



Compartment Review Presentation

Roscommon Forest Management Unit

Compartment 17

Entry Year 2016

Acreage: 642

County Roscommon

Management Area: Upper Muskegon

Revision Date: 06/24/2014

Stand Examiner: Doug Bates

Legal Description:

T24N R03W Sections 3, 9, 10, 15, and 16

Identified Planning Goals:

Maintain a diversified forest in both species and age classes benefiting both natural users and human alike.

Soil and topography:

Terrain is rolling to moderately hilly in Sections 3 and 10 to slightly rolling, flat in Sections 15 and 16. Soils are Roselawn, Grayling, and Saugatuck sands.

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

The compartment consists of several blocks intermixed with private property. The private is mostly developed with single residences or subdivision interfaces. The Northeast third of Section 3 containing state land is inaccessible due to I-75 and private property.

Unique Natural Features:

Pioneer Hill is an elevated ridge running through the compartment. It gives a nice view of southern Crawford County and the northern portion of Higgins Lake.

Archeological, Historical, and Cultural Features:

There are known concerns within the compartment. All proposed management activities have taken these concerns into consideration.

Special Management Designations or Considerations:

No special management needs found.

Watershed and Fisheries Considerations:

None noted.

Wildlife Habitat Considerations:

None noted.

Mineral Resource and Development Concerns and/or Restrictions

Surface sediments consist of ice-contact and glacial outwash sand and gravel and postglacial alluvium. The glacial drift thickness varies between 200 and 400 feet. Beneath the glacial drift is the Mississippian Michigan Formation. The Michigan is quarried for gypsum in other areas of the State. Most of the good gravel pits are associated with upland areas. The nearest gravel pit is located in Section 11 and potential appears to be good. St. Helen Field lies nine miles to the east. The field has produced over 8.7 million BO and 14.7 Bcf gas from the Devian Richfield Formation, and is in secondart recovery operations currently. All of the State minerals in the compartment are currently leased.

Vehicle Access:

The compartment is broken up by highly traveled County Roads leading to the numerous residences surrounding Higgins Lake. Almost all parcel blocks have one or more forest roads transecting them allow for access along with a few containing illegally constructed ORV trails leading off of private parcels onto public land without permission.

Survey Needs:

None. Most of the private parcels are already surveyed with well identified corners.

Recreational Facilities and Opportunities:

The blocks receive heavy use ranging from hunting to hiking particularly by the private residences that immediately adjoin the public land or are in close (walking distance) proximity to the land. Most usage is outside the winter months except for

the Cross-Country Ski Trail that is privately run under a land use agreement in Sections 15 and a portion of 10. The trail is groomed and is a very popular destination during the winter months.

Fire Protection:

Lack of pine fuels in compartment make fire suppression a moderate problem. There is a lot of residential development and this makes wildland-urban interface an issue.

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 & Treatment Map

Legend

- Miris Corners
- + Remonumented Section Corners
- ◆ PLSS Corner
- Highway
- County Paved Roads
- Paved Roads
- County Gravel Roads
- Gravel Roads
- - Poor Dirt Roads
- - County Poor Dirt Roads
- Pipeline
- Powerline
- - - Ski Trail

Regen Legend

- ▲ Natural
- ▲ Planted

Treatments

- /// Thinning (Crown, Low, Systematic)
- |||| Shelter Wood (w/Reserves)
- |||| Seed Tree (w/Reserves)
- Clearcut (w/Reserves, Patch/Strip)
- ◆ Treatments w/ Site Condition

Forest Stands

- Level 3
- 412 - Oak Types
 - 413 - Aspen Types
 - 419 - Mixed Upland Deciduous
 - 421 - Planted Pines
 - 422 - Natural Pines
 - 429 - Mixed Upland Conifers
 - 431 - Upland Mixed Forest
 - 612 - Lowland Coniferous Forest

Non-Forest Stands

- Level 3
- 110 - Low Intensity Urban
 - 122 - Road/Parking Lot
 - 310 - Herbaceous Openland
 - 330 - Low-Density Trees
 - 622 - Lowland Shrub
 - 623 - Emergent Wetland
 - Lakes and Rivers
 - State Forest Land

Stand # **23**

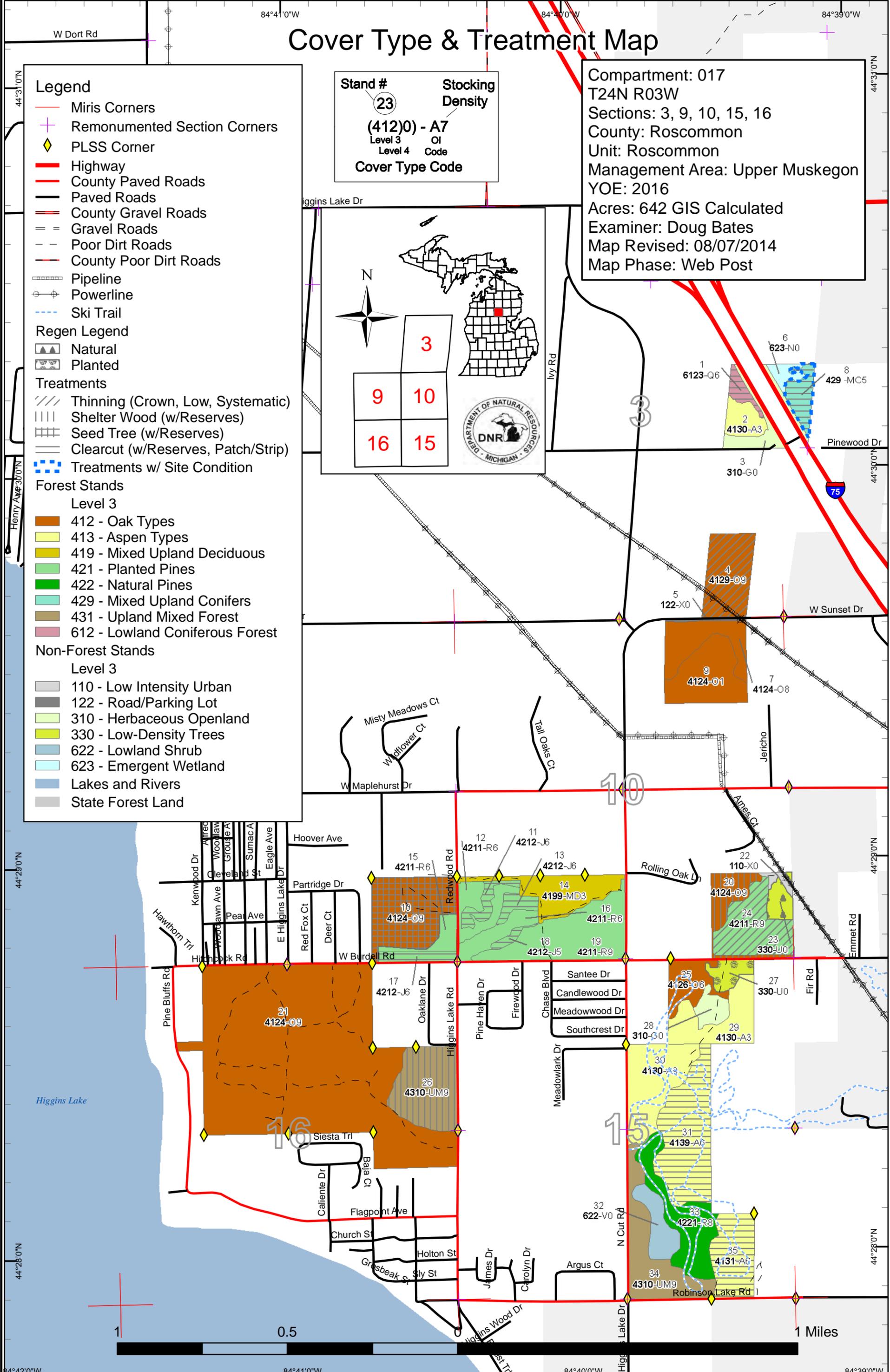
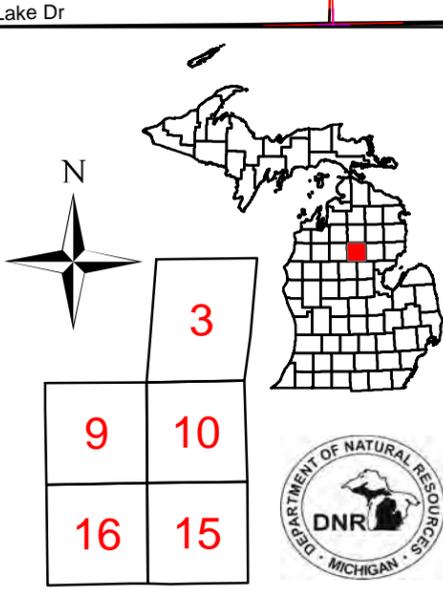
Stocking Density

(412)0 - A7

Level 3 OI
Level 4 Code

Cover Type Code

Compartment: 017
T24N R03W
Sections: 3, 9, 10, 15, 16
County: Roscommon
Unit: Roscommon
Management Area: Upper Muskegon
YOE: 2016
Acres: 642 GIS Calculated
Examiner: Doug Bates
Map Revised: 08/07/2014
Map Phase: Web Post



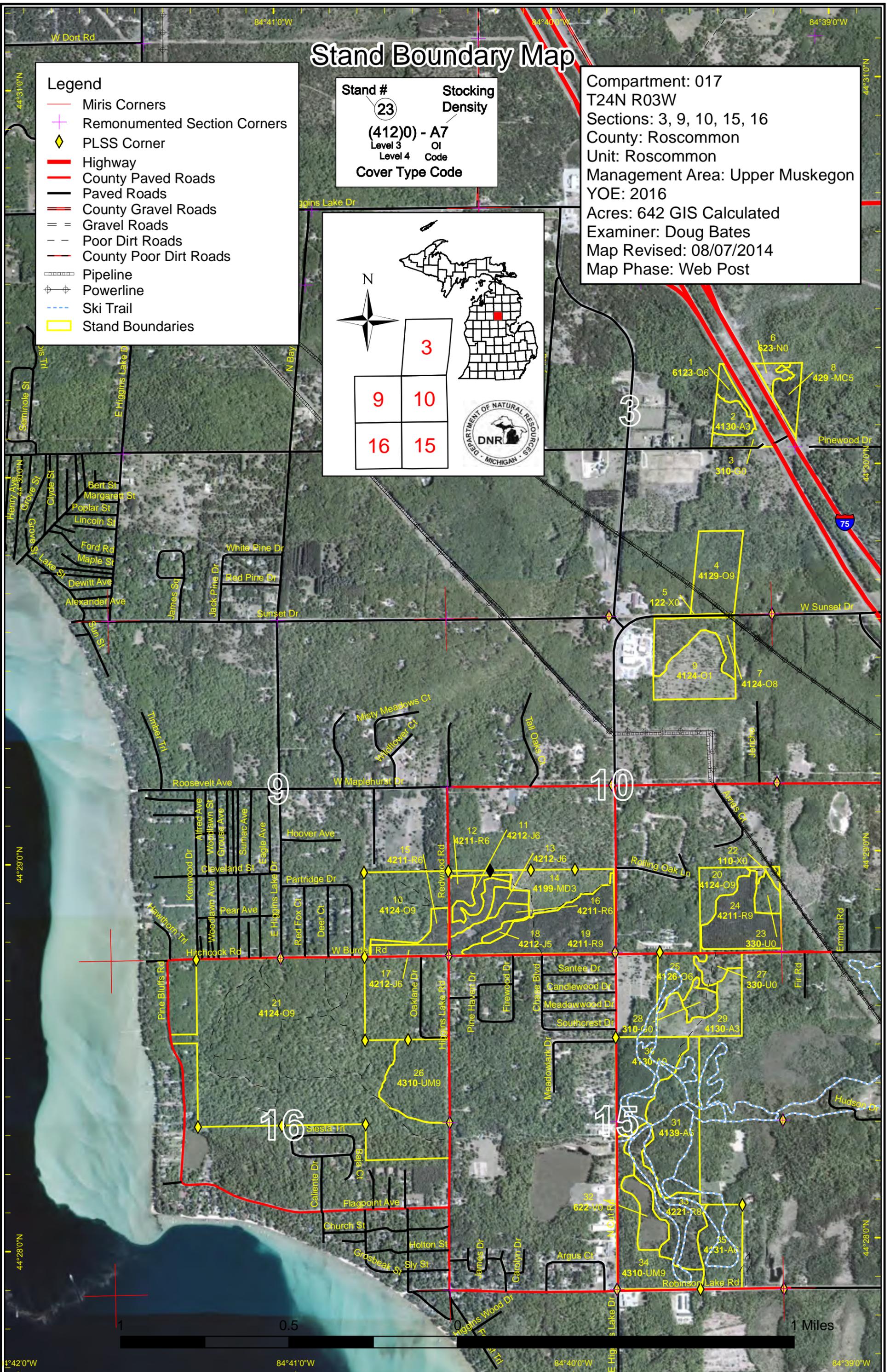
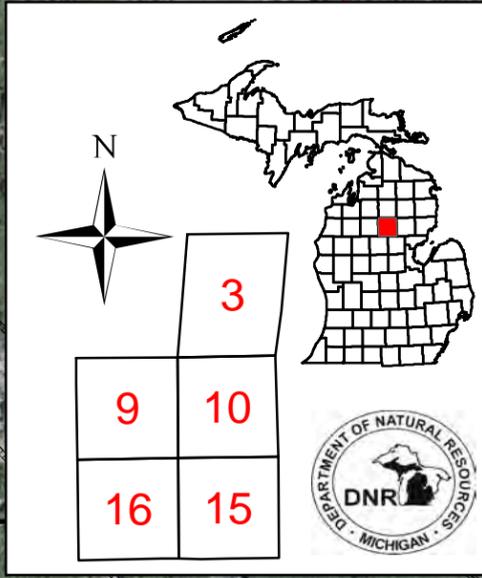
Stand Boundary Map

Legend

- Miris Corners
- + Remonumented Section Corners
- ◆ PLSS Corner
- Highway
- County Paved Roads
- Paved Roads
- County Gravel Roads
- Gravel Roads
- - Poor Dirt Roads
- - County Poor Dirt Roads
- Pipeline
- Powerline
- - - Ski Trail
- Stand Boundaries

Stand # **23**
(412)0 - A7
 Level 3 OI
 Level 4 Code
Cover Type Code

Compartment: 017
 T24N R03W
 Sections: 3, 9, 10, 15, 16
 County: Roscommon
 Unit: Roscommon
 Management Area: Upper Muskegon
 YOE: 2016
 Acres: 642 GIS Calculated
 Examiner: Doug Bates
 Map Revised: 08/07/2014
 Map Phase: Web Post

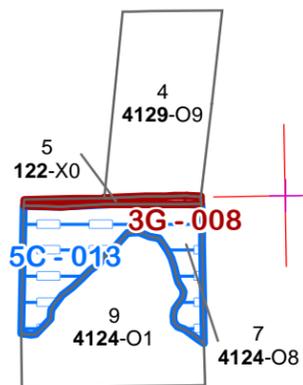
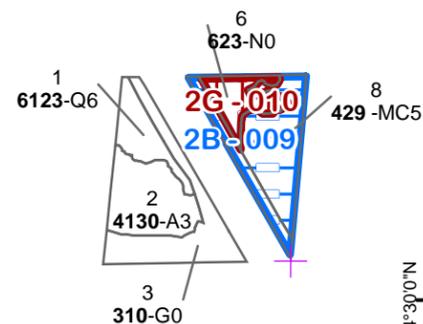
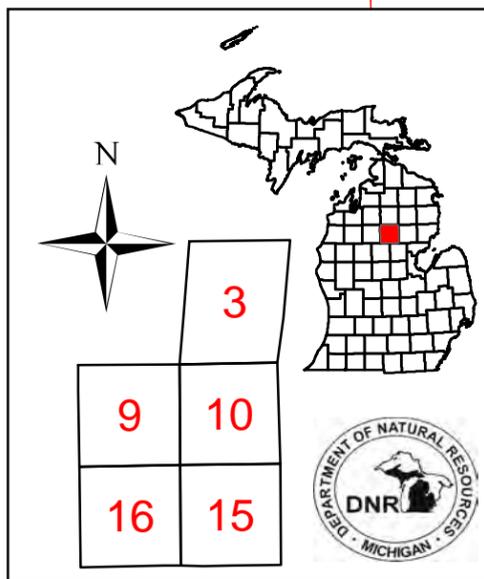


44°31'0"N 84°41'0"W 84°40'0"W 84°39'0"W 44°28'0"N 44°29'0"N 44°30'0"N 44°31'0"N

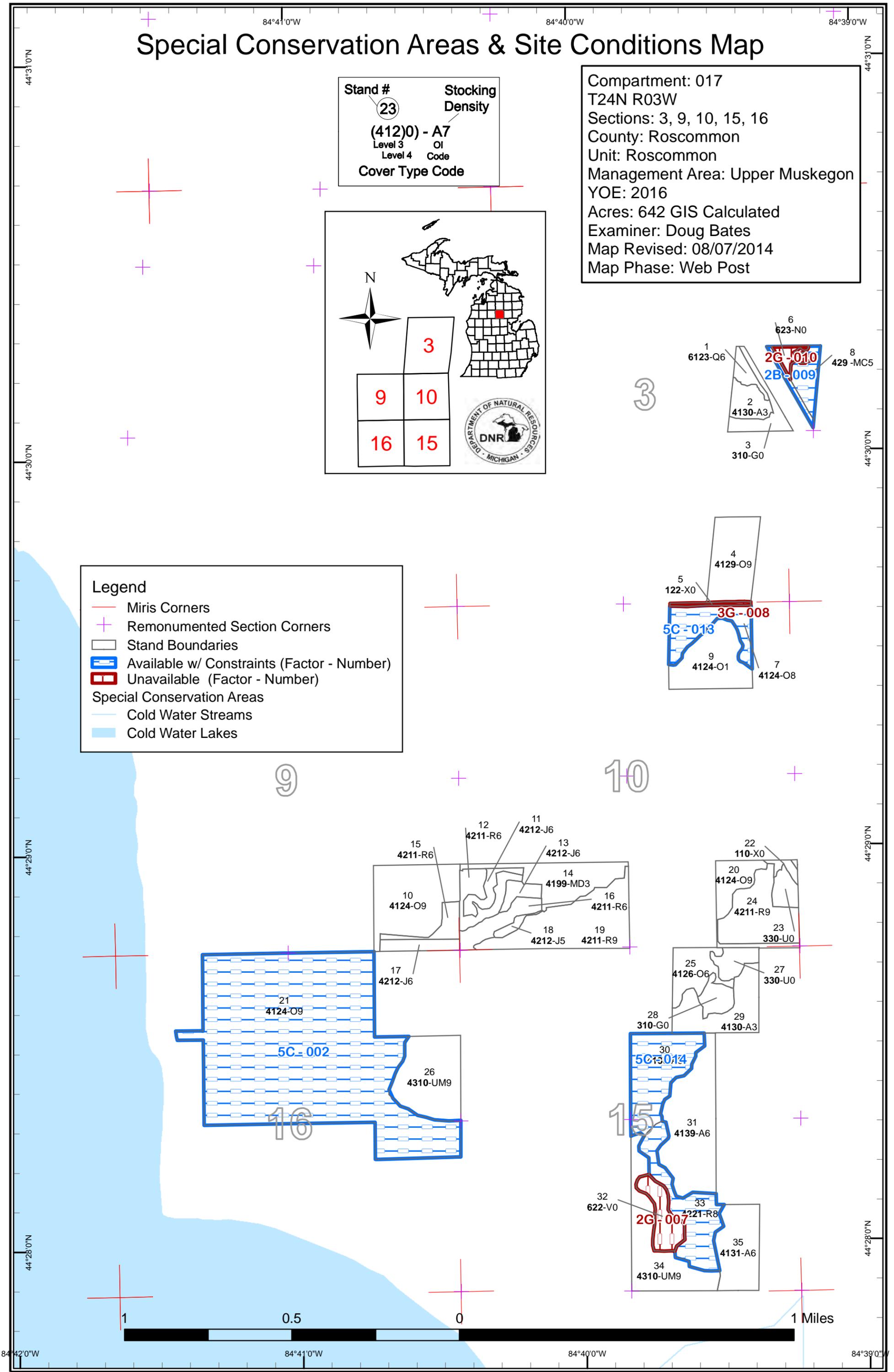
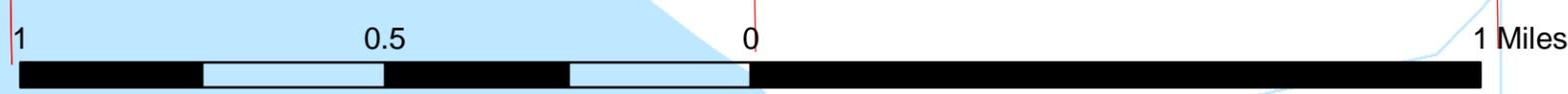
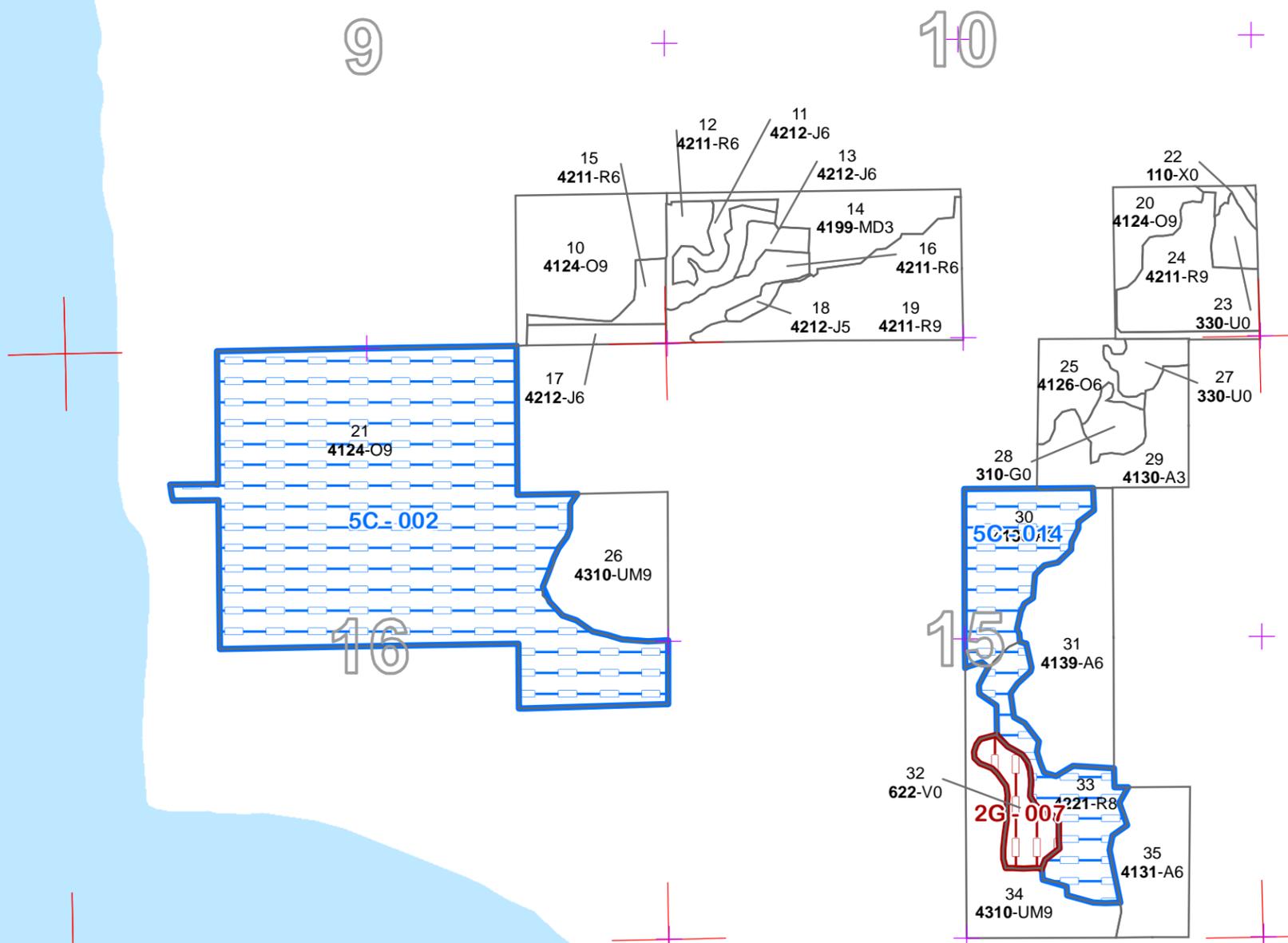
Special Conservation Areas & Site Conditions Map

Stand # **23** Stocking Density
(412)0 - A7
 Level 3 OI
 Level 4 Code
 Cover Type Code

Compartment: 017
 T24N R03W
 Sections: 3, 9, 10, 15, 16
 County: Roscommon
 Unit: Roscommon
 Management Area: Upper Muskegon
 YOE: 2016
 Acres: 642 GIS Calculated
 Examiner: Doug Bates
 Map Revised: 08/07/2014
 Map Phase: Web Post



- Legend**
- Miris Corners
 - + Remonumented Section Corners
 - Stand Boundaries
 - ▨ Available w/ Constraints (Factor - Number)
 - ▩ Unavailable (Factor - Number)
 - Special Conservation Areas
 - Cold Water Streams
 - Cold Water Lakes



Report 1 – Total Acres by Cover Type and Age Class



	Age Class														Total
	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 +	Uneven Age	
Aspen	25	0	0	0	81	0	0	0	0	0	0	0	0	0	106
Bog	9	0	0	0	0	0	0	0	0	0	0	0	0	0	9
Herbaceous Openland	15	0	0	0	0	0	0	0	0	0	0	0	0	0	15
Jack Pine	0	0	0	0	0	15	0	0	0	0	0	0	0	0	15
Low-Density Trees	10	0	0	0	0	0	0	0	0	0	0	0	0	0	10
Lowland Conifers	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
Marsh	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Mixed Upland Deciduous	0	19	0	0	0	0	0	0	0	0	0	0	0	0	19
Oak	22	0	0	0	0	11	0	66	200	0	0	0	0	0	299
Red Pine	0	0	0	0	13	64	0	0	22	0	0	0	0	0	99
Upland Conifers	0	0	0	0	0	7	0	0	0	0	0	0	0	0	7
Upland Mixed Forest	0	0	0	0	0	0	0	0	53	0	0	0	0	0	53
Urban	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Total	87	19	0	0	94	79	18	3	66	276	0	0	0	0	642



Report 2 – Proposed Treatment Summaries

Roscommon Mgt. Unit
Year of Entry 2016

Compartment 017
Total Compartment Acres: 642

Acres by Treatment Type

Commercial Harvest - 191 Tree Planting - 15 Other - 0
 Habitat Cut - 0 Opening Maintenance - 0

Cover Type by Harvest Method

	<i>Clearcut</i>	<i>Selection</i>	<i>Seed Tree</i>	<i>Shelterwood</i>	<i>Thinning</i>	<i>Other - Specify</i>	<i>Total Acres</i>
Aspen Types	55	0	0	0	0	0	55
Lowland Coniferous Forest	3	0	0	0	0	0	3
Mixed Upland Conifers	7	0	0	0	0	0	7
Oak Types	0	0	30	11	21	0	62
Planted Pines	15	0	0	0	22	0	36
Upland Mixed Forest	0	0	0	27	0	0	27
Total	80	0	30	38	42	0	191

S
t
a
n
d

Treatment Name	Acres	CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
1 71017001-Cut	3.3	6123 - Lowland Fir	High Density Pole	74	81-110	Harvest	Clearcut with Reserves	6130 - Fir, Aspen, Maple	Cmpt. Review Proposal
<p><u>Prescription</u> Treatment: Remove all aspen, red maple, balsam fir, and black spruce to a 2 inch d.b.h.. Cut all white pine ten inches and less d.b.h.. Leave all oak trees. Harvest during dry summer or frozen ground conditions. <u>Specs:</u> Retention: Place along the I-75 fence divider on east side of stand. Percentage determined by sale preparer</p> <p><u>Other</u> The landing will need to be in Stand 3 on the southwest end. It is a sparse grass/sweetfern opening with scattered pin cherry. Accumulated debris at <u>Comments:</u> landing will be hauled back into stand being treated and scattered. It is high ground and adjoins county road. There is an old skid trail through Stand 2 on this side that will be used to transport product.</p> <p><u>Next</u> Natural regeneration present in volumes to regenerate stand. Acceptable regeneration is a mix stand of balsam fir, red maple, aspen, and spruce <u>Steps:</u> with older overstory of oak and white pine for either mast and/or visual.</p> <p><u>Proposed</u> <u>Start Date:</u> 10/01/2015</p>									
4 71017004-Cut	20.6	4129 - Mixed Oak	High Density Log	80	111-140	Harvest	Crown Thinning	4121 - Oak, Aspen	Cmpt. Review Proposal
<p><u>Prescription</u> Treatment: Remove all aspen to a 2 inch d.b.h.. Remove all multi-stemmed red maple. Producer may need to remove more maple for operability. <u>Specs:</u> Cut all white pine 12 inches d.b.h. and less to a 2 inch d.b.h.. Mark to cut oak to a residual basal area of 70-90 where applicable. Place 3 to 4 openings amongst the oaks up to 1/4 acre in size, where possible remove the poorest quality trees first to make them. Favor leaving white oak due to oak wilt concentrations in area and give a mix of both log and pole sizes. Try to manage for best trees in place but do leave some mast/hollow oaks for wildlife if present. Retention: None</p> <p><u>Other</u> Landing/hauling will take place on the abandoned pipeline ROW that transects the lower southwest corner. Aspen clone areas do not count towards <u>Comments:</u> the regeneration gaps under oaks.</p> <p><u>Next</u> <u>Steps:</u></p> <p><u>Proposed</u> <u>Start Date:</u> 10/01/2015</p>									
10 71017010-Cut	30.1	4124 - Red with White Oak	High Density Log	85	81-110	Harvest	Seed Tree	412 - Oak	Cmpt. Review Proposal
<p><u>Prescription</u> Treatment: Remove oak so basal area averages 20. Acceptable to leave up to 30 in some locations if deemed beneficial. Side to white oak and/or <u>Specs:</u> large canopy trees for acorn production for seeding/mast. Retention: None, overstory represented species will be still present in seed trees</p> <p><u>Other</u> <u>Comments:</u></p> <p><u>Next</u> Currently natural regeneration is present. Monitor stand for stocking levels. Interplant red pine in larger open areas if regeneration fails. <u>Steps:</u></p> <p><u>Proposed</u> <u>Start Date:</u> 10/01/2015</p>									
11 71017011-Cut	4.6	42120 - Planted Jack Pine	High Density Pole	53	81-110	Harvest	Clearcut	4211 - Planted Red Pine	Cmpt. Review Proposal
<p><u>Prescription</u> Treatment: Final harvest all trees to a 2 inch d.b.h.. Chipping of tops is required due to site being trenched and replanted to red pine. <u>Specs:</u> Retention: None due to small irregular size and cover type conversion.</p> <p><u>Other</u> <u>Comments:</u></p> <p><u>Next</u> Trench and replanting site to red pine using seedlings. <u>Steps:</u></p> <p><u>Proposed</u> <u>Start Date:</u> 10/01/2015</p>									



S t a n d	Treatment Name	Acres	CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
13	71017013-Cut	3.6	42120 - Planted Jack Pine	High Density Pole	53	81-110	Harvest	Clearcut	4211 - Planted Red Pine	Cmpt. Review Proposal
<u>Prescription</u> Treatment: Cut all trees to a 2 inch d.b.h.. Chipping of all tops is required due to site needing to be trenched and replanted. <u>Specs:</u> Retention: None due to small size <u>Other</u> <u>Comments:</u> <u>Next</u> Trench and plant the site with red pine seedlings. <u>Steps:</u> <u>Proposed</u> <u>Start Date:</u> 10/01/2015										
17	71017017-Cut	5.0	42120 - Planted Jack Pine	High Density Pole	53	81-110	Harvest	Clearcut	4211 - Planted Red Pine	Cmpt. Review Proposal
<u>Prescription</u> Treatment: Cut all trees to a 2 inch d.b.h.. Chipping is required of tops due to site needing to be trenched and replanted. <u>Specs:</u> Retention: None due to small narrow size. <u>Other</u> <u>Comments:</u> <u>Next</u> Trench and plant with red pine seedlings. <u>Steps:</u> <u>Proposed</u> <u>Start Date:</u> 10/01/2015										
18	71017018-Cut	1.7	42120 - Planted Jack Pine	Medium Density Pole	53	51-80	Harvest	Clearcut	4211 - Planted Red Pine	Cmpt. Review Proposal
<u>Prescription</u> Treatment: Cut all trees to a 2 inch d.b.h.. Chipping of all tops is required because site is to be trenched and plant to red pine. <u>Specs:</u> Retention: None due to small size <u>Other</u> <u>Comments:</u> <u>Next</u> Trench and plant site with red pine seedlings. <u>Steps:</u> <u>Proposed</u> <u>Start Date:</u> 10/01/2015										
20	71017020-Cut	10.9	4124 - Red with White Oak	High Density Log	97	81-110	Harvest	Shelter Wood with Reserves	4124 - Red with White Oak	Cmpt. Review Proposal
<u>Prescription</u> Treatment: Cut all red maple and aspen to a 2 inch d.b.h.. Mark to leave 40-60 basal area of oak on average where applicable. Leave oak in the <u>Specs:</u> younger/smaller size classes and open up the crown. Leave a few large topped oaks for mast. Favor white oaks for residual due to oak wilt. Will be open pockets due to aspen and red maple. Use these for skid routes. The red maple regeneration is thick, allow higher damage amounts to understory regeneration due to this. Have producer cut haul routes through maple saplings. Retention: None <u>Other</u> <u>Comments:</u> <u>Next</u> A mix of oak, aspen, and maple regeneration is acceptable. <u>Steps:</u> <u>Proposed</u> <u>Start Date:</u> 10/01/2015										



S t a n d	Treatment Name	Acres	CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
24	71017024-Cut	21.6	42110 - Planted Red Pine	High Density Log	51	141-170	Harvest	Low Thinning	4211 - Planted Red Pine	Cmpt. Review Proposal
<u>Prescription</u> Treatment: Mark to remove basal area down to 110 basal area at the lowest managing for best trees in place. Remove small, deformed, cull trees <u>Specs:</u> opening up crown and reducing competitors. Retention: None <u>Other</u> <u>Comments:</u> <u>Next</u> <u>Steps:</u> <u>Proposed</u> <u>Start Date:</u> 10/01/2015										
26	71017026-Cut	27.3	4310 - Pine, Oak Mix	High Density Log	93	111-140	Harvest	Shelterwood	4220 - Natural White Pine	Cmpt. Review Proposal
<u>Prescription</u> Treatment: Cut all trees to a 2 inch d.b.h. with the following exceptions: <u>Specs:</u> - Mark to leave some large oaks for mast/seeding (10 b.a.) - Leave all white pine and red pine 16 inches and greater d.b.h.. (40-50 b.a.) *The red maple regeneration is thick. Allow higher damage amounts to understory regeneration to producer (40%+). They must cut trails through regenerations for haul routes and cut all damage saplings instead of running them over. Retention: None <u>Other</u> <u>Comments:</u> <u>Next</u> A mix of pine, oak, and some maple is acceptable for regeneration. Evaluate regeneration in ten years to decide if going to remove overstory or not. <u>Steps:</u> If regeneration is still mainly red maple remove overstory (pine) otherwise if its oak/pine leave for large woody snags and diversity. <u>Proposed</u> <u>Start Date:</u> 10/01/2015										
31	71017031-Cut	36.1	4139 - Aspen, Mixed Deciduous	High Density Pole	49	81-110	Harvest	Clearcut with Reserves	413 - Aspen	Cmpt. Review Proposal
<u>Prescription</u> Treatment: Cut all tree species to a 2 inch d.b.h.. with the following exceptions: <u>Specs:</u> - Mark to cut red pine to 70 basal area where existing percentage warrants - Leave all white pine 14 inches or greater d.b.h.. - Mark to leave 10-20 basal area oak, preferably white oak or large crowned mast producers. Harvest can not be done from December 01 to July 15 due to ski trail and oak wilt restrictions. Retention: Retention islands can include pockets of mainly pine/oak such as the large one on the southeast end to buffer the cross-country ski trail. Place pockets along trail in other locations as buffer. 10 percent combination should be used for retention. <u>Other</u> Harvest will treat the largest contiguous blocks of the stand with the smaller fragmented portions created by the trail system to be left for <u>Comments:</u> visual/retention. Access will be from the north off Burdell Road down an overgrown two-track that already exists into this stand. <u>Next</u> Regeneration of mixed aspen, oak, pine is acceptable. <u>Steps:</u> <u>Proposed</u> <u>Start Date:</u> 10/01/2015										
35	71017035-Cut	19.0	4131 - Aspen, Oak	High Density Pole	47	81-110	Harvest	Clearcut with Reserves	4121 - Oak, Aspen	Cmpt. Review Proposal
<u>Prescription</u> Treatment: Cut all aspen and red maple trees to a 2 inch d.b.h.. Mark oak residual down to 20-40 basal area where applicable to aid in visual <u>Specs:</u> concerns. Leave larger oaks for mast/seeding and favor white oak if possible. Do not cut red pine. **Stand can not be harvested from December 01 to July 15 due to ski trail and oak wilt restrictions. Retention: Place retention pockets along cross country ski trail. Use 10 percent as retention amount. <u>Other</u> Landing will be at south end along Robison Lake Rd. Work with producer to lessen impact when crossing over trails used for cross-country skiing. <u>Comments:</u> Stand will be its own sale and cut three to four years later than stand 31 to stagger the harvesting on the ski trail system. <u>Next</u> A mixed stand of aspen with oak and pine is acceptable. <u>Steps:</u> <u>Proposed</u> <u>Start Date:</u> 10/01/2018										

**Report 3 -- Treatments Prescribed
with No Limiting Factor**



S
t
a
n
d

Treatment Name	Acres	CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
Total Treatment Acreage Proposed:		183.9							

S
t
a
n
d

	Treatment Name	Acres	CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
8	71017008-Cut	6.9	429 - Mixed Upland Conifers	Medium Density Pole	61	51-80	Harvest	Clearcut with Reserves	429 - Mixed Upland Conifers	Cmpt. Review Proposal

Prescription Specs: Treatment: Harvest all species to a 2 inch d.b.h.. Leave some large white pine and oak for mast/visual. A dry summer or frozen ground conditions are required to harvest to limit soil damage.
Retention: Place along the I-75 ROW fence along the west side of the stand. 10 percent by area.

Other Comment: Stand is factored limited because of private property and I-75.

Next Steps: Regeneration present in quantities that would allow for natural regeneration to take place to meet stocking levels.

Proposed Start Date: 10/01/2015

Limiting Factor 2B: Unknown if access through adjacent landowner(s) is possible

**Total Treatment
Acreage Proposed: 6.9**

Report 5 – Site Conditions

Roscommon Mgt. Unit

Compartment 017

Doug Bates : Examiner

Year of Entry 2016

Availability for Management

Total Acres	Acres		Dominant Site Conditions	No	5C	2B
	Available	Not Available				
106	106		Aspen	80	26	0
15	15		Jack Pine	15		
3	3		Lowland Conifers	3		
19	19		Mixed Upland Deciduous	19		
299	299		Oak	94	205	
99	99		Red Pine	77	22	
7	7		Upland Conifers	0		7
53	53		Upland Mixed Forest	53		
601	601		Total Forested Acres	341	253	7
	100%		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
002	Available	5C: Delay treatment for age/size class diversity or exceptional site quality	189				
Comments:							
007	Not Available	2G: Too wet (sensitive soils, does not include access issues)	9				
Comments:							
008	Not Available	3G: Other Influence zones - See comments	1				
Comments: County Road and cleared R.O.W.							

Report 5 – Site Conditions

Roscommon Mgt. Unit
Doug Bates : Examiner

Compartment 017
Year of Entry 2016

009	Available	2B: Unknown if access through adjacent landowner(s) is possible	9	
Comments:				
010	Not Available	2G: Too wet (sensitive soils, does not include access issues)	3	5D: Unproductive Forest Land
Comments:				
013	Available	5C: Delay treatment for age/size class diversity or exceptional site quality	16	
Comments:				
014	Available	5C: Delay treatment for age/size class diversity or exceptional site quality	48	
Comments:				



Report 6 – 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
-----------------	---------------------	--------------------	-----------------------	--------------

Comments



Report 7 – 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
SCA	Archaeological Site	An aquatic or terrestrial area of the State that contains physical remains of human occupation. These are sites of cultural and historical significance that may occur upon terrestrial areas and Great Lakes bottomlands. They include thousands of Native American settlements and burial sites, as well as French and British outposts, nineteenth century logging camps, mines and homesteads. Beneath the waters of the Great Lakes, there are shipwrecks and other remains documenting the maritime trade. Such sites may be identified by Natural heritage data from the State Historic Preservation Office. Proposed treatments in this compartment will be implemented in such a manner as to maintain the integrity of these sites. Due to the sensitive nature of this information, no further detail about location is available.
SCA	Cold Water Lake	A coldwater lake has temperature and dissolved oxygen conditions that allow naturally-reproduced or stocked trout populations and those of other coldwater fish species to persist from year to year. Suitable conditions for coldwater fishes may occur in Michigan lakes if they are relatively deep, have substantial groundwater inflows, or are located in colder (northern) areas of the state. Such lakes are established by Director's action and designated as trout resources by Fisheries Order 200.
SCA	Cold Water Stream	A coldwater stream has temperature and dissolved oxygen conditions that allow naturally-reproduced or stocked trout populations and those of other coldwater fish species (e.g., slimy sculpin) to persist from year to year. Coldwater streams in Michigan typically provide these conditions due to substantial contributions of groundwater to their stream flows. Such streams are established by Director's action and designated as trout resources by Fisheries Order 210.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
1	6123 - Lowland Fir	High Density Pole	3.3	74	81-110	A lower elevation stand that gets gradually wetter as go north. It is a mixed stand with mainly red maple and balsam fir regeneration. Tag alder gets heavier as go north also. A treatment could be feasible if done in the winter. There is plenty of regeneration present and may get some more aspen back if open it up with a cut.
2	4130 - Aspen	High Density Sapling	6.8	7		Clearcut done in the fall of 2007 whereby all oak, white pine, and some green marked trees were left. Came back very well. Slightly higher elevation at south half which was mainly aspen to start with so dense regeneration of it and only a handful of overstory trees. The north half is wetter so had more pine and oak overstory ranging between 20-50 basal area. The regeneration is good for aspen but getting more red maple mixed with it. Will leave overstory to run its course till aspen is ready to treat again. Would cause too much damage trying to remove it.
4	4129 - Mixed Oak	High Density Log	20.6	80	111-140	There is an underground pipeline ROW corridor bisecting the southwest corner. The ROW clearing less than 30 feet wide and has no identification markers. Checking to see if the line is abandoned. Recommend a thinning of the stand to open up some regeneration gaps and crown to get more light into oak regeneration. The white pine regen. is heavy for most of the stand. The other regen., maple and oak, is in pockets here and there. The stand slopes downhill from the south to north. There is limited terrain to make a good landing and no matter what we need to cross the pipeline ROW. Aspen mainly at the south end with more pine and white oak to the north,
7	4124 - Red with White Oak	Medium Density Log	15.5	80	51-80	All aspen, red maple, and marked oak were cut in the fall of 2007. More residual left, sided on thinning favoring more white oak. It's at the top of a ridge with the terrain sloping to the south. No signs of oak wilt. Regeneration is very good for oak. The aspen is also good and is taller than the maple. The oak and aspen did get browsed hard over the winter. Only oak not showing browse are the taller stump sprouted saplings. Most oak regeneration is from seeding though. Have had two good acorn years in the last three. Recommend no treatment let regen. come in more and residual get some size. About 45% of the overstory left is pole sized. The entire east third has heavy aspen regen. with some red maple under the overstory and a trace of oak.
8	429 - Mixed Upland Conifers	Medium Density Pole	6.9	61	51-80	Slower going to get to merchantable size. No access. Soils get more saturated to the north. This is where changes from oak/aspen to the fir/pine. Stand has good regeneration and could be harvested but is landlocked by private and I-75. Put down for treatment and factor limit.
9	4124 - Red with White Oak	Low Density Sapling	21.7	7	1-50	All aspen, red maple, and oak removed in Fall 2007. Some green marked trees left as seed trees. Favored the white oak. Rolling to steep terrain. The oak regeneration came back in well. Full oak mainly from seed. Browse is heavy though. Less aspen overall but a large pocket of dense regeneration in the southeast corner. Some red maple also but light and mainly stump sprouts. Good results so far and no wilt signs. The overstory is 25% forest cover. Will not remove these trees, leave and let regeneration become new overstory. Typing will change when regen. percentage gets high enough to take over.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
10	4124 - Red with White Oak	High Density Log	30.1	85	81-110	Shelterwood harvested in winter 1999/2000. All aspen and red maple cut along with marked trees. There is alot of good oak regeneration coming in. Thick in pockets. Any under 3 feet have been browsed heavily by deer. Maple mixed in amongst oak in places, its dense and only regeneration. White pine is scattered about. Recommend another harvest to open up canopy more to allow more light in to oaks. Mark residual oak to 30-40 basal area siding to white oaks do to oak wilt on private property in area.
11	42120 - Planted Jack Pine	High Density Pole	4.6	53	81-110	Established in 1961. Poor quality stand with numerous dead and poor growth. Not a jack pine site. Harvest and put in red pine. The site is more conducive to this as evident by the existing good quality plantations surrounding this stand. This will concentrate red pine in an area and stagger the age class for the species in this area also.
12	42110 - Planted Red Pine	High Density Pole	9.4	55	141-170	Established in 1959. Third rowed thinned in 1997 and thinned again in 2008. The terrain is more undulating with the east half of the stand planted on a slope. Not enough to hamper future operations though. It is 5-6 stick pine with about 1/2 the canopy still alive. Stand could wait another ten years and would be good to thin it down and start putting diameter growth on. This will also stagger treatments in the red pine area. No understory growth.
13	42120 - Planted Jack Pine	High Density Pole	3.6	53	81-110	Jack pine plantation established in 1961. Very poor quality stand with poor growth. Several trees from the original planting still sapling size. Several mortality pockets also. Recommend removal and replanting with red pine which is more conducive to this site as evident by similiar aged red pine plantations surrounding this stand that have log sized stems.
14	4199 - Other Mixed Upland Deciduous	High Density Sapling	18.7	15		Aspen stand cut in February 1998. Oak with some scattered aspen clones with lots of red maple and cherry brush regeneration. The aspen has some coming into pole sizes. The larger oaks are off stump sprouts along with red maple, however, fair amount of oak is off seeding. The oak is mainly around perimeter with the aspen/maple in the center. The maple percentage is high amongst the aspen.
15	42110 - Planted Red Pine	High Density Pole	5.0	41	111-140	Red pine plantation established in 1973. Was thinned in 2008. Good red pine plantation with third of stand into sawlog size. Several thinner basal area pockets where overstory oak left when planted. Do not thin this time around and re-evaluate in 10 years.
16	42110 - Planted Red Pine	High Density Pole	8.2	41	111-140	Established in 1973. Third rowed thinned 1997 and thinned again in 2008. Still has pole sizes as majority of class with 4-5 sticks. The basal area is alright to let go another rotation and maybe put some heighth on them. About a half acre sand opening inclusion with some jack pine and red pine saplings scattered about.
17	42120 - Planted Jack Pine	High Density Pole	5.0	53	81-110	Jack pine plantation established in 1961. Poor quality with numerous mortality pockets. Fairly good oak and white pine saplings in understory. Recommend remaval of jack pine and plant to red pine which is more conducive to site and will be surrounded by red pine plantation of older age classes. This will stagger the red pine age classes in area and concentrate the pine. The stand will be a mixed stand with the existing oak and white pine regeneration present already just not enough of it to allow for good natural regeneration.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
18	42120 - Planted Jack Pine	Medium Density Pole	1.7	53	51-80	Jack pine plantation established in 1961. Stand is on fast decline with several mortality pockets. The white pine is filling in these pockets. Recommend a harvest and plant to red pine which is a more suited for this location. Will stagger the red pine age classes in this area with the already established plantation of red pine and will have a component of white pine mixed in with the already present regeneration. This also concentrates red pine on sites more suited for it.
19	42110 - Planted Red Pine	High Density Log	32.7	55	141-170	Red pine plantation established in 1959. It was third rowed thinned in 1997 and then again thinned in 2008. It is a very good stand with 6-7 sticks. About a third of the tops are alive. Based on work done by Mead/Plum Creek they treat stands when the tops are at this stage because feel losing growth on the trees by not opening them up. Will used this stand as a control, there is an identical stand 1/2 mile to the east where will treat by thinning and compare the results in upcoming years of which one grew better. The stand has openings where no pine is present and the red maple saplings are thick. A few small pockets like this scattered about in the center of the stand.
20	4124 - Red with White Oak	High Density Log	10.9	97	81-110	The stand slopes downhill from west to east and has a subdivision on the north and west lines. There is an aspen pocket on the northeast side. The understory is dense red maple over the entire stand. The maple is from sapling size to log sized in the overstory. The largest stemmed maples are multi-stemmed stump sprouted trees. The oak is overmature and recommend a treatment to try and open pockets up for oak regeneration. The treatment would involve removing all aspen which will give a couple of good aspen pockets a restart and add diversity to the area. The oak overstory would be removed to a 40-50 basal area where applicable. Favor large oaks for mast and side towards white oak due to oak wilt being on private property to the west. There is a landowner to the north who is in trespass.
21	4124 - Red with White Oak	High Density Log	189.3	98	81-110	Stand had a shelterwood harvest done in the winter of 1999/200 removing all aspen, red maple, and marked oak trees. Very good regeneration of oak. Dense in several areas but is found all over the stand in some sort of density. The red maple is heavy to but not found over the whole stand like the oak. White pine is the same by being found in certain areas but not real heavy. The stand could be treat but recommend holding off one more rotation. This compartment is heavily surrounded by urban interface and there are several other treatments prescribed with higher needs including a large oak stand just across the street to the north. The stand will hold and currently did not find an signs of oak wilt but will monitor periodically and treat if found before next rotation. This will also stagger oak age classes in the area.
24	42110 - Planted Red Pine	High Density Log	21.6	51	141-170	Red pine plantation established in 1963. Third row thinned in 1998 and then thinned again in spring 2008. Recommending an earlier thin. Based on work by Mead/Plum Creek they are treating their stands earlier when only a third of the crown is alive because their finding the tree slows down in growth with this much live top. Want to see if by opening up the canopy it with allow more more growth. A similiar red pine stand is half mile to the east that had was treated on the same rotation as this one. The other stand is not to be treated and is a control. Want to see the growth differences in future years to see if third thinnings should be done on an earlier rotation. This stand will be thinned to 90 basal area removing smaller poor deformed trees opening up the canopy and managing for the best quality tree in place.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
25	4126 - White, Black, N. Pin Oak	High Density Pole	10.9	68	51-80	Older oak stand that has started to lose its larger log overstory to old age. The oak poles and saplings are there with a good mix of both pin and white oak. Some large red pine logs are scattered about with a one acre pocket of pure red pine log size trees at the far southwest tip. An aspen pocket of pole size lies at the north end. Do not recommend a harvest at this time. It does have some overmature oak but the majority of oak is still below rotational age. Only about a third of the basal area swings contained any log size oak with most being pole sized which a majority of would be kept anyway. Over a quarter mile portion of a privately maintained cross-country ski trail under a land use lease loops through the stand making future treatments more challenging.
26	4310 - Pine, Oak Mix	High Density Log	27.3	93	111-140	This is a pine/oak mixed stand predominately white pine followed by red. The oak is mainly red but traces of white are there. The stand is mature plus. The only regeneration is dense red maple with some white pine here and there. Recommend a harvest removing all the maple, most of the oak, and portion of pine. The canopy is so dense, needs to be opened to allow other regeneration a chance. Mark to leave some large mast oaks and do not cut any pine 16 inches d.b.h. and up. There is a good amount of super-canopy pines in pockets. Leave these for diversity and visual. Will not shade out regeneration.
29	4130 - Aspen	High Density Sapling	18.1	5		Final harvested in the Fall of 2007. All oak under 5 inches were left plus additional green marked ones. Good thick regeneration. The overstory of pine/oak left so light that it did not impact the new regeneration. Sub-canopy mix of variety of species but still mainly aspen. Portion of cross-country ski trail goes along west line.
30	4130 - Aspen	High Density Log	25.7	49	141-170	Final harvest form 1965. The stand consists of a ridge running north/south that slopes downward east/west and runs pretty much through the middle of the stand. The aspen is very nice quality with the lower elevation containing more sawlog sized aspen. There are more poles on the ridge top. The red pine is found in the lower portion with some being super-canopy sized. All left from the last harvest and did not hamper regeneration of aspen. Only regeneration in sub-canopy is red maple. There is trace amounts of some red and white pine and also oak but not enough to count. Stand could be harvested but will use as buffer for similiar stand to the east that will be harvested this rotation. There is also a private cross-country ski trail throught the stand under a land use lease agreement. Staggering the stand harvest will diversify age classes and help with recreational impacts.
31	4139 - Aspen, Mixed Deciduous	High Density Pole	36.1	49	81-110	Final harvest from 1965. This stand is way less quality than the stand to the west. Do have pockets of good aspen, but very few. Several areas where aspen of both pole and log size have conks. Also areas where aspen regeneration, full red maple or oak stump sprouts. More overstory left when harvested last time. Along with more overstory and poorer quality, no aspen came in under it. Just red maple. These pockets of residual of overstory consists of red pine or a red/white pine oak mix. These pockets are scattered about. Less canopy closure due to thin regeneration areas than stand to the west. This stand has less basal area due to more open areas because no regeneration and smaller diameter of aspen than adjacent stand, but health wise should be harvested first. Stand to west hold should hold another rotation. There is almost 4600 feet of cross-country ski trail in this stand run by a private company under a land use lease. Will need to adjust to minimize impacts on trail



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
33	42210 - Natural Red Pine	Medium Density Log	22.4	90	51-80	Removed aspen, red maple, jack pine, and marked red/white pine in the summer 1999. Over 1/4 mile of ski trail under a land use lease traverses the entire stand. The north and south quarters of the stand are where the red pine basal area is the highest, averaging about 110. The regeneration under these parts is light to red maple and oak. The middle half is the lightest, averaging around 50. Find some white pine here. The regen. is heavy to full with either jack pine, white pine, or red maple depending on where at. Fluctuates. This portion borders the bog which actually grades into this stand but has pine on high mounds. Some of the regen. just into pole size but sparse, recommend holding till more regeeneration gets merchatable size, then remove and drop red pine basal area to 50-70. The pine will hold and allow poles to get to log size. Stagger treatments around the ski trail influence and will do the same for
34	4310 - Pine, Oak Mix	High Density Log	25.9	94	51-80	This stand contains just a short segment of the privately run cross country ski trail under land use lease. The stand borders on two age with the dominate canopy in the 90's and the second mid-canopy in the 30-40 year old class and then the dense regeneration under this. The overstory is mainly red pine with some white pine in there also. The rest is aspen, maplem some jack pine and oak. Recommend leaving the stand for at least two rotations before a treatment. The main overstory will hold and the mid-canopy will be just getting to treatable age. This block of the compartment is highly visible on heavily traveld roads and need to stagger treatments/age class as much as possible.
35	4131 - Aspen, Oak	High Density Pole	19.0	47	81-110	Portion of the privately run ski trail runs through here and is under a land use agreement. A varied stand with that aspen appearing to have been cut around the same time as the aspen to the north. Lower quality though with majority of it being found on the ridge tops that run up the middle of the stand north and south. The oak is all old declinging stuff left from the previous treatment. Some oak regeneration here but mostly red maple which is the dominate species over the whole stand for regen. It could be harvested and may be able to salvage some of the oaks before die off. By opening up hope to stimulate more of present oak and get some stump sprouts and additional seeding.



Stand	Cover Type	Acres	Managed Site	Management Priority (Objective)	General Comments:
3	3102 - Grass	9.3	No	Unspecified	Grass stand along I-75. Contains an old landing site and part of the Pinewood Drive cul-de-sac.
5	122 - Road/Parking Lot	1.4	Unspecified	Unspecified	
6	6230 - Cattail	3.2	No	Unspecified	
22	11 - Low Intensity Urban	1.8	Yes	Medium	Grass stand with east half being the R.O.W. for overhead power transmission lines. The other side is a grass opening the private landowner to the north is mowing and has some items in trespass on us.
23	3301 - Low Density Deciduous Trees	4.8	Natural Regen	Aspen	Stand treated in Fall 2011 removing all trees but pine, oak under 4 inches, and some green marked trees. The aspen has come back good and is found over entire stand. Dense in a few large pockets. Residual oak left averages 10-20 basal area.
27	3302 - Low Density Conifer Trees	5.6	Plantation	Red Pine	Red pine plantation planted in the spring 2010. Red pine doing good even in the thick grass cover. Have scattered pin cherry which are not impacting the pine. Have multiple pockets of jack pine scattered about. These were planted around with their sizes being saplings to poles. Good diversity.
28	3102 - Grass	5.3	No	Unspecified	Grass field with sweetfern. Pin cherry in multiple clumps, heavy at times mainly on the west side. Some white pine there also. The south and east perimeter is a mix of jack pine and oak both in the sapling and pole size class. Not enough to make its own stand and yet gives diversity to open area.
32	6225 - Bog	9.3	No	Unspecified	Leatherleaf bog