



# Compartment Review Presentation

## Traverse City Forest Management Unit

Compartment 61048

Entry Year 2018

Acreage: 1,801

County Grand Traverse

Management Area: Boardman Plains

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**Revision Date:** 2016-06-02

**Stand Examiner:** Pat Ruppen

**Legal Description:**

T26N R10W Sections 1,2,3,4,12 T27N R10W Sections 34,35,36

**Identified Planning Goals:**

This compartment is located within the Boardman Plains Management Area. Vegetation management in the Boardman Plains management area (MA) (Figure 4.1) will provide forest products; maintain or enhance wildlife habitat; protect areas of unique character including the Boardman River (a designated natural river) and the Sand Lakes Quiet area (a designated high conservation value area), threatened, endangered and special concern species; and provide for forest-based recreational uses. Timber management objectives for this 10-year planning period include improving the age-class structure of aspen; increasing regeneration of oak; working toward balancing the red pine age-class structure; continuing emphasis on managing the northern hardwood resource for stand quality, age, and species diversity; wildlife values; and continued production of wood products. Wildlife habitat management objectives include perpetuating early-successional communities for species adapted to young forests for hunting and other wildlife related recreation opportunity. Expected trends within this 10-year planning period are: increased recreational pressure, especially on the Muncie Lakes pathway, North Country and other established trails; increased oil and gas development; an increased wildland/urban interface; a need to restore oak/pine barrens communities; invasive plant control; and the conversion of poor oaks sites to mixed pine/oak sites. This compartment is primarily described by LTA 5211 which is glacial outwash plain pitted with ice block depressions. In pre-settlement times, large areas of this LTA were covered by the entire spectrum of conifer-dominated forests with red pine as the predominant species. Pine/oak barrens covered 25% of this area and were the dominant vegetation form in this compartment. Large wildfires were common and maintained the oak/pine barrens. Due to fire suppression the extent of natural xeric pine associations, Pine Barrens and dry prairie openings have been greatly reduced. Forest associations formed after the last cycle of extensive fires (1920-1930) are present in this compartment. These are generally stands with an oak dominated canopy and a pine component. The most common under story species is white pine which is heavily stocked in places with an under represented red pine component. An attempt should be made through vegetative management and/or the use of prescribed fire to re-set the clock on some of these stands and recreate some new natural pine/oak/aspens mixes or to re-establish pine/oak barrens. Due to local population density, prescribed fire is not a feasible tool in much of this compartment so red pine inter-planting will be necessary to return this disturbance dependent species to the vegetative mix. Oak should be maintained in some areas as a canopy species to provide mast. Some jack pine stands in this compartment are older and declining. These stands are converting to oak. It is recommended that the jack pine over-story be removed to release the advanced oak understory. New, young oak stands are important in this area as most of the oak is old and declining in vigor and quality. Two areas of this older oak are recommended for harvest, followed by planting with red pine. This is expected to create a new stand with mixed oak and pine along with red maple and aspen. Another area of older overstocked oak is recommended for crown thinning to try to improve the health and vigor of an area dominated by oak. Some likely oak wilt pockets have been found in this compartment and will be considered in treatments.

**Soil and topography:**

Level to rolling with pothole marshes and ice block depression lakes. Soils are described as deep, excessively drained acidic sands- mainly Rubicon.

**Ownership Patterns, Development, and Land Use in and Around the Compartment:**

Rapidly growing residential area especially around the lakes which have heavy development pressure.

**Unique Natural Features:**

Ice depression lakes and small depression are common in this compartment. Arbutus, Spider, Vandervoight, Indian,

Bass, and Rennie Lakes all have State owned shoreline. Past observations and current potential for Hills Thistle, Bald Eagle, Wood Turtle.

### **Archeological, Historical, and Cultural Features:**

Old Indian trail noted in GLO notes in Section 36 Other known archeological sites in compartment.

### **Special Management Designations or Considerations:**

Heavy recreation use along with heavy recreation development. State ownership around Arbutus Lake Campground which includes stands 19, 18, 22, 15, 13, and 14 should be managed with a recreation emphasis. The east half of stand 22 has an area of old aged red and white pine which had been nominated for old growth designation. Recommend designating this as an SCA managed for old aged pine.

### **Watershed and Fisheries Considerations:**

This compartment is within the Boardman River watershed, and contains many of the more popular kettle lakes that are found in this area. Appropriate buffers (as outlined in Water Quality Management Practices on Forest Land) should be adhered to around all lakes within this compartment. Existing buffers appear to be appropriate for the proposed

### **Wildlife Habitat Considerations:**

Wildfire was a common natural disturbance of this area's sandy glacial outwash soils. Consequently, many of the communities found here are comprised of fire dependant species. Present habitat types are oak or aspen communities with scattered natural pine stands as well as several plantations. Small lakes, ponds, and wetlands are found in ice block depressions scattered about this area.

Other depressions function as frost pockets or cold air drainages and support open or semi-open communities. Prescribed fire is an important tool in maintaining the vigor of these habitats. Opportunities to re-establish the currently rare barrens communities should be pursued when identified. Selective cutting and controlled burning are vital tools for barrens restoration projects. A large number of both common and rare species are associated with various barrens communities. Grasshopper sparrows, sharp-shinned hawks, wild turkeys, deer, badgers, Eastern box turtles, and numerous species of plants and invertebrates make use of, or are dependent on barrens communities.

Aspen communities are another important component of this fire prone early successional landscape. Timber harvests are typically used in lieu of stand replacing fires, which were once common. The incorporation of snags, live residual trees, and downed material in these cuts are used help to increase wildlife use and to replicate a wildfire-altered forest. This will result in a wildlife friendly matrix of aspen, oak and pines. Conversion of some stands to aspen dominated communities is ecologically appropriate on this landscape and should be pursued when possible. Many early successional dependent wildlife species will benefit from aspen management, including, ruffed grouse, woodcock, deer, mourning warblers, yellow-billed cuckoos, and indigo buntings.

Proposed oak treatments are intended to promote oak regeneration and create a diversity of oak age classes. This will ensure a continuous presence of mature mast producing trees on the landscape.

### **Mineral Resource and Development Concerns and/or Restrictions**

Surface sediments consist of glacial outwash sand and gravel and postglacial alluvium. The glacial drift thickness varies between 400 and 800 feet. Beneath the glacial drift is the Mississippian Coldwater Shale. There is no current economic use for the Coldwater. A gravel pit is located in Section 28 and there should be good potential. This area is located along the north edge of the prolific Niagaran reef trend and has production in the south half. Most of the Compartment is leased for oil and gas exploration. Additional reefs could be found in the compartment or the Antrim Shale may be developed in this area.

### **Vehicle Access:**

Access is generally good via county roads and a number of two tracks that traverse the compartment.

### **Survey Needs:**

## **Survey Needs:**

## **Recreational Facilities and Opportunities:**

A segment of the Vasa non-motorized Pathway dips into the north central part of this compartment. Snowmobile Trail #5 is located in the NW corner of this compartment. Trail protection specifications for both these trails should be considered when setting up forest treatments in this compartment (T.N. 1/26/2016)

## **Fire Protection:**

This area is protected by the Grand Traverse Fire Department and DNR fire protection is from the Traverse City Unit. Most of this compartment is small blocks of state land, with many two tracks and forest roads throughout. Urban interface can be an issue in some parts of this compartment with scattered ownership of private land. Access is acceptable. The Se corner of Section 12 is within Zone 6. This section is located close to our standby location, so travel time on standby days is acceptable. There have been several fires throughout this compartment over the years.

## **Additional Compartment Information:**

The following reports from the Inventory are attached:

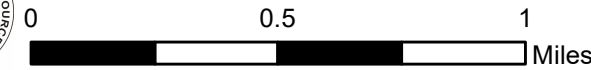
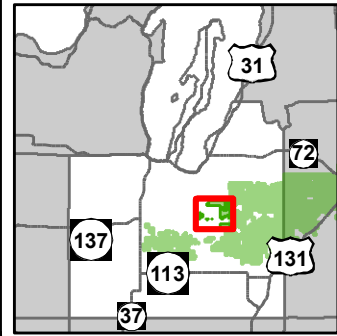
- Total Acres by Cover Type and Age Class**
- Cover Type by Harvest Method**
- Proposed Treatments – No Limiting Factors**
- Proposed Treatments – With Limiting Factors**
- Stand Details (Forested and Nonforested)**
- Dedicated and Proposed Special Conservation Areas**
- Site Condition Details**

The following information is displayed, where pertinent, on the attached compartment maps:

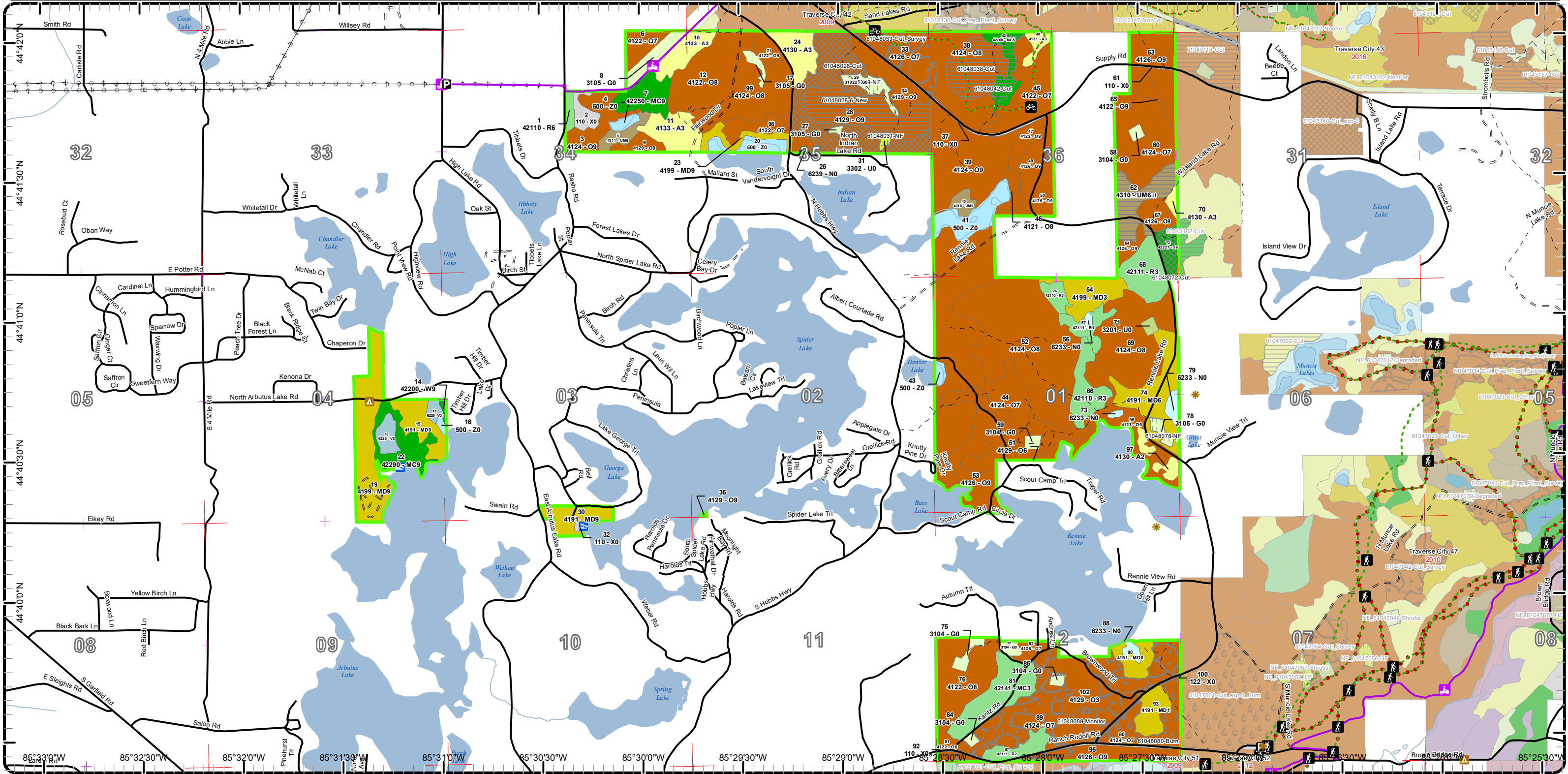
- Base feature information, stand boundaries, cover types, and numbers**
- Proposed treatments**
- Site condition boundaries**
- Details on the road access system**

# Cover Type & Treatments Map

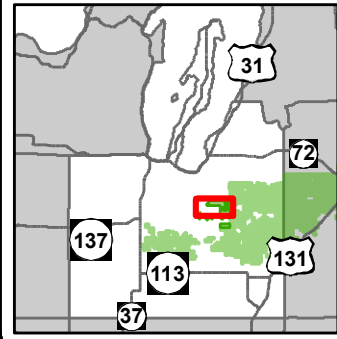
Compartment: 48  
 T26N R09W 19-24  
 County: Grand Traverse  
 Unit: Traverse City  
 Mgmt Area: Boardman Plains  
 YOE: 2018  
 Acres: 1801 GIS Calculated  
 Examiner: Pat Ruppen  
 Map Revised: 6/8/2016  
 Map Phase: Web - Post



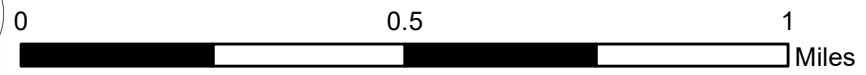
- Miris Corners
- + Remonumented Section Corners
- Boating Access Site
- Campground
- Parking Lot
- Trailhead
- Bike Trails
- Hiking Trails
- Ski Trails
- Snowmobile Trails
- Designated Hiking Trails
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- Poor Dirt Roads
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- Powerline
- Compartment Boundary
- Selection (Group, Single Tree)
- Clearcut (w/Reserves)
- Other Treatment - See Comments
- Prescribed Burn
- Opening Maintenance
- Regeneration Survey
- 412 - Oak Types
- 413 - Aspen Types
- 419 - Mixed Upland Deciduous
- 421 - Planted Pines
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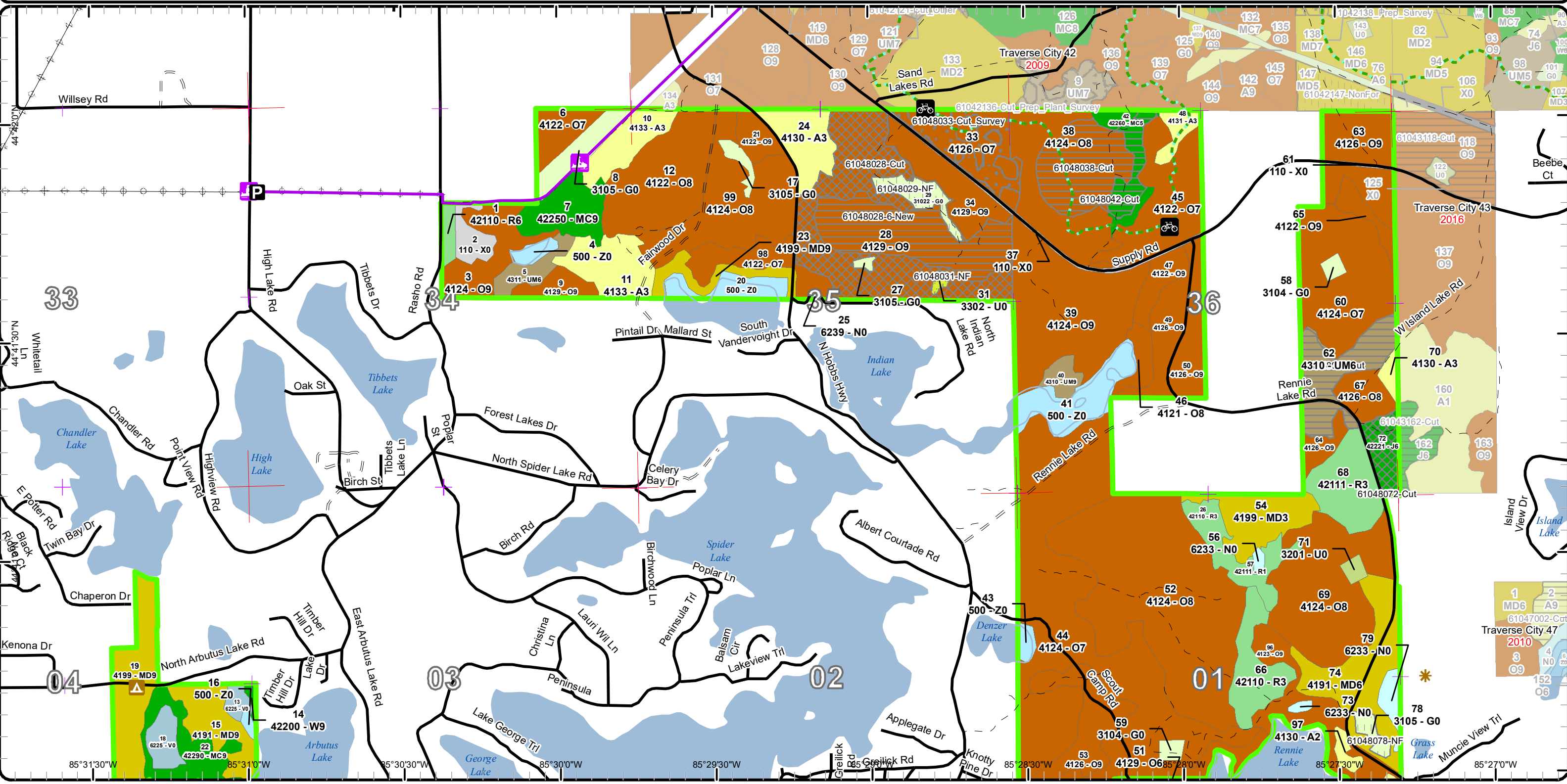
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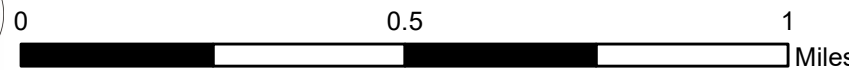
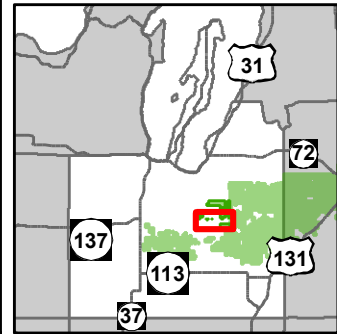


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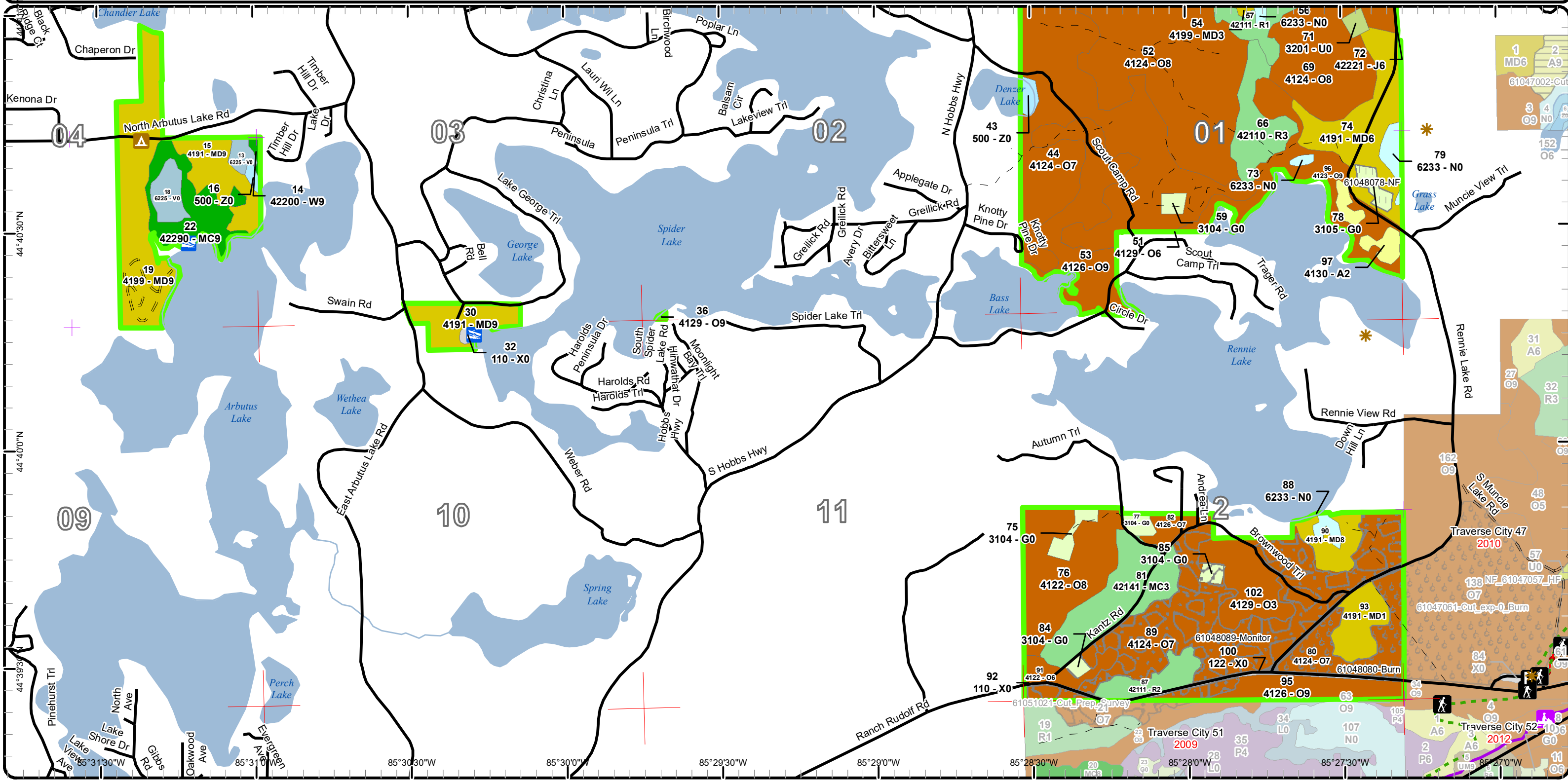


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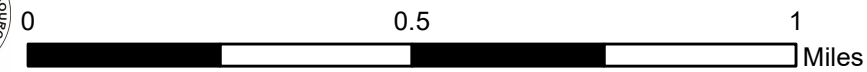
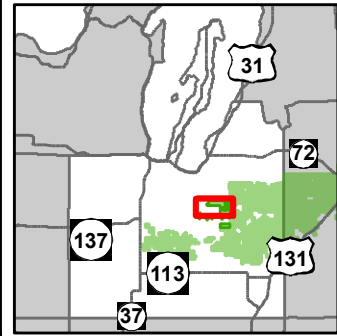


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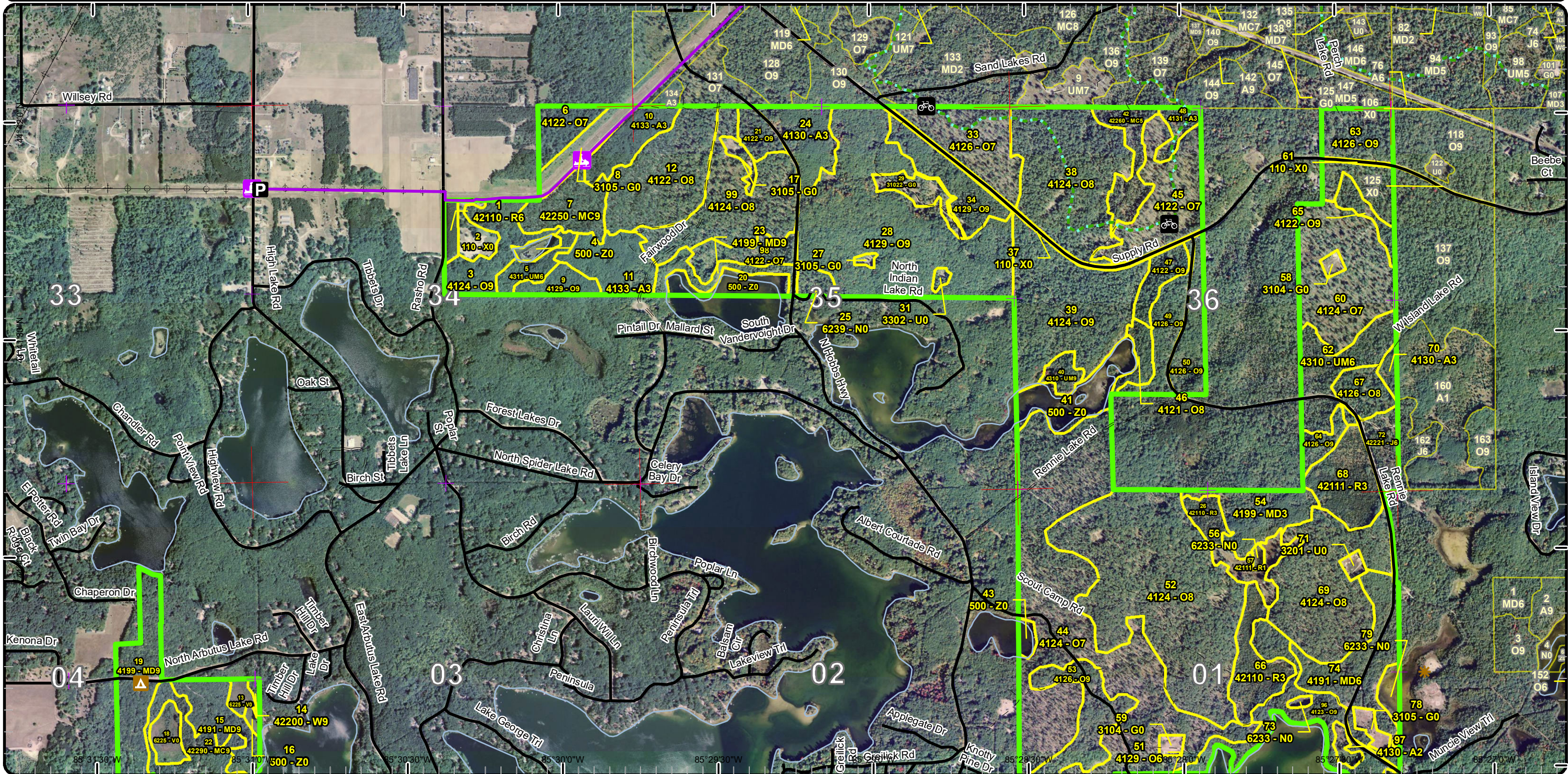


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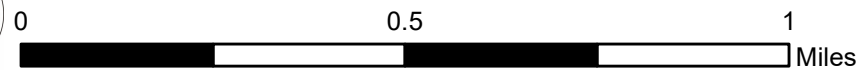
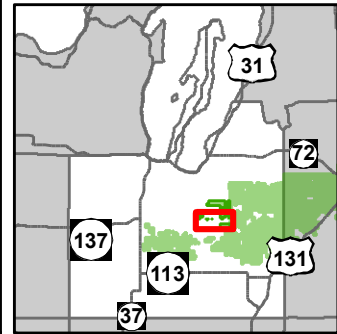


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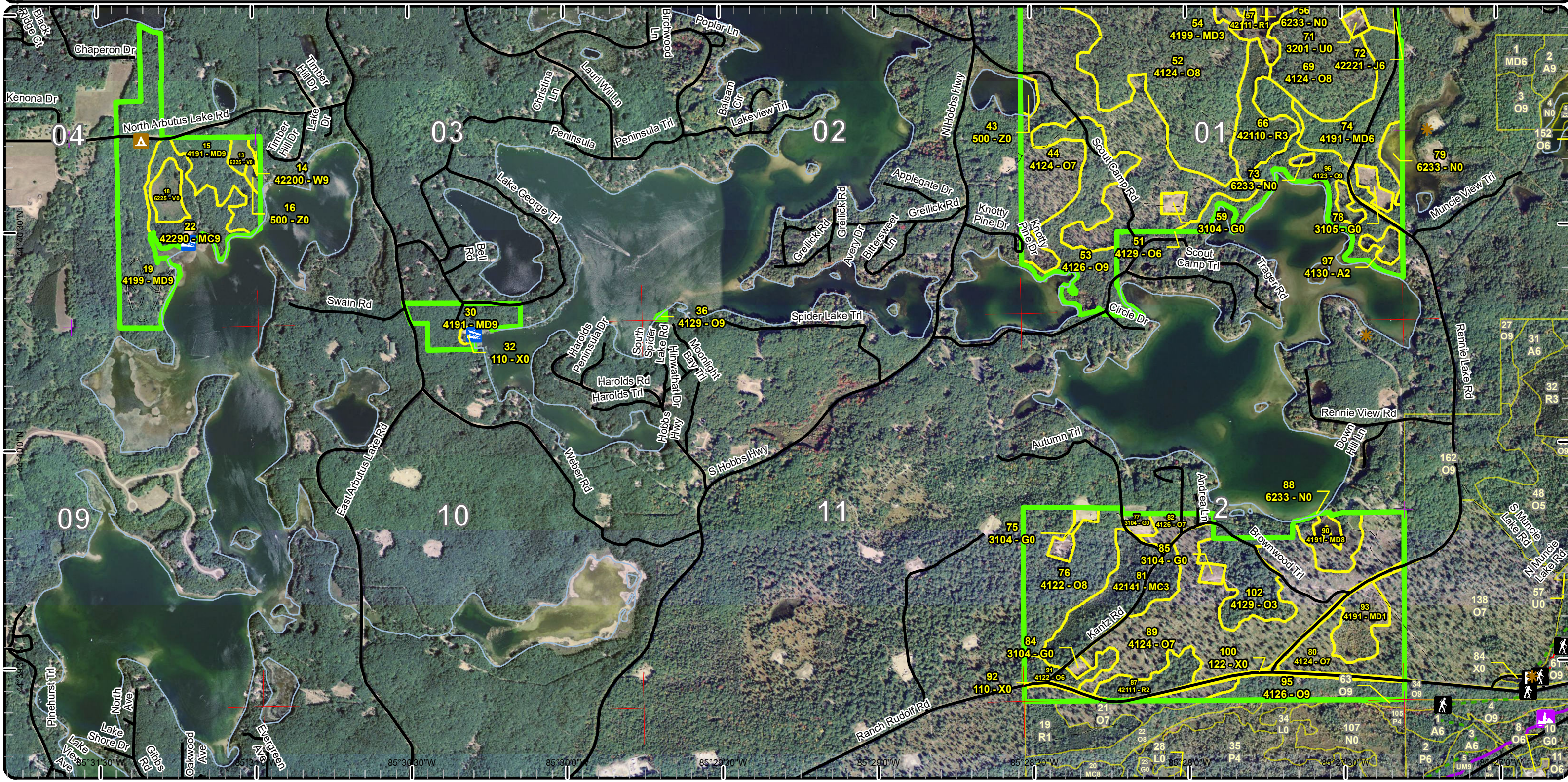


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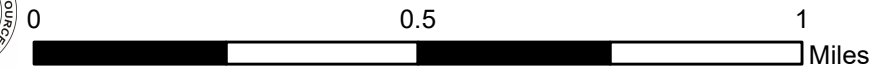
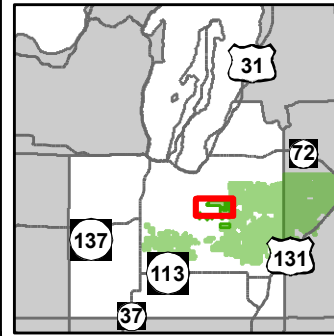
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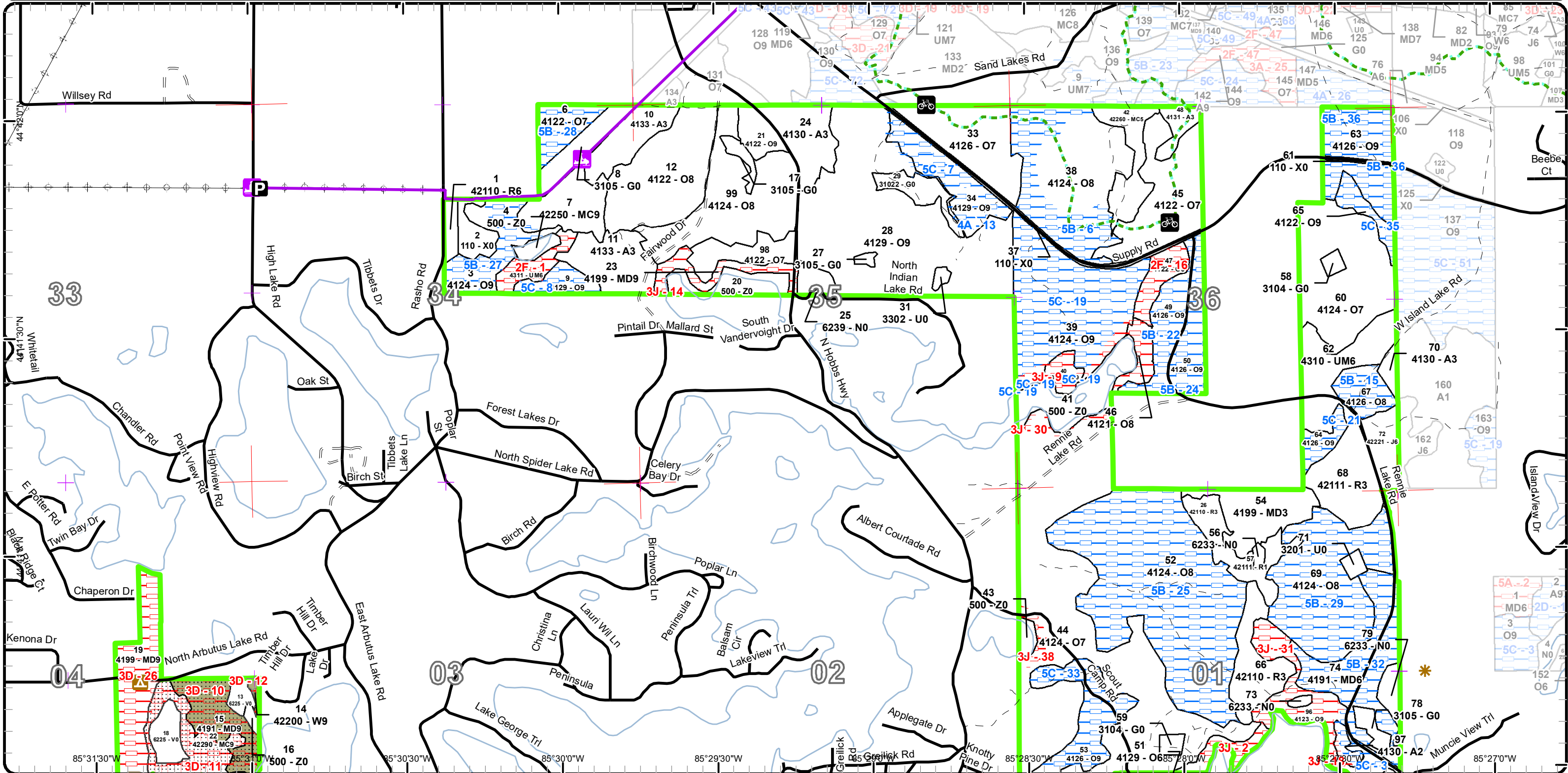


# Special Conservation Areas & Site Conditions Map

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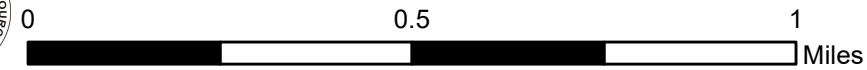
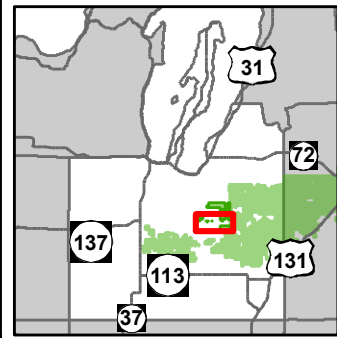


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- - - Unavailable
- 4A: No Markets Available for these Forest Products
- 5B: Maintain for regeneration purposes
- 5C: Delay treatment for age/size class diversity or exceptional site quality
- 2F: Too steep
- 3D: Recreational / Scenic values
- 3J: Water quality / BMPs (stream, river, or lake)
- Stand Boundaries
- Special Conservation Areas
- Potential Old Growth
- Other SCA (No Category Assigned)

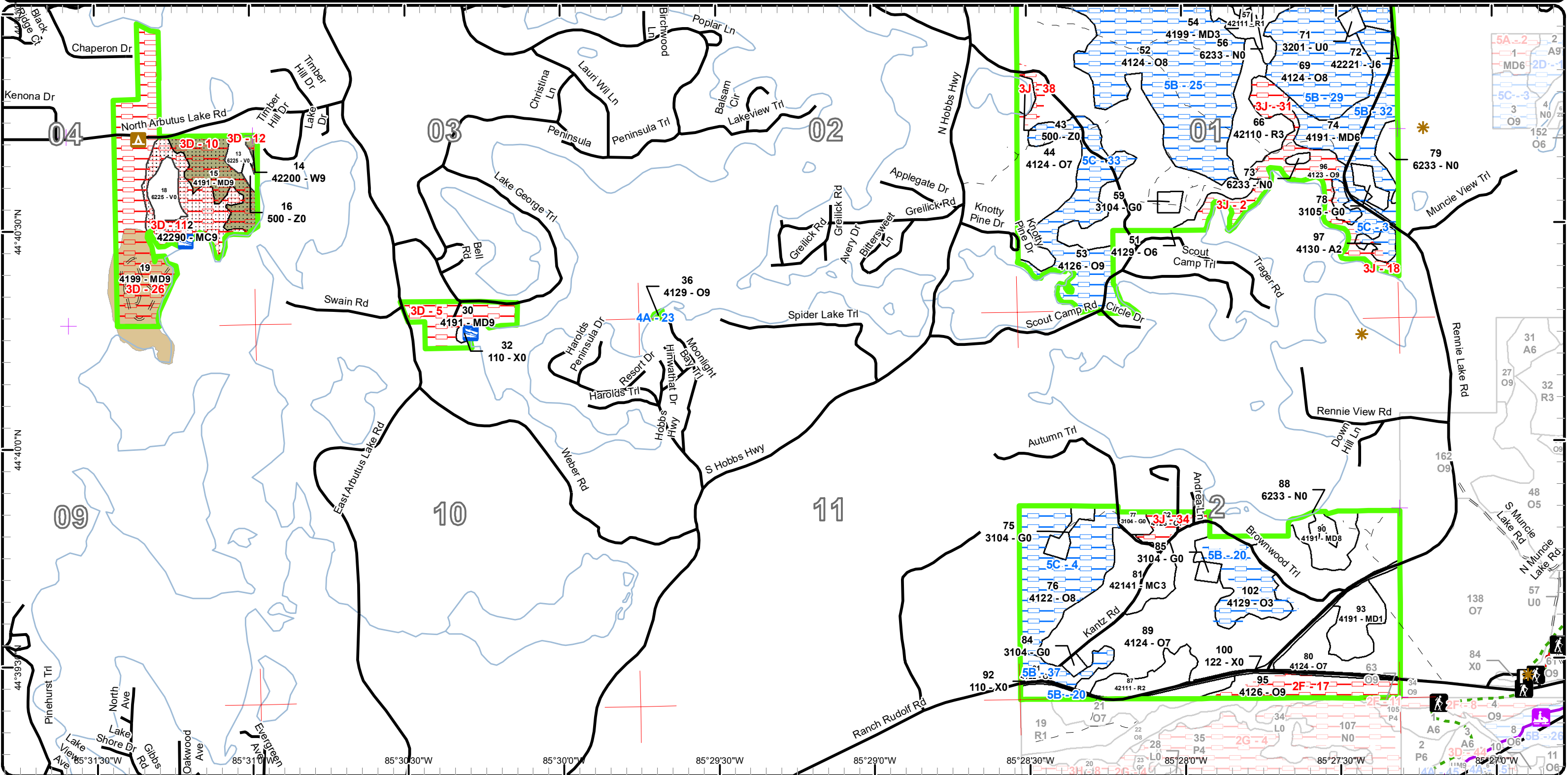


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|--|---|---|
| <ul style="list-style-type: none"> <li>— Miris Corners</li> <li>✚ Remonumented Section Corners</li> <li>🚤 Boating Access Site</li> <li>🏕️ Campground</li> <li>P Parking Lot</li> <li>🌟 Trailhead</li> <li>🚲 Bike Trails</li> <li>👤 Hiking Trails</li> <li>🏂 Ski Trails</li> <li>🚙 Snowmobile Trails</li> <li>— Designated Hiking Trails</li> </ul> | <ul style="list-style-type: none"> <li>- - Designated Bicycle Trails</li> <li>• Designated Equestrian Trails</li> <li>- - Designated Ski Trails</li> <li>- - Designated Snowmobile Trails</li> <li>— Paved Roads</li> <li>- - Gravel Roads</li> <li>- - Poor Dirt Roads</li> <li>— Rivers</li> <li>🟩 Compartment Boundary</li> <li>- - Available w/ Constraints</li> <li>- - Unavailable</li> <li>4A: No Markets Available for these Forest Products</li> <li>5B: Maintain for regeneration purposes</li> </ul> | <ul style="list-style-type: none"> <li>5C: Delay treatment for age/size class diversity or exceptional site quality</li> <li>2F: Too steep</li> <li>3D: Recreational / Scenic values</li> <li>3J: Water quality / BMPs (stream, river, or lake)</li> <li>☐ Stand Boundaries</li> <li>🟤 Special Conservation Areas</li> <li>🟡 State Forest Campground</li> <li>🟢 Potential Old Growth</li> <li>🟠 Other SCA (No Category Assigned)</li> </ul> |
|--|---|---|



Report 1 – Total Acres by Cover Type and Age Class



Age Class

	Non-Forest	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120-129	130-139	140-149	150+	Uneven-Aged	Total
Aspen	0	7	17	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66
Bog	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
Herbaceous Openland	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41
Jack Pine	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	11
Low-Density Trees	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Marsh	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
Mixed Upland Deciduous	0	0	14	21	0	0	0	34	27	47	11	0	0	0	15	0	0	0	169
Natural Mixed Pines	0	0	0	0	0	0	18	15	0	0	0	0	0	0	0	21	0	0	54
Oak	0	0	22	0	0	0	0	0	0	314	185	449	118	144	0	0	0	0	1232
Planted Mixed Pines	0	0	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33
Red Pine	0	10	0	58	0	0	4	0	0	0	0	0	0	0	0	0	0	0	72
Upland Mixed Forest	0	0	0	0	0	0	8	25	5	0	0	0	0	0	0	0	0	0	38
Upland Shrub	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Urban	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
Water	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38
White Pine	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
<b>Total</b>	<b>127</b>	<b>17</b>	<b>53</b>	<b>154</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>54</b>	<b>54</b>	<b>27</b>	<b>361</b>	<b>196</b>	<b>449</b>	<b>119</b>	<b>144</b>	<b>15</b>	<b>21</b>	<b>0</b>	<b>1803</b>



## Report 2 – Treatment Summary

Traverse City Mgt. Unit  
Year of Entry: 2018

Compartment 48  
Total Compartment Acres: 1,801

### Acres of Harvest

Commercial Harvest - 180  
Harvests with Site Condition - 0  
Next Step Harvest - 0  
Habitat Cut - 0

### Cover Type by Harvest Method

	Clearcut	Selection	Patch Clearcut	Seed Tree	Shelterwood	Thinning	Overstory Removal	Salvage	Other	Total Acres
Jack Pine	0	11	0	0	0	0	0	0	0	11
Natural Mixed Pines	9	0	0	0	0	0	0	0	0	9
Oak	73	63	0	0	0	0	0	0	0	136
Upland Mixed Forest	24	0	0	0	0	0	0	0	0	24
<b>Total</b>	<b>106</b>	<b>73</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>180</b>

### Proposed and Next Step Treatments by Method

	Harvest	Site Prep	Planting	Seeding	Burning	Pesticide	Monitoring	Other	Non-Forest Mgt.	Total Acres
Current	180	0	0	0	24	0	131	0	13	347
Next Step	0	125	82	0	0	125	233	0	0	565
<b>Total</b>	<b>180</b>	<b>125</b>	<b>82</b>	<b>0</b>	<b>24</b>	<b>125</b>	<b>364</b>	<b>0</b>	<b>13</b>	<b>912</b>



Stand Name	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Approval Status
28	61048028-6-New	43.2	4129 - Mixed Oak	Sawtimber Well	95	111-140	Harvest	Clearcut with Retention	42111 - Planted Red Pine, Mixed Deciduous	Uneven-Aged	Proposal

**Habitat Cut: No**

**Site Condition:**

Prescription Retain widely scattered well formed oak or white pine (10 ft basal area or less). Favor white oak. Harvest down to 2" dbh and chip tops to reduce slash load. After harvest trench and plant red pine in a weave pattern around scattered residual. Spray herbicide if necessary to control red maple and cherry and aspen.

Next Step Monitoring, Artificial Regen(3yr); SitePrep, Roller Chopping; Pesticide, Other - Specify; SitePrep, Trenching; Planting, Initial Plant

Acceptable white pine, red pine, oak, , jack pine.

Other possible oak wilt pockets. East part of stand and possibly other areas.

Proposed Start Date: 10/01/2017

28	61048028-Cut	62.8	4129 - Mixed Oak	Sawtimber Well	95	111-140	Harvest	Single Tree Selection	42201 - Natural White Pine, Mixed Deciduous	Uneven-Aged	Proposal
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**Habitat Cut: No**

**Site Condition:**

Prescription Remove poor quality oak and red maple and harvest most aspen. green mark some aspen for retention. Where crop trees are found mark for crop tree release and reduce ba to @ 70. where quality is poor reduce basal are to @ 40 to promote existing pine in understory. Quality and stocking varies throughout stand. Attempt to protect advanced white pine understory.

Next Step Monitoring, Natural Regen (Re-Inventary)

Acceptable white pine, red pine, oak, red maple, aspen, jack pine.

Other possible oak wilt pockets.

Proposed Start Date: 10/01/2017

29	61048029-NF	8.0	31022 - Warm Season Grass	Nonstocked			NonForestMgt	Brush Cutting	3205 - Mixed Upland Shrub		Proposal
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**Habitat Cut: No**

**Site Condition:**

Prescription Maintain as needed with mowing, planting of native upland mast producing shrubs, seeding of native grasses and forbs, fertilizing, burning, or removal of woody encroachment.

Next Step

Acceptable

Other

Proposed Start Date: 10/01/2017

31	61048031-NF	1.3	3302 - Low Density Conifer Trees	Nonstocked			NonForestMgt	Other - Specify	3205 - Mixed Upland Shrub		Proposal
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**Habitat Cut: No**

**Site Condition:**

Prescription Maintain as needed with mowing, planting native upland mast bearing shrubs, seeding of native grasses and forbs, fertilizing, burning, or removal of woody encroachment.

Next Step

Acceptable

Other

Proposed Start Date: 10/01/2017



Stand	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Approval Status
33	61048033-Cut_Survey	28.5	4126 - White, Black, N. Pin Oak	Sawtimber Poor	129	1-50	Monitoring	Natural Regen (Re-Inventory)	42260 - Natural Pine, Mixed Deciduous	Unspecified	Field Boundary

**Habitat Cut: No**

**Site Condition:**

Prescription

Specs:

Next Step

Treatments:

Acceptable

Regen:

Other Comment: Old savannah oak/pine -still has open look in places. Red and white pine coming in to openings. Oak quality low. Old next step comments: Burn periodically to maintain openness and develop ground vegetation consistent with historic pine/oak barrens

Proposed Start Date: 10/03/2016

38	61048038-Cut	29.7	4124 - Red with White Oak	Sawtimber Medium	130	51-80	Harvest	Clearcut with Retention	42111 - Planted Red Pine, Mixed Deciduous	Even-Aged	Proposal
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**Habitat Cut: No**

**Site Condition:**

Prescription

Specs: Harvest to 2" dbh and require chipping of tops to prep site for trenching. Concentrated retention along bike trail about a chain on each side. Keep retention in other areas to 10 ft. basal area or less. favor white oak for retention

Next Step Pesticide, Other - Specify; SitePrep, Trenching; Planting, Initial Plant; Monitoring, Artificial Regen(1yr); Monitoring, Artificial Regen(3yr)

Treatments:

Acceptable aspen, oak, white pine, planted red pine, jack pine

Regen:

Other Comment: Fat Tire Bike/single-track Trail passes through treatment area. Retention concentrated along trail

Proposed Start Date: 10/01/2017

42	61048042-Cut	9.1	42260 - Natural Pine, Mixed Deciduous	Poletimber Medium	70	51-80	Harvest	Clearcut with Retention	42111 - Planted Red Pine, Mixed Deciduous	Even-Aged	Proposal
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**Habitat Cut: No**

**Site Condition:**

Prescription harvest to 2" dbh and chip tops to prepare site for trenching. retain some widely scattered and well formed oak (10 ft BA or less) Favor white oak.

Specs: Trench and plant red pine after harvest. Spray herbicide if necessary to control red maple, cherry and aspen. Attempt to retain oak regeneration.

Next Step SitePrep, Trenching; Planting, Initial Plant; Pesticide, Other - Specify; Monitoring, Artificial Regen(1yr)

Treatments:

Acceptable oak, red pine, white pine

Regen:

Other Comment: Treat with stand 38

Proposed Start Date: 10/01/2017

62	61048062-Cut	24.3	4310 - Pine, Oak Mix	Poletimber Well	65	81-110	Harvest	Clearcut with Retention	4122 - Oak, Pine	Even-Aged	Proposal
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**Habitat Cut: No**

**Site Condition:**

Prescription harvest jack pine, aspen and poor quality oak.

Specs:

Next Step Monitoring, Natural Regen (Re-Inventory)

Treatments:

Acceptable oak, jack pine, aspen, red pine, white pine, red maple

Regen:

Other Comment: attempt to protect advanced oak and pine understory

Proposed Start Date: 10/01/2017



S t a n d	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Approval Status
72	61048072-Cut	10.5	42221 - Natural Jack Pine, Mixed Deciduous	Poletimber Well	60	51-80	Harvest	Group Selection	4122 - Oak, Pine	Two-Aged	Proposal

**Habitat Cut: No**

**Site Condition:**

Prescription Remove remaining jack pine and poorly formed oak. and red maple.

Specs:

Next Step Monitoring, Natural Regen (Re-Inventory)

Treatments:

Acceptable Mixed oak, jack pine, white pine, red pine, red maple and aspen.

Regen:

Other Most oak is pine oak with some white and red. some areas have thick advanced oak regeneration but the understory is variable in stocking.

Comment: Attempt to protect understory

Proposed Start Date: 10/01/2017

78	61048078-NF	3.6	3105 - Mixed Upland Herbaceous	Nonstocked		Unspec ified	NonForestMgt	Herbaceous/Crop/ Grass Planting	31022 - Warm Season Grass		Proposal
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**Habitat Cut: No**

**Site Condition:**

Prescription Maintain as needed with mowing, native shrub planting, seeding of native grasses/forbs, burning, or removal of woody encroachment.

Specs:

Next Step

Treatments:

Acceptable

Regen:

Other Close to road. Two old well sites. Would be highly visible and could make good location for a restoration project and sign, "What's going on here?"

Comment:

Proposed Start Date: 10/01/2017

80	61048080-Burn	23.7	4124 - Red with White Oak	Sawtimber Poor	95	1-50	Burn	Understory	330 - Low-Density Trees		Proposal
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**Habitat Cut: No**

**Site Condition:**

Prescription Periodically burn to promote and maintain barrens habitat.

Specs:

Next Step Monitoring, Other - Specify

Treatments:

Acceptable

Regen:

Other

Comment:

Proposed Start Date: 10/01/2017

89	61048089-Monitor	102.2	4124 - Red with White Oak	Sawtimber Poor	94	1-50	Monitoring	Artificial Regen(3yr)	42111 - Planted Red Pine, Mixed Deciduous	Two-Aged	Draft Field Boundary
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**Habitat Cut: No**

**Site Condition:**

Prescription

Specs:

Next Step

Treatments:

Acceptable see notes

Regen:

Other Percent to Treat = 100%

Comment:

Proposed Start Date: 10/01/2016

**Total Treatment Acreage Proposed: 346.8**

## Report 4 – Site Conditions

Traverse City Mgt. Unit

Pat Ruppen : Examiner

Compartment: 48

Year of Entry: 2018

### Availability for Management

Total Acres	Acres Available	Acres Avail		Dominant Site Conditions	Dominant Site Conditions						
		With Condition	Not Available		4A	5B	5C	2F	3D	3J	
66	60	5	2	Aspen			5				2
10	10	0	0	Bog							
41	40	0	0	Herbaceous Openland		0	0				
11	11	0	0	Jack Pine							
1	1	0	0	Low-Density Trees							
10	10	0	0	Marsh							
168	45	34	89	Mixed Upland Deciduous		34			80	9	
54	32	1	21	Natural Mixed Pines		1			21		
1227	640	513	74	Oak	4	328	182	24		50	
33	33	0	0	Planted Mixed Pines							
72	72	0	0	Red Pine							
37	25	0	13	Upland Mixed Forest				8		5	
2	2	0	0	Upland Shrub							
24	24	0	0	Urban			0				
38	38	0	0	Water						0	
1	0	0	1	White Pine					1		
1,796	1,042	553	201	Total Forested Acres	4	363	186	32	102	66	
	58%	31%	11%	Relative Percent							

*\*Due to limitations in the current Site Conditions Analysis tool, all nonforested acres are considered available. Future development will enable analysis of nonforested types.*

Site No.	Dominant Site Cond Availability	Dominant Site Condition	Acres	Other Site Condition	Other Site Condition	Other Site Condition	Other Site Condition
1	Unavailable	2F: Too steep	8	3J: Water quality / BMPs (stream, river, or lake)	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
2	Unavailable	3J: Water quality / BMPs (stream, river, or lake)	5	2F: Too steep	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							



## Report 4 – Site Conditions

Traverse City Mgt. Unit

Pat Ruppen : Examiner

Compartment: 48

Year of Entry: 2018

3	<b>Available</b>	<b>5C: Delay treatment for age/size class diversity or exceptional site quality</b>	11	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Aspen clearcut with reserves							
4	<b>Available</b>	<b>5C: Delay treatment for age/size class diversity or exceptional site quality</b>	42	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Good bit of oak regen 1-3 ft high and some moving through. Cut aspen and Jp to open up.							
5	<b>Unavailable</b>	<b>3D: Recreational / Scenic values</b>	15	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> DRN Boat Launch							
6	<b>Available</b>	<b>5B: Maintain for regeneration purposes</b>	30	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Stand was thinned in past entry. New age is slowly forming in understory. Part of this stand will be harvested and re-planted. Evaluate stand in next entry period. Adjacent stands have been recently harvested. Keep this for diversity.							
7	<b>Available</b>	<b>5C: Delay treatment for age/size class diversity or exceptional site quality</b>	16	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Stand recently harvested across Supply Road and the remainder of this stand will be thinned this entry period. Kept this portion of stand out of treatment for visual management and diversity.							
8	<b>Available</b>	<b>5C: Delay treatment for age/size class diversity or exceptional site quality</b>	8	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							

## Report 4 – Site Conditions

Traverse City Mgt. Unit

Pat Ruppen : Examiner

Compartment: 48

Year of Entry: 2018

9	<b>Unavailable</b>	<b>3J: Water quality / BMPs (stream, river, or lake)</b>	16	2F: Too steep	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
10	<b>Unavailable</b>	<b>3D: Recreational / Scenic values</b>	17	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Area around Arbutus Lake campground should be managed for recreation.							
11	<b>Unavailable</b>	<b>3D: Recreational / Scenic values</b>	21	3A: Potential old growth / biodiversity	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Area around Arbutus Lake Campground. Old growth characteristics in pine in east part of stand.							
12	<b>Unavailable</b>	<b>3D: Recreational / Scenic values</b>	1	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Part of Arbutus lake campground tract. Nominate entire ownership south of road for SCA Arbutus Lake Campground.							
13	<b>Available</b>	<b>4A: No Markets Available for these Forest Products</b>	4	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Added by WLD to treat with stand 29 which will be burned to maintain opening. Jack pine in stand 34 should be cut to facilitate burn.							
14	<b>Unavailable</b>	<b>3J: Water quality / BMPs (stream, river, or lake)</b>	9	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
15	<b>Available</b>	<b>5B: Maintain for regeneration purposes</b>	10	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							

## Report 4 – Site Conditions

Traverse City Mgt. Unit

Pat Ruppen : Examiner

Compartment: 48

Year of Entry: 2018

16	Unavailable	2F: Too steep	9	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
17	Unavailable	2F: Too steep	16	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
18	Unavailable	3J: Water quality / BMPs (stream, river, or lake)	8	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Aspen clearcut with reserves							
19	Available	5C: Delay treatment for age/size class diversity or exceptional site quality	57	5B: Maintain for regeneration purposes	Unspecified	Unspecified	Unspecified
<b>Comments:</b> This stand was thinned in 1998. Basal area is 50-80 and second age has not developed much at this time. Adjacent stand to west will be thinned this entry period. Allow second age to develop and look at next entry.							
20	Available	5B: Maintain for regeneration purposes	19	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
21	Available	5C: Delay treatment for age/size class diversity or exceptional site quality	6	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							

## Report 4 – Site Conditions

Traverse City Mgt. Unit

Pat Ruppen : Examiner

Compartment: 48

Year of Entry: 2018

22	<b>Available</b>	<b>5B: Maintain for regeneration purposes</b>	16	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Stand was thinned in 2000. Allow second age to develop and advance in understory.							
23	<b>Available</b>	<b>4A: No Markets Available for these Forest Products</b>	0	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
24	<b>Available</b>	<b>5B: Maintain for regeneration purposes</b>	16	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> stand was thinned in 2000. Allow second age in understory to advance and grow in.							
25	<b>Available</b>	<b>5B: Maintain for regeneration purposes</b>	117	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Stand thinned in 2012. Allow new age to develop in understory. Not much at this time.							
26	<b>Unavailable</b>	<b>3D: Recreational / Scenic values</b>	47	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Arbutus Lake Campground and access road. Trail to Chandler Lake in north part of stand.							
27	<b>Available</b>	<b>5B: Maintain for regeneration purposes</b>	18	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
28	<b>Available</b>	<b>5B: Maintain for regeneration purposes</b>	11	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							

## Report 4 – Site Conditions

Traverse City Mgt. Unit

Pat Ruppen : Examiner

Compartment: 48

Year of Entry: 2018

29	<b>Available</b>	<b>5B: Maintain for regeneration purposes</b>	57	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> stand thinned in 2012. Allow second age to form in understory.							
30	<b>Unavailable</b>	<b>3J: Water quality / BMPs (stream, river, or lake)</b>	3	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Slope around Indian Lake							
31	<b>Unavailable</b>	<b>3J: Water quality / BMPs (stream, river, or lake)</b>	16	2F: Too steep	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Steep area and area in riparian area along lake. Adjacent area also harvested recently and re-planted.							
32	<b>Available</b>	<b>5B: Maintain for regeneration purposes</b>	34	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Complicated stand with various age classes. Let younger age classes develop at this time.							
33	<b>Available</b>	<b>5C: Delay treatment for age/size class diversity or exceptional site quality</b>	42	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Surrounding stands recently harvested. Retain for diversity at this time.							
34	<b>Unavailable</b>	<b>3J: Water quality / BMPs (stream, river, or lake)</b>	6	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Aspen and Jack pine could come out. Leave most oak and red and white pine. Scarify to promote pine or pine weave.							

## Report 4 – Site Conditions

Traverse City Mgt. Unit

Pat Ruppen : Examiner

Compartment: 48

Year of Entry: 2018

35	<b>Available</b>	<b>5C: Delay treatment for age/size class diversity or exceptional site quality</b>	7	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Older stand between two stands with recent harvests. Keep this older pine and oak for age class diversity at this time.							
36	<b>Available</b>	<b>5B: Maintain for regeneration purposes</b>	28	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Various ages of oak and pine with canopy gaps still filling in. Let this stand develop before next treatment.							
37	<b>Available</b>	<b>5B: Maintain for regeneration purposes</b>	8	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Stand is remnant from various surrounding treatments and small "different" parts of stand are not big enough to stand alone. Let understory pine develop at this time							
38	<b>Unavailable</b>	<b>3J: Water quality / BMPs (stream, river, or lake)</b>	4	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Riparian zone around Denzer Lake							



**Report 5 – PROPOSED SPECIAL CONSERVATION AREA\* (SCA) DETAILS**

\* This is a partial list of SCAs for this compartment. Not included are those areas identified under other Department initiatives (Natural Rivers, Deer Wintering Areas, etc.). Those will be identified in separate, future map and report products.

SCA Name	SCA Category	Detail Type	Recommendation	Acres
	Type 1 or Type 2 Old Growth	Verified Type 2 Old Growth Area	<b>Proposed SCA</b>	38
<b>Comments</b>				
	Potential Old Growth		<b>SCA Removal</b>	1
<b>Comments</b>				
This area no longer meets the criteria to be classified as a Special Conservation Area.				



**Report 6 – EXISTING SPECIAL CONSERVATION AREA DETAILS**

\* This is a list of SCA's for this compartment along with a 1/4 mile buffer surrounding the compartment. Refer to the Special Conservation Area Map for locations of the below listed Conservation Areas.

ERA = Ecological Reference Area  
 HCVA = High Conservation Value Area  
 SCA = Special Conservation Area

Conservation Area	Type	Description
HCVA	Natural Rivers	There are two Natural Rivers datasets which are derived from spatial buffers set from an established and approved distance from the river centerlines. The Natural Rivers Zoning District is a 400 foot buffer for most Natural Rivers. The Vegetative Buffer ranges from 25 to 100 feet. To view specific Zoning Districts and Vegetative Buffers for each Natural River see the table located on the I:\Documentation\GDSE data folder.





	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
1	42110 - Planted Red Pine	Poletimber Well	3.8	55	201+	BA around 270. Good height growth. It thinned would have to be row thinning but may be getting too tall to open up stand at this time with these diameters. Was prescribed in 2006 but withdrawn due to a possible land transaction with the County.
3	4124 - Red with White Oak	Sawtimber Well	19.9	90	111-140	2016: Some log sized oak but most is pole sized suppressed and poor formed. Northern part of stand has lower stocking but south part could benefit from marked thinning and take most aspen. Probably not enough volume for commercial harvest. Converting to white pine with some red pine poles. Some storm damage on bigger oak. White pine filling in canopy gaps. Steep around pond-not workable. Some box elder, alanthus and walnut around dump site.
5	4311 - Pine, Aspen Mix	Poletimber Well	7.7	55	111-140	2016: Factor Limit stand for steep slopes and riparian concerns
6	4122 - Oak, Pine	Sawtimber Poor	10.7	110	1-50	2006: Aspen cut out of stand and most of the pine and oak retained in stand. TS# 013-98. TCR 12/99 Cut all trees but no red pine, white pine or red oak 12" dbh or larger. . Some basswood in nw corner around open area. Good regen in pockets but not seeing much red pine regen. 2016: Aspen looks good in pockets. Patchy -pockets of fully stocked oak and pine with basswood and open areas with the aspen clones regenerating. Pockets of younger pine. Areas of thick autumn olive. Looks like good deer bedding cover. Aspen will likely expand and dominate this site next time it is harvested. Let stand develop and grow in at this time. Will likely call both age classes
7	42250 - Pine, Oak	Sawtimber Well	18.2	65	81-110	2006:Red pine looks good but stopped growing at 50-60 years. Pine in stand to the north started growing after release. Mark everything but spec aspen. Manage natural pine oak mix. TS# 080-08. Unit harvested 5/11. Marked for crop tree release. Mixed pine and oak. Cut all aspen and orange marked. Marked red maple. 2016: Red maple sprouts with aspen clones regenerating. Good aspen regen in places. Stand looks fine. May desire to keep stand condition until new age becomes merchantable in 30-40 years.
9	4129 - Mixed Oak	Sawtimber Well	7.6	90	111-140	2006:Big scattered oak with stunted pole size grown in. Some aspen and pine mixed in. Needs thinned. Crop tree release where quality is present and open up /shelter-seed where poor quality. 2016: Stand is over stocked and could benefit from marked thinning. Access is not assured. Steep pothole in middle of stand nearly splits workable area in two. Private on south line is fenced.
10	4133 - Aspen, Mixed Pine	Sapling Well	14.5	16	1-50	2006: TS# 13-98. Cut all but no red pine or green marked. TCR 12/99. Aspen clearcut with pine and oak reserves. Response on residual red pine after thinning. Red pine regen mixed in! Maybe should wait and see if more rp regen developes. Maybe should take out most of the red pine before it gets trapped by the aspen. 2016: Fully stocked stand from second age. Call 16 yr class as dominate stand with pine/oak super canopy.
11	4133 - Aspen, Mixed Pine	Sapling Well	19.6	26	Unspecified	2016:Clear-cut 1990 . Some green marked retention. Very well stocked with aspen and white pine. White pine is keeping up with aspen



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
12	4122 - Oak, Pine	Sawtimber Medium	41.5	110	51-80	TS# 080-08 TCR 11/12 Cut orange marked and all aspen. Marked for crop tree release where quality trees were found and to open canopy for understory development in areas of lower quality. Cut with stand across lane. Two ages of oak in stand. 2016: light understory forming of rm, wp ,aspen.
14	42200 - Natural White Pine	Sawtimber Well	1.2	125	81-110	Small strip between private property and bog. Needs checked for trespass if time allows. Not accessible but through private property.
15	4191 - Mixed Upland Deciduous with Conifer	Sawtimber Well	17.3	80	111-140	2006: This stand and others in the ownership in section 4 should be designated as a SCA. Arbutis Lake Campground. Manage for recreation. Nice mix of oak and aspen with n hardwoods. Some birch and hemlock mixed in. 2016: Factor limit for recreation. Topography is rolling with some steep areas.
19	4199 - Other Mixed Upland Deciduous	Sawtimber Well	47.2	90	111-140	2006: Some Nice Oak/N Hardwood mixed with pine/aspen. Corners located. Pathway goes through. Hemlock band along slope going down to Chandler Lake. North of the road, the stand is low quality and ba-more ironwood and beech regen. But. north of that, the quality and mix is quite nice. Most of the aspen south of the road is pole/sm log size. Aspen to north is large log. South Central part of the stand has the most aspen but mixes more toward hardwoods and oak on both sides of that band. Trail to Chandler Lake on north part. Road to campground through South part of stand. Factor limit for recreation. Most of the White birch is falling out of stand. and most ash has EAB-not all dead. Only light beech scale at this time.
21	4122 - Oak, Pine	Sawtimber Well	7.3	117	51-80	part of TS# 080-08. Harvested 6/11. Thinned mixed pine and oak stand. Removed all aspen and red maple and orange marked 2016: Red maple, aspen and white pine forming new age under canopy. Most white pine in sub canopy was present at time of harvest. Not much evidence of new recruitment yet.
22	42290 - Natural Mixed Pine	Sawtimber Well	21.2	150	201+	Very cool stand. Big old RP, WP, around bog with RO, WO, RM, SM, Beech Hemlock coming up under. This stand and others in the ownership in section 4 should be designated as a SCA. Arbutis Lake Campground. Manage for recreation. 2016: Pine on west side of boat launch access road is generally younger -aged 70. pine in other parts of stand is 150 age. Hiking trails laid out from campground. Factor limit for recreation and unique character.
23	4199 - Other Mixed Upland Deciduous	Sawtimber Well	9.4	80	141-170	Aspen/oak pine mix along lake. Factor Limit for riparian concerns.
24	4130 - Aspen	Sapling Well	17.2	26	Unspecified	2006: Aspen clearcut with pine reserves cut in 1990. A couple open areas with poor regen. 2016: Good stocking and growth. let stand develop.
26	42110 - Planted Red Pine	Sapling Well	6.5	24	Immature	Pocket of red pine planted in oak/aspen clearcut. TS # 038-88 TCR 9/1990.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
28	4129 - Mixed Oak	Sawtimber Well	107.1	95	111-140	2006: Red Maple looks pretty good. Enough older/larger oak and small logs to carry a sale. Good enough quality to mark for crop tree release in good spots and shelterwood in places with lower quality. Good clear height on logs. 2016: Large area of older oak/pine mix with wp coming in under. Stocking, species mix and diameters vary throughout stand but it is all basically older declining oak converting back to white pine. Treatment not completed from 2006 YOR. Small expansion on the east end of stand 29. Merged back into stand 28. Northeast part of stand has more of an old barrens look. Northwest part of stand has lower stocking and better form and quality. Some areas have more white pine mixed in while some other areas are heavier to oak. Understory white pine in variable also but generally moderate to heavy 10-20'. It appears to be a multi-aged layer. Possible oak wilt spot in SW near stand 98.
30	4191 - Mixed Upland Deciduous with Conifer	Sawtimber Well	15.3	140	111-140	Part of DNR Access site and boat launch.
33	4126 - White, Black, N. Pin Oak	Sawtimber Poor	28.5	129	1-50	2006: Heavy white pine regen under old oak and pine. TS# 074-08. TCR 11/13. Retained green marked oak and pine and attempted to protect white pine understory. Expect stand to convert to white pine/oak/rm/aspen mix. 2016: not much new regeneration yet. Some sprouting but getting browsed off. Some wp left after harvest in various ages. Some wind throw or large retained oak from Aug 2015 storm. Let stand develop or consider planting?
34	4129 - Mixed Oak	Sawtimber Well	19.3	95	111-140	2006: Red Maple looks pretty good. Enough older/larger oak and small logs to carry a sale. Good enough quality to mark for crop tree release in good spots and shelterwood in places with lower quality. Good clear height on logs. 2016: Large area of older oak/pine mix with wp coming in under. Stocking, species mix and diameters vary throughout stand but it is all basically older declining oak converting back to white pine. Treatment not completed from 2006 YOR. Small expansion on the east end of stand 29. Merged back into stand 28. Northeast part of stand has more of an old barrens look. Northwest part of stand has lower stocking and better form and quality. Some areas have more white pine mixed in while some other areas are heavier to oak. Understory white pine in variable also but generally moderate to heavy 10-20'. It appears to be a multi-aged layer. Possible oak wilt spot in SW near stand 98.
36	4129 - Mixed Oak	Sawtimber Well	0.2	110	51-80	Small lot on south side of spider lake. Needs to be sold.
38	4124 - Red with White Oak	Sawtimber Medium	61.2	130	51-80	Thinned @2000. TS# 124-98. Cut all merch jp, rm, dead oak and orange marked. TCR 10/01 Oak and pine regen slowly developing. 2016: Mixed ages of pine with old oak, Fat tire bike trail. Should we manage this for all ages? Oak regen is betting browsed but some is growing through. Was treated in past with Stand 39 to south. Consider opening the canopy further or looking for some well lying ground to final harvest and plant.
39	4124 - Red with White Oak	Sawtimber Well	61.1	110	51-80	TS# 024-98. Cut all merchantable rm, jp, dead oak and orange marked. Riparian area along lake was not treated Stand 38 was part of treatment. 2016: Old oak with pine and white pine/rm/oak coming in under. A note-able amount of the wp understory has been leveled by snow. Scattered big old white pine and oak.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
40	4310 - Pine, Oak Mix	Sawtimber Well	5.2	70	81-110	Pine Draw with mix of large old SCATTERD PINE AND OAK 20-30" dbh 120 yr old pine/OAK and younger age class filled in. All in canopy call. Some areas are open. Factor limit for water quality and slopes.
42	42260 - Natural Pine, Mixed Deciduous	Poletimber Medium	14.7	70	51-80	2006: Part of this stand was thinned in 2000-2001. Leave for younger age class to develop. Older oak and pine scattered around 90-100 yr. and younger age class -60 yr. Also some 45 yr. 2016: Jp ages 55-70. Stand follows drain. Stand is starting to break up and should be harvested if nearby. May also consider just letting jp fall out of stand. Will likely be replaced by wp with some oak.
44	4124 - Red with White Oak	Sawtimber Poor	152.1	109	1-50	2006: Younger stand of aspen and wp just east of lake was added to this stand because it could not stand alone. Keep this out of any treatment. Could take some wolfy and junky oak out and let pine understory go. Take out jp pockets. Could thin pockets of pine regen. TS# 107-11. TCR 11/13. Green marked oak and pine retention @20-40 ba. Expect regeneration of oak, aspen, white pine, jack pine, red maple. Stand had a good bit of white pine understory that was retained as possible. Some pockets of younger aspen/white pine left as islands. 2016: Not much new in understory-some aspen and oak sprouting but getting browsed heavily. Pockets of white pine and a little red pine left from last harvest in understory.
45	4122 - Oak, Pine	Sawtimber Poor	35.2	122	1-50	TS# 076-08. TCR 11/13. Retained scattered green marked oak and pine. Attempted to protect advanced white pine regeneration. Expect stand to form new age of white pine, oak, rm, and planted red pine. 2016: Good bit of wp saplings left after harvest-patchy. Not much other regeneration yet. A little rm, oak, aspen but most is getting browsed off. Some of the retained oak blown down in august 2015 storm.
46	4121 - Oak, Aspen	Sawtimber Medium	6.3	130	51-80	Part of stand was thinned 1999-2000. Looks like only the east part of this stand-top of slope was treated. Cut all rm, jp, dead oak and orange marked. YOE. Oak and pine regen slowly filling in. The steep part of this should be factor limited for steepness and water-Indian Lake. White pine is trying to grow into this stand- too much oak over story left. A lot of the established wp understory has been damaged by snows. Some of the red oak looks to be better quality-not so much pin oak. Some big scattered pine around would probably seed in most of stand if left. Could cut out most of the oak to regenerate and release advanced wp in understory. Look at treating if adjacent stands are treated. May want to treat the stands in this area with a mix of treatments.
47	4122 - Oak, Pine	Sawtimber Well	8.7	110	51-80	Marked sale 2000. Cut all red maple, jack pine, dead oak and orange marked. This stand was part of sale area but most of this was not cut -likely due to the steep slopes and low value. Separate the area and factor limit -too steep. Not much regen has developed. A small amount of oak stump sprouts.
48	4131 - Aspen, Oak	Sapling Well	5.5	26	Unspecified	2006: Good aspen and oak regen in clearcut. Sale #031-88-01 TCR 1990 Left Pine 10" dbh or less.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
49	4126 - White, Black, N. Pin Oak	Sawtimber Well	15.8	100	51-80	Part of marked timber sale @ 2000. Cut all merchantable jp, rm, dead oak and orange marked. Poor quality oak over-story remaining with white pine understory. May be desirable to remove some of the over-story to release new age but excessive damage to advanced regeneration may occur. Multi-aged pine in understory.
50	4126 - White, Black, N. Pin Oak	Sawtimber Well	15.6	110	81-110	2006: Very large and old scattered oak 20-30" dbh with jp, oak and wp in overstory /openings. SI Tree WP 60 11.9" 72' Stand is going to wp and it looks good east of the road. Could take out most of the big oak and thin 80 year old class to make openings for the wp to go. 2016: Older oak and pine with wp coming in under. Some legacy trees. A lot of the advanced wp regeneration is broken down from the snow. Depression in SE with wp poles and some jp. These stands need to grow in (new age -pine in understory) but getting some of the poor quality oak out may help to release new age.
51	4129 - Mixed Oak	Poletimber Well	6.5	130	81-110	Hodge/Podge of older oak and pine that's filled in with oak, jp, wp, rm, aspen Steep area around lake. Factor Limit for slopes and riparian concern.
52	4124 - Red with White Oak	Sawtimber Medium	116.8	110	51-80	2006: Area in NE part of stand with heavy white pine regeneration. New well site in stand that isn't on imagery. Oak wilt pocket a 44.40.53.284N, 85.27.52.724W. TS# 085-08. Marked for crop tree release in areas with better quality oak and as a shelter-wood in areas with low quality. White pine understory thick in places but this pine was knocked down a good bit by the heavy snow in March 2012. TCR 3/30/12 2016: Not much new understory forming yet. White pine and a little red pine left from last harvest is still in understory. Some oak stump sprouts and a little aspen in spots. Sprouts are getting browsed heavily. Some mortality in Red Oak that was left in canopy. May just be decline, stress.
53	4126 - White, Black, N. Pin Oak	Sawtimber Well	41.1	130	51-80	20016: Pine and oak over-story with some aspen. White pine growing in under (seedlings -poles) along with a little red pine. More pine in canopy along west side near lake. Some old pine scattered around. Some areas with thick understory white pine. Let stand develop. This stand makes some good diversity with the surrounding stands recently harvested. Looks like trespass in SE part of stand along lake. Concrete monument found on section line just north of Scout Camp Road. It this is correct house to south should be on state ownership. Plat of pinewood shores sub. shows lot 20 on east side of section line. There is a house on the west side?
54	4199 - Other Mixed Upland Deciduous	Sapling Well	20.8	26	Immature	2006; 16 yr old clearcut Nice aspen regen and good areas of heavy oak regen. 2016: ASPEN REGEN GOOD IN CLONES. some of the oak from sprouts is 3-4 "dbh but most is 1-2". Two rotations of aspen may grow before the oak makes small logs.
57	42111 - Planted Red Pine, Mixed Deciduous	Sapling Poor	9.8	4	Immature	2006: TS# 085-08. Harvested jack pine stand leaving scattered oak and pine for retention. Harvested 2010. Trenched and planted 2011-12. Trench and plant red pine to supplement what natural jack pine regeneration that we get along with oak and maple sprouts 2016: A fair amount of sprouts from oak, maple and cherry. Planted red pine. looks fine. Oak and maple getting browsed.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
60	4124 - Red with White Oak	Sawtimber Poor	48.1	120	1-50	2013: TS# 073-08. TCR 11/12. Cut back to barrens look. Retained mix of well crowned oak and some pine. TMS will evaluate possibility of trenching and weaving in red pine around retained trees. Two ages of oak were in stand 10-40 ba of oak left from last harvest. 2016: Terminated trenching next step. Good amount of evenly distributed oak stump sprouting with some red maple and aspen. Stand is getting browsed. Let stand develop.
62	4310 - Pine, Oak Mix	Poletimber Well	24.6	65	81-110	2006 jp 53 yr 9.7" 53' rp 55yr 12.5" 56' rp 52yr 8" 48' Should this JP be cut and replanted to rp? The jp seems off site, but the red pine looks good. Some pockets of aspen. Some rp growing through and a couple old seed tree red pine. JP could go another cycle. Still looks alright. Keep and look at 2016: East side of stand is more oak small logs/poles. Most is pin with some white oak. Lots of pin oak with some white oak in understory especially under jack pine which is mainly on the west side of the stand. Jack pine is declining and falling out of stand with pin oak replacing it. This site would grow good pine but dominated by this low quality oak. The jack pine should come out if there is enough to make a commercial treatment. Could also remove the poor formed oak. Another option would be to just let the jack pine fall out and be replaced by oak.
63	4126 - White, Black, N. Pin Oak	Sawtimber Well	28.0	130	1-50	2006: Mix of older open oak and younger pockets of regen. Both layers counted in canopy call. Some aspen growing in. Still has savannah look. 120 yr age +60 yr.+ young age class (age 26). TS# 03-88. Cut to 2" but do not cut any oak. 2016: Let stand develop. Oak is of various ages as all was left at last harvest. All called in canopy. Still growing in to gaps. Some aspen and red maple growing in understory. 10-40 ba of older oak left from last harvest with oak, wp,jp, rm, aspen growing in under.
64	4126 - White, Black, N. Pin Oak	Sawtimber Well	6.0	110	51-80	2006: Looks like pre inv stand 75 but not opened up. Just big open oak 2016: Older oak with some jp and smaller oak logs. Small stand like this may be good for diversity in this area. State Land is posted -a good distance from private line that seems to be known. Old wire and old signs in proper place.
65	4122 - Oak, Pine	Sawtimber Well	6.5	110	81-110	2006: Let stand grow in more. Older scattered oak,wp,rp with 40 year old regen, mostly wp but going to nice mix with oak and aspen ,rp mixed in. 2016: Keep stand for diversity at this time between younger age classes. Oak is poor quality but pine has pretty good growth on this site. Older age of pine is 80 but there are younger age classes grown in. More white pine on east edge.
66	42110 - Planted Red Pine	Sapling Well	18.4	24	51-80	2006: Same cut as pr-inv stand 76. Red pine planted and jp seedling in. Cherry and oak also competing for site. 2016: TS# 038-88. TCR 2/90. Cut to 2" but do not cut aspen regen. Red pine showing decent growth. Crown ratio 50-75%.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
67	4126 - White, Black, N. Pin Oak	Sawtimber Medium	10.3	115	1-50	2006: WO 105 yr 77' 14.5" Cut to a shelterwood in past. (1998? possible 1988 but probably not) Cut most of the Aspen and RM and left oak and pine. Could cut out most of the shelterwood trees and let it go. Wait another cycle. 2016: let this stand grow in. Second age has formed to the point that it would be damaged beyond agreeable by trying to remove over-story at this time. Good aspen regen in pockets. Areas without aspen are not well stocked in the understory. Most of the oak sprouts and seedlings are getting browsed and not advancing. There are some pockets of oak that have made it above browse line. Consider harvesting this stand when the aspen becomes merchantable. Aspen will likely expand at that time.
68	42111 - Planted Red Pine, Mixed Deciduous	Sapling Well	22.3	24	51-80	Planted red pine-many failed and cherry filled in. bad start but is growing the last couple years. Where red pine stocking is full it looks fine. Other areas are pretty patchy with a lot of cherry brush. A good bit of oak in understory in places. Good bit of leader damage on red pine (weevil?) Crown ration 50-75% on interior red pine.
69	4124 - Red with White Oak	Sawtimber Medium	57.0	110	51-80	2006: Harvested with TS# 085-08. Marked for crop tree release where better quality stems were found or shelter wood where oak was poor quality. White pine in understory was knocked back by wet snow in March 2012. 2016: Not much new regeneration. A little rm, bc and oak sprouting, Maple and oak getting browsed.
70	4130 - Aspen	Sapling Well	3.0	18	Unspecified	Part of Aspen clearcut in comp 43 1996 yoe
72	42221 - Natural Jack Pine, Mixed Deciduous	Poletimber Well	11.4	60	51-80	2006: JP starting to decline but could go another cycle. Lots of wind shear out by the road. Slash would be an impediment to planting. 2016: prescribed with C 47 treatments. CC with retention and plant rp. JP 47 years 10.3" 50' RP 16.6" 65 yr. 55'
74	4191 - Mixed Upland Deciduous with Conifer	Poletimber Well	34.2	70	111-140	2006: MOST IS YOUNGER OAK AND PINE IN POCKETS WITH SCATTERED OLDER TREES. LET DEVELOP. 2016: Adjusted stand boundaries to try to get this stand more uniform. older oak and pine in over story (100Yr +) with dominant age @70. Some areas are heavier in old component in overstory. Let this stand grow in. May want to mark a thinning next entry? Stand is complicated.
76	4122 - Oak, Pine	Sawtimber Medium	42.3	110	1-50	2006: Good bit of oak regen 1-3 ft high and some moving through. Cut aspen and Jp to open up. 2016: Low stocked Oak and pine canopy (10-40 ba) with new age class forming under. Age estimated @ 15-20. Looks like all pine was left in last harvest so various ages of white pine are found in sub-canopy. Some jp left in canopy but greatly reduced since last inventory. Some areas have heavy white pine in understory while others are heavier to oak saplings.
80	4124 - Red with White Oak	Sawtimber Poor	23.7	95	1-50	TS# 079-08. Cut back to well formed oak and a few pine to replicate barrens look. Must maintain with periodic prescribed fire. 2016: Burned 2015 for first time. Good heat and affect for first burn. Set back some pine and red maple. Continue periodic burns.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
81	42141 - Planted Mixed Pine, Mixed Deciduous	Sapling Well	32.7	26	51-80	TS# 040-88. TCR 3/90. Cut to 2" but no oak. Red pine planted through open oak stand. JP and Wp seeding in and oak growing in as well. Nice mix. Good bit of oak poles and saplings mixed in as well. Good height growth.
82	4126 - White, Black, N. Pin Oak	Sawtimber Poor	6.1	129	1-50	Part of timber sale # 079-08. This part of the sale had a bit of mature aspen and oak with oak wilt issues. Left scattered oak and pine and harvested remaining stems to regenerate stand. Trenched and planted red pine in areas without aspen regeneration. Expect regeneration of aspen, maple, oak pine. The east side of this stand was not in the harvest but is too small to break out as separate stand. 2016: Regeneration is not impressive at this time. Look for stand to fill in in next few years.
87	42111 - Planted Red Pine, Mixed Deciduous	Sapling Medium	11.0	26	Immature	TS# 040-88. TCR 3/90. Cut to 2" but no oak. Not sure what the mounds are from. Red pine planted among widely scattered oak. Wp, Jp and some oak coming in as well. 2016: Good height growth on red pine in last decade. Fair amount of oak saplings growing with pine.
89	4124 - Red with White Oak	Sawtimber Poor	101.4	94	1-50	2006The Ba isn't very high in this stand but not much is growing in. Recommend opening up more -taking aspen and jack pine and weaving red pine through openings. Take out some XL oak to create larger openings. Much of the current stand is poor quality stump sprouts. TS# 079-08. Cut and chipped all to 2" except green marked oak and pine. Harvested 2012. Trenched and planted red pine Fall 2013. 2016: Called residual as canopy. Should shift canopy to second age as understory advances. Good bit of rm sprouting getting past browse stage. Oak seedlings getting browsed heavily. Some have advanced. Some pockets of aspen sprouting in places. Red pine was fall planted with 1/0 seedlings. Had slow start. May not compete well with hardwood sprouting but deer browsing may delay oak advancement in understory. Trespass with Woods and Water Condominiums. Sold a small piece of state ground to resolve trespass
90	4191 - Mixed Upland Deciduous with Conifer	Sawtimber Medium	10.6	109	51-80	Retention area around low area. Left from surrounding harvest. Trespass in NW corner of left side by the lake resolved with land transfer.
91	4122 - Oak, Pine	Poletimber Well	7.5	95	81-110	Low stocking of oak and white pine in canopy with white pine understory. Thick white pine understory in places with some jack pine and red pine. Fully stocked pine canopy in western edge of stand. East finger is more oak canopy. Stand is remnant from various surrounding treatments and small "different" parts of stand are not big enough to stand alone. Let understory pine develop at this time
93	4191 - Mixed Upland Deciduous with Conifer	Sapling Poor	13.5	15	171-200	2006:TS# 013-98 TCR 99. Clearcut and planted to JP. Not much survival. Oak on ground may come on. JP doesn't look too good. 2016: Jp is poor. Oak is filling in a bit. Good bit of cherry brush. Area east of and around this stand is managed as barrens area. West is newly harvested and planted. This stand is good for diversity.
95	4126 - White, Black, N. Pin Oak	Sawtimber Well	17.6	110	81-110	Too steep to manage Steep bank off road





	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
96	4123 - Red Oak	Sawtimber Well	28.1	94	81-110	2006: Cut aspen pockets out of this stand. New stand formed. (stand 97) 2016: Small oak logs with wp, rm, wp. Good bit of wp understory in places. Red pine grew well on this site but has been stagnant last 30 years. Factor limit area along lake. Due to visual concerns along road and riparian concerns with lake there is not much to manage in this stand.
97	4130 - Aspen	Sapling Medium	6.7	4	Immature	Harvested with TS# 077-08. Two pockets of heavy aspen were harvested with the expectation of a couple nice regeneration pockets with aspen, maple, pine. Regeneration has not developed at this time. It appears that heavy browsing by herd around the lake has set back sprouting. Re-check this after 2012 growing season to see if the regen develops. 2016: Residual oak scattered around with good aspen regeneration. Call age 4 first age
98	4122 - Oak, Pine	Sawtimber Poor	16.6	100	1-50	TS# 080-08. Harvested 6/11. Cut all aspen, red maple and orange marked. Stand was heavier to aspen. Expect good aspen regen. 2016: Mix of aspen, red maple and white pine in understory. Some areas on the west side of Hobbs are not real well stocked but some areas are good.
99	4124 - Red with White Oak	Sawtimber Medium	46.9	117	1-50	TS# 080-08. Harvest 2011. Residual canopy of oak and pine with second age forming in sub-canopy. Good red maple stump sprouting after harvest. Not many oak stump sprouts. Not many new white pine seedling since harvest which was expected but there is a good bit of residual white pine saplings that were present at harvest. New age class will likely consist of predominately red maple and white pine with some oak and aspen. Some areas have oak seedlings, 3' which are heavily browsed.
102	4129 - Mixed Oak	Sapling Well	22.1	16	1-50	TS# 013-908 TCR 12/99. Cut all trees but no red oak. SW part of this stand was not part of this sale but was excluded from the sale that surrounds this sale so this piece was added to this stand due to its size. It was excluded from sale due to the amount of advanced pine regeneration. This part of the stand has oak/pine canopy with heavy wp understory. The rest of the stand has oak residual with oak/aspen/wp filling in gaps. A little rp also.



Stand	Cover Type	Acres	Managed Site	General Comments:
2	110 - Low Intensity Urban	6.6	No	Recycling Transfer Station
4	500 - Water	3.1	No	
8	3105 - Mixed Upland Herbaceous	11.1	No	Pipeline
13	6225 - Bog	3.2	No	Bog on edge of Arbutus Lake
16	500 - Water	1.3	No	Arbutus Lake
17	3105 - Mixed Upland Herbaceous	3.0	No	Oil well pad/ landing at N end w/ good grass component.
18	6225 - Bog	7.2	No	Bog near Arbutus Lake Campground
20	500 - Water	10.4	No	Vandervoight Lake
25	6239 - Mixed Emergent Wetland	0.2	No	edge of Indian Lake
27	3105 - Mixed Upland Herbaceous	1.0	No	
29	31022 - Warm Season Grass	8.0	No	Trash. St. Johns Wort, Bearberry, Juneberry
31	3302 - Low Density Conifer Trees	1.3	No	
32	110 - Low Intensity Urban	1.0	Yes	Spider Lake Boat Launch
37	110 - Low Intensity Urban	6.7	No	Supply Rd
41	500 - Water	20.2	No	Indian Lake
43	500 - Water	2.6	No	Danzer Lake
56	6233 - Wet Meadow	1.1	No	Iris
58	3104 - Degraded	1.8	No	



Stand	Cover Type	Acres	Managed Site	General Comments:
59	3104 - Degraded	2.2	No	Limit access to stand, soils need major conditioning. Location would make a nice wildlife opening.
61	110 - Low Intensity Urban	1.1	No	Supply Rd
71	3201 - Sweet Fern	2.1	No	
73	6233 - Wet Meadow	1.0	No	Snags, mixed forbs. Iris, thistle, horse mint
75	3104 - Degraded	3.9	No	North pad still in use. Hawkweed, Milkweed.
77	3104 - Degraded	2.8	No	eed soil reconditioning, seeding and possibly fenced off from road. Milkweed 3 Hen turkeys bugging.
78	3105 - Mixed Upland Herbaceous	3.6	No	Nice component of Little Bluestem established in the S 1/2. fair amount of Spotted Knapweed in the N end. Soil & cover restoration, work w/ existing Little Bluestem. Mullin and 1 Juniper.
79	6233 - Wet Meadow	4.9	No	Appears Jack pine snags along perimeter. Iris, Goldon Rod, Asters and misc. forbs.
84	3104 - Degraded	1.4	No	Should be supplementary seeded with grass ssp. to enhance herb. cover & build soils. Pines on perimeter should make good cover for critters using opening. Other species include: Hoary alysum, timothy, aster and milkweed.
85	3104 - Degraded	1.9	No	Not in terrible shape for an old well pad. Could use some seeding & soil conditioning. Deer tracks. Pussy toes, Milkweed, Hawkweed, Mullin, Golden Rod, Hoary wood, Yarrow.
88	6233 - Wet Meadow	2.5	No	ORV trespass from adjacent landowner. Powerline bisects stand.
92	110 - Low Intensity Urban	6.2	No	Ranch Rudolph Rd
100	122 - Road/Parking Lot	3.4	No	Rennie Lake Road ROW