANAGEMENT MAPS



## Figure 5. – Soils Maps

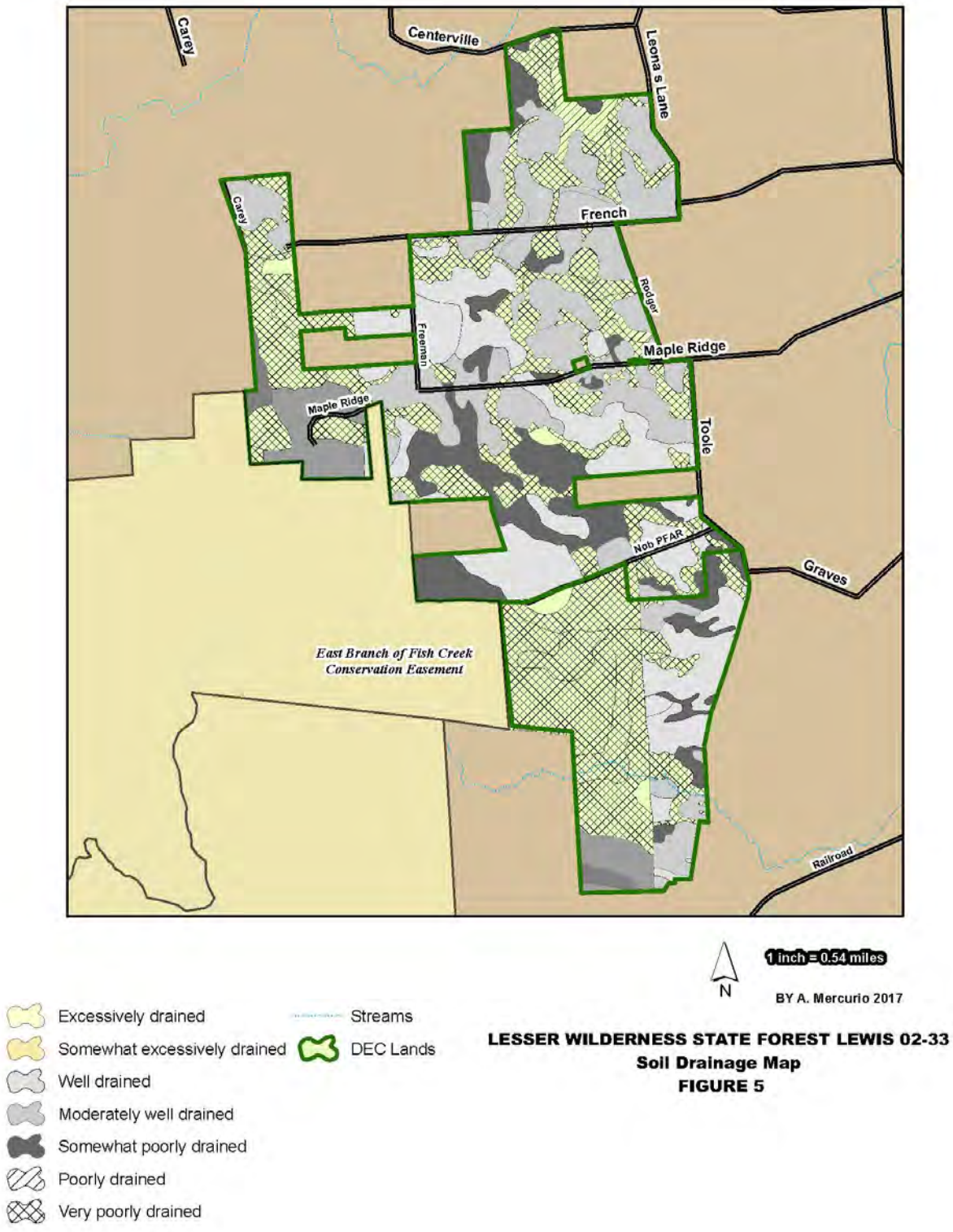
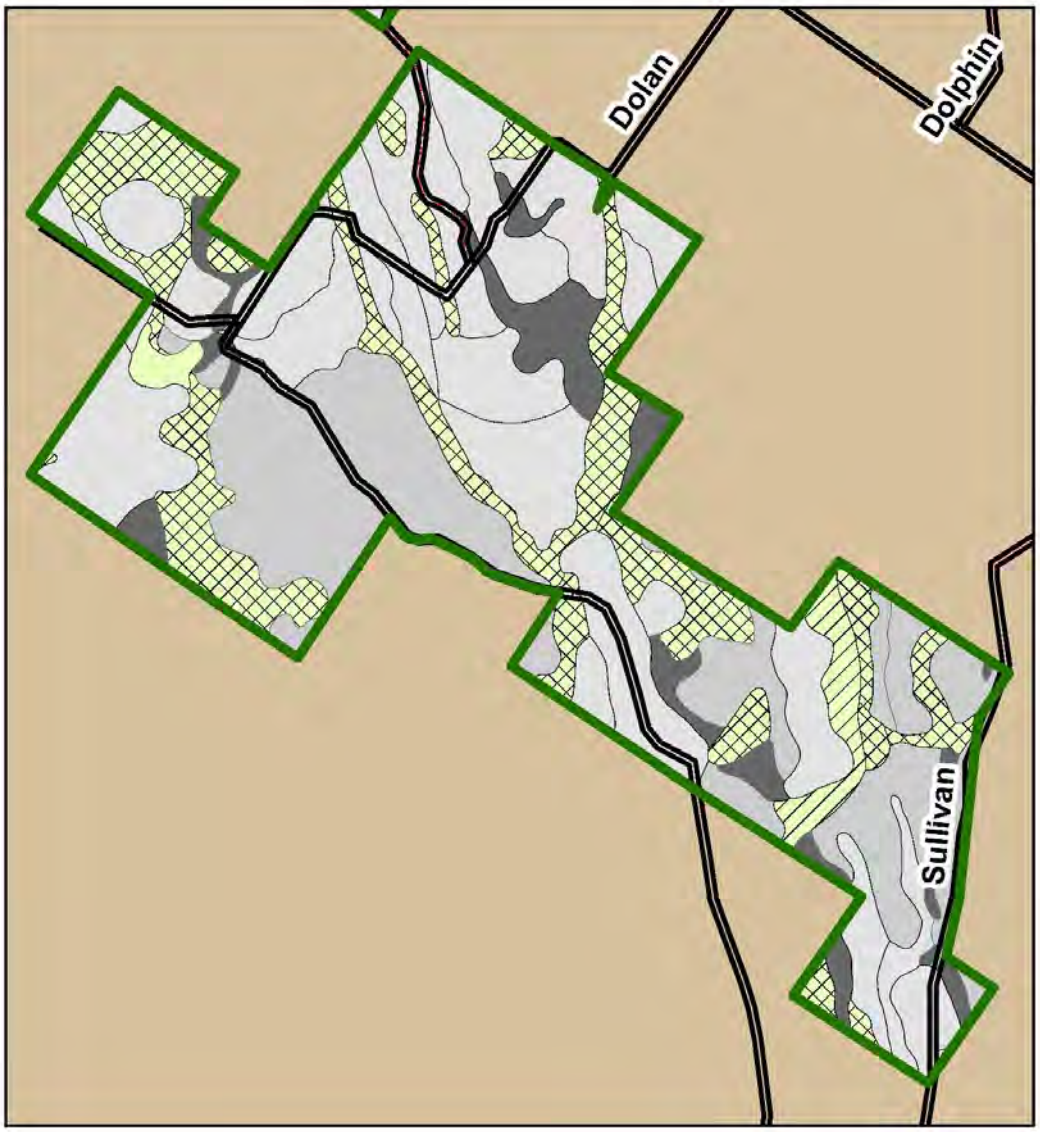
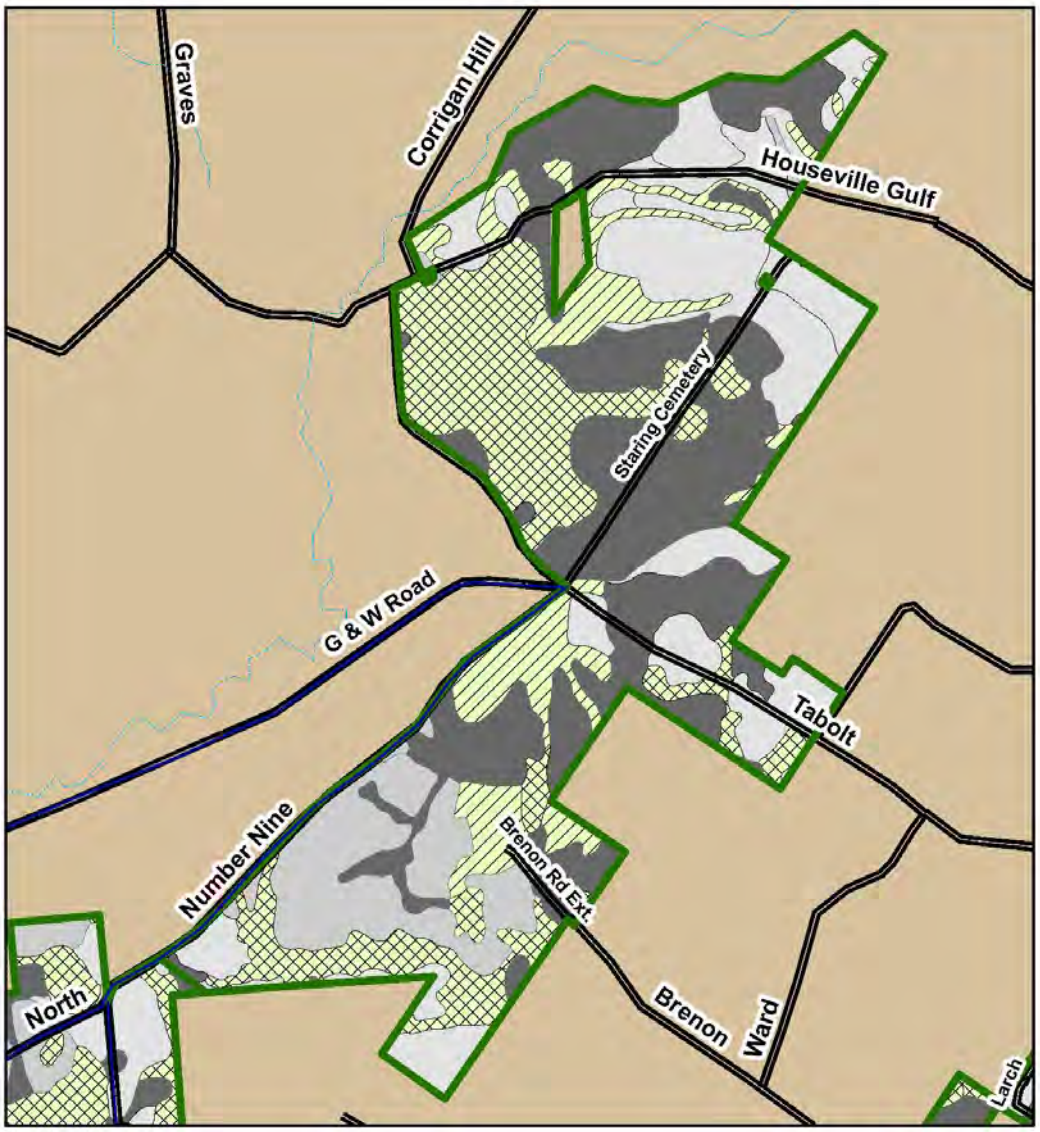


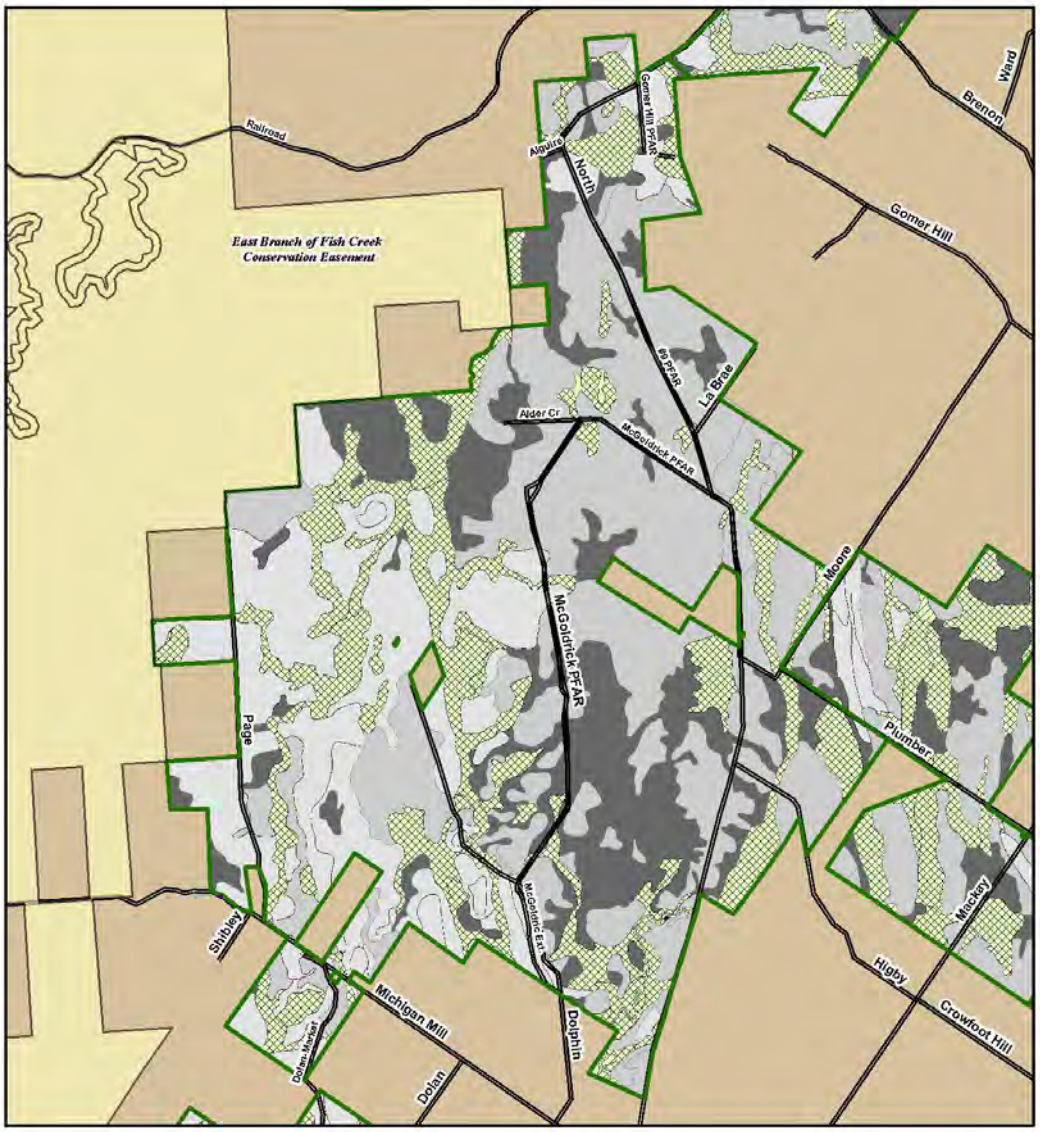
FIGURE 5. - SOILS MAPS






**LESSER WILDERNESS STATE FOREST LEWIS 07**
**Soil Drainage Map**
**FIGURE 5**

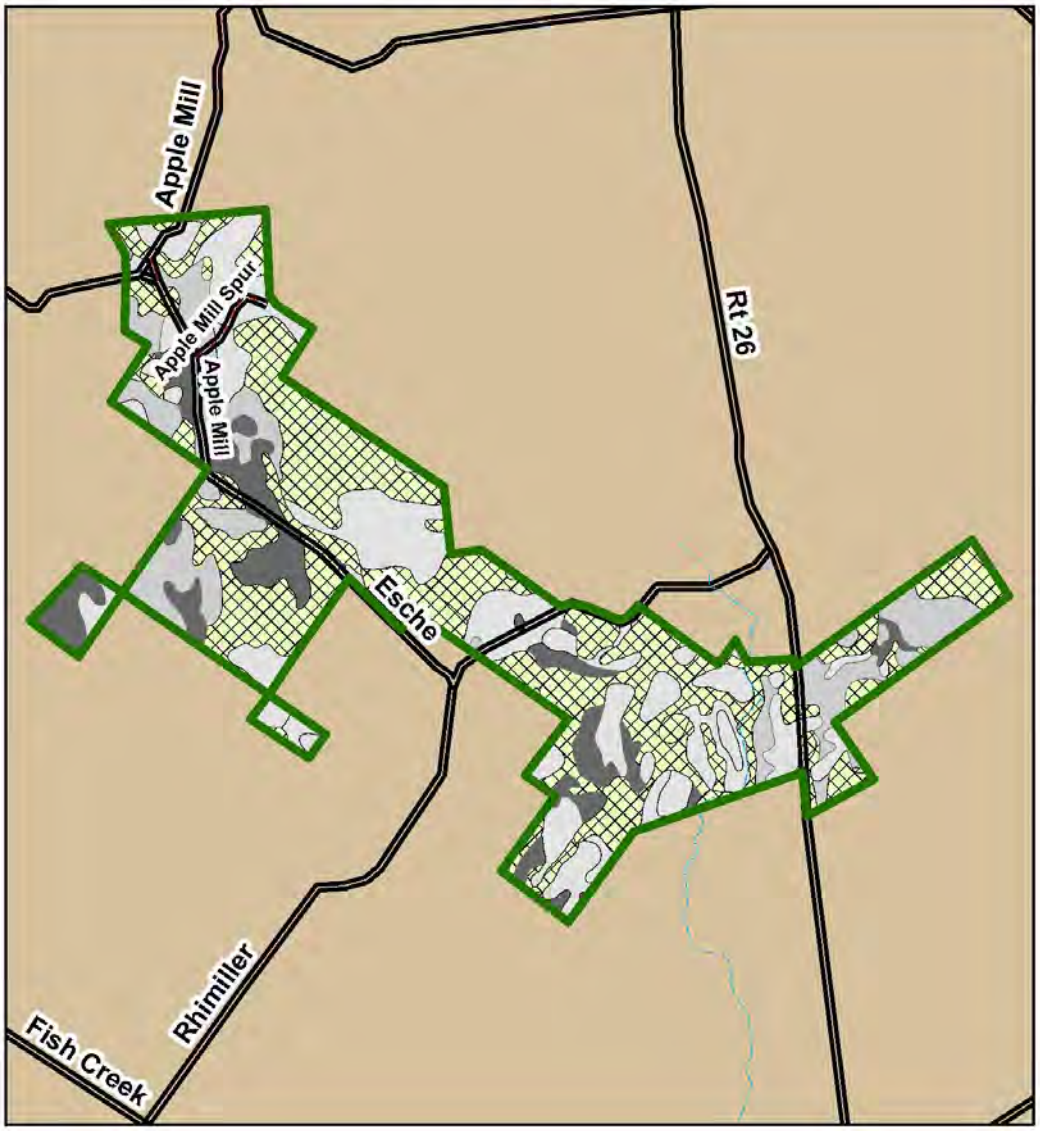
FIGURE 5. - SOILS MAPS




**LESSER WILDERNESS STATE FOREST LEWIS 08**
**Soil Drainage Map**
**FIGURE 5**


**LESSER WILDERNESS STATE FOREST LEWIS 09**
**Soil Drainage Map**
**FIGURE 5**

FIGURE 5. - SOILS MAPS




**MOHAWK SPRINGS STATE FOREST LEWIS 16**
**Soil Drainage Map**
**FIGURE 5**

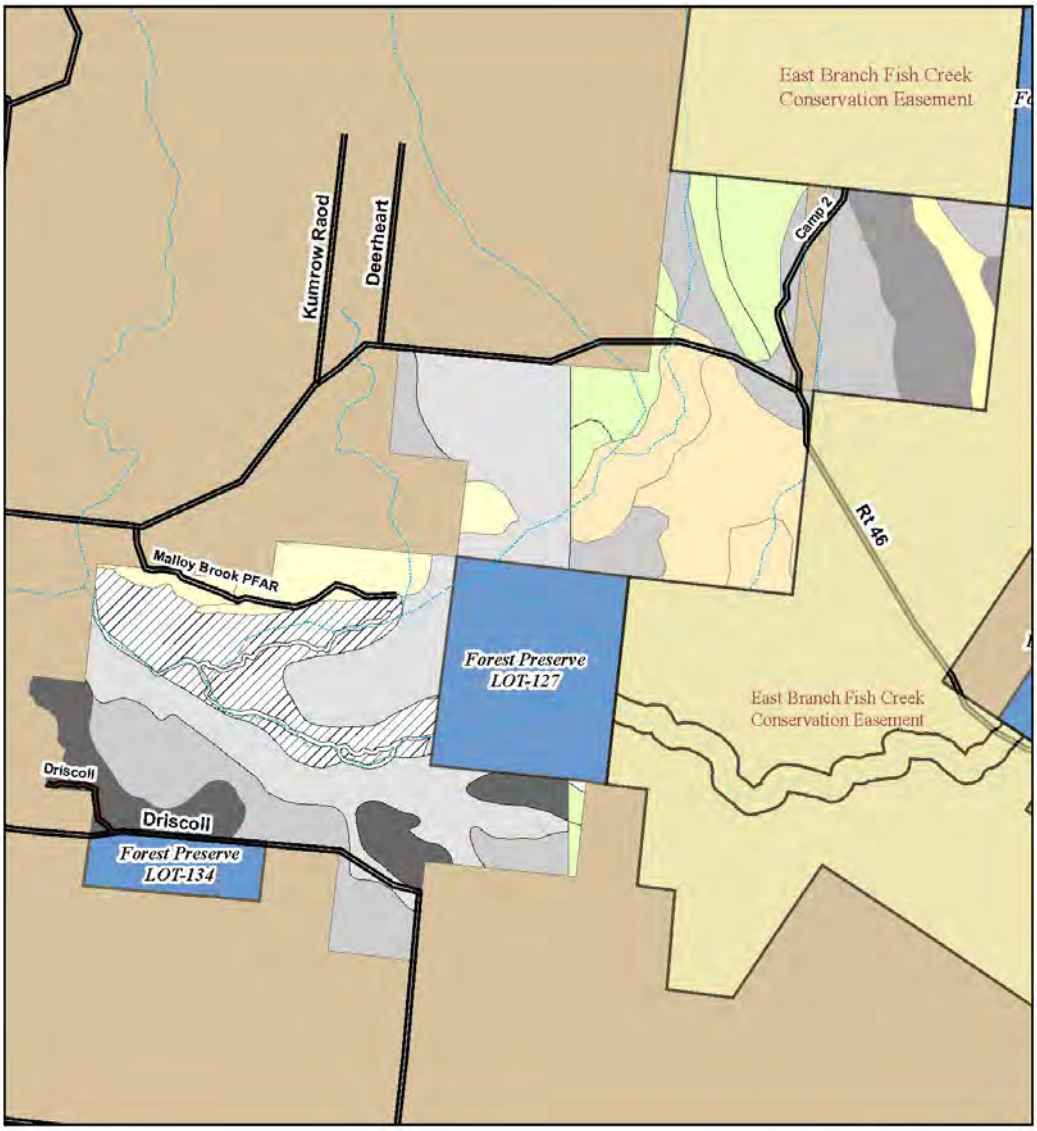
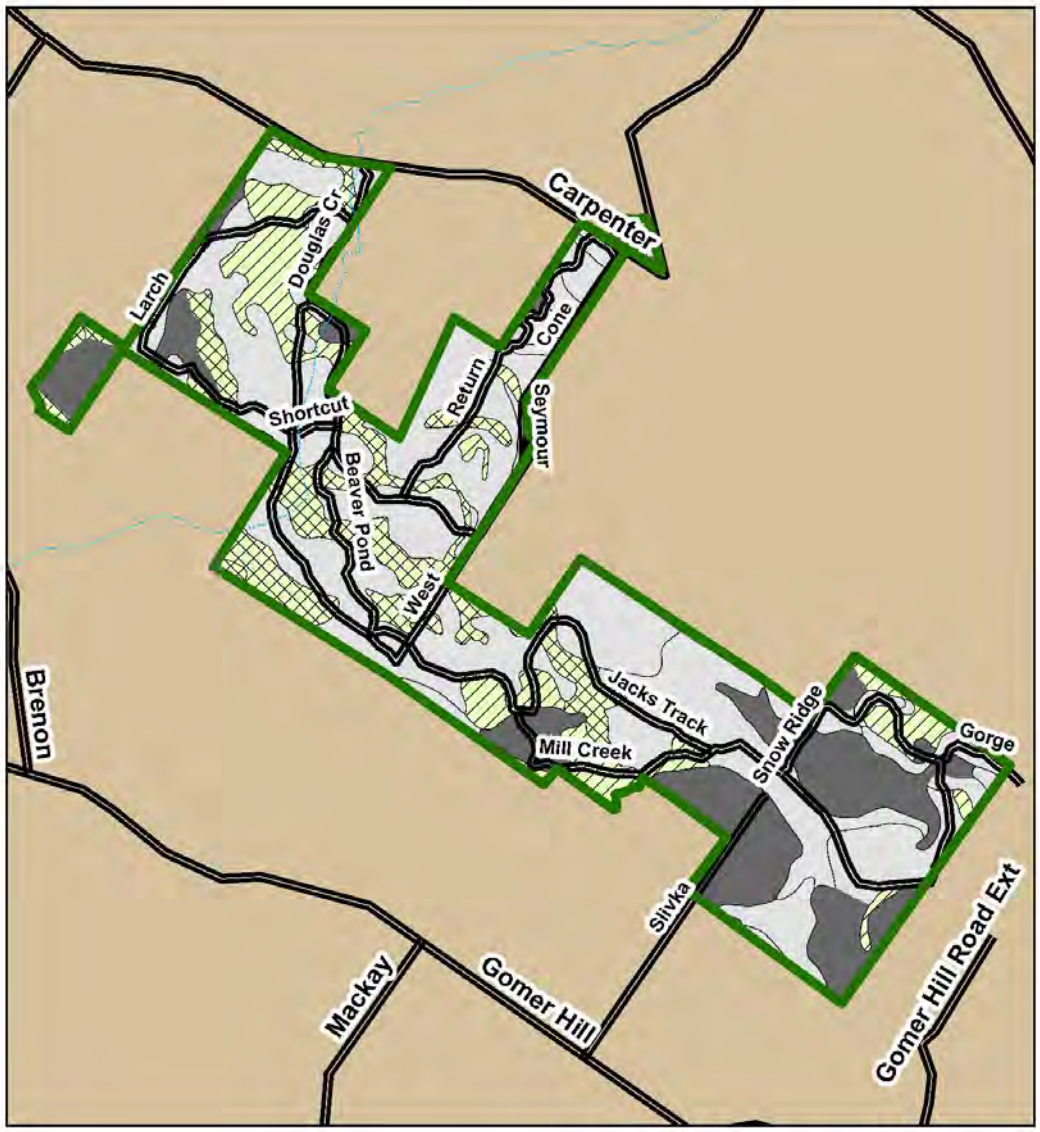

East Branch Fish Creek
Conservation Easement
Kumrow Raod
Deerheart
Camp 2
Rt 46
Malloy Brook PFAR
Forest Preserve
LOT-127
East Branch Fish Creek
Conservation Easement
Driscoll
Driscoll
Forest Preserve
LOT-134
N
1 inch = 0.5 miles
BY A. Mercurio 2017
Excessively drained
Somewhat excessively drained
Well drained
Moderately well drained
Somewhat poorly drained
Poorly drained
Very poorly drained
Streams
DEC Lands
EAST OSCEOLA STATE FOREST LEWIS 21
Soil Drainage Map
FIGURE 5

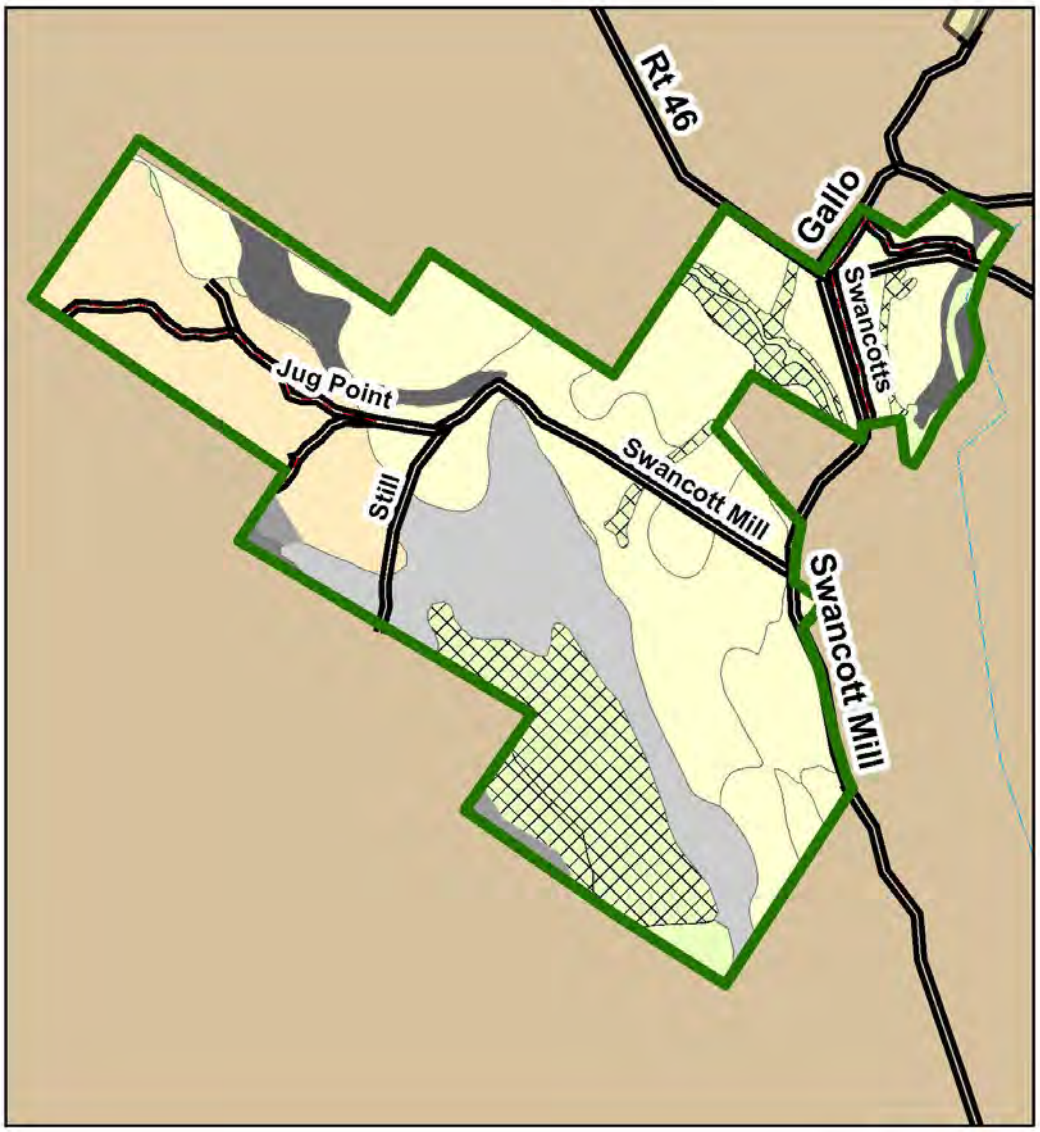
FIGURE 5. - SOILS MAPS




**LESSER WILDERNESS STATE FOREST LEWIS 23**
**Soil Drainage Map**
**FIGURE 5**


**LESSER WILDERNESS STATE FOREST LEWIS 25**
**Soil Drainage Map**
**FIGURE 5**

FIGURE 5. - SOILS MAPS




N

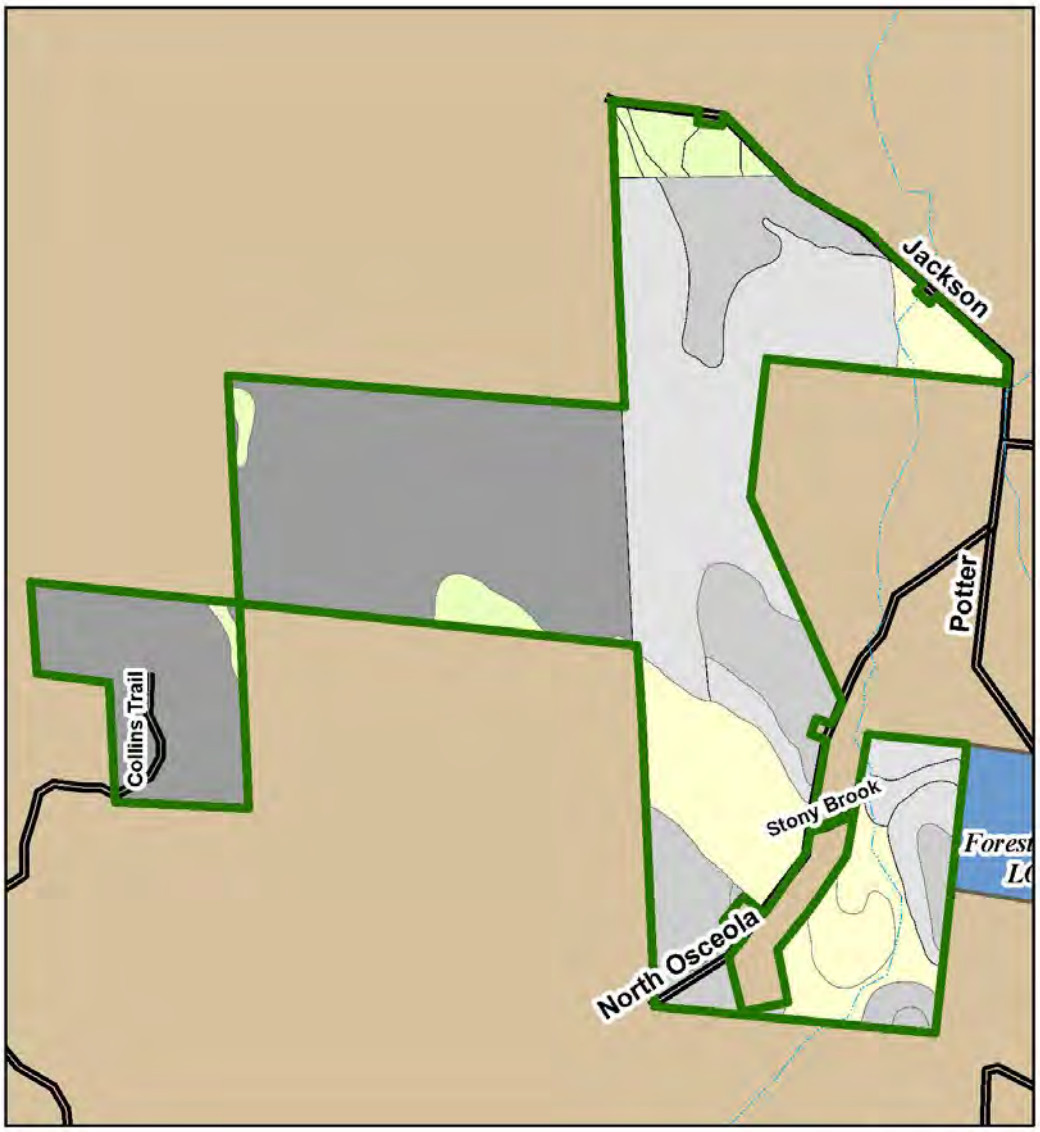
1 inch = 0.24 miles

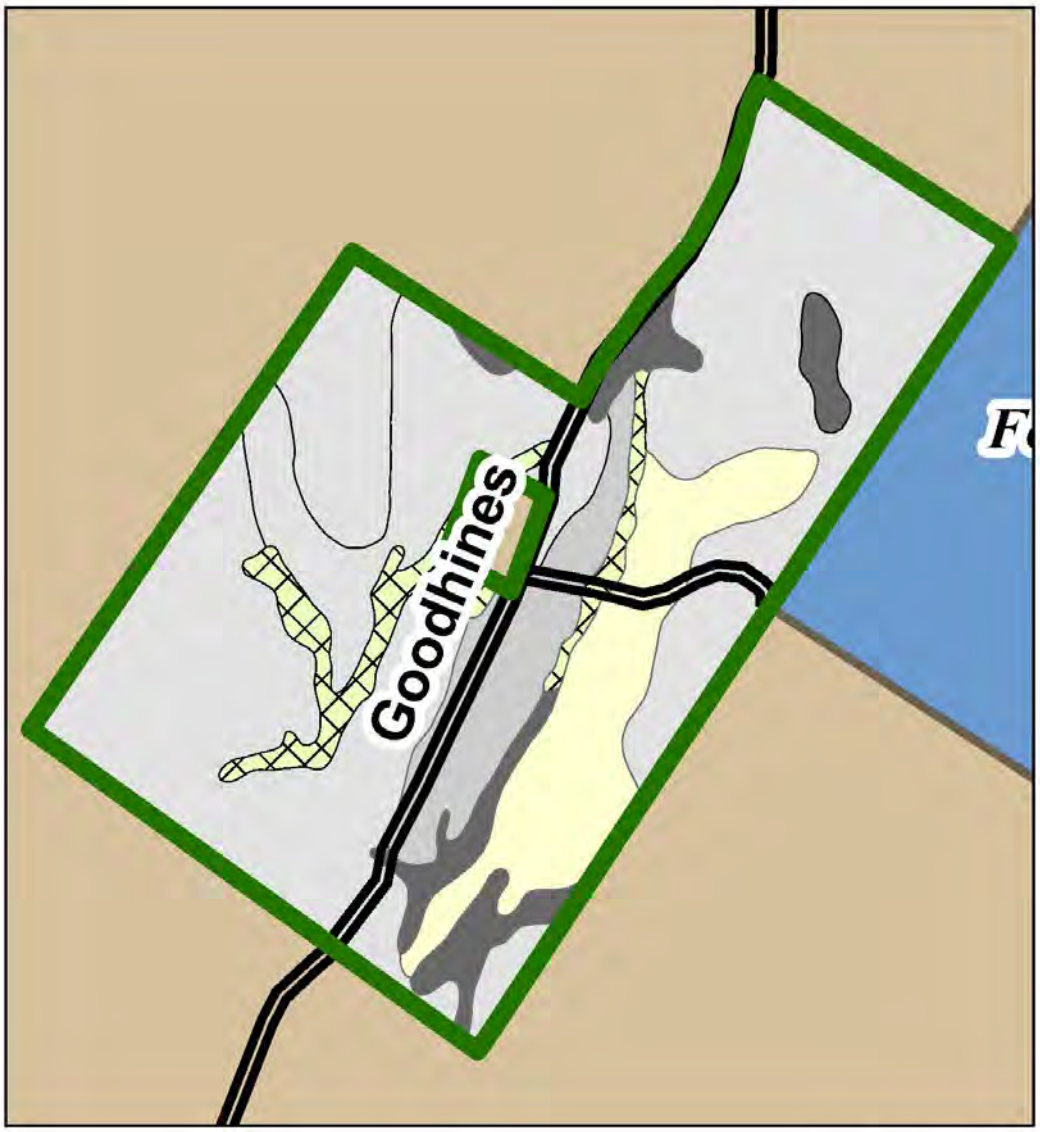
BY A. Mercurio 2017

Excessively drained
Somewhat excessively drained
Well drained
Moderately well drained
Somewhat poorly drained
Poorly drained
Very poorly drained
Streams
DEC Lands

**MOHAWK SPRINGS STATE FOREST LEWIS 39**
**Soil Drainage Map**
**FIGURE 5**

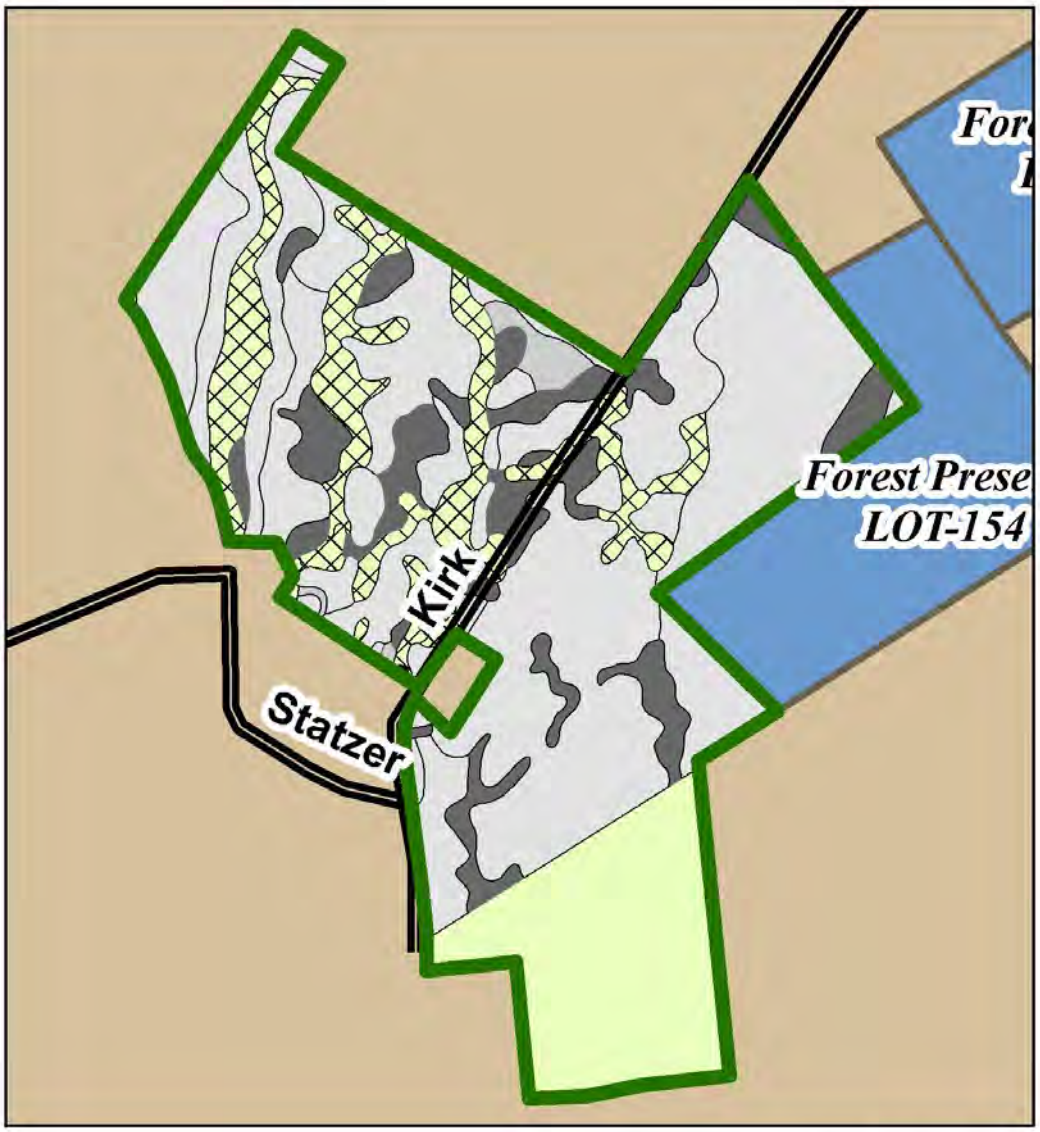
FIGURE 5. - SOILS MAPS



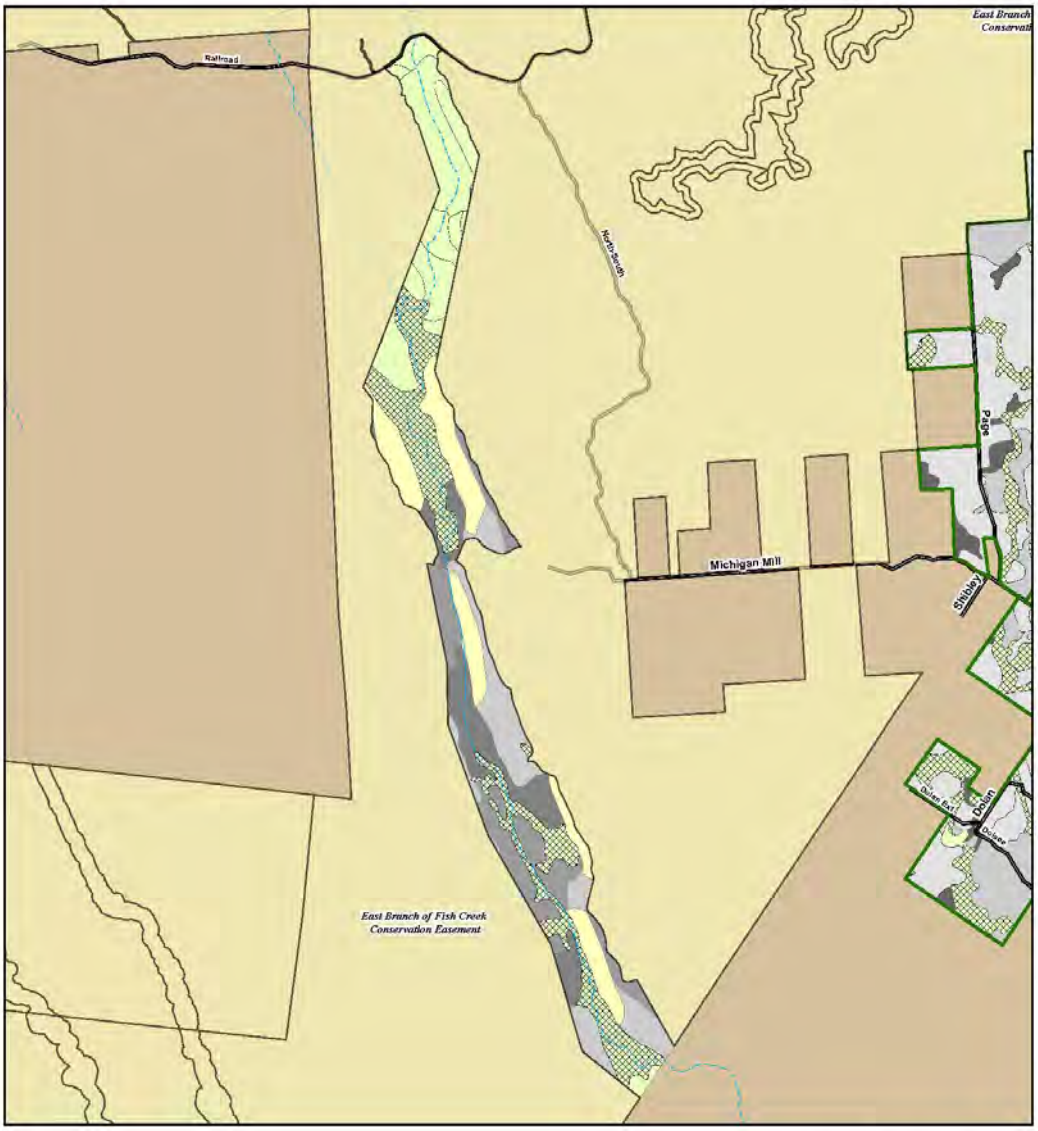



**RAYWOOD UNIQUE AREA LEWIS 43**
**Soil Drainage Map**
**FIGURE 5**

FIGURE 5. - SOILS MAPS




**COTTRELL STATE FOREST LEWIS 44**
**Soil Drainage Map**
**FIGURE 5**




**EAST BRANCH FISH CREEK STATE FOREST LEWIS 45 n**
**Soil Drainage Map**
**FIGURE 5**

FIGURE 5. - SOILS MAPS