



**SAULT FOREST MANAGEMENT UNIT  
COMPARTMENT REVIEW PRESENTATION**

**COMPARTMENT # 173    ENTRY YEAR: 2010**

**Compartment Acreage: 1,909    County: Mackinac**

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**Revision Date:** August 11, 2008

**Stand Examiner:** Matt Edison

**Legal Description:** T43N-R10W Sections 15, 16, 17, 18, 19, 20, 21, & 22; Garfield Township

**RMU (if applicable):**

**Management Goals:** The compartment is located in the central part of the area managed by the Naubinway Field Office, near the town of Engadine. The compartment lies within the proposed Mackinac Mix Management Area. Plans for this Management Area are currently in progress. The compartment is also within a designated deer wintering area. Treatments proposed for this entry include small final harvests of several mature aspen type stands. This is to facilitate natural regeneration of these stands. Some natural pine, spruce and mixed conifer stands will be managed through selection cuts and final harvest. Where applicable, these regeneration harvests will be followed by scarification to promote natural regeneration of jack pine. Necessary buffer strips will be maintained along wetlands and roadways. Retention will be considered and provided for in all treatments. All management activities will be conducted in accordance with the FMFM work instructions. Recreation concerns will include the management of the snowmobile trails.

**Soil and Topography:** The overall topography of the compartment is relatively level. Large expanses of low lying areas of swamp make up a good portion of the acreage. There are also areas of higher ground present making access to the compartment easier. The soil types found in the compartment include: Wallace, Amadon-Longrie, Wallace-Spot, Battydoe, Histosols and Aquents, Paquin-Spot, Markey and Carbondale Mucks, Furlong, Allendale-Wakely, Pickford, Amadon-Rockoutcrop, Spot-Finch complex, Corrine, Leafriver-Croswell-Wainola, Croswell, Shelter, Iosco.

**Ownership Patterns, Development, and Land Use in and Around the Compartment:** The compartment is bordered by the Hiawatha Sportsman's Club to the east, private land parcels to the north and west and a mix of State of Michigan land and parcels of private land to the south across US Highway 2.

**Unique, Natural Features (include only non-site specific and non-sensitive information):** The compartment contains a small creek named O'Neil Creek. Several small mud bottom ponds are also present. There is an Osprey nest on a utility pole in a farm field outside, but nearby, the compartment boundary.

**Archeological, Historical, and Cultural Features (include only non-site specific and non-sensitive information):** In Section 17 of the compartment, the old Engadine Dump is located. The area consists of a grass opening and a small pond now. There are two pipeline right-of-ways, which run through the length of the compartment in a northeast/southwest direction. Great Lakes Gas Company, and Enbridge Oil Company maintain one each. Canadian National Railroad runs through the compartment paralleling County Road H-40. Edison-Sault Electric also maintains a power line right-of-way through the west part of the compartment.

**Special Management Designations or Considerations:** Permission to operate within or to cross railroad tracks and pipelines will be needed from respective owners. A temporary bridge may be needed to cross O'Neil Creek to access stands to the north.

**Watershed and Fisheries Considerations:** This compartment contains stream reaches of O'Neil Creek and a small tributary to the Rock River. Previous fisheries surveys have documented steelhead, brook trout, blacknose dace, central mudminnow, Johnny darter, mottled sculpin, white sucker, creek chub, pearl dace, and fathead minnow. Implementation of BMP's will aid in preventing sediment input from road crossings and upland areas are critically important to protect spawning areas for trout and other stream-resident fishes. Buffering the river is also critical to ensure future inputs of woody material to the stream channel and provide shading to protect water temperature from warming to a degree that will inhibit trout survival.

**Wildlife Habitat Considerations:** This compartment lies within the Rock River deeryard. Retention of cedar within the area is important because of its value to wintering deer and other wildlife. Spruce and fir also provide important canopy structure. Retention of these species increases habitat value within deer yards.

Some stands within the compartment which did not fall within the deer yard boundary contained heavy browse impacts and low cedar regeneration. Management practices within these areas will encourage cedar regeneration to improve the possibility of future recovery of this important resource (see Wildlife Objective 5).

Several ephemeral wetlands and streams and permanent wetlands are within this compartment.

Examples of late successional poor conifer swamp natural communities are present and portions will be managed for biodiversity (see Wildlife Objective 8). Gray jays were observed within these stands during site surveys.

### **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 15<sup>th</sup>, 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 15<sup>th</sup>, 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 ft<sup>2</sup> 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 lacustrine (lake) sand and gravel and peat & muck sometimes thin to discontinuous over bedrock. The glacial drift thickness varies between 50 and 100 feet. The Silurian Engadine Group subcrops below the glacial drift. The Engadine is quarried for stone/limestone elsewhere in the UP. Gravel pits are located around Engadine and potential is good on the uplands. There is no current economic oil and gas production in the UP.

**Vehicle Access:** Access to the compartment is good from the south side via US Highway 2. State Highway M-117 runs north and south through the middle of the compartment, and County Road H-40 runs through the northern part of the compartment. Several woods roads (two tracks) are found within the compartment in the areas with higher ground. The snowmobile trail also runs through the compartment using the Great Lakes Gas pipeline right-of-way and County Road H-40. No public access can be gained from the east or west edges of the compartment due to the large holdings of private land.

**Survey Needs:** Some timber sales will require blue lines against private ownership. There are a couple of areas that will need corner work for line running. These areas include: Sec. 15 NENW, Sec. 20 NWSW,

**Recreational Facilities and Opportunities:** There are many different types of recreation available within the compartment's boundaries. The snowmobile trail runs through the length of the compartment via the Great Lakes Gas pipeline right-of-way and County Road H-40. Deer hunting, small game hunting, and even some trapping take place within the compartment. The area also offers wildlife viewing possibilities.

**Fire Protection:** The compartment is in an area where some small fires have occurred over the years, mainly on the private land nearby. There are some red pine stands with an understory of ladder fuels along with some other stands (balsam, upland spruce) which could be a fire hazard. However, the area as a whole is not an area of high concern for fire protection. The private land to the east creates some concern with respect to wildfire. There is no zone dispatch located in or around the compartment. Options for water sources are limited, but there is a dry hydrant at the crossing over the Millecoquins River on H-40.

#### **Additional Compartment Information:**

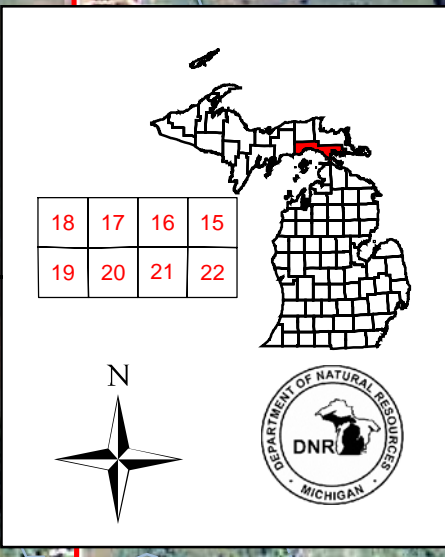
- **Cover Type details, Proposed Treatments, and Stand listings are listed in the attached reports:**
  - ◆ **Proposed Treatments – No Limiting Factors**
  - ◆ **Proposed Treatments – With Limiting Factors**
  - ◆ **Stand Listing – Forested**
  - ◆ **Stand Listing – Non Forested**
  - ◆ **Special Conservation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



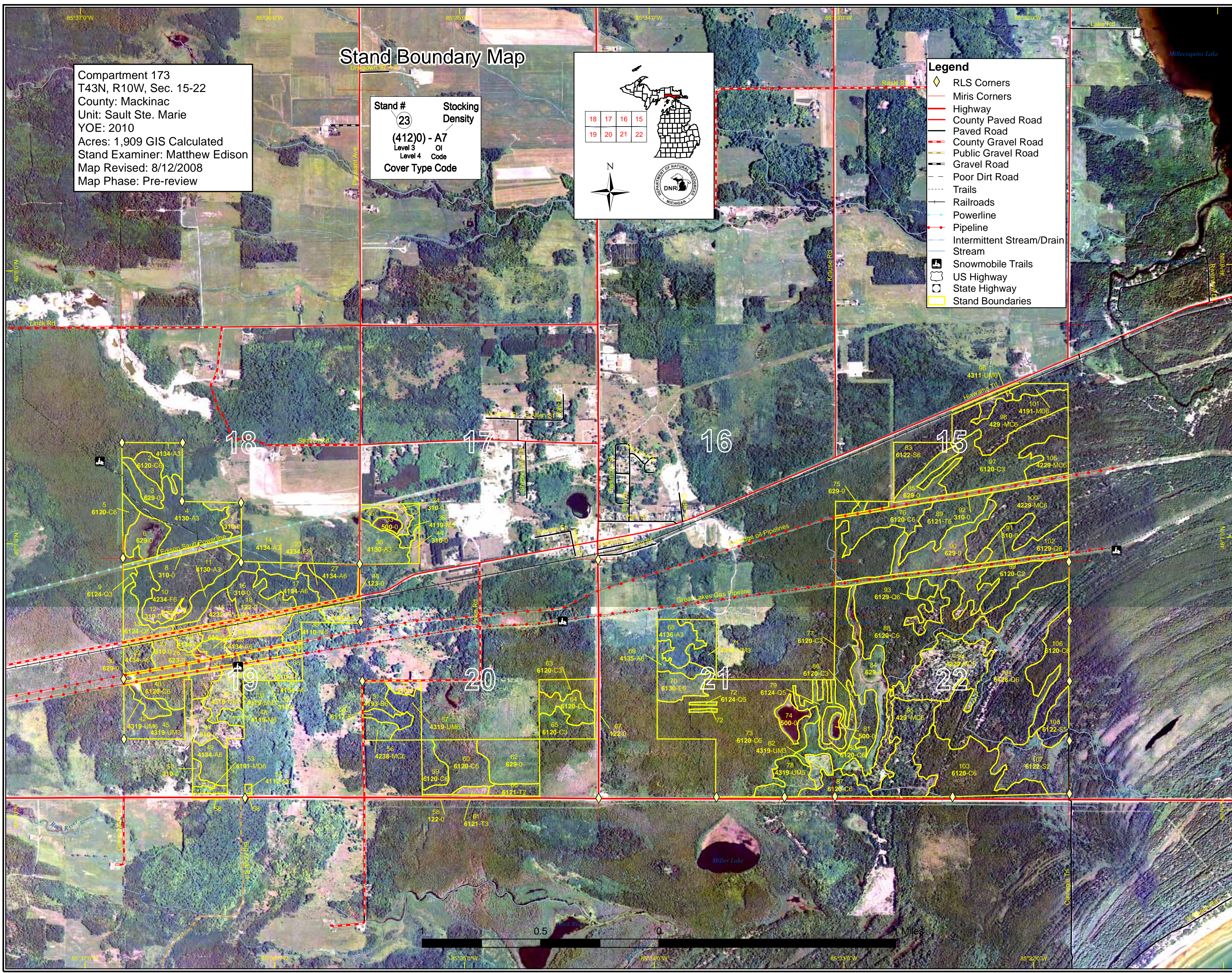
# Stand Boundary Map

Compartment 173  
 T43N, R10W, Sec. 15-22  
 County: Mackinac  
 Unit: Sault Ste. Marie  
 YOE: 2010  
 Acres: 1,909 GIS Calculated  
 Stand Examiner: Matthew Edison  
 Map Revised: 8/12/2008  
 Map Phase: Pre-review

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



- Legend**
- ◊ RLS Corners
  - Miris Corners
  - Highway
  - County Paved Road
  - Paved Road
  - County Gravel Road
  - Public Gravel Road
  - Gravel Road
  - Poor Dirt Road
  - Trails
  - Railroads
  - Powerline
  - Pipeline
  - Intermittent Stream/Drain
  - Stream
  - Snowmobile Trails
  - US Highway
  - State Highway
  - Stand Boundaries

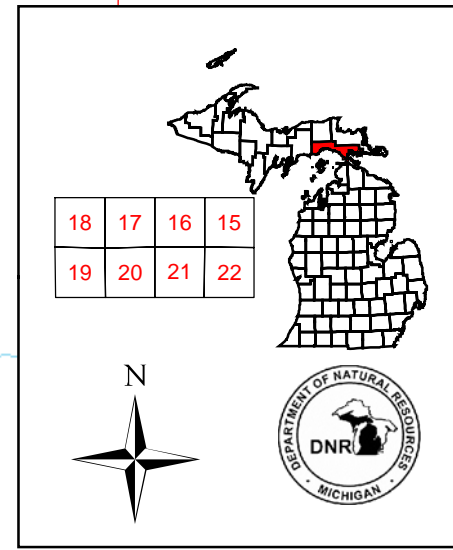


0.5 Miles

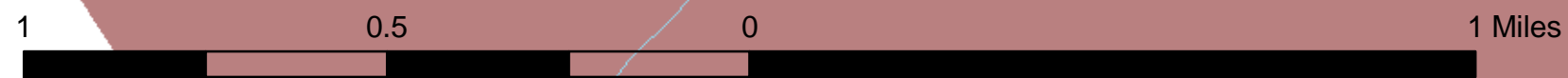
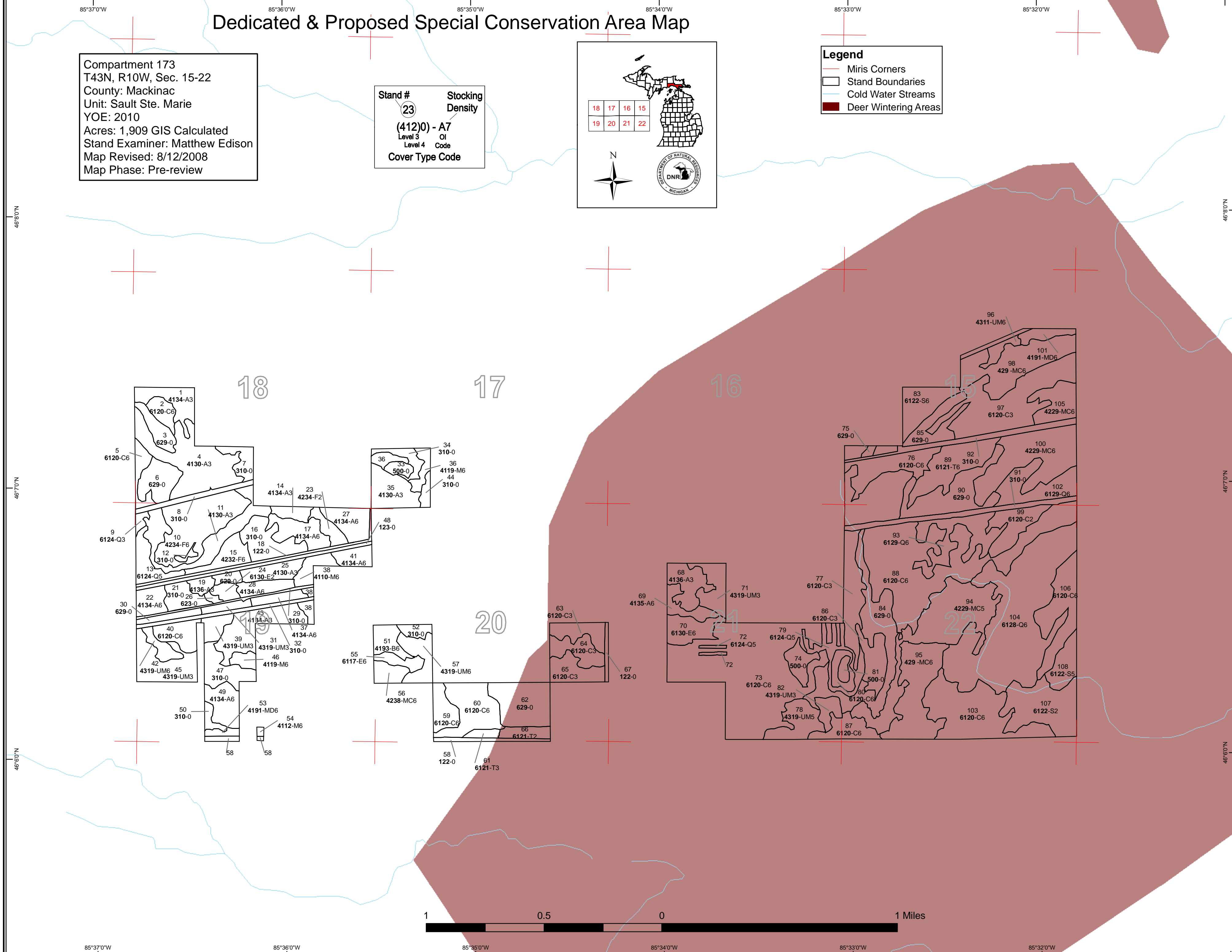
# Dedicated & Proposed Special Conservation Area Map

Compartment 173  
 T43N, R10W, Sec. 15-22  
 County: Mackinac  
 Unit: Sault Ste. Marie  
 YOE: 2010  
 Acres: 1,909 GIS Calculated  
 Stand Examiner: Matthew Edison  
 Map Revised: 8/12/2008  
 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
  - Deer Wintering Areas



85°37'0"W      85°36'0"W      85°35'0"W      85°34'0"W      85°33'0"W      85°32'0"W

46°30'N  
46°20'N  
46°10'N  
46°00'N

46°30'N  
46°20'N  
46°10'N  
46°00'N

Sault Ste. Marie Mgt. Unit

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

Compartment 173 Year of Entry 2010

Report Date: 08/12/2008



|                            | 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            | 67.0        | 20.6        | 73.1         | 49.4         | 15.0         | 0           | 23.1         | 0            | 0           | 0            | 0            | 0            | 0        | 0          | 248.2         |
| Emergent Wetland           | 1.4          | 0           | 0           | 0            | 0            | 0            | 0           | 0            | 0            | 0           | 0            | 0            | 0            | 0        | 0          | 1.4           |
| Herbaceous Openland        | 116.4        | 0           | 0           | 0            | 0            | 0            | 0           | 0            | 0            | 0           | 0            | 0            | 0            | 0        | 0          | 116.4         |
| Lowland Coniferous Forest  | 0            | 0           | 2.1         | 51.9         | 15.9         | 38.9         | 0           | 36.2         | 85.2         | 23.3        | 140.4        | 335.3        | 179.8        | 0        | 0          | 909.1         |
| Lowland Deciduous Forest   | 0            | 0           | 0           | 0            | 5.9          | 0            | 0           | 0            | 0            | 0           | 0            | 0            | 0            | 0        | 0          | 5.9           |
| Lowland Mixed Forest       | 0            | 0           | 4.6         | 0            | 14.1         | 0            | 0           | 0            | 0            | 0           | 0            | 0            | 0            | 0        | 0          | 18.7          |
| Mixed non-forested wetland | 150.3        | 0           | 0           | 0            | 0            | 0            | 0           | 0            | 0            | 0           | 0            | 0            | 0            | 0        | 0          | 150.3         |
| Mixed Upland Conifers      | 0            | 0           | 0           | 0            | 0            | 0            | 0           | 41.7         | 40.1         | 0           | 0            | 0            | 0            | 0        | 0          | 81.8          |
| Mixed Upland Deciduous     | 0            | 0           | 0           | 0            | 2.8          | 9.4          | 0           | 6.2          | 0            | 0           | 0            | 0            | 0            | 0        | 0          | 18.4          |
| Natural Pines              | 0            | 0           | 0           | 0            | 0            | 47.5         | 0           | 78.1         | 0            | 0           | 0            | 0            | 0            | 0        | 0          | 125.6         |
| Northern Hardwood          | 0            | 0           | 0           | 0            | 0            | 0            | 21.0        | 0.7          | 4.3          | 0           | 0            | 0            | 0            | 0        | 0          | 26.0          |
| Other High Intensity Urban | 12.3         | 0           | 0           | 0            | 0            | 0            | 0           | 0            | 0            | 0           | 0            | 0            | 0            | 0        | 0          | 12.3          |
| Other Upland Conifers      | 0            | 0           | 0           | 0            | 18.1         | 43.7         | 0           | 0            | 7.2          | 0           | 0            | 0            | 0            | 0        | 0          | 69.0          |
| Road/Parking Lot           | 17.3         | 0           | 0           | 0            | 0            | 0            | 0           | 0            | 0            | 0           | 0            | 0            | 0            | 0        | 0          | 17.3          |
| Upland Mixed Forest        | 0            | 6.6         | 15.7        | 28.9         | 0            | 16.5         | 12.6        | 13.4         | 0            | 0           | 0            | 0            | 0            | 0        | 0          | 93.7          |
| Water                      | 15.2         | 0           | 0           | 0            | 0            | 0            | 0           | 0            | 0            | 0           | 0            | 0            | 0            | 0        | 0          | 15.2          |
| <b>Total</b>               | <b>312.9</b> | <b>73.6</b> | <b>43.1</b> | <b>154.0</b> | <b>106.1</b> | <b>171.0</b> | <b>33.7</b> | <b>199.4</b> | <b>136.8</b> | <b>23.3</b> | <b>140.4</b> | <b>335.3</b> | <b>179.8</b> | <b>0</b> | <b>0</b>   | <b>1909.4</b> |

**PROPOSED TREATMENTS  
NO LIMITING FACTORS**



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| Treatment Name  | Acres | Stage1 CoverType         | Size Density      | Stand Age | Treatment Type | Treatment Method       | Cover Type Objective |
|-----------------|-------|--------------------------|-------------------|-----------|----------------|------------------------|----------------------|
| 17 45173017-Cut | 14.3  | 4134 - Aspen, Spruce/Fir | High Density Pole | 43        | Harvest        | Clearcut with Reserves | Aspen, Spruce/Fir    |

Rev Rocky ground.  
Cmnt:

Rev Cut all merchantable trees except those designated for retention. Retain trees within 10' radius around large boulders for retention. Leave visual management/ retention buffer along H-40. Retention will include non-merchantable trees and visual management buffer along H-40.  
Spec:

Next Regeneration survey will be needed within 4 years following harvest. Acceptable regeneration includes aspen, spruce, balsam, birch, cedar, cherry, and maple in various amounts.  
Steps:

|                 |     |                          |                   |    |         |                        |                   |
|-----------------|-----|--------------------------|-------------------|----|---------|------------------------|-------------------|
| 28 45173028-Cut | 8.2 | 4134 - Aspen, Spruce/Fir | High Density Pole | 66 | Harvest | Clearcut with Reserves | Aspen, Spruce/Fir |
|-----------------|-----|--------------------------|-------------------|----|---------|------------------------|-------------------|

Rev  
Cmnt:

Rev Cut all merchantable trees except those designated for retention. Retention will include non-merchantable trees and exclusion areas of representative species. Also, identify and retain some patches of large mature aspen.  
Spec:

Next Regeneration survey will be needed within 4 years following harvest. Acceptable regeneration includes aspen, spruce, balsam, birch, cedar, cherry, and maple in various amounts.  
Steps:

|                 |     |                          |                   |    |         |                        |                   |
|-----------------|-----|--------------------------|-------------------|----|---------|------------------------|-------------------|
| 37 45173037-Cut | 5.6 | 4134 - Aspen, Spruce/Fir | High Density Pole | 66 | Harvest | Clearcut with Reserves | Aspen, Spruce/Fir |
|-----------------|-----|--------------------------|-------------------|----|---------|------------------------|-------------------|

Rev Access road is snomobile trail.  
Cmnt:

Rev Cut all merchantable trees except those designated for retention. Retention will include non-merchantable trees and exclusion areas of representative species. Also, identify and retain some patches of large mature aspen.  
Spec:

Next Regeneration survey will be needed within 4 years following harvest. Acceptable regeneration includes aspen, spruce, balsam, birch, cedar, cherry, and maple in various amounts.  
Steps:

|                 |     |                     |                   |    |         |                        |              |
|-----------------|-----|---------------------|-------------------|----|---------|------------------------|--------------|
| 51 45173051-Cut | 8.3 | 4193 - Birch, Aspen | High Density Pole | 45 | Harvest | Clearcut with Reserves | Birch, Aspen |
|-----------------|-----|---------------------|-------------------|----|---------|------------------------|--------------|

Rev  
Cmnt:

Rev Cut all merchantable trees except those designated for retention. Retention will include non-merchantable trees and visual management buffer along Price rd. Protect any wetland with 100' buffer.  
Spec:

Next Regeneration survey will be needed within 4 years following harvest. Acceptable regeneration includes aspen, spruce, balsam, birch, cedar, cherry, and maple in various amounts.  
Steps:

|                 |      |                            |                   |    |         |                        |                     |
|-----------------|------|----------------------------|-------------------|----|---------|------------------------|---------------------|
| 57 45173057-Cut | 12.6 | 4319 - Mixed Upland Forest | High Density Pole | 56 | Harvest | Clearcut with Reserves | Mixed Upland Forest |
|-----------------|------|----------------------------|-------------------|----|---------|------------------------|---------------------|

Rev  
Cmnt:

Rev Cut all merchantable trees except those designated for retention. Retention will include non-merchantable trees and exclusion areas of representative species. Retain Hemlock and White Pine and some cedar patches.  
Spec:

Next Regeneration survey will be needed within 4 years following harvest. Acceptable regeneration includes aspen, spruce, balsam, birch, cedar, cherry, and maple in various amounts.  
Steps:



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| Treatment Name  | Acres | Stage1 CoverType       | Size Density      | Stand Age | Treatment Type | Treatment Method | Cover Type Objective |
|-----------------|-------|------------------------|-------------------|-----------|----------------|------------------|----------------------|
| 96 45173096-Cut | 4.6   | 4311 - Pine, Aspen Mix | High Density Pole | 15        | Harvest        | Clearcut         | Pine, Aspen Mix      |

Rev Cmmt:  
Rev Spec: Cut all trees to reclaim opening. Retain any white pine. Buffer any bordering wetland by 30'.  
Next Steps: Regeneration survey will be needed within 4 years following harvest. Acceptable regeneration includes any mix of aspen, spruce, balsam, birch, cedar, cherry, pine, or maple. Revisit next entry.

|                 |      |                             |                   |    |         |                        |                      |
|-----------------|------|-----------------------------|-------------------|----|---------|------------------------|----------------------|
| 98 45173098-Cut | 40.1 | 429 - Mixed Upland Conifers | High Density Pole | 78 | Harvest | Clearcut with Reserves | Aspen, Mixed Conifer |
|-----------------|------|-----------------------------|-------------------|----|---------|------------------------|----------------------|

Rev Cmmt: Access from south (requires bridge) or via Hiawatha club. Stand is variable with numerous wet fingers. Sale shape may vary from proposed treatment. Areas around these fingers will be appropriately buffered and will add to retention.  
Rev Spec: Cut all merchantable trees except those designated for retention. Retention will include non-merchantable trees and visual management buffer along H-40. Buffer any wetlands by 30'. Leave some red pine and all white pine.  
Next Steps: Regeneration survey will be needed within 4 years following harvest. Acceptable regeneration includes aspen, spruce, balsam, birch, cedar, cherry, and maple in various amounts.

|                  |      |                            |                   |    |         |                        |                    |
|------------------|------|----------------------------|-------------------|----|---------|------------------------|--------------------|
| 100 45173100-Cut | 47.5 | 42290 - Natural Mixed Pine | High Density Pole | 44 | Harvest | Clearcut with Reserves | Natural Mixed Pine |
|------------------|------|----------------------------|-------------------|----|---------|------------------------|--------------------|

Rev Cmmt: Sale shape may vary from proposed treatment. Areas around these fingers will be appropriately buffered and will add to retention.  
Rev Spec: Cut all merchantable trees except those large red/white pine designated for retention. Stand is variable with numerous wet fingers. Sale shape may vary from proposed treatment. Areas around these fingers will be appropriately buffered and will add to retention. Leave cedar as retention. Where possible, promote cedar regeneration by dropping trees around patches.  
Next Steps: Scarify to promote natural jack pine regeneration. Regeneration survey will be needed within 4 years following harvest. Acceptable regeneration includes jack pine, aspen, spruce, balsam, birch, red pine, white pine, and maple in various amounts.

|                  |     |                                            |                   |    |         |                        |              |
|------------------|-----|--------------------------------------------|-------------------|----|---------|------------------------|--------------|
| 101 45173101-Cut | 6.2 | 4191 - Mixed Upland Deciduous with Conifer | High Density Pole | 64 | Harvest | Clearcut with Reserves | Aspen, Birch |
|------------------|-----|--------------------------------------------|-------------------|----|---------|------------------------|--------------|

Rev Cmmt: Access via Hiawatha Club, get r.r. crossing, or from south (requires bridge).  
Rev Spec: Cut all merchantable trees except those designated for retention. Retention will include non-merchantable trees and visual management buffer along H-40. Leave white pine and some red pine.  
Next Steps: Regeneration survey will be needed within 4 years following harvest. Acceptable regeneration includes aspen, spruce, balsam, birch, cedar, cherry, and maple in various amounts.

|                  |      |                            |                   |    |         |                       |                    |
|------------------|------|----------------------------|-------------------|----|---------|-----------------------|--------------------|
| 105 45173105-Cut | 16.5 | 42290 - Natural Mixed Pine | High Density Pole | 60 | Harvest | Single Tree Selection | Natural Mixed Pine |
|------------------|------|----------------------------|-------------------|----|---------|-----------------------|--------------------|

Rev Cmmt: Access via Hiawatha Club, get r.r. crossing, or from south (requires bridge). Stand is variable with numerous wet fingers. Sale shape may vary from proposed treatment. Areas around these fingers will be appropriately buffered and will add to retention.  
Rev Spec: Mark jack pine, spruce, balsam, and some pine trees to reduce basal area to approximately 100-120.  
Next Steps: Revisit in 10 years and consider final harvest of pine and regeneration of natural pine.

**Total Treatment  
Acreage Proposed: 163.9**

**PROPOSED TREATMENTS  
WITH LIMITING FACTORS**



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d

| Treatment Name  | Acres | Stage1 Cover Type        | Size Density      | Stand Age | Treatment Type | Treatment Method       | Cover Type Objective |
|-----------------|-------|--------------------------|-------------------|-----------|----------------|------------------------|----------------------|
| 22 45173022-Cut | 8.0   | 4134 - Aspen, Spruce/Fir | High Density Pole | 66        | Harvest        | Clearcut with Reserves | Aspen, Spruce/Fir    |

Limiting Factor 2G: Blocked by physical obstacle

and Comment: Stand access is limited by railroad tracks and wet pipeline. Will need r.r. crossing or winter access along pipeline.

Rev Cmnt: Stand access is limited by railroad tracks and wet pipeline. Will need r.r. crossing or winter access along pipeline.

Rev Spec: Cut all merchantable trees except those designated for retention. Leave visual management/ retention buffer along H-40. Retention will include non-merchantable trees and visual management buffer along H-40. Retain any trace White Pine.

Next Steps: Regeneration survey will be needed within 4 years following harvest. Acceptable regeneration includes aspen, spruce, balsam, birch, cedar, cherry, and maple in various amounts.

No Treatment Reason Stand access is limited by railroad tracks and wet pipeline. Will need r.r. crossing or winter access along pipeline.

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**Total Treatment  
Acreage Proposed:      8.0**



**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               | 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 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.                                                                                                                                                                                                                 |