



SAULT FOREST MANAGEMENT UNIT COMPARTMENT REVIEW PRESENTATION

COMPARTMENT # 28 ENTRY YEAR: 2010

Compartment Acreage: 1205 County: Mackinac

Revision Date: August 11, 2008

Stand Examiner: Jeff Wise

Legal Description: T42N-R1E Sections 15, 16, 21, & 22; Clark Township

Management Goals: To develop an optimal age class distribution of aspen stands for sustainable forestry and wildlife values. To rotate hardwood treatments for optimum regeneration and stocking of all age classes. Maintain current openings as needed for diversity and enhancement of wildlife benefits. To provide reasonable public access for multiple use benefits such as hunting, trail riding, camping, and hiking, while protecting the natural resources. Most accessible areas have had treatments in the past. All prescribed treatments for this YOE are factor limited due to access. The main access road into the last remaining mature timber is on private land with a bridge rated for snowmobile use only. No treatments are planned for this compartment. This compartment is within the Huron Patterned Outcrop Management Area. Plans for this Management Area are currently being written.

Soil and Topography: Markey-Battydoe-Shelter Association, nearly level to steep, very deep soils that are very poorly drained to somewhat excessively drained. Pickford-Rudyard Association, nearly level to rolling, very deep soils that are very poorly drained to moderately well drained. Land is generally rolling, low to higher ground with areas of boulders, some very large. The compartment is split NW to SE by Mc Kay Creek with large areas of swamp.

Ownership Patterns, Development, and Land Use in and Around the Compartment: This compartment is essentially land locked from the public. Private land borders the north and north-west, with corporate land, Michigan Limestone, bordering on the south, east, and west. The DNR has easily obtained permission to access for management. Land use around the compartment is largely quarried for limestone products, with limited access for hunting by quarry employees, and private land owners.

Unique, Natural Features: Huge rock out-crops occur in the north-west part of the compartment. MNFI lists no element occurrences in this compartment but the potential may exist for limestone boulder loving species such as Walking Fern.

Archeological, Historical, and Cultural Features: None known at this time.

Special Management Designations or Considerations: Lies within the deer yard complex.

Watershed and Fisheries Considerations: This compartment contains a large portion of McKay Creek and the headwaters of Prentiss Creek. These streams are classified as cold transitional streams. No treatments are scheduled for this compartment.

Wildlife Habitat Considerations: No treatments are prescribed this YOY. Conifer cover within the deer yard of this compartment will be maintained in their current state. Several ephemeral wetlands and streams and permanent wetlands are within this compartment.

General Wildlife Objectives and Considerations:

1. Ephemeral wetlands/intermittent streams

Despite their small size, ephemeral wetlands and intermittent streams are critically important to reptile and amphibians and contribute to the overall forest biodiversity (MI Wildlife Action Plan – wetlands: ephemeral wetlands).

Terrestrial habitats within 100 ft of ephemeral wetlands and intermittent streams will be left uncut following to protect water quality BMP guidelines. Mature, undisturbed forests surrounding wetlands are important because harvest practices can degrade habitat suitability for dependent wildlife species, particularly reptiles and amphibians. Soil temperatures increase and humidity decreases with loss of canopy closure, rutting in low areas can disrupt species movement, harvested areas have lower dead and down woody debris, and exposed soils combined with large rain events after harvest can introduce sedimentation impacting water quality and quickly fill in small isolated wetlands.

Adjacent to the water quality buffer, management of the adjacent terrestrial habitat up to 500 ft will incorporate the life requirements of reptile and amphibian species. Harvest within this core habitat zone will avoid peak breeding periods of Apr. 15 – July 15th, when logistically feasible. Retention patches, particularly with clear cut stands, will be placed adjacent to wetland buffers or between wetlands within a stand to increase protection and connectivity.

2. River/Marsh

Maintaining mature, closed canopy forest types adjacent to rivers, lakes, ponds will benefit numerous wildlife species. Wood ducks, hooded mergansers, bald eagle, osprey, numerous passerines, red-shouldered hawk, black bear, fisher, marten, and other aquatic fur bearers are some species which utilize mature forests adjacent to water bodies.

Emphasis of mature forest community elements adjacent to water quality buffers will maximize wildlife value. Retention patches, particularly with clear cuts, will be placed adjacent to or between wetlands within a stand increase protection and connectivity. Harvest within 500 ft will avoid peak breeding reptile and amphibian breeding periods of Apr. 15 – July 15th, when logistically feasible.

3. Oak

Retention of oak is now particularly important given the significant loss of beech across the landscape. Management which encourages and protects mast producing species such as oak will benefit numerous wildlife species such as white-tailed deer, grouse, bear, rodents, and wild turkey.

4. Cedar/conifer/fir/spruce within deer yards

One of the primary objectives within deer yards is to maintain a dense canopy cover which serves as an intercept to snow accumulation during winter. To maintain this cover, retention of these species is important. Because of the low probability of cedar regeneration within concentrated areas of deer use, harvest should be avoided. If harvest of cedar has been conducted within the yard, evaluating harvest techniques and regeneration will be critical to the success of future management.

5. Cedar management outside of deer yard boundaries with regeneration challenges

Where cedar is not regenerating outside of deer yards, clear criteria should be developed to judge adequate regeneration and appropriated actions to correct understocked areas (SFI Performance Measure 2.1). It must be determined where and how much this lower stocking rate is acceptable. Because of the high economic

and ecological value of cedar, the priority should be to evaluate regeneration of past harvest areas and to limit or clearly define sustainable harvest levels until status within these areas is determined. Monitoring results will take time (30 - 50 yrs) but will not jeopardize cedar communities as they are long-lived.

In stands where cedar is harvested, actions will be taken to protect desirable or planned advanced natural regeneration during harvest (SFI Performance Measure 2.1):

- 1) Leave cedar seed trees every 30 ft.
- 2) Avoid cutting leaning cedar ($\sim \leq 45^\circ$) - trees provide better opportunities for vegetative regeneration.
- 3) Avoid harvesting large trees ($> 12''$ dbh) - good seed dispersal.
- 4) Create slash piles and downed whole trees adjacent to retained cedar.
- 5) Avoid harvesting in low areas with hummock microtopography as equipment can flatten and result in site conversion to species that are more adapted to wet areas.
- 6) Clearcutting of cedar on shallow organic soils, poorly decomposed acid peats, or wet mineral soils frequently result in inadequate regeneration. Harvest should be restricted to the most productive organic soils.

Citation:

Chimner, R.A., and J.B. Hart 1996. Hydrology and microtopography effects on northern white-cedar regeneration in Michigan's Upper Peninsula. *Can. J. For. Res.* 26:389-393.

Lanasa, M. 1989. Northern white-cedar management and whitetail deer habitat. In: *Proceedings of the National Silvicultural Workshop: Silviculture for all resources; 1987 May 11-14; Sacramento, CA.* Washington, DC: U.S. Department of Agriculture, Forest Service, Timber Management: 19-24.

Verme, L.J., and W.F. Johnson. 1986. Regeneration of Northern white cedar deeryards in upper Michigan. *J. Wild. Manag.* 50:307-313.

6. Northern hardwood

Retention of large diameter living trees and snags will provide cavity, den, and foraging habitat and future dead and down woody debris for numerous wildlife species.

7. Hemlock

Hemlock communities provide habitat for rare raptor species such as red-shouldered hawk and Northern goshawk and is also important to black-throated blue, cerulean, black-throated green warblers, and scarlet tanagers, black bear, moose and marten.

Closed canopy structure results in lower snow levels and lower energy expenditures for deer. When harvesting other trees species within a stand where hemlock is retained, equipment should refrain from removing trees from hemlock inclusions to avoid damaging the canopy.

8. Poor conifer swamp

This natural community is dominated by black spruce, Labrador tea, and sphagnum mosses and is important to many rare plants and animals such as the yellow pitcher plant, black crowberry, spruce grouse, wood turtle, and merlin. When managing for biodiversity within poor conifer swamps, large unharvested tracts may be left to allow natural processes to operate unhindered to generate a range of successional stages. Examples of this community with late successional characteristics are relatively rare and should be considered for retention with the presence of large trees, treefall gaps, snags and downed wood.

Dead and dying wood will be retained to become snags, stumps, and fallen logs. Long rotation periods (over 100 years) will favor numerous species, such as epiphytic lichen and trunk foraging birds that depend on old, large trees.

Where management does occur, patches of residual trees, all snags, and dead and downed wood will be retained. High retention (> 20 %) will be important because spruce is not very windfirm, thus isolated retention patches blow over easily. Retention of both spruce and fir is important to maintain the multi-storied structure within the stand.

Citation:

Kost, M.A., D.A. Albert, J.G. Cohen, B.S. Slaughter, R.K. Schillo, C.R. Weber, and K.A. Chapman. 2007. Natural Communities of Michigan: Classification and Description. Michigan Natural Features Inventory, Report No. 2007-21, Lansing, MI.

MDNR FMFM Within-Stand Retention Guidelines. 2006. Cover type specific considerations – spruce-fir. Pgs. 25-26.

9. Aspen

Maintaining a component of interspersed large (saw log) living aspen or aspen patches within managed stands will provide for future snag age class and a food resource for ruffed grouse. This aspen multi-age class juxtaposition also provides benefits for deer and hare.

Oak and cherry retained within aspen stands serve as important mast producers.

Retention of longer-lived species such as maple, oak, cedar, and white pine enhance vertical structure and assure a steady supply of snags and downed woody debris.

Retention of conifer < 4” dbh within stands provides cover for ruffed grouse.

10. Red pine

Retention of some red pine at final harvest in plantation stands provide wildlife values in terms of super-canopy nesting trees, a good long-term cavity resource, and live/wood legacy tree retention. The benefit of these patches to wildlife will be maximized by placing retention of red pine adjacent to 100 ft, unharvested, water quality buffers.

The retention zone beyond the buffer can be managed to maximize ecological complexity and natural plant diversity with variable density thinning and longer rotations. Retention within this zone of 60 – 80 ft² per acre of residual red pine at the initial harvest will result in development of two-age cohort stands and potentially multi-cohort stands when this level of harvest is repeated in the future. Economic rotation ages of 50 – 90 years are shorter than those to develop complex stand structures (120 – 200 years). Thus the primary determinant of harvest within the retention zone will be the acceptable level of structural complexity and within-stand heterogeneity.

Because large continuous stands of red pine of the same age are susceptible to severe pest outbreaks, having zones of red pine of varying age classes broken up with alternate non-pine species will prove beneficial.

Management within red pine plantations will enhance and perpetuate oak components which are an important hard mast source for numerous wildlife species.

Citation:

Gilmore, D. W., and B. J. Palik. 2006. A revised manager’s handbook for red pine in the North Central

Region. Gen. Tech. Rep. NC-264. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 55 p.

MDNR FMFM Within-Stand Retention Guidelines. 2006. Cover type specific considerations – red pine. Pgs. 22-23.

Michigan State Forest Red Pine Management Guidelines. 1991.

Nicholls, T. H., and D. D. Skillings. 1997. Pocket guide to red pine diseases and their management. U.S. Department of Agriculture, Forest Service, North Central Research Station.

11. Limestone Boulders

These unique geologic features serve as micro-habitat for several rare plant species including Hart's tongue fern, green spleenwort, and walking fern. Harvesting too close to these boulders can interrupt the canopy cover and micro-climate for these plants. In areas where plants have been found, retention guidelines will be followed (pg. 15). In areas within the plant species distribution (see MNFI summaries) harvest will not occur at a minimum of 10 ft of large boulders (approximately $\geq 4 \times 4$ ft) to protect micro-climate and possible future colonization sites.

12. Retention considerations

- Retention patches placed within a stand for water quality, inoperability, or protection of sensitive habitat can contribute toward but not fully satisfy retention requirements (pg. 10).
- Important to vary retention patterns across the landscape to encourage structural diversity (pg. 11).
 - When retaining scattered trees, important to capture the size diversity by assuring that large diameter trees / trees with desirable wildlife characteristics are included.
 - For stands greater than 10 acres, patches are recommended. This also assures that a representation of the current species community is retained.

Mineral Resource and Development Concerns and/or Restrictions: Surface sediments consist of thin to discontinuous glacial till over bedrock. The glacial drift thickness varies between 10 and 50 feet. The Silurian Engadine Group subgroups below the glacial drift. The Engadine is quarried for stone/dolomite in the UP. A gravel pit is located in Section 17 and there may be potential on the uplands. There is no current economic oil and gas production in the UP.

Vehicle Access: The Quarry Road is the only main access to this compartment. It is a private road owned and operated by the quarry for moving material with the large off road dump trucks. One two track enters the compartment through quarry property from the Quarry Road. The snow trail borders the compartment on the south side but has limited vehicle access.

Survey Needs: None this YOY unless access Limiting Factors are removed from stands in the north-west., then possibly Sec 21 could use some work.

Recreational Facilities and Opportunities: The snow trail runs the south border of the compartment. With no legal access to the public, there are no ORV trails. Hunting and trapping are predominant, with the possibility of other nature watching activities.

Fire Protection: The Quarry Road is the main access to this area for fire suppression. Water sources vary with several drainages and swamps. Lake Huron is about two miles away.

Additional Compartment Information:

- **Cover Type details, Proposed Treatments, and Stand listings are listed in the attached reports:**
 - ◆ **Proposed Treatments – No Limiting Factors**
 - ◆ **Proposed Treatments – With Limiting Factors**
 - ◆ **Stand Listing – Forested**
 - ◆ **Stand Listing – Non Forested**
 - ◆ **Special Conservation Area (SCA) Details**

- **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**
 - ◆ **SCA – Special Conservation Areas**

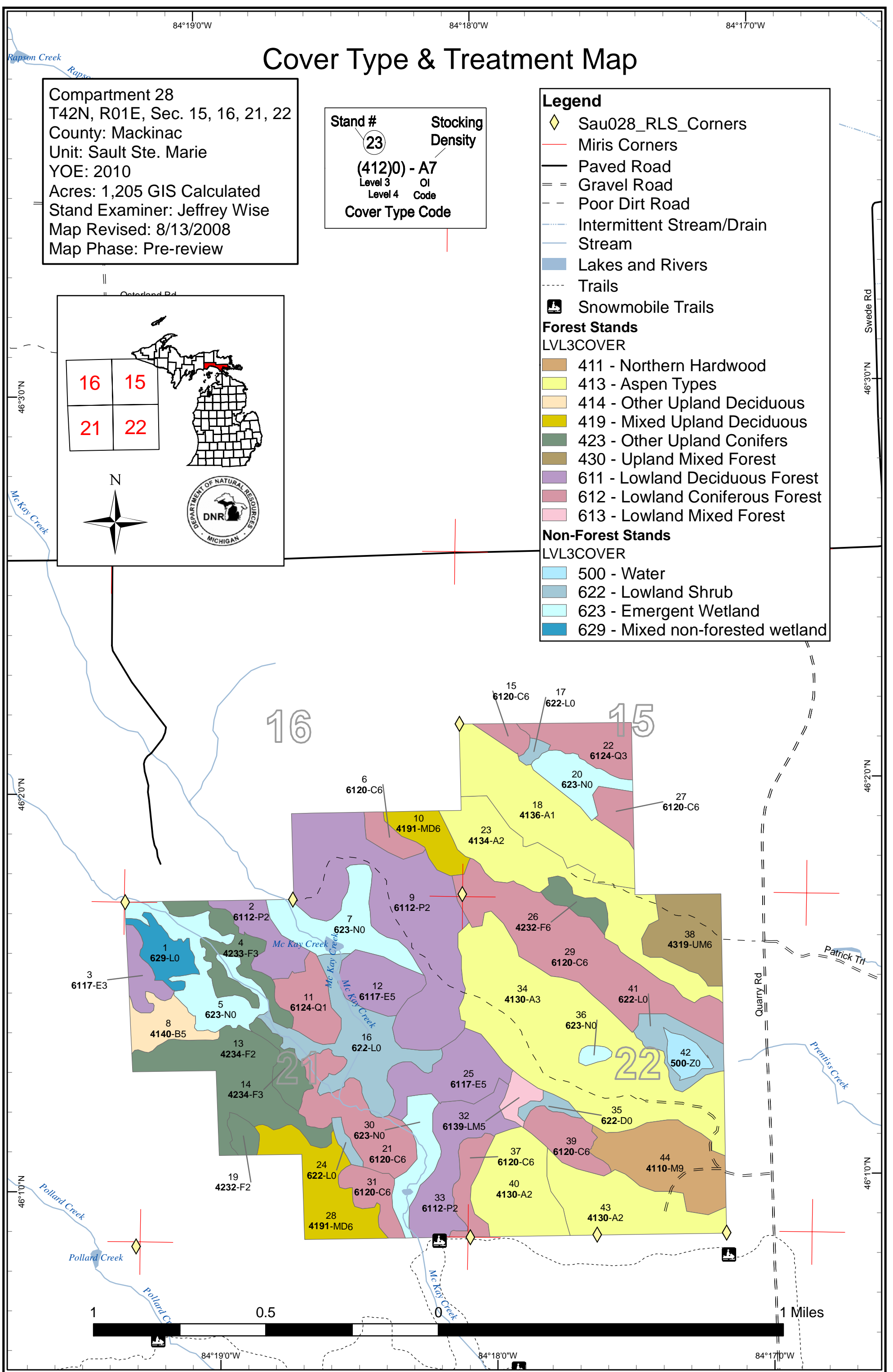
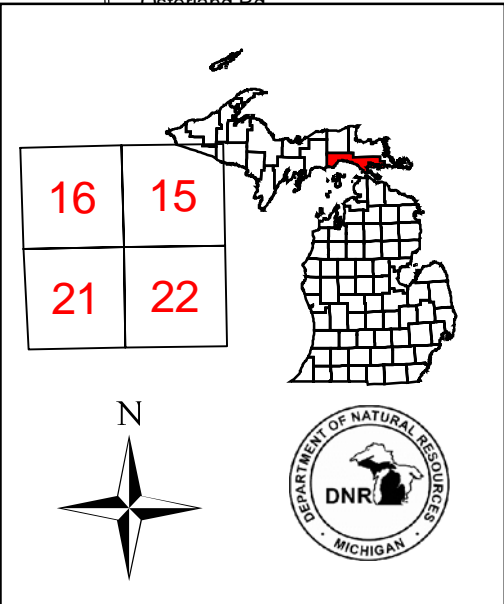
Cover Type & Treatment Map

Compartment 28
 T42N, R01E, Sec. 15, 16, 21, 22
 County: Mackinac
 Unit: Sault Ste. Marie
 YOE: 2010
 Acres: 1,205 GIS Calculated
 Stand Examiner: Jeffrey Wise
 Map Revised: 8/13/2008
 Map Phase: Pre-review

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

Legend

- ◆ Sau028_RLS_Corners
 - Miris Corners
 - Paved Road
 - == Gravel Road
 - - - Poor Dirt Road
 - Intermittent Stream/Drain
 - Stream
 - Lakes and Rivers
 - Trails
 - 🏠 Snowmobile Trails
- Forest Stands**
- LVL3COVER
- 411 - Northern Hardwood
 - 413 - Aspen Types
 - 414 - Other Upland Deciduous
 - 419 - Mixed Upland Deciduous
 - 423 - Other Upland Conifers
 - 430 - Upland Mixed Forest
 - 611 - Lowland Deciduous Forest
 - 612 - Lowland Coniferous Forest
 - 613 - Lowland Mixed Forest
- Non-Forest Stands**
- LVL3COVER
- 500 - Water
 - 622 - Lowland Shrub
 - 623 - Emergent Wetland
 - 629 - Mixed non-forested wetland

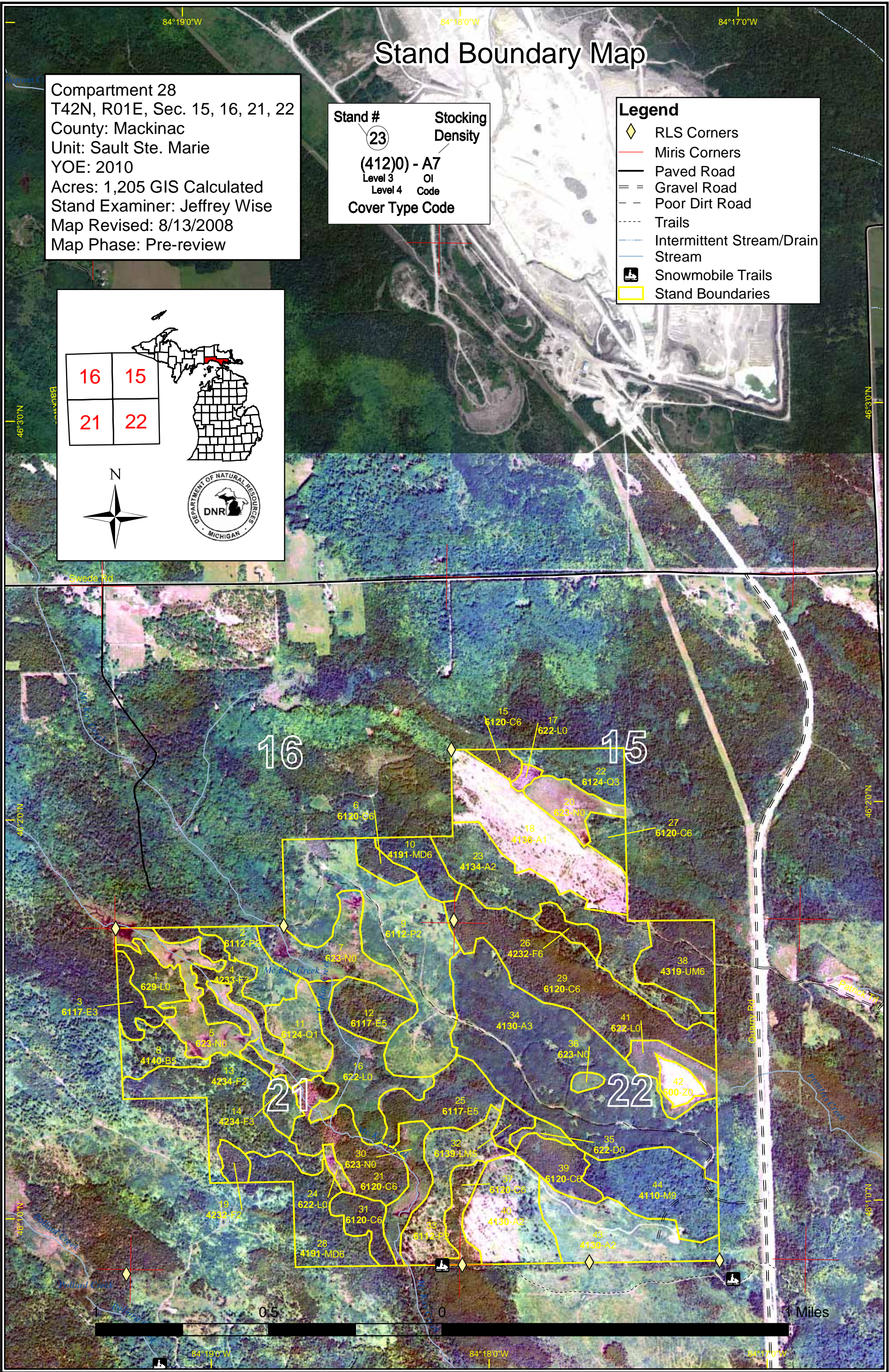
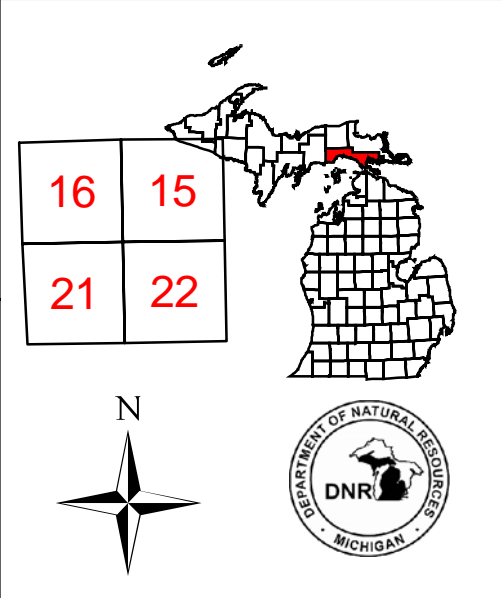


Stand Boundary Map

Compartment 28
 T42N, R01E, Sec. 15, 16, 21, 22
 County: Mackinac
 Unit: Sault Ste. Marie
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Stand #
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Stocking Density
 (412)0 - A7
 Level 3 OI
 Level 4 Code
Cover Type Code



- Legend**
- ◇ RLS Corners
 - Miris Corners
 - Paved Road
 - == Gravel Road
 - - Poor Dirt Road
 - Trails
 - Intermittent Stream/Drain
 - Stream
 - 🚙 Snowmobile Trails
 - 🟡 Stand Boundaries

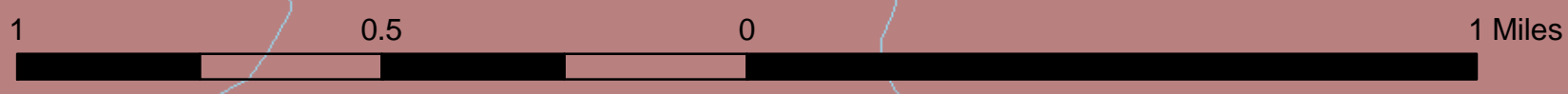
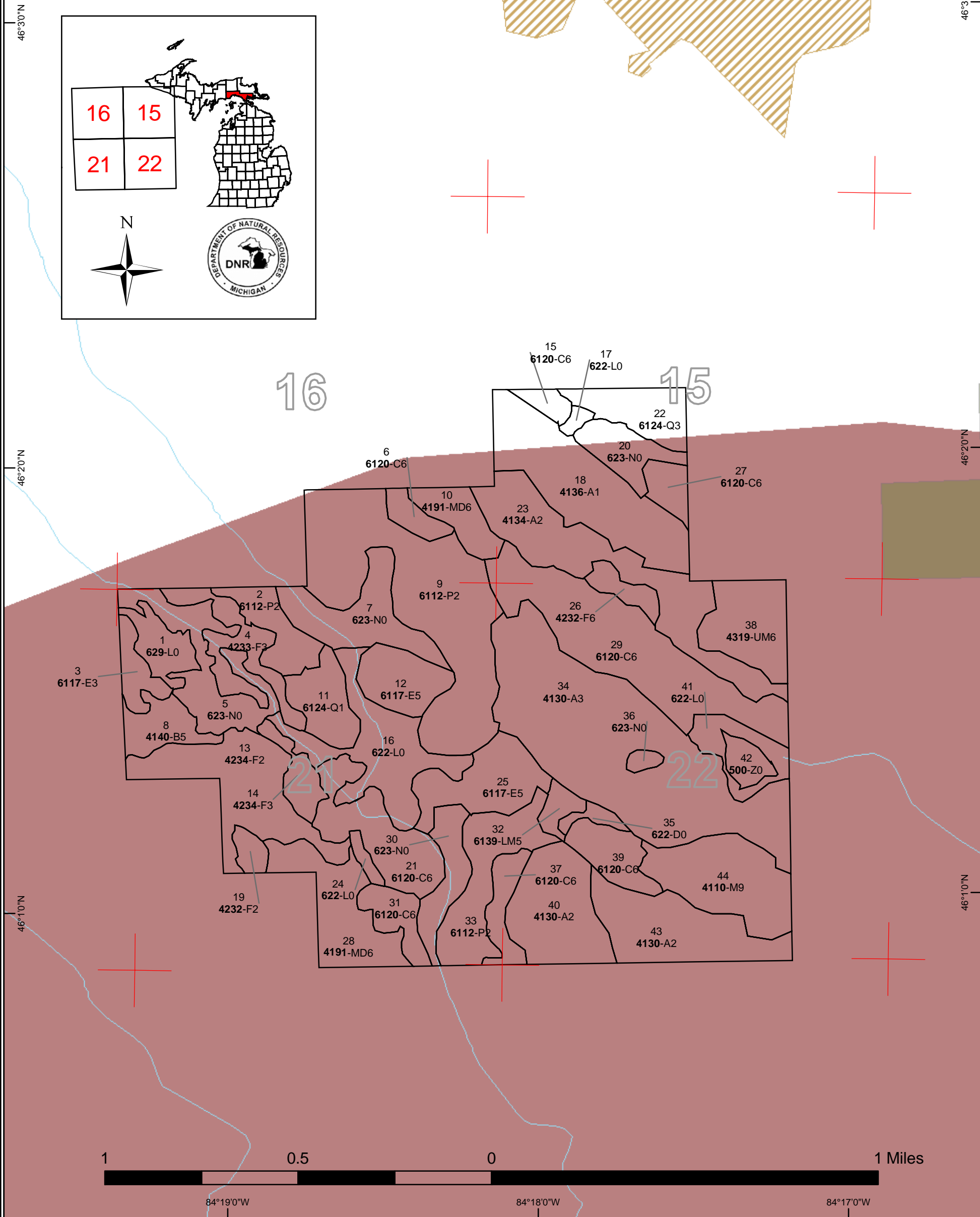
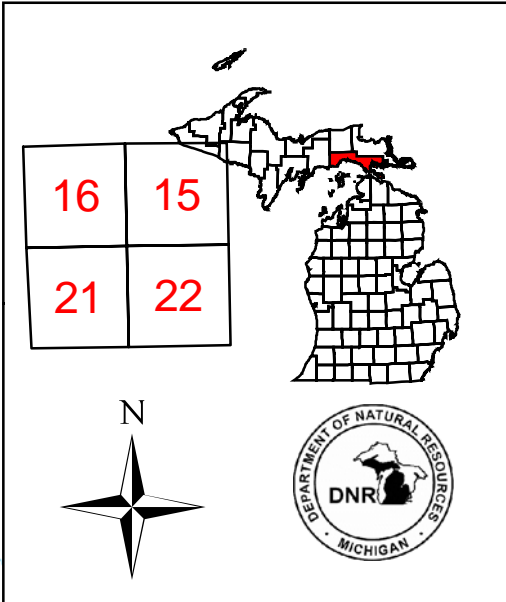


Dedicated & Proposed Special Conservation Area Map

Compartment 28
 T42N, R01E, Sec. 15, 16, 21, 22
 County: Mackinac
 Unit: Sault Ste. Marie
 YOE: 2010
 Acres: 1,205 GIS Calculated
 Stand Examiner: Jeffrey Wise
 Map Revised: 8/13/2008
 Map Phase: Pre-review

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

- Legend**
-  Miris Corners
 -  Stand Boundaries
 -  Cold Water Streams
 -  Mineral Resource Polygon
 -  OI Special Conservation Areas
 -  Deer Wintering Areas



84°19'0"W 84°18'0"W 84°17'0"W

Sault Ste. Marie Mgt. Unit

Covertypes, Acres, and Age summary
(Level 3 Cover Type)

Compartment 028 Year of Entry 2010

Report Date: 08/13/2008



	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 Types	0	145.7	0	0	0	0	0	0	0	0	0	0	0	0	200.4	346.1
Emergent Wetland	100.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100.5
Lowland Coniferous Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	215.9	215.9
Lowland Deciduous Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	216.1	216.1
Lowland Mixed Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.2	6.2
Lowland Shrub	66.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66.2
Mixed non-forested wetland	13.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13.8
Mixed Upland Deciduous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49.3	49.3
Northern Hardwood	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42.8	42.8
Other Upland Conifers	0	0	0	15.7	0	0	0	0	0	0	0	0	0	0	80.7	96.4
Other Upland Deciduous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15.3	15.3
Upland Mixed Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29.4	29.4
Water	7.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.5
Total	188.0	145.7	0	15.7	0	0	0	0	0	0	0	0	0	0	856.1	1205.5

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Sault Ste. Marie Mgt. Unit
Inventory Method: IFMAP

**PROPOSED TREATMENTS
NO LIMITING FACTORS**

Compartment: 028 Entry Yr: 2010
Date 08/13/2008



Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
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Rev
Cmnt:

Rev
Spec:

Next
Steps:

**Total Treatment
Acreage Proposed: 0**

**PROPOSED TREATMENTS
WITH LIMITING FACTORS**



S
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Treatment Name	Acres	Stage1 Cover Type	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Page 1 of 1
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Limiting Factor
and Comment:

Rev
Cmnt:

Rev
Spec:

Next
Steps:

No Treatment
Reason

**Total Treatment
Acreage Proposed: 0**



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.

Inventory Method: IFMAP

Stand	SCA Name	Acres	Comments



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	Habitat Area	An area that provide some specific need for the life cycle of wildlife species, including State Wildlife Areas and Waterfowl Production Areas, deer wintering complexes in lowland conifer communities, grassland openings and savannas. Habitat areas are distinct from critical habitat designated for recovery of endangered or threatened species (such as Kirtland's warbler or piping plover areas) in that they are more general in nature, are not primarily associated with threatened or endangered species, and are not covered by species recovery plans that are developed in cooperation with Federal agencies.
SCA	Potential Old Growth Areas	This category contains stands were identified for a broad range of reasons and were coded in the OI database as stand condition 8 as potential old growth (POG). Approximately 310,000 acres have been identified through the Operations Inventory (OI)/Compartment Review process. For stands in Year of Entry 2008 and forward, potential old growth is managed for the identified objective until it is: 1) vetted through the Biodiversity Conservation Planning Process (BCPP) and given a specific designation and objective (as an ERA, HCVA, or other type of SCA) and is released from the potential old growth designation; or 2) it is released from the potential old growth designation via the Compartment Review process.