

# CADILLAC FOREST MANAGEMENT UNIT



## COMPARTMENT REVIEW PRESENTATION

### COMPARTMENT # 132 ENTRY YEAR: 2013

**Compartment Acreage (GIS Acres): 2809 County: Wexford**

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**Revision Date: 10/07/2011 10:24 AM**

**Stand Examiner:** Derek Cross, Forester

**Legal Description:** Township 24N Range 10W Sections 7,8,17 and 18  
Township 24N Range 11W Sections 12,13 and 24

**Management Goals:** Maintain the integrity of the Manistee River Valley by incorporating silviculturally sound management practices. Promote age class diversity in the early successional forest types while providing quality timber products and enhancing wildlife habitat and natural communities.

**Soil and Topography:** There are unique terrain features to contend with in this compartment. Elevation changes of up to 300 feet create steep river bluffs and banks along with upland and lowland plateaus. The soil make-up within the compartment is mostly Rubicon-Montcalm-Graycalm association. The Tawas-Croswell-Lupton association dominates the lowland forest areas. The Karlin series can be found within the hardwood forest areas.

**Ownership Patterns, Development, and Land Use in and Around the Compartment:** There are three private land holding within this compartment. The NE 1/4 Sec. 12, the N 1/2 of Sec. 7 and the NENW in Sec. 8. All of these parcels are recommended for land acquisition. A portion of the NE 1/4 of sec. 12 is currently for sale.

**Unique, Natural Features (include only non-site specific and non-sensitive information):** The Manistee River marks the south boundary of this compartment. There is potential for wood turtle and massasauga rattlesnakes along the river corridor. The hardwood component of this compartment provides potential nesting habitat for Red Shouldered Hawks and Goshawks.

**Archeological, Historical, and Cultural Features (include only non-site specific and non-sensitive information):** High Rollaways Overlook

**Special Management Designations or Considerations:** This compartment contains a unique old growth corridor along the Manistee River. The North Country Trail follows this corridor and the ridge line overlooking the river.

**Watershed and Fisheries Considerations:** The Manistee River and several unnamed streams flow through Compartment 132. The Manistee River is a Designated Trout Stream, and in this area supports popular sportfisheries for brown trout, walleye, and northern pike. Brown trout are stocked by MDNR. Natural Rivers standards should be followed for any treatments conducted near the Manistee River.

**Wildlife Habitat Considerations: Priority Wildlife Species:** Those wildlife species associated with dry-mesic forested communities and riverine communities.

**Habitat Objectives:** This compartment is located within the Highplains Ecosystem, Grayling Outwash Plain Subsection, LTA's 5111 excessively drained sands. Historically this area was composed of northern hardwood forests of American beech and sugar maple or mixed forest of red pine/white pine, beech and red maple. Forests composed of mixed dry conifer, dry hardwoods, and aspen. The Manistee River runs along the south boundary of the compartment. The river valley is utilized as a travel corridor for numerous wildlife species and is an important deer wintering area. Wildlife habitat objectives are to continue to maintain species and age-class diversity across the compartment and to continue to manage the Manistee River corridor for the maximum diversity of wildlife species. (MK 9/30/11)

**Mineral Resource and Development Concerns and/or Restrictions:** Surface sediments consist of glacial outwash sand and gravel and postglacial alluvium and an end moraine of coarse-textured till. The glacial drift thickness varies between 200 and 600 feet. Beneath the glacial drift are the Mississippian Coldwater Shale and the Marshall Sandstone. The Marshall was previously used as a building stone. A gravel pit is located in Section 18 and potential is considered to be good, especially the upland area. This area lies four miles southeast of the prolific Guelph (Niagaran) reef trend. There does not appear to be any potential for reefs in this area. This area is not currently leased for oil and gas and potential appears to be limited.

**Vehicle Access:** A forest road access plan is detailed on the compartment map. Identified are state and county roads as well as forest roads and trails under the jurisdiction of the DNR. Also indicated are forest roads and trails under the jurisdiction of the DNR that are proposed for abandonment. These roads were determined to be in excess of the access needs in the area, are a threat to the resources, or are a concern environmentally. Proposed new roads or roads recommended for substantial improvement are noted below: There are a number of ORV restoration projects that have been done in this compartment at this time most of them appear to be holding up well. There are several areas that have been blocked off to vehicle access that should be revisited and fortified.

**Survey Needs:** There are no survey needs at this time.

**Recreational Facilities and Opportunities:** Within the compartment boundary there are several recreational facilities. The High Rollaways Overlook and information kiosk is a very popular scenic site. A viewing platform, parking area and pathway lined with a split rail fence have been installed to provide safer viewing opportunity. There is a Park and Recreation Division river access site located in stand 122 that allows vehicle boat access to the Manistee River. There is a small parking area and outhouse located on site. The Baxter bridge state forest campground is located across 29 1/2- mile rd. from the access site. This is located in adjacent compartment 150.

**Fire Protection:** Heavy fall use of this compartment by recreational users is a concern. Due to minimal roads, suppression forces must access from the north. The steep banks along the Manistee River will hamper suppression activities. 9-1-2011 BET

**Additional Compartment Information:** A small isolated patch of garlic Mustard was found and 2<sup>nd</sup> year rosettes were pulled. A Garlon treatment is recommended on 1<sup>st</sup> year rosettes before the end of the growing season. A follow up visit should be done for the next several years to monitor eradication success and provide follow up treatments as necessary.

- **The following 5 reports from the Operations Inventory System (OIPC) are attached:**
- ◆ **Cover Type by Age Class**
  - ◆ **Cover Type by Management Objective**
  - ◆ **Compartment Volume Summary**
  - ◆ **Proposed Treatments – No Limiting Factors**

◆ **Proposed Treatments – With Limiting Factors**

- **The following information is displayed, where pertinent, on the attached compartment maps:**
- ◆ **Base feature information, stand numbers, cover types**
  - ◆ **Proposed treatments**
  - ◆ **Proposed road access system**
  - ◆ **Suggested potential old growth**

**Table 1 – Total Acres by Cover Type and Age Class**



	Age Class														Total	
	Non-Forested	1-9	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	0	17	26	15	8	256	251	58	4	119	38	0	0	0	26	817
Bog	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32
Cedar	0	0	0	0	0	0	0	0	0	10	3	0	4	0	0	17
Herbaceous Openland	152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	152
Jack Pine	0	0	0	0	0	8	0	60	0	0	0	0	0	0	0	68
Low-Density Trees	154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	154
Lowland Deciduous	0	0	0	0	0	8	0	25	7	0	11	0	0	68	11	130
Lowland Mixed Forest	0	0	0	0	0	0	0	0	13	0	8	0	0	7	0	28
Lowland Shrub	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
Mixed Upland Deciduous	0	0	0	0	0	0	11	20	0	13	52	68	0	0	0	164
Natural Mixed Pines	0	0	0	0	0	0	52	46	6	0	0	0	0	0	0	103
Northern Hardwood	0	0	0	0	0	0	0	71	0	6	293	0	0	0	134	503
Oak	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	13
Planted Mixed Pines	0	0	0	46	0	0	0	0	0	0	0	0	0	0	0	46
Red Pine	0	0	0	0	46	0	31	197	61	0	0	0	0	10	25	370
Sand, Soil	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
Upland Mixed Forest	0	0	0	0	0	0	0	0	43	0	0	0	0	0	0	43
Upland Shrub	85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85
Urban	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Water	53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53
<b>Total</b>	<b>506</b>	<b>17</b>	<b>26</b>	<b>61</b>	<b>54</b>	<b>271</b>	<b>345</b>	<b>476</b>	<b>133</b>	<b>148</b>	<b>418</b>	<b>68</b>	<b>4</b>	<b>85</b>	<b>197</b>	<b>2809</b>



## Table 2 – Proposed Treatment Summaries

**Cadillac Mgt. Unit**  
**Year of Entry 2013**

**Compartment 132**  
**Total Compartment Acres: 2809**

### Acres by Treatment Type

Commercial Harvest - 837	Site Prep - 0	Tree Planting - 0	Prescribed Burn - 232	Other - 0
Habitat Cut - 31	Opening Maintenance - 0	Tree Seeding - 0	Pesticide - 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>
<b>Aspen</b>	279	0	0	0	10	0	<b>288</b>
<b>Jack Pine</b>	68	0	0	0	0	0	<b>68</b>
<b>Lowland Mixed Forest</b>	0	13	0	0	0	0	<b>13</b>
<b>Natural Mixed Pines</b>	6	37	0	10	15	0	<b>68</b>
<b>Northern Hardwood</b>	0	311	0	0	0	0	<b>311</b>
<b>Red Pine</b>	2	65	0	0	10	0	<b>77</b>
<b>Upland Mixed Forest</b>	0	0	0	43	0	0	<b>43</b>
<b>Total</b>	<b>355</b>	<b>426</b>	<b>0</b>	<b>53</b>	<b>35</b>	<b>0</b>	<b>868</b>



Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
1	63132001-Cut1	36.2	4110 - Sugar Maple Association	High Density Log	120	Harvest	Single Tree Selection	4110 - Sugar Maple Association	Cmpt. Review Proposal
<u>Prescription:</u> Thin to a residual BA of 70-80. Focus on removing Large diameter trees and those in the 14" size class. <u>Specs:</u> <u>Other Comments:</u> There is a large amount of maple dieback in this stand. Monitoring trees have been labeled and data collected. Check trees next growing season to determine if decline continues. Retain oaks for mast and seed source. Focus on retaining mast and berry producing shrubs. <u>Next Steps:</u>									
2	63132002-Cut	13.6	4130 - Aspen	High Density Log	62	Harvest	Clearcut with Reserves	4130 - Aspen	Cmpt. Review Proposal
<u>Prescription:</u> Cut all trees except oak and mast producing shrubs. Include grouse drumming log, stump production and top retention specs. <u>Specs:</u> <u>Other Comments:</u> <u>Next Steps:</u>									
4	63132004-Cut	5.9	42260 - Natural Pine, Mixed Deciduous	High Density Log	73	Harvest	Clearcut with Reserves	4133 - Aspen, Mixed Pine	Cmpt. Review Proposal
<u>Prescription:</u> Cut all aspen and maple. Thin pine to a residual Ba of 20-40 <u>Specs:</u> <u>Other Comments:</u> Focus on retaining mast and berry producing shrubs. <u>Next Steps:</u>									
6	63132006-Cut	1.8	42110 - Planted Red Pine	High Density Log	65	Harvest	Clearcut	42110 - Planted Red Pine	Cmpt. Review Proposal
<u>Prescription:</u> Final harvest all red pine and white pine. <u>Specs:</u> <u>Other Comments:</u> <u>Next Steps:</u> Replant to red pine.									
7	63132007-Cut	9.8	4133 - Aspen, Mixed Pine	High Density Log	64	Harvest	Crown Thinning	4116 - Mixed N. Hardwood - Aspen	Cmpt. Review Proposal
<u>Prescription:</u> Remove all aspen and mark pine and hardwood to a residual Ba of 70-90. <u>Specs:</u> <u>Other Comments:</u> Retain oaks for mast and seed source. Focus on retaining mast and berry producing shrubs. <u>Next Steps:</u>									
8	63132008-Cut_RPP	61.9	42110 - Planted Red Pine	Medium Density Pole	46	Harvest	Clearcut	42110 - Planted Red Pine	Fld. Tr. Bdy. - Incomplete
<u>Prescription:</u> Clearcut. <u>Specs:</u> <u>Other Comments:</u> Treatment is part of the Red Pine Project. No retention, classic red pine management. <u>Next Steps:</u> Plant to red pine.									



S t a n d	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
23	63132023-Cut	94.6	4130 - Aspen	Medium Density Pole	57	Harvest	Clearcut with Reserves	4130 - Aspen	Cmpt. Review Proposal
<u>Prescription</u> Cut all trees except oak, mast and berry producing shrubs. Include grouse drumming log, stump production and top retention specs. <u>Specs:</u> <u>Other</u> Wld requests encompassing NF stands within treatment boundary for maintenance puposes. Girdle large maples in these openings. <u>Comments:</u> <u>Next</u> <u>Steps:</u>									
24	63132024-Cut	10.3	42260 - Natural Pine, Mixed Deciduous	High Density Log	64	Harvest	Shelterwood	4133 - Aspen, Mixed Pine	Cmpt. Review Proposal
<u>Prescription</u> Remove aspen and maple thin pine. <u>Specs:</u> <u>Other</u> leave oak and cherry. <u>Comments:</u> <u>Next</u> <u>Steps:</u>									
26	63132026-Cut	41.7	42110 - Planted Red Pine	High Density Log	65	Harvest	Single Tree Selection	42111 - Planted Red Pine, Mixed Deciduous	Cmpt. Review Proposal
<u>Prescription</u> Remove low quality red pine leaving a residual BA of 80-120. <u>Specs:</u> <u>Other</u> Focus the lower BA in areas of dense sugar maple regen. <u>Comments:</u> <u>Next</u> Remove remaining red pine next rotation completing a conversion to hardwood. <u>Steps:</u>									
29	63132029-Cut	20.6	4130 - Aspen	Medium Density Pole	54	Harvest	Clearcut with Reserves	4130 - Aspen	Cmpt. Review Proposal
<u>Prescription</u> Remove all trees except oak and mast producing shrubs. Include grouse drumming log, stump production and top retention spec. <u>Specs:</u> <u>Other</u> <u>Comments:</u> <u>Next</u> <u>Steps:</u>									
32	63132032-Cut	41.1	4130 - Aspen	High Density Log	48	Harvest	Clearcut with Reserves	4130 - Aspen	Cmpt. Review Proposal
<u>Prescription</u> Cut all trees except oak. <u>Specs:</u> <u>Other</u> <u>Comments:</u> <u>Next</u> <u>Steps:</u>									



S t a n d	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
34	63132034-Cut	7.8	42221 - Natural Jack Pine, Mixed Deciduous	Medium Density Pole	43	Harvest	Clearcut with Reserves	42221 - Natural Jack Pine, Mixed Deciduous	Cmpt. Review Proposal
<u>Prescription</u> Remove all aspen and jack pine									
<u>Specs:</u>									
<u>Other</u>									
<u>Comments:</u>									
<u>Next</u> Check for natural regen. May need seeding or planting.									
<u>Steps:</u>									
40	63132040-Cut	14.8	42260 - Natural Pine, Mixed Deciduous	High Density Log	52	Harvest	Crown Thinning	42260 - Natural Pine, Mixed Deciduous	Cmpt. Review Proposal
<u>Prescription</u> Thin pine to a residual BA of 120.									
<u>Specs:</u>									
<u>Other</u> Protect aspen clones and young ash pockets.									
<u>Comments:</u>									
<u>Next</u>									
<u>Steps:</u>									
42	63132042-Cut	13.0	6132 - Mixed Lowland Forest with Cedar	High Density Log	79	Harvest	Group Selection	6132 - Mixed Lowland Forest with Cedar	Cmpt. Review Proposal
<u>Prescription</u> Remove all aspen, paper birch and maple. May need to cut some cedar for mobility. Leave scattered nurse logs to aid in cedar regeneration.									
<u>Specs:</u>									
<u>Other</u> Stand will need to be winter cut.									
<u>Comments:</u>									
<u>Next</u>									
<u>Steps:</u>									
43	63132043-Cut	21.0	42110 - Planted Red Pine	High Density Pole	58	Harvest	Single Tree Selection	42110 - Planted Red Pine	Cmpt. Review Proposal
<u>Prescription</u> Thin red pine to a residual BA of 120.									
<u>Specs:</u>									
<u>Other</u>									
<u>Comments:</u>									
<u>Next</u>									
<u>Steps:</u>									
44	63132044-Cut	42.9	4311 - Pine, Aspen Mix	High Density Pole	73	Harvest	Shelterwood	4311 - Pine, Aspen Mix	Cmpt. Review Proposal
<u>Prescription</u> Remove all aspen and maple. mark white and red pine leaving a residual BA of 30-50. Leave all oak.									
<u>Specs:</u>									
<u>Other</u> Protect oak poles and saplings in the understory. The oak/pine component is desired in this stand. Focus on retaining mast and berry producing									
<u>Comments:</u> shrubs.									
<u>Next</u> Check regeneration.									
<u>Steps:</u>									

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Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
56 63132056-Cut	36.9	42260 - Natural Pine, Mixed Deciduous	High Density Pole	54	Harvest	Group Selection	42260 - Natural Pine, Mixed Deciduous	Cmpt. Review Proposal

Prescription Remove aspen, maple and jack pine. mark to cut in red pine pockets removing low quality trees. Leave oak. Focus on retaining mast and berry producing shrubs.

Other The south portion of this stand becomes hilly treatment boundary may need to be adjusted to compensate for slope.

Next  
Steps:

65 63132065-Cut	67.7	4131 - Aspen, Oak	High Density Pole	88	Harvest	Clearcut with Reserves	4131 - Aspen, Oak	Cmpt. Review Proposal
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Prescription Cut all trees except oak, hemlock and mast producing shrubs. Include grouse drumming log, stump production and top retention spec.

Other There are several vernal ponds within the stand boundary. These areas should be buffered. Consider winter or dry summer harvest.

Next  
Steps:

76 63132076-Cut	31.2	4119 - Mixed Northern Hardwoods	High Density Log	96	Harvest	Single Tree Selection	4119 - Mixed Northern Hardwoods	Cmpt. Review Proposal
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Prescription Thin hardwood to a residual BA of 70-80. cut aspen pockets to regenerate. Focus on retaining mast and berry producing shrubs. There is a small pond next to this stand. These areas should be buffered. Consider winter or dry summer harvest.

Other Aspen is concentrated in clones around stand edges.

Next  
Steps:

79 63132079-Cut	60.4	42220 - Natural Jack Pine	High Density Log	63	Harvest	Clearcut with Reserves	42260 - Natural Pine, Mixed Deciduous	Cmpt. Review Proposal
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Prescription Remove jack pine, aspen and red maple. mark red pine where needed to provide crown spacing.

Other Apply harvest methods to promote jack pine regen. Follow BMP and natural river guidelines.

Next Check for regen and plant or seed if needed.

82 63132082-Cut	41.0	4133 - Aspen, Mixed Pine	Low Density Log	87	Harvest	Clearcut with Reserves	42250 - Pine, Oak	Cmpt. Review Proposal
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Prescription Cut all trees except oak and mast producing shrubs. Include grouse drumming log, stump production and top retention spec.

Other stop operations east of the road. natural rivers guidelines need to be followed. West polygon to be harvested by WLD.

Next  
Steps:



S t a n d	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
87	63132087-Cut	182.0	4111 - S.Maple, Hard Mast Association	High Density Log	95	Harvest	Single Tree Selection	4111 - S.Maple, Hard Mast Association	Cmpt. Review Proposal

Prescription Thin to a residual BA of 70-80. Limit harvest impact around scenic overlook. Focus on ash removal where applicable.

Specs:

Other reinforce berms blocking old rds in stand.

Comments:

Next  
Steps:

93	63132093_Edt -Cut	2.1	4111 - S.Maple, Hard Mast Association	Medium Density Pole	62	Harvest	Single Tree Selection	4111 - S.Maple, Hard Mast Association	Cmpt. Review Proposal
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Prescription Thin to a residual BA of 70-80.

Specs:

Other

Comments:

Next  
Steps:

103	63132103-Cut	23.4	4111 - S.Maple, Hard Mast Association	High Density Log	76	Harvest	Single Tree Selection	4111 - S.Maple, Hard Mast Association	Cmpt. Review Proposal
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Prescription Thin to a residual BA of 70-80.

Specs:

Other remove ash. Block access to sand pit on south edge of stand.

Comments:

Next  
Steps:

18	NF_63132018- Burn	48.8	Non-Forested		0	Prescribed Burn	Unspecified	3303 - Mixed Low Density Trees	Cmpt. Review Proposal
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Prescription Rv Burn to set back encroachment and promote warm season grasses.

Specs:

Other

Comments:

Next  
Steps:

30	NF_63132030- Burn	66.6	Non-Forested		0	Prescribed Burn	Unspecified	31022 - Warm Season Grass	Cmpt. Review Proposal
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Prescription Rx Burn to promote warm season grasses and set back encroachment

Specs:

Other

Comments:

Next  
Steps:

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



S t a n d	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval
									Status
36	NF_63132036- Burn	51.7	Non-Forested		0	Prescribed Burn	Unspecified	3205 - Mixed Upland Shrub	Cmpt. Review Proposal

Prescription Rx Burn to set back encroachment and promote grasses.

Specs:

Other

Comments:

Next

Steps:

90	NF_63132090- Burn	38.1	Non-Forested		0	Prescribed Burn	Unspecified	31021 - Cool Season Grass	Cmpt. Review Proposal
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Prescription Rx Burn and plant warm season grasses

Specs:

Other

Comments:

Next

Steps:

96	NF_63132096- Burn	26.9	Non-Forested		0	Prescribed Burn	Unspecified	31022 - Warm Season Grass	Cmpt. Review Proposal
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Prescription Rx burn to set back encroachment and plant warm season grasses.

Specs:

Other

Comments:

Next

Steps:

**Total Treatment  
Acreage Proposed: 1113.7**



S t a n d	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
101	63132101-Cut	36.4	4111 - S.Maple, Hard Mast Association	High Density Pole	77	Harvest	Single Tree Selection	4111 - S.Maple, Hard Mast Association	Cmpt. Review Proposal

Prescription Thin to residual BA of 70-80

Specs:

Other Natural river buffers will need to be followed.

Comment:

Next

Steps:

Limiting Factor and No 2G: Blocked by physical obstacle

Treatment Reason Wood could be forwarded up to the top of the embankment. A road does exist.

104	63132104-Cut	10.4	42210 - Natural Red Pine	High Density Pole	53	Harvest	Systematic Thinning	42110 - Planted Red Pine	Cmpt. Review Proposal
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Prescription Third row thin or mark to cut leave a residual BA of 120.

Specs:

Other

Comment:

Next

Steps:

Limiting Factor and No 2G: Blocked by physical obstacle

Treatment Reason A road does exist to this site. Wood would need to be forwarded to the top of embankment.

121	63132121-Cut	1.9	42110 - Planted Red Pine	High Density Pole	60	Harvest	Single Tree Selection	42110 - Planted Red Pine	Cmpt. Review Proposal
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Prescription Thin to a residual BA of 120

Specs:

Other

Comment:

Next

Steps:

Limiting Factor and No 4D: Low volume (small acreage)

Treatment Reason

**Total Treatment  
Acreage Proposed: 48.7**

**Out of YOE -- Treatments  
Prescribed with No Limiting Factor**

Year of Entry: 2013



Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
63102_OutOfY OE_1-Cut	7.2				Harvest	Clearcut	42110 - Planted Red Pine	Cmpt. Review Proposal
<u>Prescription:</u> Final harvest plant to red pine								
<u>Specs:</u>								
<u>Other Comments:</u>								
<u>Next Steps:</u> Write FTP								
<b>Total Treatment Acreage Proposed:</b>		<b>7.2</b>						



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
1	4110 - Sugar Maple Association	High Density Log	36.2	Uneven Age	81-110	* Trace of red maple. There are alot of high quality sawlogs in this stand crown spacing is adequate in some places but tight in others. Some of the larger DBH trees are growing past the 24" size limit for hardwoods most of these trees are of veneer quality. Pockets of sugar maple regen less than 3' are present throughout the stand. Jason Stephens collected QD data for in depth sand analysis.
2	4130 - Aspen	High Density Log	13.6	62		Good quality aspaen stand
4	42260 - Natural Pine, Mixed Deciduous	High Density Log	5.9	73	171-200	Aspen in this stand is ready to go, it is likely that it will not make the next rotation.
6	42110 - Planted Red Pine	High Density Log	1.8	65	171-200	Stand split by property line - half on private.
7	4133 - Aspen, Mixed Pine	High Density Log	9.8	Uneven Age	111-140	
9	42141 - Planted Mixed Pine, Mixed Deciduous	High Density Sapling	46.3	21		Young pine strips had adjoining mature pine removed last winter will be replanted.
10	42110 - Planted Red Pine	Medium Density Log	25.4	Uneven Age	1-50	This stand has a red pine overstory that was heavily thinned prior to a prescribed burn. The treatment resulted in a flush of bigtooth aspen and red maple which is mostly stump sprout in origin. A portion of the thinned area was excluded from the RXB this area has thicker and taller regen.
11	4130 - Aspen	High Density Pole	21.4	52		
13	4130 - Aspen	High Density Pole	9.0	47		
14	42110 - Planted Red Pine	Medium Density Log	60.9	77	111-140	RXB was done to reduce maple in the understory and promote natural red pine volunteers. Stem quality is mostly sawlog and pulp some cabin logs and poles.
15	4130 - Aspen	High Density Pole	30.5	44		Good oak in stand lots of deer travel
21	42110 - Planted Red Pine	High Density Sapling	45.8	39	111-140	Grass groundcover. Aspen is mainly located along edges. Pine is 2 sticks at this time.
22	4130 - Aspen	High Density Pole	63.8	49	81-110	Stand is good condition at this time. aspen is 4-6 sticks in most places within the stand. Could be broken into multiple units to stagger age class. If this is done begin cutting in the southern unit.
23	4130 - Aspen	Medium Density Pole	172.1	57		Quality varies throughout stand.



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
24	42260 - Natural Pine, Mixed Deciduous	High Density Log	10.3	64	141-170	Weevil damaged pine, aspen looks good.
25	4110 - Sugar Maple Association	Low Density Log	27.4	68	51-80	Open grown hardwood stand. Poor quality stems very little saw log potential.
26	42110 - Planted Red Pine	High Density Log	41.7	65	111-140	Stand has heavy sugar maple regen AFO indicator species
27	4110 - Sugar Maple Association	High Density Log	5.6	89	81-110	Quality log stand has regen filling the gaps created by the last harvest.
29	4130 - Aspen	Medium Density Pole	20.6	54		Trace amount of red oak present
32	4130 - Aspen	High Density Log	41.1	48	51-80	
33	4139 - Aspen, Mixed Deciduous	Medium Density Log	24.4	49	81-110	Stand follows a ridge that drops in a cedar stand, the bottom of the ridge is wet in some places there is a higher contingent of quaking aspen in these areas. An older contingent of sugar maple has produced a good flush of saplings in various pockets. The indicator species are present for an AFO and an AFOCa in small pockets.
34	42221 - Natural Jack Pine, Mixed Deciduous	Medium Density Pole	7.8	43	51-80	Small jack pine stand with some patches of good trees but most are in poor condition. there is a lot of blow down and snapped off trees.
35	4110 - Sugar Maple Association	High Density Log	22.1	63	81-110	
39	4133 - Aspen, Mixed Pine	Medium Density Pole	55.6	47		Two-aged aspen. stand is extremely variable in size and stocking density. Some clones of bigtooth are fair to good quality. overall quality is rather poor. Good location for a chip sale.
40	42260 - Natural Pine, Mixed Deciduous	High Density Log	14.8	52	171-200	Small drainage on north end of stand flowing from the west.
42	6132 - Mixed Lowland Forest with Cedar	High Density Log	13.0	79	171-200	Soils are inconsistant throughout the stand holding water in some areas while remaining dry in others. there is a network of deer runs throughout the stand but it does not appear to be a wintering area there is plenty of browse within reach of ground level.
43	42110 - Planted Red Pine	High Density Pole	21.0	58	171-200	Slash is present but breaking down, heavy in places.
44	4311 - Pine, Aspen Mix	High Density Pole	42.9	73	171-200	Aspen clones vary in quality. A portion of the west end is visible from NCT leave visual buffer.



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
45	4199 - Other Mixed Upland Deciduous	High Density Pole	11.0	56	81-110	Scattered Log size trees with a smaller diameter pole stand growing into the canopy. Poles are primarily bigtooth and red maple.
46	42110 - Planted Red Pine	High Density Log	30.0	67	111-140	Thinned winter of 2010
47	6118 - Lowland Deciduous with Cedar	Medium Density Pole	11.3	95		Stand is forested although it is lowland forest and very wet.
48	4130 - Aspen	High Density Pole	8.4	43		Small aspen pole stand with a log overstory of red oak and white pine.
50	4130 - Aspen	High Density Pole	36.8	57		Stand make up is comparable to parts of stand 92. flowing water between stands blocks rd that connects stands.
52	4139 - Aspen, Mixed Deciduous	High Density Pole	26.2	16		The east side of the road that bisects the stand follows a ridge that leads into a valley running down to the river. The valley is currently wet and appears to regularly seep water down to the river. This valley is not part of the harvest tht attributes to the atsnd age given from the cutting record. * a trace of hemlock and cedar are present in the valley.
54	4191 - Mixed Upland Deciduous with Conifer	Medium Density Log	13.5	83		Steep river bank. NCT views
55	42110 - Planted Red Pine	High Density Log	17.6	67	171-200	
56	42260 - Natural Pine, Mixed Deciduous	High Density Pole	36.9	54	141-170	The main body of this stand is fairly level and treatable. Stop treatments at top of steep hill. The North Country Trail follows the ridgeline that creates the southern boundary of the stand. Create a visual buffer between trail and harvest operations.
57	4130 - Aspen	High Density Log	7.3	68		Steep slope leading too river bottom.
58	42110 - Planted Red Pine	High Density Log	103.6	67	171-200	Consumers Energy Pine Lease.
59	4131 - Aspen, Oak	High Density Pole	22.8	41		
60	4123 - Red Oak	High Density Log	13.0	97	81-110	Located on a steep slope leading down to the river. The NCT follows the top of the ridge and borders stand.
61	4191 - Mixed Upland Deciduous with Conifer	Medium Density Log	19.7	63		Fairly open grown stand with several grass patches that are used as campsites.
65	4131 - Aspen, Oak	High Density Pole	67.7	88	81-110	There are several vernal ponds located within this stand that will need to be buffered during harvest operations. recommend winter cut or dry summer due to high water table in areas.



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
66	4131 - Aspen, Oak	Medium Density Log	8.5	31		North country trail overlooks stand. Two age stand with containing oak and pine over younger aspen
68	6120 - Lowland Cedar	High Density Log	2.8	93	200+	Several seeps bubbling out of the ground.
71	4131 - Aspen, Oak	High Density Log	11.5	93		Stand is located on a steep ridge dropping into the manistee river valley.
74	6118 - Lowland Deciduous with Cedar	Medium Density Log	6.3	41	81-110	This stand was split off from 117 it is 20'-30' lower in elevation than the rest of the stand and extends into the river bottom. there are pockets of standing water and evidence of flooding.
76	4119 - Mixed Northern Hardwoods	High Density Log	31.2	Uneven Age	141-170	Aspen concentrated in clones mostly around edges.
77	6118 - Lowland Deciduous with Cedar	Medium Density Log	41.3	124		Multi polygon stand
79	42220 - Natural Jack Pine	High Density Log	60.4	63	81-110	Cedar is a small component along the river edge. There is a rd coming into the stand off 23 mi rd. jack pine beginning to fall over.
80	4119 - Mixed Northern Hardwoods	High Density Log	6.7	Uneven Age		Along lower level of flood plain but above the "E" type. Trace of yellow birch.
81	4133 - Aspen, Mixed Pine	Low Density Log	3.6	73	51-80	
82	4133 - Aspen, Mixed Pine	Low Density Log	41.0	87		Poor Quality aspen, fairly open grown.
83	6120 - Lowland Cedar	High Density Log	10.1	84	200+	
85	42211 - Natural Red Pine, Mixed Deciduous	High Density Log	10.3	136	141-170	Very scenic stand of large red pine and oak. NCT overlooks. STEEP bank to river. Evidence of previous fire activity. Most of red pine are fire scarred and well as some of the oak. Hillside is scattered with burned over pine stumps.
86	42260 - Natural Pine, Mixed Deciduous	High Density Log	35.3	68	171-200	Most of this stand is within natural river corridor.
87	4111 - S.Maple, Hard Mast Association	High Density Log	292.7	95	141-170	Very nice hardwood stand that has a diverse stand dynamic depending on location within the stand. lots of use by public. High rollways viewing area. West end of stand has some steep hills that may require some creative harvest techniques. There is a network of old roads throughout this stand that need to be blocked post harvest it is through this network of trails that access can be gained into the lower elevation stands on river peninsulas.



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
88	6132 - Mixed Lowland Forest with Cedar	High Density Log	7.9	93	200+	Unique stand of river edge cedar. stand would appear to provide good thermal cover but very little deer activity present. 11" cedar cored much larger trees present.
89	4130 - Aspen	High Density Log	3.5	94	81-110	Aspen regen along southern edge of stand 10-20 ft tall. FTP#W 63-521 cut winter of 2002/2003
91	4130 - Aspen	High Density Sapling	16.8	7		Wildlife habitat cut done in winter of 2002/2003 FTP# W63-521
92	6132 - Mixed Lowland Forest with Cedar	High Density Log	7.1	147		
93	4111 - S.Maple, Hard Mast Association	Medium Density Pole	2.1	62	81-110	OI Stand 109. Field Sheet stand 96-missing. Fmd: Super canopy white pine; some hemlock. Flagged for Unit QC.
94	4131 - Aspen, Oak	Medium Density	16.4	Uneven Age		Stand is mostly aspen regen with a red oak overstory. All cut aspen was left on site. Located an FTP that puts the cut in the winter of 2002/2003 FTP# W 63-521. Residual oak carries a BA of 10-50
95	6118 - Lowland Deciduous with Cedar	High Density Log	26.2	126	81-110	Standing water pockets scattered throughout stand.
97	4139 - Aspen, Mixed Deciduous	High Density Log	1.9	94	81-110	
98	6120 - Lowland Cedar	High Density Log	3.8	113	111-140	Very little cervid evidence within stand. Mucky ground with seeps in places.
99	6118 - Lowland Deciduous with Cedar	High Density Log	1.4	73		
101	4111 - S.Maple, Hard Mast Association	High Density Pole	36.4	Uneven Age	111-140	A large amount of poor quality tress with good poles growing in.
102	4199 - Other Mixed Upland Deciduous	High Density Log	67.6	104	141-170	Sugar maple component decreases toward the west side of the stand. opengrown stand with very little regen underneath canopy.
103	4111 - S.Maple, Hard Mast Association	High Density Log	23.4	Uneven Age	141-170	Super canopy of White Pine and some Hemlock.
104	42210 - Natural Red Pine	High Density Pole	10.4	53	200+	Small red pine stand on a penninsula in the manistee river.
105	6118 - Lowland Deciduous with Cedar	Medium Density Pole	11.4	Uneven Age	51-80	Cedar component higher in north end of stand.
108	4130 - Aspen	High Density Pole	14.9	28		stand has regenerated nicely

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## Cadillac Mgt. Unit

## 5 – Forested Stands

Compartment: 132  
Year of Entry: 2013

	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
109	4139 - Aspen, Mixed Deciduous	High Density Log	10.3	87	171-200	AFO indicators present NCT bisects stand
110	4131 - Aspen, Oak	Medium Density Log	36.8	63	111-140	
111	4199 - Other Mixed Upland Deciduous	High Density Log	52.5	92	111-140	Due to the inaccessability of this stand it would be a good candidate for old growth nomination.
112	6118 - Lowland Deciduous with Cedar	Medium Density Log	5.3	73	141-170	Flooded spring of 2011 (flood plain).
113	6118 - Lowland Deciduous with Cedar	High Density Log	8.4	67		No access. River flood plain.
114	6118 - Lowland Deciduous with Cedar	High Density Pole	16.8	65		Wet mucky ground on inside of river bend at base of very steep slope no chance of equipment access.
115	4139 - Aspen, Mixed Deciduous	High Density Log	21.0	91		Converting from mature aspen to northern hardwoods. Allow natural conversion due to heavy travel influences-North Country Trail. Extends around bend of river.
116	4110 - Sugar Maple Association	High Density Log	18.9	63	111-140	Flood plain very rich soil
119	6115 - Lowland Ash	Medium Density Pole	1.6	47		River Flood Plain
121	42110 - Planted Red Pine	High Density Pole	1.8	60	200+	Very small planation thinning may not be logistically viable.



Stand	Cover Type	Acres	Managed Site	Management Priority (Objective)	General Comments:
3	3205 - Mixed Upland Shrub	6.0	No	Unspecified	Saw hen pheasant in this opening
5	3303 - Mixed Low Density Trees	19.6	No	Unspecified	
8	3302 - Low Density Conifer Trees	61.9	Yes	High (NonForested)	Red Pine plantation was harvested for red pine project small pockets of mature red pine were left on site.
12	3301 - Low Density Deciduous Tree	7.8	Yes	Low (NonForested)	
16	3102 - Grass	5.5	No	Unspecified	joins large field to the north on private. This land is for sale 80ac.
17	3105 - Mixed Upland Herbaceous	3.6	Yes	Low (NonForested)	
18	3301 - Low Density Deciduous Tree	48.8	Yes	Low (NonForested)	
19	3204 - Mast Producing Shrub	2.2	No	Unspecified	
20	3205 - Mixed Upland Shrub	15.3	No	Unspecified	
28	31022 - Warm Season Grass	3.8	Yes	Low (NonForested)	
30	31022 - Warm Season Grass	66.6	Yes	Medium (NonForested)	Fmd: Burn for warm season grasses, wild flowers planted as well as fruit and chestnut trees.
31	3102 - Grass	1.1	No	Unspecified	
36	3205 - Mixed Upland Shrub	51.7	Yes	Medium (NonForested)	
37	6229 - Mixed lowland shrub	1.4	No	Unspecified	Shrubs are witch hazel, willow and musclemwood.
38	3205 - Mixed Upland Shrub	5.5	No	Unspecified	
41	3102 - Grass	1.0	No	Unspecified	
49	710 - Sand, Soil	4.0	Yes	High (NonForested)	
51	3301 - Low Density Deciduous Tree	2.5	No	Unspecified	



Stand	Cover Type	Acres	Managed Site	Management Priority (Objective)	General Comments:
53	3105 - Mixed Upland Herbaceous	2.2	No	Unspecified	starting to fill with woody vegetation
62	710 - Sand, Soil	3.4	No	Unspecified	
63	3205 - Mixed Upland Shrub	1.5	Yes	Medium (NonForested)	
64	3205 - Mixed Upland Shrub	2.1	Yes	Medium (NonForested)	
67	6225 - Bog	32.1	No	Unspecified	
69	710 - Sand, Soil	1.2	No	Unspecified	
70	710 - Sand, Soil	5.5	No	Unspecified	sand bank leading down to river. Below high rollways observation deck.
72	629 - Mixed non-forested wetland	4.6	No	Unspecified	
73	50 - Water	3.0	No	Unspecified	Small vernal pond buffer when surrounding stand is harvested.
75	710 - Sand, Soil	4.0	No	Unspecified	scattered trees
78	3205 - Mixed Upland Shrub	1.0	Yes	Low (NonForested)	
84	3303 - Mixed Low Density Trees	3.1	No	Unspecified	
90	3102 - Grass	38.1	Yes	High (NonForested)	
96	3102 - Grass	26.9	Yes	Medium (NonForested)	
100	50 - Water	50.2	No	Unspecified	
106	3301 - Low Density Deciduous Tree	10.5	No	Unspecified	
107	3102 - Grass	2.0	No	Unspecified	
117	3102 - Grass	1.2	No	Unspecified	



Stand	Cover Type	Acres	Managed Site	Management Priority (Objective)	General Comments:
118	710 - Sand, Soil	1.5	No	Unspecified	Sand bank about 100 feet tall along Manistee R.
120	6229 - Mixed lowland shrub	2.7	No	Unspecified	
122	11 - Low Intensity Urban	1.1	Yes	High (NonForested)	Boat launch and toilet



## 7 – 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.

Stand	SCA Type	SCA Name	Acres	Comments
45	SCA Removal	63132045	11.0	previous notes are factor limited for potential old growth.
55	Unique Site - SCA	63132055	13.5	Old POG
58	Unique Site - SCA	63132058	7.3	Old POG
60	Unique Site - SCA	63132060	22.8	Old POG
61	Unique Site - SCA	63132061	13.0	Old POG
72	Unique Site - SCA	63132072	11.5	
77	Unique Site - SCA	63132077	41.3	Old POG
85	Unique Site - SCA	63132085	10.3	
87	SCA Removal	63132087	292.7	Stand can be managed under hardwood guidelines without compromising unique values.
93	Unique Site - SCA	63132093	16.4	Old POG
94	Unique Site - SCA	63132094	26.3	Old POG
100	Unique Site - SCA	63132100	67.6	Old POG
107	Unique Site - SCA	63132107	10.3	Old POG
110	Unique Site - SCA	63132110	5.3	Old POG



**8 – DEDICATED CONSERVATION AREA DETAILS**

\* This is a list of Dedicated Biodiversity Areas for this compartment along with a 1/4 mile buffer surrounding the compartment. Refer to Dedicated Conservation Area Map for areas that the below listed Conservation Areas are located.

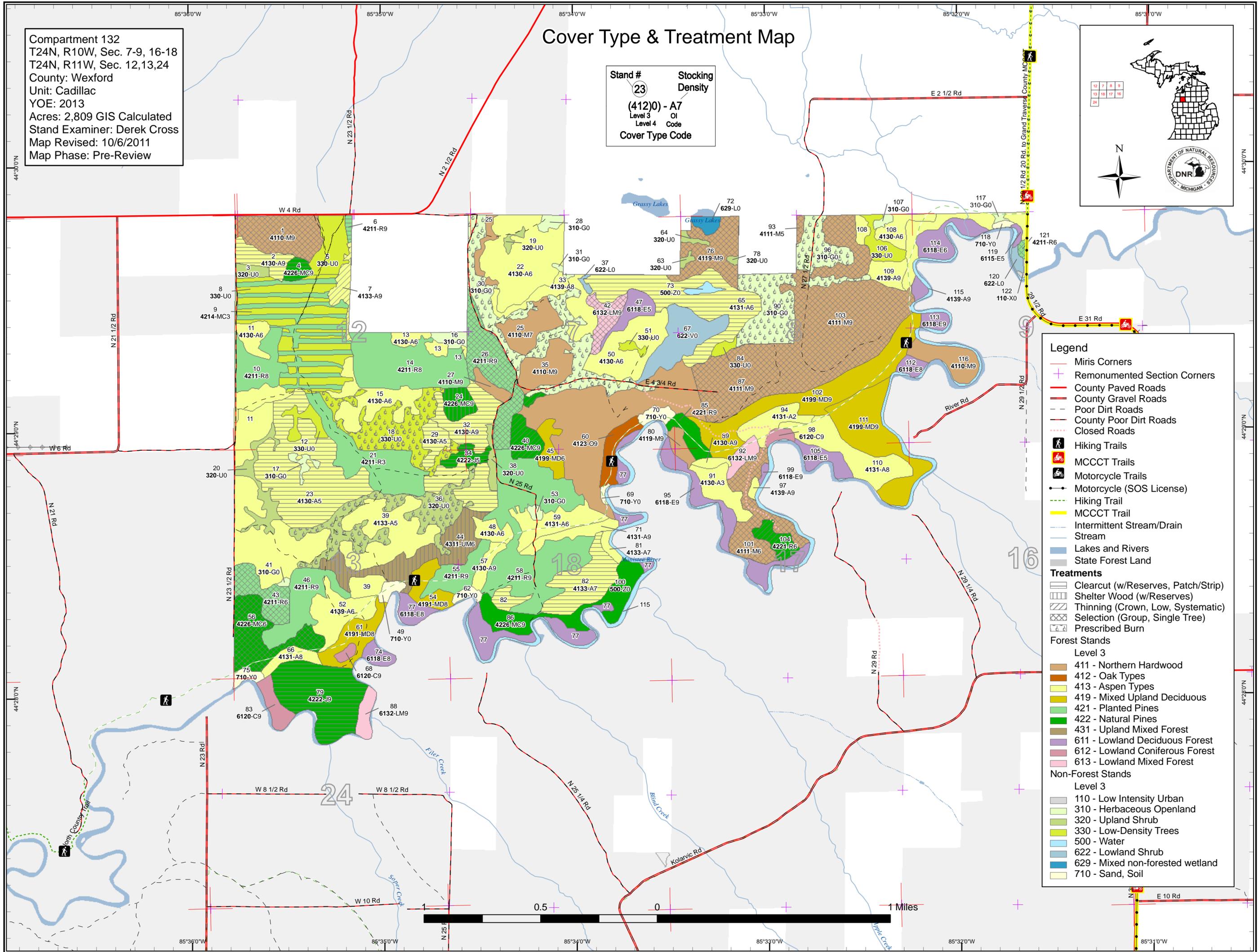
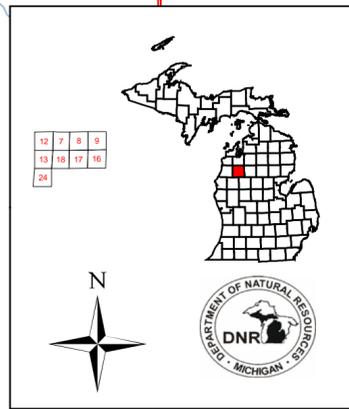
ERA = Ecological Reference Area  
HCVA = High Conservation Value Area  
SCA = Special Conservation Area

Conservation Area	Type	Description
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.
SCA	Concentrated Recreation Area	Facilities that are designed and maintained for routine or heavy recreational use, including State Parks, State Forest campgrounds, motorized and non-motorized trails, trailheads, staging areas and public access sites.

# Cover Type & Treatment Map

Compartment 132  
 T24N, R10W, Sec. 7-9, 16-18  
 T24N, R11W, Sec. 12,13,24  
 County: Wexford  
 Unit: Cadillac  
 YO: 2013  
 Acres: 2,809 GIS Calculated  
 Stand Examiner: Derek Cross  
 Map Revised: 10/6/2011  
 Map Phase: Pre-Review

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



### Legend

- Miris Corners
- Remounted Section Corners
- County Paved Roads
- County Gravel Roads
- Poor Dirt Roads
- County Poor Dirt Roads
- Closed Roads
- Hiking Trails
- MCCCT Trails
- Motorcycle Trails
- Motorcycle (SOS License)
- Hiking Trail
- MCCCT Trail
- Intermittent Stream/Drain
- Stream
- Lakes and Rivers
- State Forest Land

### Treatments

- Clearcut (w/Reserves, Patch/Strip)
- Shelter Wood (w/Reserves)
- Thinning (Crown, Low, Systematic)
- Selection (Group, Single Tree)
- Prescribed Burn

### Forest Stands

Level 3

- 411 - Northern Hardwood
- 412 - Oak Types
- 413 - Aspen Types
- 419 - Mixed Upland Deciduous
- 421 - Planted Pines
- 422 - Natural Pines
- 431 - Upland Mixed Forest
- 611 - Lowland Deciduous Forest
- 612 - Lowland Coniferous Forest
- 613 - Lowland Mixed Forest

### Non-Forest Stands

Level 3

- 110 - Low Intensity Urban
- 310 - Herbaceous Openland
- 320 - Upland Shrub
- 330 - Low-Density Trees
- 500 - Water
- 622 - Lowland Shrub
- 629 - Mixed non-forested wetland
- 710 - Sand, Soil



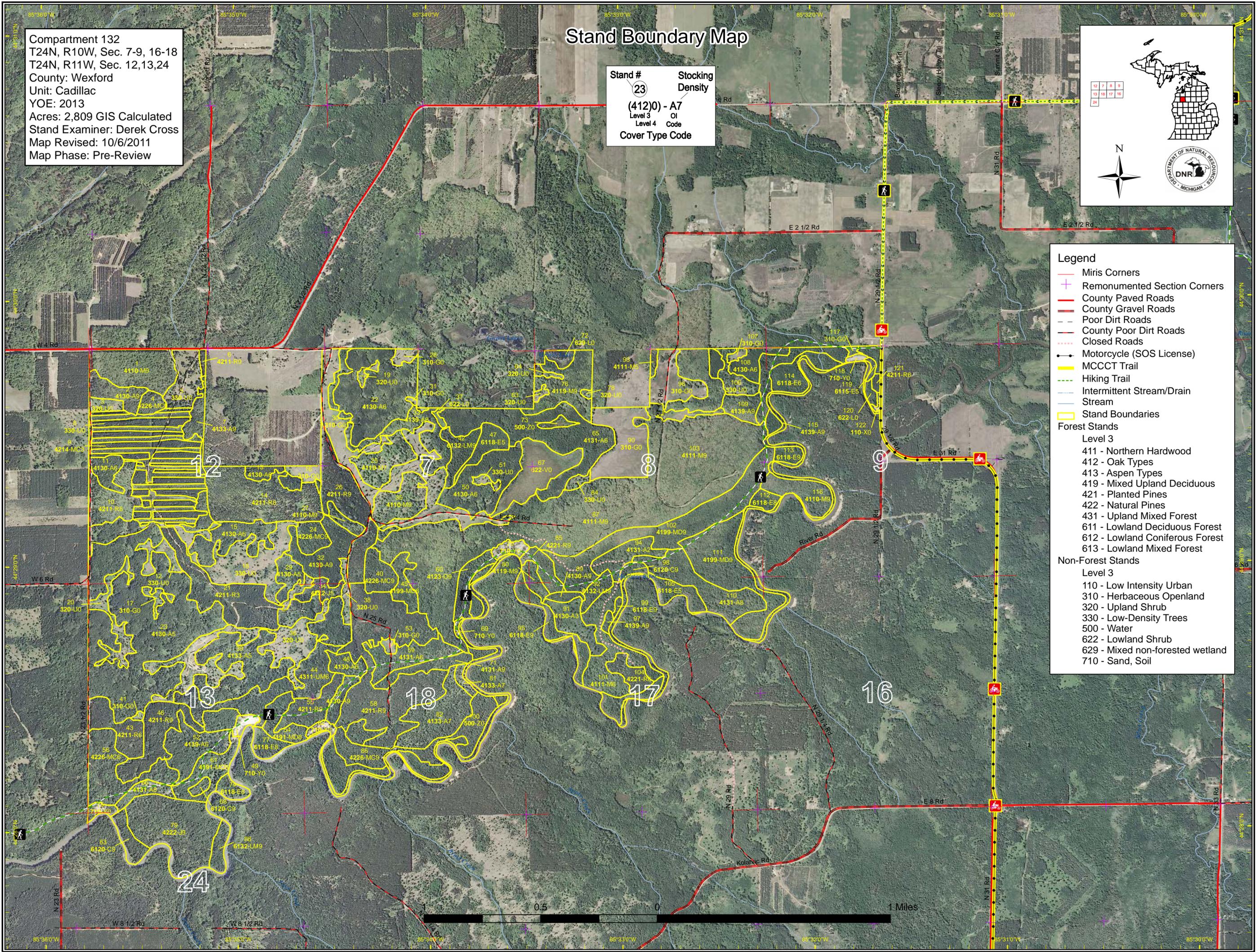
# Stand Boundary Map

Compartment 132  
 T24N, R10W, Sec. 7-9, 16-18  
 T24N, R11W, Sec. 12,13,24  
 County: Wexford  
 Unit: Cadillac  
 YOE: 2013  
 Acres: 2,809 GIS Calculated  
 Stand Examiner: Derek Cross  
 Map Revised: 10/6/2011  
 Map Phase: Pre-Review

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



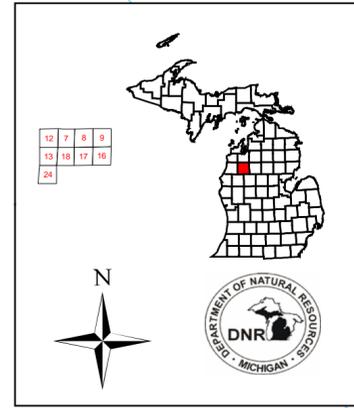
- Legend**
- Miris Corners
  - ⊕ Remonumented Section Corners
  - County Paved Roads
  - County Gravel Roads
  - - - Poor Dirt Roads
  - - - County Poor Dirt Roads
  - ⋯ Closed Roads
  - ⚡ Motorcycle (SOS License)
  - MCCCT Trail
  - Hiking Trail
  - Intermittent Stream/Drain
  - Stream
  - Stand Boundaries
- Forest Stands**
- Level 3
- 411 - Northern Hardwood
  - 412 - Oak Types
  - 413 - Aspen Types
  - 419 - Mixed Upland Deciduous
  - 421 - Planted Pines
  - 422 - Natural Pines
  - 431 - Upland Mixed Forest
  - 611 - Lowland Deciduous Forest
  - 612 - Lowland Coniferous Forest
  - 613 - Lowland Mixed Forest
- Non-Forest Stands**
- Level 3
- 110 - Low Intensity Urban
  - 310 - Herbaceous Openland
  - 320 - Upland Shrub
  - 330 - Low-Density Trees
  - 500 - Water
  - 622 - Lowland Shrub
  - 629 - Mixed non-forested wetland
  - 710 - Sand, Soil



# Dedicated & Proposed Special Conservation Area Map

Compartment 132  
 T24N, R10W, Sec. 7-9, 16-18  
 T24N, R11W, Sec. 12,13,24  
 County: Wexford  
 Unit: Cadillac  
 YOE: 2013  
 Acres: 2,809 GIS Calculated  
 Stand Examiner: Derek Cross  
 Map Revised: 10/6/2011  
 Map Phase: Pre-Review

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



- Legend**
- Miris Corners
  - Stand Boundaries
  - Proposed Special Conservation Areas
    - ▨ SCA - Special Conservation Area
    - ▩ SCA Removal
  - Dedicated Special Conservation Areas
    - Cold Water Streams
    - ⚓ Boat Access Sites
    - ⚠ Campgrounds
  - Forest Stands
    - Level 3
      - 411 - Northern Hardwood
      - 412 - Oak Types
      - 413 - Aspen Types
      - 419 - Mixed Upland Deciduous
      - 421 - Planted Pines
      - 422 - Natural Pines
      - 431 - Upland Mixed Forest
      - 611 - Lowland Deciduous Forest
      - 612 - Lowland Coniferous Forest
      - 613 - Lowland Mixed Forest
    - Non-Forest Stands
      - Level 3
        - 110 - Low Intensity Urban
        - 310 - Herbaceous Openland
        - 320 - Upland Shrub
        - 330 - Low-Density Trees
        - 500 - Water
        - 622 - Lowland Shrub
        - 629 - Mixed non-forested wetland
        - 710 - Sand, Soil

