



TRAVERSE CITY FOREST MANAGEMENT UNIT COMPARTMENT REVIEW PRESENTATION

COMPARTMENT # 61 ENTRY YEAR: 2011

Compartment Acreage: 4027 County: Grand Traverse

Stand Examiner: Scott Lint

Legal Description: T26N - R12W - sections 3, 4, 5, 6, 10
T27N - R12W - sections 29, 30, 31, 32, 33, 35, 36

Management Goals: The primary focus in this compartment is forest-based recreational use while also providing timber products; maintaining or enhancing wildlife habitat; and protecting areas of unique threatened, endangered and special concern species. With recreation being the primary use in this compartment, timber sale activity will have to be carried out in such a manner as to minimize impacts on recreational uses. Visual management will be very important in most areas of the compartment.

Soil and Topography: Mostly flat with numerous bogs.

Ownership Patterns, Development, and Land Use in and Around the Compartment: Private ownership borders the compartment on the north, east, and south. State land, compartments 11 and 12, border the west edge of the compartment. Heavy residential development surrounds the compartment on three sides. The Cedar Hedge Lake area to the south, the Long Lake area one mile to the east, and the northern edge of the compartment are all heavily developed with single family residential properties. The Village of Interlochen is located just south of the compartment. Interlochen has experienced recent increases in commercial development. The Village of Lake Ann is located one mile to the west of the compartment. Lake Ann has experienced significant increased residential development over the last ten years.

Unique, Natural Features: MNFI records indicate numerous occurrences of Common Loons (State Threatened, G5, S3S4) throughout and around the compartment. The Ebony Bog Haunter (State Special Concern, G3G4, S1S2) occurs within the compartment. Lost Lake Bog and North Lost Lake Bog have been identified by MNFI as Ecological Reference Areas. Bogs are ranked as S4 (uncommon, but not rare) and G3G5.

Archeological, Historical, and Cultural Features: none known

Special Management Designations or Considerations: Lake Dubonnet was a small natural lake that was enlarged with the construction of a dam on Sherman Creek in the late 1950's. The project was a joint effort between Fisheries and Wildlife Divisions with Fisheries Division taking responsibility for the care and maintenance of the dam and stop logs.

Watershed and Fisheries Considerations:

Wildlife Habitat Considerations: Most of this compartment, and nearly all of the State Forest land, lies within Landtype Association 5211, characterized as a pitted outwash plain with many kettle lakes on well drained sand or loamy sand soils. Presettlement vegetation was dominated by a white pine-mixed deciduous association in the uplands and mixed conifer, cedar, and hemlock-white pine associations in and around

wetland areas. Lake Dubonnet and its outlet through Sherman Creek dominate the wetland community, and many small lakes, bogs, and forested wetlands are interspersed among the aspen-oak-pine types on upland sites. White-tailed deer, ruffed grouse, wild turkey, flying squirrel, wood pewee, and hog-nosed snake are common to the uplands, and mink, raccoon, wood duck, kingfisher, great blue heron, and leopard frog inhabit the wetlands. State Threatened (ST) and Special Concern (SSC) species found in this compartment include bald eagle, osprey, and several nesting pairs of common loon. MNFI recognizes the potential for red-shouldered hawk, goshawk, eastern massasauga, wood turtle, and Blanding's turtle, and has documented the SSC ebony bog haunter at the Lost Lake Bog.

The quantity and distribution of oak in this compartment is an exceptional resource for wildlife, and its active management and long term regeneration is a priority. Managing the oak-pine-aspen association provides an opportunity to maintain a prominent oak component while periodically harvesting the aspen. Even aged management of aspen types should progress towards a mosaic of smaller aspen stands of differing ages interspersed with wetlands and existing stands of oak, hardwoods, and natural pine. Leave islands dominated by oak and pine, and scattered mature oak and cherry should be retained when harvesting aspen stands for diversity, mast production. Potential den trees, snags, and coarse woody debris should be retained to improve structural diversity and provide drumming logs and cover for small mammals, reptiles, and amphibians. Small wetlands can be focal points for retention of the surrounding mesic habit, and provide important vertical structure when harvesting adjacent stands. Many of the bogs are acidic, with fruiting shrubs on edges, and associated with white pine. Mature white pines near bogs and lakes provide potential bald eagle perches and nesting sites. The few openings that exist in this compartment should be maintained by cutting woody encroachment, mowing, and better protecting the young fruit trees planted in two of the openings from browsing.

Mineral Resource and Development Concerns and/or Restrictions: Surface sediments consist of glacial outwash sand and gravel and postglacial alluvium. The glacial drift thickness varies between 400 and 800 feet. Beneath the glacial drift is the Devonian Ellsworth Shale, used for cement products. A gravel pit is located in Section 29 and there should be potential. This area is located north of the prolific Guelph (Niagaran) reef trend. Most of the Compartment is leased for oil and gas exploration, primarily for the Antrim Shale.

Vehicle Access:

Survey Needs: None at this time.

Recreational Facilities and Opportunities: Lake Dubonnet State Forest Campground and Lake Dubonnet Horse Trail Camp are located in this compartment. The Lost Lake Pathway is located in the western part of the compartment. The Michigan Shore-to-shore Riding/Hiking Trail passes through the center of the compartment. There are several boat launches in the compartment. The launches on Ellis Lake, Cedar Hedge Lake and nearby Bass Lake are maintained by Parks and Recreation Division. The launch on Lake Dubonnet is maintained by Forest, Mineral, and Fire Management Division. Bellows Lake in the northwest corner of the compartment has an unimproved access site where small boats, canoes, or kayaks can be launched. Interlochen State Park is located just a few miles to the south of the compartment and provides camping, swimming, and access to Green and Duck Lake. In addition to these managed recreational sites, numerous opportunities for dispersed recreation occur within the compartment. The most common of these include fishing and hunting.

Fire Protection: Local fire protection is provided by Grand Traverse Rural Fire from either the Interlochen or Long Lake Battalions. DNR fire protection is provided by Platte River and Traverse City Field Offices. There is a fair amount of scattered pine within these sections, and access, travel times, and remoteness could allow fires to grow appreciably before suppression forces could make attack. Urban interface is a concern along the northern and eastern portions of the compartment.

Additional Compartment Information:

****** Cover type details, proposed treatments and stands designated as FDF are listed in the attached reports:**

Cover Type by Age Class
Cover Type by Management Objective
Compartment Volume Summary
Proposed Treatments – No Limiting Factors
Proposed Treatments – With Limiting Factors

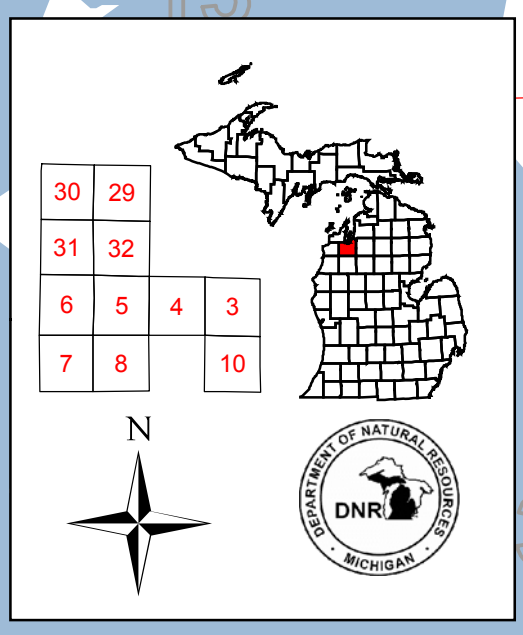
****** The following information is displayed on the attached compartment maps:**

Base feature information, stand numbers, cover types
Proposed treatments
Proposed road access system
Suggested potential old growth

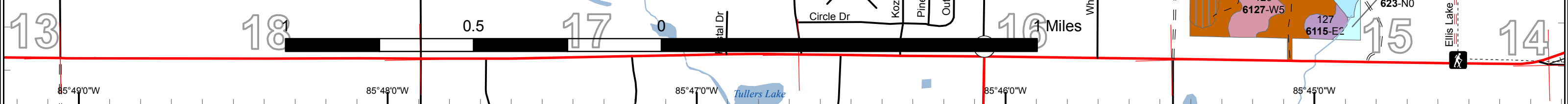
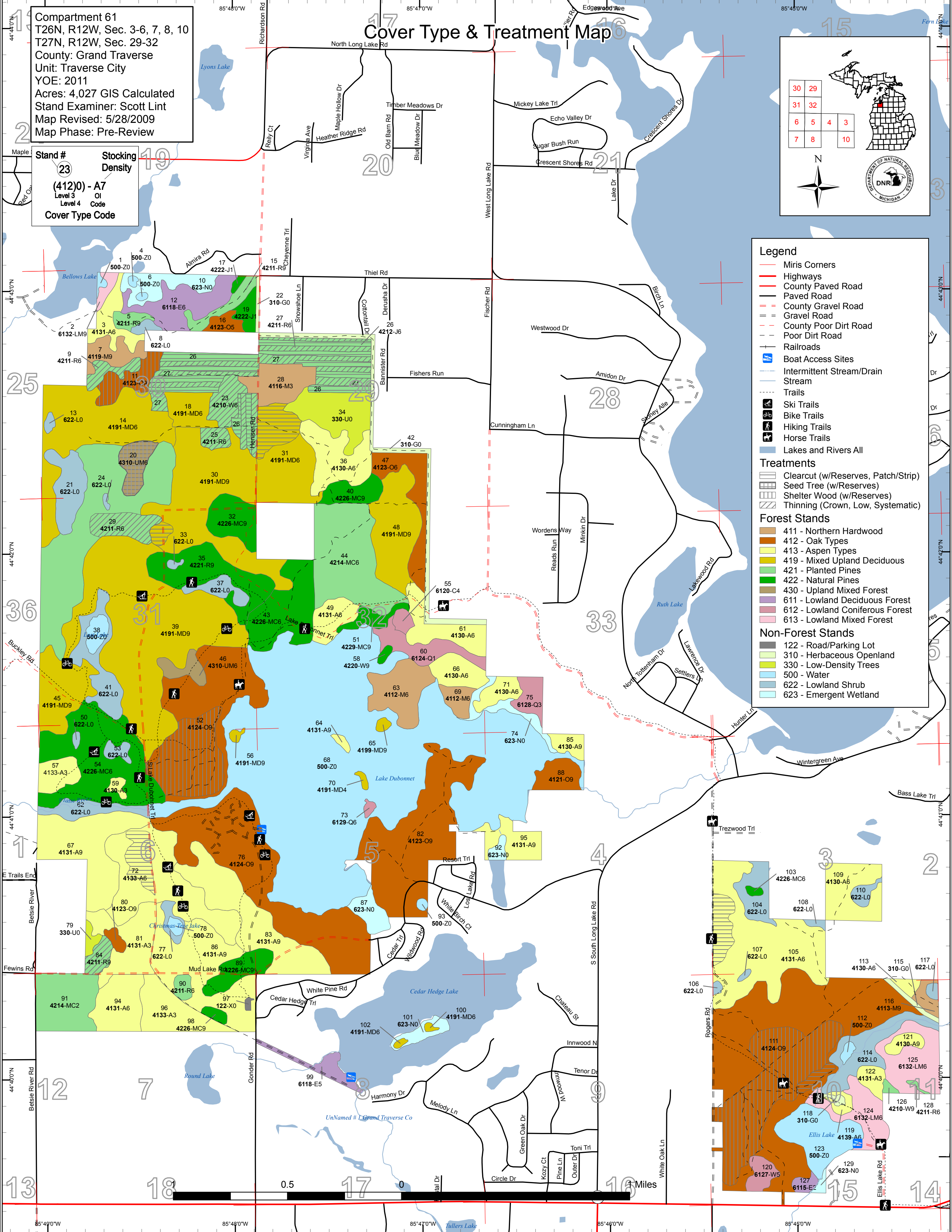
Cover Type & Treatment Map

Compartment 61
 T26N, R12W, Sec. 3-6, 7, 8, 10
 T27N, R12W, Sec. 29-32
 County: Grand Traverse
 Unit: Traverse City
 YOY: 2011
 Acres: 4,027 GIS Calculated
 Stand Examiner: Scott Lint
 Map Revised: 5/28/2009
 Map Phase: Pre-Review

Stand #
 (4120) - A7
 Level 3 OI
 Level 4 Code
 Cover Type Code



- ### Legend
- Miris Corners
 - Highways
 - County Paved Road
 - Paved Road
 - - - County Gravel Road
 - - - Gravel Road
 - - - County Poor Dirt Road
 - - - Poor Dirt Road
 - Railroads
 - Boat Access Sites
 - Intermittent Stream/Drain
 - Stream
 - Trails
 - Ski Trails
 - Bike Trails
 - Hiking Trails
 - Horse Trails
 - Lakes and Rivers All
- ### Treatments
- ▨ Clearcut (w/Reserves, Patch/Strip)
 - ▨ Seed Tree (w/Reserves)
 - ▨ Shelter Wood (w/Reserves)
 - ▨ Thinning (Crown, Low, Systematic)
- ### Forest Stands
- 411 - Northern Hardwood
 - 412 - Oak Types
 - 413 - Aspen Types
 - 419 - Mixed Upland Deciduous
 - 421 - Planted Pines
 - 422 - Natural Pines
 - 430 - Upland Mixed Forest
 - 611 - Lowland Deciduous Forest
 - 612 - Lowland Coniferous Forest
 - 613 - Lowland Mixed Forest
- ### Non-Forest Stands
- 122 - Road/Parking Lot
 - 310 - Herbaceous Openland
 - 330 - Low-Density Trees
 - 500 - Water
 - 622 - Lowland Shrub
 - 623 - Emergent Wetland



Compartment 61
 T26N, R12W, Sec. 3-6, 7, 8, 10
 T27N, R12W, Sec. 29-32
 County: Grand Traverse
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 Stand Examiner: Scott Lint
 Map Revised: 5/28/2009
 Map Phase: Pre-Review

Stand Boundary Map

Stand #
 23
Stocking Density
 (4120) - A7
 Level 3 OI
 Level 4 Code
Cover Type Code

Legend

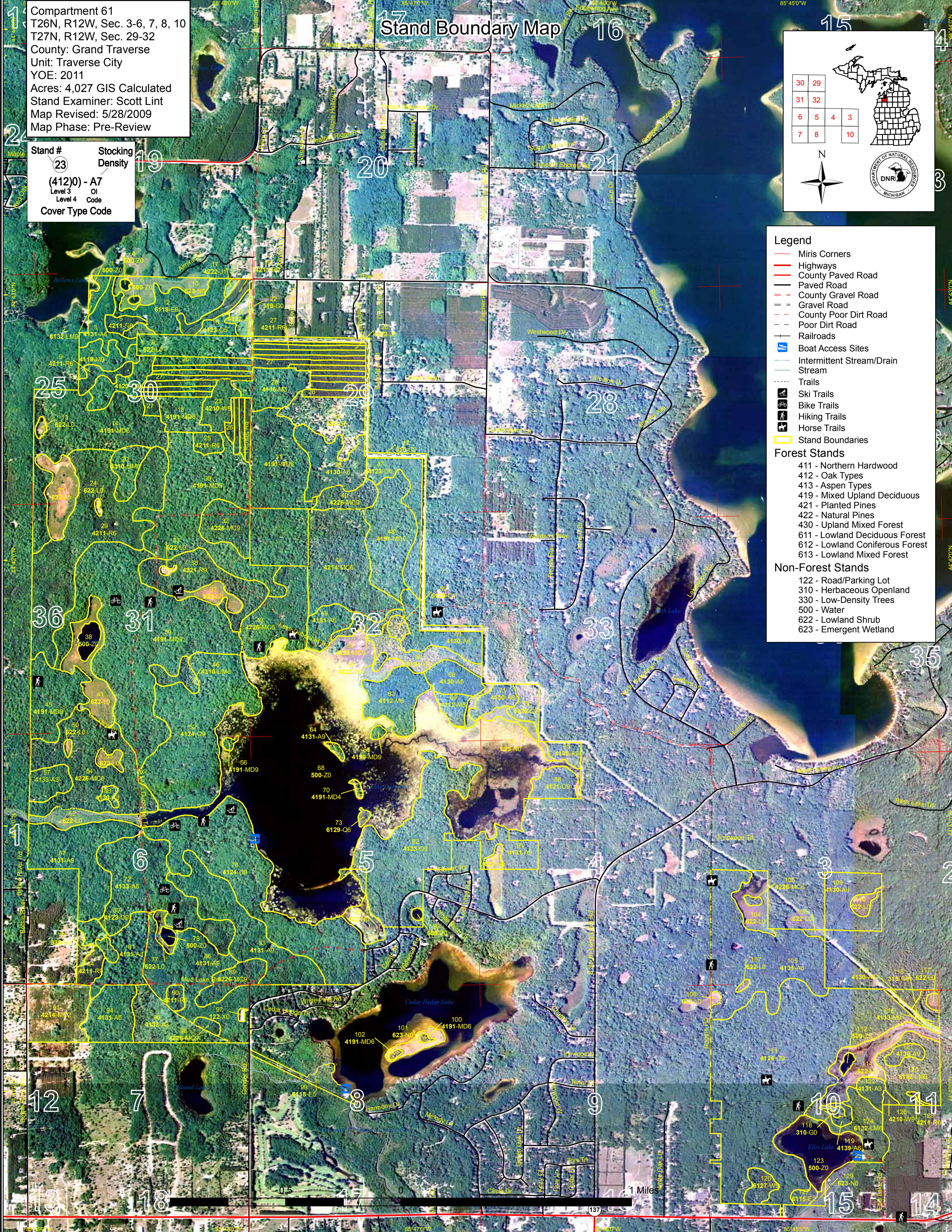
- Miris Corners
- Highways
- County Paved Road
- Paved Road
- - - County Gravel Road
- - - Gravel Road
- - - County Poor Dirt Road
- - - Poor Dirt Road
- Railroads
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- Bike Trails
- Hiking Trails
- Horse Trails
- Stand Boundaries

Forest Stands

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Non-Forest Stands

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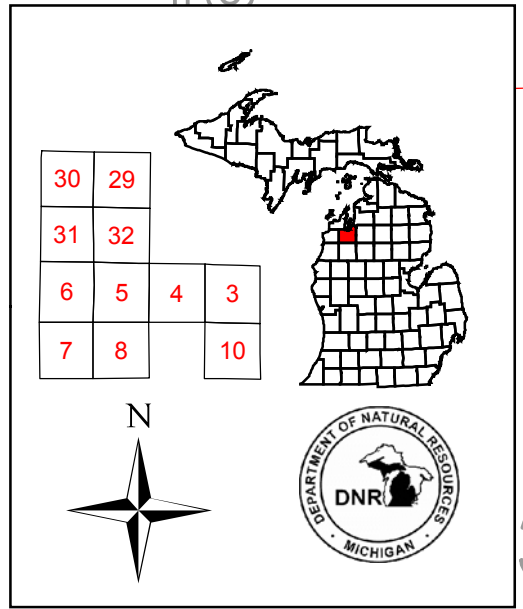


1 Miles

Dedicated & Proposed Special Conservation Area Map

Compartment 61
 T26N, R12W, Sec. 3-6, 7, 8, 10
 T27N, R12W, Sec. 29-32
 County: Grand Traverse
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Stand # Stocking Density
 (4120) - A7
 Level 3 OI
 Level 4 Code
 Cover Type Code



Legend

- Miris Corners
- Stand Boundaries
- Proposed - Special Conservation Area

Dedicated Special Conservation Areas

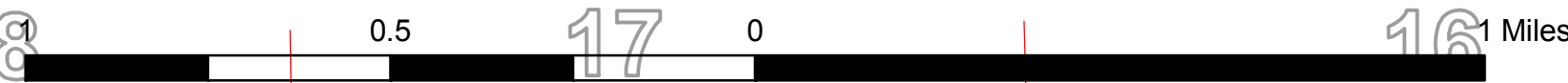
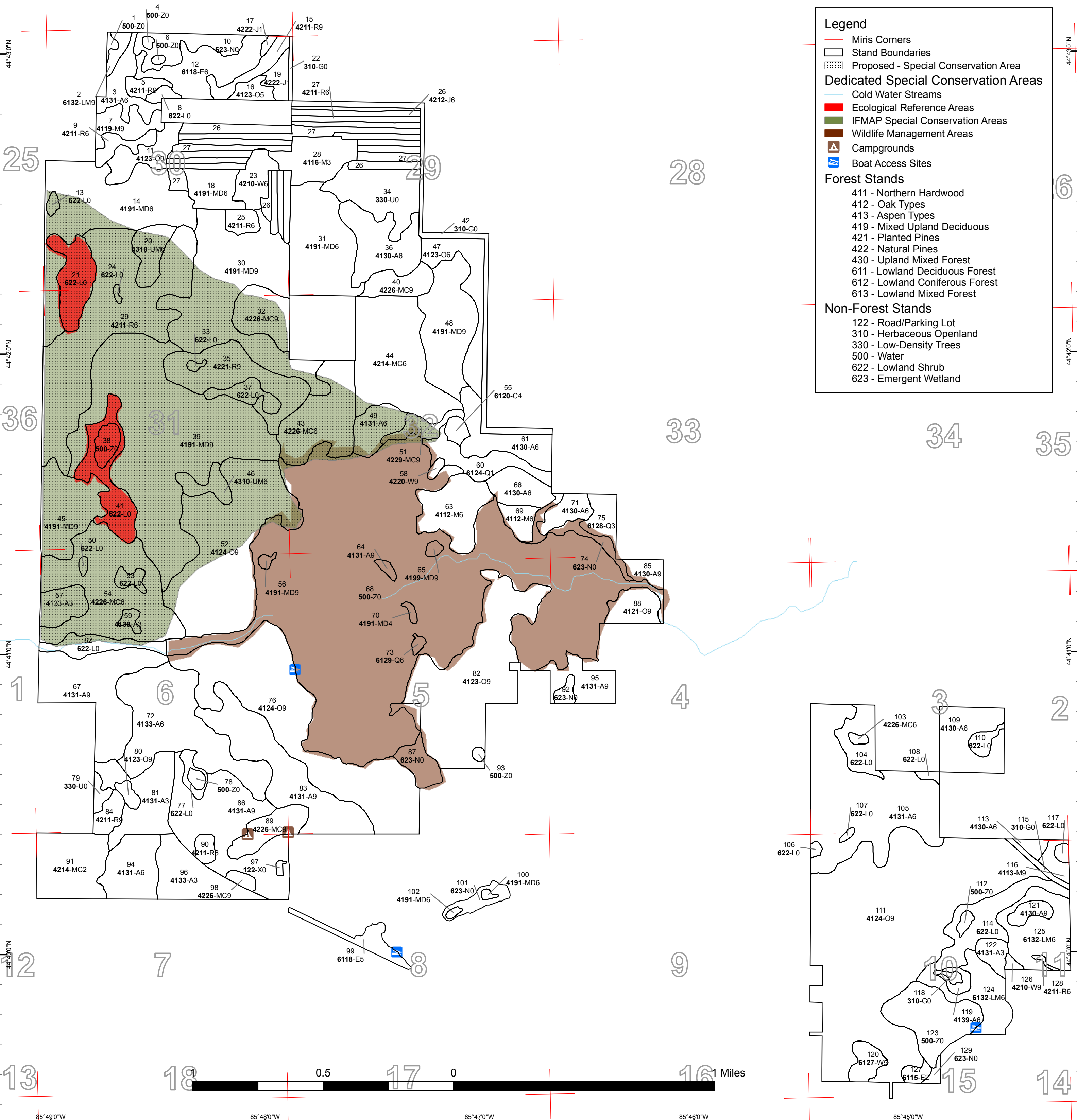
- Cold Water Streams
- Ecological Reference Areas
- IFMAP Special Conservation Areas
- Wildlife Management Areas
- Campgrounds
- Boat Access Sites

Forest Stands

- 411 - Northern Hardwood
- 412 - Oak Types
- 413 - Aspen Types
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Traverse City Mgt. Unit

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

Compartment 061 Year of Entry 2011

Report Date: 05/28/2009



	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	33.5	40.2	98.6	18.0	105.2	279.3	69.9	0	8.3	64.8	0	0	0	2.0	719.8
Emergent Wetland	58.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58.8
Herbaceous Openland	35.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35.0
Low-Density Trees	41.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41.8
Lowland Coniferous Forest	0	0	0	0	0	40.2	9.8	0	0	0	0	0	0	0	0	50.1
Lowland Deciduous Forest	0	0	0	35.8	0	4.3	0	0	12.4	0	0	0	0	0	0	52.5
Lowland Mixed Forest	0	0	0	0	0	0	0	0	0	0	0	33.9	0	36.8	0	70.7
Lowland Shrub	159.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	159.7
Mixed Upland Deciduous	0	0	0	79.8	0	0	170.1	0	96.1	0	46.5	0	1.0	0	206.2	599.8
Natural Pines	0	9.5	0	0	0	1.7	0	22.5	15.6	89.9	35.9	0	48.0	0	49.3	272.3
Northern Hardwood	0	0	0	27.3	0	0	0	0	43.8	0	15.2	6.4	0	0	0	92.7
Oak Types	0	0	0	0	0	30.0	0	0	18.5	282.9	396.1	0	0	0	7.0	734.4
Planted Pines	0	0	42.3	0	0	0	396.5	0	0	0	0	0	0	0	0	438.8
Road/Parking Lot	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0
Upland Mixed Forest	0	0	0	0	0	0	15.6	0	0	10.0	0	0	0	0	0	25.7
Water	646.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	646.9
Total	943.2	43.0	82.5	241.5	18.0	136.9	906.1	102.1	174.0	403.5	558.5	40.3	49.0	36.8	264.5	3999.9

**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
9 61061009-Cut	8.6	42111 - Planted Red Pine, Mixed Deciduous	High Density Pole	59	Harvest	Crown Thinning	Planted Red Pine

Rev
Cmnt:

Rev --Scott Lint : 05/27/2009 comments: Row thin by removing every third row. Row alignment is poor and some additional trees will likely need to be marked for removal to facilitate harvest equipment. Additional poor quality and suppressed trees should also be marked for removal at this time. Residual basal area should not be less than 90 square feet.

Next
Steps:

11 61061011-Cut	18.5	4123 - Red Oak	High Density Log	76	Harvest	Shelterwood	Oak, Pine
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Rev
Cmnt:

Rev --Scott Lint : 05/27/2009 comments: Reduce oak/maple/pine overstory to 30-50 square feet to release established white pine understory. Retain white pine and good quality white oak. Most of the red oak appears to be in decline and should be removed.

Next
Steps:

20 61061020-Cut	15.6	4310 - Pine, Oak Mix	High Density Pole	52	Harvest	Seed Tree	Pine, Oak
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Rev --Scott Lint : 05/27/2009 comments: Treatment is in a potential SCA. Treatment is consistent with goals of this SCA (Dry-Mesic Northern Forest).
Cmnt: Removal of older oaks to release pine.

Rev --Scott Lint : 05/27/2009 comments: Remove majority of deciduous overstory to release established red/white pine understory. Retain a few good quality white oaks.

Next
Steps:

23 61061023-Cut	15.5	42101 - Planted White Pine, Mixed Deciduous	High Density Pole	56	Harvest	Crown Thinning	Planted Red Pine, Mixed Deciduous
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Rev
Cmnt:

Rev --Scott Lint : 05/27/2009 comments: Row thin, and/or mark to crown thin. Good quality stems with fairly wide row spacing, may be able to selectively mark and retain a majority of good quality trees without having to remove every third row. If not possible, row thin plus mark additional poor quality trees to be removed at this time. Residual basal area should not be less than 90 square feet.

Next
Steps:

25 61061025-Cut	7.2	42111 - Planted Red Pine, Mixed Deciduous	High Density Pole	55	Harvest	Crown Thinning	Planted Red Pine
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Rev
Cmnt:

Rev --Scott Lint : 05/27/2009 comments: Remove every third row. Additional poor quality and suppressed trees should also be marked for removal at this time. Residual basal area should not be less than 100 square feet.

Next
Steps:

**PROPOSED TREATMENTS
NO LIMITING FACTORS**



S t a n d	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Page 2 of 4

26 61061026-Cut 59.0 42121 - Planted Jack Pine, Mixed Deciduous High Density Pole 59 Harvest Clearcut Planted Jack Pine

Rev
Cmnt:

Rev --Scott Lint : 05/27/2009 comments: No retention.

Spec:

Next --Scott Lint : 05/27/2009 comments: plant red pine to supplement natural regeneration. Plant at lower stocking than traditional plantation. Goal should be a mixed stand of pine, oak, hardwood.

Steps:

27 61061027-Cut 57.3 42111 - Planted Red Pine, Mixed Deciduous High Density Pole 56 Harvest Crown Thinning Planted Red Pine

Rev

Cmnt: --Scott Lint : 05/27/2009 comments: Large amount of residential developement on north and east sides of stand.

Rev --Scott Lint : 05/27/2009 comments: Thin to encourage eventual conversion to hardwood or natural pines.

Spec:

Next

Steps:

29 61061029-Cut 19.0 42111 - Planted Red Pine, Mixed Deciduous High Density Pole 52 Harvest Crown Thinning Planted Red Pine, Mixed Deciduous

Rev

Cmnt: --Scott Lint : 05/27/2009 comments: Treatment is in a potential SCA. Treatment is consistent with goals of this SCA (Dry-Mesic Northern Forest). Treatment is intended to encourage stand to resemble a natural pine stand or begin moving it in that direction.

Rev --Scott Lint : 05/27/2009 comments: Row thin pine in areas of heavy stocking. Mark some additional trees for removal to facilitate harvest and to further

Spec: reduce basal area. Basal area should not be reduced below 90 square feet.

Next

Steps:

30 61061030-Cut 4.8 4191 - Mixed Upland Deciduous with Conifer High Density Log 59 Harvest Clearcut with Reserves Aspen

Rev

Cmnt: --Scott Lint : 05/27/2009 comments: Treatment is in a potential SCA. Treatment is intended to mimic a small disturbance resulting in a small patch of aspen regeneration.

Rev --Scott Lint : 05/27/2009 comments: Retain some pine.

Spec:

Next

Steps:

31 61061031-Cut 20.4 4191 - Mixed Upland Deciduous with Conifer High Density Pole 28 Harvest Clearcut with Reserves Aspen, Mixed Pine

Rev

Cmnt:

Rev --Scott Lint : 05/27/2009 comments: Regenerate aspen. Thin red and white pine heavily to promote aspen regeneration where possible. Use red and white pine for retention.

Spec:

Next

Steps:

**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
52 61061052-Cut	57.4	4124 - Red with White Oak	High Density Log	85	Harvest	Shelter Wood with Reserves	Oak, Pine

Rev Cmnt: --Scott Lint : 05/27/2009 comments: Dubonnet Trail Camp is located in the southern one third of stand and has been the epicenter of an oak wilt outbreak. Attempts to contain this outbreak have been unsuccessful. Removal of all red oaks will eliminate need for annual removal of dead trees.

Rev Spec: --Scott Lint : 05/27/2009 comments: Remove all red oak from the southern half of stand. Dubonnet Trail Camp is located in the southern one third of stand and has been the epicenter of an oak wilt outbreak. Remove all aspen and multiple stem red maple. Retain good quality single stem red maple, all pine, and good quality white oaks to acheive a residual basal area of 30-50 square feet where possible.

Next Steps:

72 61061072-Cut	15.2	4133 - Aspen, Mixed Pine	High Density Pole	50	Harvest	Clearcut with Reserves	Aspen, Mixed Pine
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Rev Cmnt:

Rev Spec: --Scott Lint : 05/27/2009 comments: Clearcut to regenerate aspen where possible. Retain some pine, but remove enough pine and large canopy oaks to insure good aspen regeneration.

Next Steps:

84 61061084-Cut	8.5	42110 - Planted Red Pine	High Density Log	54	Harvest	Crown Thinning	Planted Red Pine
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Rev Cmnt:

Rev Spec: --Scott Lint : 05/27/2009 comments: Stand row thinned in 2003. Row spacing is narrow. Will need to take equipment access into consideration when marking stand. Remove poor quality and suppressed trees and reduce basal area to around 120.

Next Steps:

105 61061105-Cut	15.3	4131 - Aspen, Oak	High Density Pole	54	Harvest	Clearcut with Reserves	Aspen
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Rev Cmnt:

Rev Spec: --Scott Lint : 05/27/2009 comments: Retain conifer and a few oaks through individual tree retention.

Next Steps:

111 61061111-Cut_clearcut	5.1	4124 - Red with White Oak	High Density Log	97	Harvest	Clearcut with Reserves	Aspen, Oak
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Rev Cmnt:

Rev Spec: --Scott Lint : 05/27/2009 comments: Retain conifer and a few oaks.

Next Steps:

**PROPOSED TREATMENTS
NO LIMITING FACTORS**

	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
111	61061111-Cut-shelterwood	98.7	4124 - Red with White Oak	High Density Log	97	Harvest	Shelter Wood with Reserves	Red with White Oak

Rev
Cmnt:

Rev --Scott Lint : 05/27/2009 comments: Reduce basal area to 30-50 square feet. Retain good quality red and white oak and all conifers. Release white pine
Spec: sub-canopy in patches where possible.

Next
Steps:

**Total Treatment
Acreage Proposed: 426.1**

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Traverse City Mgt. Unit
Inventory Method: IFMAP

PROPOSED TREATMENTS WITH LIMITING FACTORS

Compartment: 061 Entry Yr: 2011
Date 05/28/2009



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
multiple - see map	Comp 61 SCA	888.9	This area was referred to the Biodiversity Stewardship Area (BSA) core design team for consideration. Two Ecological Reference Areas have already been identified within this potential area. There are numerous other small bogs in this area as well being a possible candidate for Dry Mesic Forest. In addition, part of this area was identified in the original potential old growth program.



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
ERA	Ecological Reference Areas	Ecological Reference Areas (ERAs) are high quality examples of natural communities that have been identified as Element Occurrences (EOs) by the Michigan Natural Features Inventory (MNFI) within the context of their natural community classification system. Element Occurrences with viability ranks of A (Excellent) or B (Good) and a Global (G) or State (S) element (rarity) ranking of endangered (1), threatened (2), or rare (3) serve as an initial base of ERAs. They may be located upon any ownership in the State. The system is comprised of individual or associations of natural community types that are managed for restoration and maintenance of natural ecological processes and values. The public may submit recommendations for lands as ERAs using the DNR Conservation Area Recommendation Form.
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	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.
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.

Michigan Department of Natural Resources, Forest, Mineral & Fire Management Division

HIGH CONSERVATION VALUE AREA (HCVA) AND ECOLOGICAL REFERENCE AREA (ERA)

MANAGEMENT AND MONITORING FORMS PACKET

Portions of this information are exempt from Michigan's Freedom of Information Act, 1976 PA 442, MCL 15.243



BACKGROUND AND INSTRUCTIONS

Prior to using this packet material and forms please refer to Work Instruction 1.4 Biodiversity Management on State Forestlands and the Conservation Area Management Guidelines available on line at:

http://www.michigan.gov/dnr/0,1607,7-153-30301_33360-144865--,00.html.

Identified HCVA's and ERAs will be managed to conserve, protect, maintain, and/or enhance their defined conservation objectives or values. The management methods used will vary depending on the objective and type of designation. On DNR-managed lands, Ecological Reference Areas may be protected through a variety of mechanisms (refer to Conservation Area Management Guidance). Management activities or prescriptions in Ecological Reference Areas are highly restricted to those that maintain or enhance the defined attributes and values and protect the immediate natural resource values or human health and safety.

This packet is for each High Conservation Value Area (HCVA) without an existing management plan and all Legally Dedicated State Natural Areas, Ecological Reference Areas (ERA), Critical Dunes and Coastal Environmental Areas on state forest land. Its purpose is to: 1.) document baseline information on each area and its conservation values, threats, management goals and objectives, and 2.) to track changes in threats, when management activities are carried out, monitor if they are effective, and capture needed changes in management determined not to be effective.

Keep the original copies of these forms in the Compartment/Stand File within each FMU and send copies to respective DEQ and DNR program managers and the DNR, FMFM Forest Resource Management Section, Monitoring Specialist.

SUMMARY: LOCATION MAP, MANAGEMENT RECOMMENDATIONS

PART I: HCVA BASELINE INFORMATION, GOALS AND OBJECTIVES

COMPLETE FOR EACH HCVA WITHOUT AN EXISTING MANAGEMENT PLAN

PART I TO ACCOMPANY PART II

SECTION 1: SITE INFORMATION

- A. HCVA TYPE
- B. SITE, CONTACT AND ADMINISTRATIVE INFORMATION
- C. OWNERSHIP INFORMATION
- D. CONSERVATION PARTNERS
- E. OTHER DOCUMENTS RELATED TO THIS HCVA

SECTION 2: CONSERVATION VALUES (TARGETS)

- A. BIODIVERSITY VALUES
- B. SOCIAL/ECONOMIC VALUES
- C. INFRASTRUCTURE/FACILITIES VALUES

SECTION 3: CURRENT CONDITIONS (THREATS)

- A. VALUE OR TARGET VIABILITY (POOR, FAIR, GOOD, VERY GOOD)
- B. CURRENT PRIMARY THREATS

SECTION 4: MANAGEMENT GOALS AND OBJECTIVES

PART II: HCVA MONITORING

SECTION 5: COMPLIANCE MONITORING (WERE TASKS COMPLETED?)

SECTION 6: EFFECTIVENESS MONITORING AND RECOMMENDATIONS (HOW WELL DID MANAGEMENT WORK OR WERE OBJECTIVES ACHIEVED? WHAT ARE NEXT THE STEPS?)

SECTION 7: THREATS MONITORING FIELD FORM – STAND ALONE FORM (WHAT IS THE STATUS OF VALUES OR TARGETS?)

MAY BE COMPLETED BY ANYONE FOR ANY HCVA

OR PART OF MONITORING PACKET TO ACCOMPANY PART I AND PARTS II, SECTIONS 6, 7 AND PART III.

Helpful References:

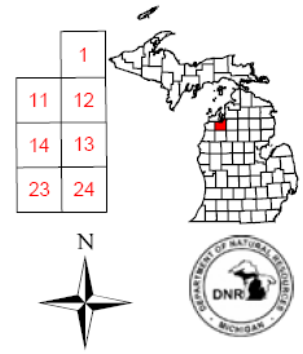
Marqoluis, R. and N. Salafsky. 1998. Measures of Success. Island Press, Washington, DC.362 pp.

The Nature Conservancy. 2005. CAP (Conservation Action Planning) Toolkit - version 08-23-05.

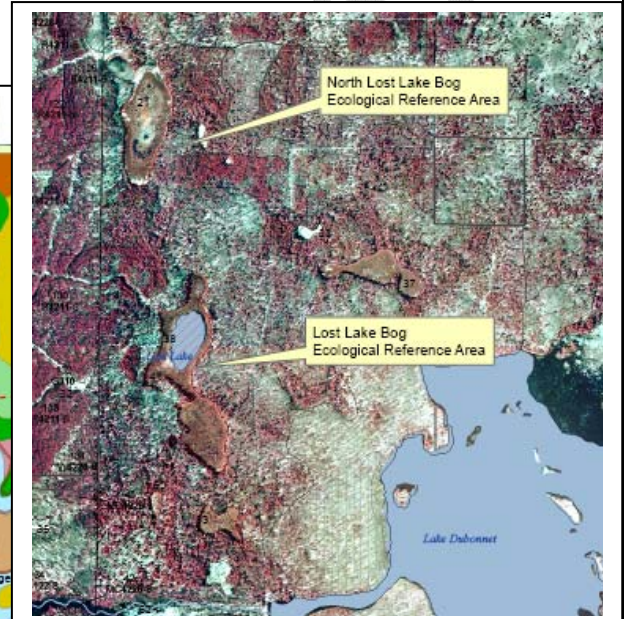
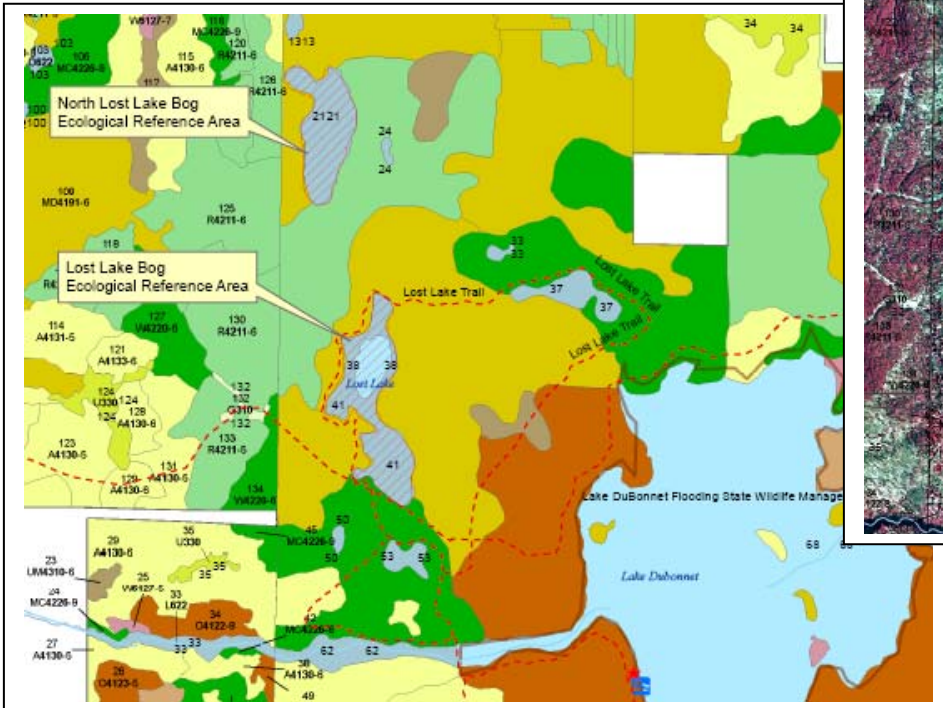
See 2007 overview at <http://sites-conserveonline.org/dcs/projects/art10152.html> and the workbook at http://www.conserveonline.org/2003/07/s/ConPrjMgmt_v4

SUMMARY

**North Lost Lake Bog &
 Lost Lake Bog
 Ecological Reference Area**
 Traverse City
 Forest Management Unit
 Grand Traverse County, MI
 Compartment 61
 T 27 N, R 12 W, Sections 30, 31
 Acres = 37 and 60



Lost Lake Bog Photo by Joshua G. Cohen



RECOMMENDED MANAGEMENT GOALS AND ACTIVITIES (REPEATED FROM SECTION 4)

CHECK ALL GOAL CATEGORIES THAT APPLY

- NATURAL COMMUNITY MAINTENANCE OR ENHANCEMENT GOALS
- ECOLOGICAL SYSTEMS MAINTENANCE OR ENHANCEMENT GOALS
- SPECIES MAINTENANCE OR ENHANCEMENT GOALS
- SPECIES RESTORATION GOALS
- SOCIAL ECONOMIC GOALS
- INFRASTRUCTURE/FACILITIES GOALS
- ADMINISTRATIVE GOALS— PROTECTION STATUS; CAPACITY BUILDING; FUNDING, VOLUNTEERS

GOALS AND DESCRIPTION DERIVED FROM SECTIONS 2 AND 3 (REPEATED ON SUMMARY PAGE)

- GOAL 1: MAINTAIN BOG COMMUNITY THROUGH ALLOWING NATURAL PROCESSES TO OCCUR WITHIN BOG AND ADJACENT UPLAND BUFFERS.**
 OBJECTIVE 1: USE MINIMUM IMPACT SUPPRESSION TECHNIQUES WHEN FEASIBLE WHEN SUPPRESSING WILDFIRE IN AND AROUND THE BOGS
 OBJECTIVE 2: PERIODICALLY MONITOR FOR INVASIVE SPECIES THROUGH INVENTORY PROCESS
 OBJECTIVE 3: USE THE RDR PROCESS TO IDENTIFY RESOURCE DAMAGE ISSUES AS THEY DEVELOP.
 OBJECTIVE 4: USE THE ROAD CLOSURE PROCESS TO ADDRESS ACCESS INTO THE AREA AS NEEDED.
 OBJECTIVE 5: MAINTAIN FORESTED BUFFERS.
-
- GOAL 2: MAINTAIN CURRENT NON-MOTORIZED RECREATIONAL USES.**
 OBJECTIVE 1: CONTINUE TO WORK WITH RECREATION PROGRAM TO MONITOR USES AND ADDRESS FUTURE NEEDS.
MAY BE MORE PENDING WILDLIFE ON SITE REVIEW.
-
- GOAL 3: ACCEPT RECOMMENDATIONS OF THE LOST LAKE AND NORTH LOST LAKE BOG COMPLEX FOR BIODIVERSITY STEWARDSHIP AREA CONSIDERATION THROUGH THE BIODIVERSITY PLANNING PROCESS.**

PART I: HCVA BASELINE INFORMATION , GOALS AND OBJECTIVES

SECTION 1: SITE INFORMATION

A: HCVA TYPE – CHECK ALL THAT APPLY

- | | |
|--|---|
| <input type="checkbox"/> Critical Dune as defined by DEQ
<input type="checkbox"/> Legally Dedicated State Natural Area
<input checked="" type="checkbox"/> Ecological Reference Area:
<input type="checkbox"/> Endangered Species Management Area
<input type="checkbox"/> Kirtland Warbler
<input type="checkbox"/> Piping Plover
<input type="checkbox"/> Other: | <input type="checkbox"/> Environmental Area as defined by DEQ
<input type="checkbox"/> State Natural or Scenic River:
<input type="checkbox"/> Quiet Area:
<input type="checkbox"/> Biodiversity Stewardship Area (BSA)
<input type="checkbox"/> Other: |
|--|---|

SPECIAL CONSERVATION AREA - LIST OTHER CATEGORIES BELOW

**SCA – Compartment 61 Stand Condition 8 – plan to leave in and expand
 Possible Biodiversity Stewardship Area (BSA) called the Lost Lake and North Lost Lake Bogs**

B: SITE, CONTACT AND ADMINISTRATIVE INFORMATION

Site Name : North Lost Lake Bog and Lost Lake Bog		Other Names: Long Lake Bog --- MNFI Site Name	
Report Date Pre-draft May 18, 2009	Forest Mgt Unit Traverse City Forest Management Unit	Compartment: 61 2011 YOE Stand Number(s): 21, 38, 41	<input checked="" type="checkbox"/> Map Attached <input checked="" type="checkbox"/> Shape File in OI/IFMAP GDSE
County(ies): Grand Traverse		Township(s) Range(s) Section(s) ¼ Sec. Optional if mapped T27N, R12W, Sections 30, 31	
Name of individual completing this form (first and last) <input checked="" type="checkbox"/> Check if DNR Employee Kim Herman, Monitoring Specialist, Forest, Mineral, Fire Management Division (FMFMD), Escanaba Scott Lint, Forest Technician, FMFMD, Traverse City (TC) Steve Griffith, Wildlife Technician, WD, TC Mike Kowalski, Wildlife Assistance, TC		Telephone (906) 786-2351ext 132 (231) 922-5280 ext 6844 (231) 922-5280 ext 6831 (231) 922-5280 ext 6832	Email Address hermank@michigan.gov lints@michigan.gov griffs@michigan.gov kowalskiM1@michigan.gov
Additional contact information Name of individual providing information (first and last), if applicable David Lemmien, Traverse City FMU Manager, FMFM Tom Haxby, Inventory and Planning Specialist		Telephone (231) 922-5280 ext 6840 (231) 775-9727 ext 6042	Email Address lemmiend@michigan.gov haxbyt@michigan.gov
Name of DNR/DEQ Program Contact if Applicable		Telephone	Email Address
<input checked="" type="checkbox"/> Volunteer (s): Number of Volunteers: - Focus is on trails Name of Group: Grand Traverse Hiking Club Chapter of North Country Trail Association Contact Name: John Heiam, President		Telephone (231) 938-9655	Email Address johnheiam@charter.net
<input checked="" type="checkbox"/> Volunteer(s) For Shore to Shore Horse Trail Number of Volunteers: Name of Group: MI Trail Riders Association, Inc Contact Name: 5806 E. State Rd., Hale, MI 48739		Telephone (989) 473-3205	Email Address

C: OWNERSHIP INFORMATION - CHECK ALL THAT APPLY AND INCLUDE NAME OF THE UNIT:

- | | |
|---|--|
| <input checked="" type="checkbox"/> State Forest Land: Traverse City Management Unit | <input type="checkbox"/> State Game Area: |
| <input type="checkbox"/> State Park/Recreation Area: | <input type="checkbox"/> Other or Private Land (describe): |

D: CONSERVATION PARTNERS – FILL IN ALL KNOWN PARTNERS

Name of Organization: The Nature Conservancy Contact Name: Christine (Tina) Hall, Conservation Director Email Address: chall@tnc.org Telephone (906) 225-0399 ext 12	Name of Organization Michigan Natural Areas Council Contact Name: Phyllis Higman Email Address: mnac@cyberspace.org Telephone (517) 373-6983
Name of Organization: Contact Name: Email Address: Telephone:	Name of Organization: Contact Name: Email Address: Telephone:

E: OTHER DOCUMENTS RELATED TO THIS HCVA – CITATION AND LOCATION WHERE STORED

Cohen, J.G., and M.A. Kost. 2008. Natural community abstract for bog. Michigan Natural Features Inventory, Lansing, MI. 20 pp. <http://web4.msue.msu.edu/mnfi/abstracts/ecology/Bog.pdf>

Cohen, J.G., B.S. Slaughter, and M.A. Kost. 2008. Site Summaries for Long Lake Bog and North Lost Lake Bog in Natural Community Surveys of Potential Ecological Reference Areas on State Forest Lands. Michigan Natural Features Inventory, Report Number 2008-04, Lansing, MI. pp 22 & 24 of 272 pp.

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. [Bog](#)

SECTION 2: CONSERVATION VALUES/TARGETS - CHECK ALL THAT APPLY

A: BIODIVERSITY VALUES

There are a number of ways to describe biodiversity values - check all that apply.

1. **Natural Communities** – Based on Michigan Natural Features Inventory Community Classification.

GO to: http://web4.msue.msu.edu/mnfi/data/MNFI_Natural_Communities.pdf; <http://web4.msue.msu.edu/mnfi/pub/abstracts.cfm>

Quality Rank comes from specific MNFI Element Occurrence Records (EOR) in the FMFM IFMAP Biodiversity Data Layer.

Community Name	State Rank	Global Rank	Quality Rank A,B,C,D
Bog	S4	G3G5	AB and B

2. **Other information if known.**

- Ecological Systems** .Check Applicable Regional Landscape Ecosystem (Section), Subsection, and Sub-subsection from Albert, Dennis A. 1995. Regional landscape ecosystems of Michigan, Minnesota, and Wisconsin: a working map and classification. Gen. Tech. Rep. NC-178. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 250 pp

Name

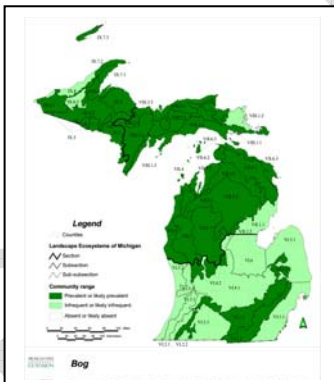
Section VII. Northern Lacustrine-Influenced Lower Michigan
 Subsection VII.3 . Newaygo Outwash Plain
 Sub-subsection VII.2.2 Newaygo Outwash Plain

3. **Ecological Systems**

- List name(s) of Ecosystems/Natural Communities (based on MNFI Community Classification):**

BOG

Overview: Bog is a nutrient-poor peatland characterized by acidic, saturated peat and the prevalence of sphagnum mosses and ericaceous shrubs. Bogs occur in depressions in glacial outwash and sandy glacial lakeplains and in kettles on pitted outwash and moraines. Bogs frequently occur as a floating mat on the margins of lakes and ponds. Fire and flooding are the main natural disturbance factors (Kost et al. 2007).



Bog Map of Statewide Distribution (MNFI , 2008)



Lost Lake Bog Left and North Lost Lake Bog Right Photos by Joshua G. Cohen, Ecologist Michigan Natural Features Inventory



Summary Site Descriptions Excerpted from Cohen et. al. 2008.

North Lost Lake Bog

Natural Community Type: Bog

Rank: G3G5 S4, vulnerable to secure globally and apparently secure within the state

Element Occurrence Rank: AB

Location: Traverse City Forest Management Unit, Compartment 61

Element Occurrence Identification Number: 8430

Site Description: This bog occupies a kettle depression in a pitted outwash plain with deep saturated sphagnum peats overlying wet sands. Both organic and mineral soils are acidic. Overall topography is flat with sphagnum hummocks and hollows providing diverse microtopography and fine-scale gradients in soil moisture and chemistry. The site is characterized by high species diversity (over 50 species) with complex ecological zonation. Minimal anthropogenic disturbance was noted. The bog is surrounded by mature second-growth dry-mesic northern forest with dirt roads and trails throughout the landscape.

Four primary ecological zones characterize the site: open bog, treed bog, floating mat, and poor fen. The open bog is characterized by deep acidic sphagnum peat dominated by leatherleaf (*Chamaedaphne calyculata*) with bog laurel (*Kalmia polifolia*) and few-seed sedge (*Carex oligosperma*). The treed bog has an open canopy (10-25%) of scattered and stunted black spruce (*Picea mariana*) and tamarack (*Larix laricina*) that range in DBH from 4 to 20 cm and in height from 15 to 40 ft. The low shrub layer in this zone is dense and dominated by ericaceous species, namely leatherleaf, bog laurel, and low sweet blueberry (*Vaccinium angustifolium*). The floating mat is extensive with 20 to 40 cm of fibric peat over water. White-beak-rush (*Rhynchospora alba*) is dominant on the mat with prevalent species including pitcher-plant (*Sarracenia purpurea*), cotton-grasses (*Eriophorum* spp.) and patches of twig-rush (*Cladium mariscoides*) and yellow-eyed grass (*Xyris torta*). Numerous pockets of poor fen occur along the wetland margin and a larger pocket of poor fen is found at the north end of the complex. Poor fen inclusions are characterized by slightly acidic sedge peats (60 cm deep) over circumneutral sand dominated by wiregrass sedge (*Carex lasiocarpa*) and bluejoint grass (*Calamagrostis canadensis*)

Lost Lake (MNFI Site Name = Long Lake)

Natural Community Type: Bog

Rank: G3G5 S4, vulnerable to secure globally and apparently secure within the state

Element Occurrence Rank: B

Location: Traverse City Forest Management Unit, Compartment 61

Element Occurrence Identification Number: 11575

Site Description: Lost Lake is a lake-filled, ombrotrophic bog that occurs in a kettle depression in a pitted outwash plain with deep, strongly acidic (pH 4.5-5.0) saturated sphagnum peats overlying acidic (pH 5.0) sands. The overall topography is flat with sphagnum hummocks and hollows providing diverse microtopography and finescale gradients in soil moisture and chemistry. The site is surrounded by mature second growth dry-mesic northern forest with dirt roads and trails throughout the landscape. The bog is characterized by three primary ecological zones: a grounded mat with higher tree density, broad areas of open bog dominated by leatherleaf (*Chamaedaphne calyculata*), and a floating bog mat with increased importance of graminoids. The shrub layer is dominated by leatherleaf, bog laurel (*Kalmia polifolia*), and bog rosemary (*Andromeda glaucophylla*) with areas along the lake margin supporting whorled loosestrife (*Decodon verticillatus*) and areas along the upland margin supporting mountain holly (*Nemopanthus mucronata*), huckleberry (*Gaylussacia baccata*), and blueberries (*Vaccinium* spp.). The herbaceous layer is dominated by few-seed sedge (*Carex oligosperma*) and cotton-grasses (*Eriophorum* spp.) with twig-rush (*Cladium mariscoides*), white beak-rush (*Rhynchospora alba*), small cranberry (*Vaccinium oxycoccos*), pitcher-plant (*Sarracenia purpurea*), and round-leaved sundew (*Drosera rotundifolia*) prevalent on the floating mat adjacent to the lake. Sphagnum species dominate the ground cover throughout the site. Three-way sedge (*Dulichium arundinaceum*) is a local dominant in areas of shallow peat over sand close to the upland margin. The scattered and stunted canopy in areas of treed bog is dominated by white pine (*Pinus strobus*), black spruce (*Picea mariana*), and tamarack (*Larix laricina*) with trees ranging in DBH from 4 to 20 cm and in height from 15 to 40 ft. Over thirty vascular plant species were noted during the survey.

- Ecological processes** – such as connectivity, hydrology, fire, wind events, flooding, pest and disease cycles;
Describe: Saturated and inundated conditions inhibit organic matter decomposition and allow for the accumulation of peat. Under cool, anaerobic, and acidic conditions, the rate of organic matter accumulation exceeds organic decay. Natural disturbance factors influencing bogs include fire, flooding, windthrow, and insects.

Underlying environmental features – such as soils, geology, topography, headwaters;

Describe:

Environmental gradients – such as elevation, precipitation, temperature;

Describe:

Species and/or community structure – using during migration, during different life stages, or gradual species turnover across environmental gradients.

Describe:

Nested large and small natural communities linked by functional or restorable ecosystems:

Describe:

High quality natural communities nearby:

Describe: Other bog or wetland communities nearby

Large Block Size:

General Shape and Acres:

4. **Species Assemblages** – List types of species assemblage targets.

Major groupings of species - share common natural processes or have similar conservation requirements (e.g., freshwater mussels, forest-interior birds, essential pollinators).

Globally significant species aggregations (e.g. migratory shorebird aggregation).

5. **Species** - List types of species by common and scientific name:

Focal species - keystone, wide-ranging (regional), providing linkages between ecosystems, and umbrella species.

Species:

Globally imperiled or state endangered or threatened native species - Ranked G1, G2, G3 by NatureServe, and S1, S2 by MNFI, state and/or federally listed or proposed for listing as Threatened or Endangered (MI and U.S.), and on the IUCN Red List (International). Species:

Species of Special Concern - Due to vulnerability, declining trends, disjunct distributions, or endemic status; Ranked S3 by MNFI

Species: Ebony Boghaunter *Williamsonia fletcheri*

Weblink [Williamsonia fletcheri \(Ebony Boghaunter\) - MNFI Rare Species Explorer](#)

1999 Record

Other species of greatest conservation need - Identified as part of Michigan's Wildlife Action Plan due to declining populations or other characteristics that may make them vulnerable.

Species: B: KNOWN SOCIAL/ECONOMIC VALUES

- Archaeological:
- Historical:
- Recreational:
 - Camping : **Dispersed Camping**
 - Canoeing/Kayaking:
 - Fishing: **No**
 - Hiking/Backpacking:
 - Hunting/Trapping: **Deer, upland game**
 - Photography
 - Scenic
 - Water (lake, river, stream): **Lost Lake Bog**
 - Wildlife Viewing: **Nearby flooding – 1mile away**
 - Cross Country Skiing – **trails not groomed, but used**
 - Other :
- Restorative/Spiritual
- Traditional Use/Gathering

C: EXISTING INFRASTRUCTURE/FACILITIES:

- American Disability Accessibility (ADA) Considerations
- Boat Launch(es)
- Bridge(s):
- Campground(s):
- Interpretive Displays:
- Marked boundaries
- Parking lot(s):
- Posted use rules
- Scenic Overviews
- Toilet(s)
- Trails/Boardwalks: **Lost Lake Pathway around Lost Lake Bog**
- Shore to Shore Riding and Hiking Trail**
- Other:

SECTION 3: CURRENT CONDITIONS

D. CURRENT STATUS/VIABILITY OF CONSERVATION VALUE/TARGET (FROM TNC CAP TOOL KIT)

STATUS DEFINITIONS – POOR - IMMINENT LOSS, FAIR – VULNERABLE, GOOD – MINIMUM INTEGRITY, VERY GOOD - OPTIMAL INTEGRITY

<i>LIST CONSERVATION VALUE/TARGET FROM SECTION 2 – A, B OR C</i>	<i>LIST CATEGORY OF SIZE, CONDITION, OR LANDSCAPE CONTEXT</i>	<i>LIST KEY ATTRIBUTE</i>	<i>LIST INDICATOR</i>	<i>LIST CURRENT STATUS POOR, FAIR, GOOD, OR VERY GOOD</i>
BOGS	CONDITION LANDSCAPE CONTEXT	NATURAL PROCESSES FIRE AND HYDROLOGY	FIRE PLANNING IN PLACE LACK OF ATV RUTTING WITHIN BOGS FORESTED BUFFERS AROUND BOGS	GOOD – VERY GOOD
RECREATIONAL	LANDSCAPE CONTEXT SCENIC PROPERTIES OF BOG AND TRAILS	STATE FOREST PATHWAY IN A SCENIC AREA CLOSE TO RESIDENTIAL DEVELOPMENT	SCENIC AND ECOLOGICAL INTEGRITY OF THE SHORELINE	GOOD
RARE SPECIES EBONY BOGHAUNTER	LANDSCAPE CONTEXT POPULATION	HABITAT	PRESENCE	UNKNOWN

E. : INITIAL PRIMARY THREATS ASSESSMENT TO ESTABLISH BASELINE CONDITION

**CHECK ALL THAT THERE IS ACTUAL EVIDENCE FOR AND DESCRIBE THE EVIDENCE BRIEFLY AND/OR ATTACH PHOTOS
 DO THIS INITIALLY FROM AERIAL PHOTOS, LOCAL KNOWLEDGE, AND EXISTING DATA FOLLOWED BY A SITE VISIT.**

- A. Habitat Conversion & Degradation** – Complete or substantial **loss of or damage** to natural habitats.
- Altered Fire Regime -*suppression or increase in fire frequency and/or intensity outside of its natural range of variation:*
 - Altered Hydrologic Regime Changing water flow patterns outside their natural range of variation (*surface water diversion, groundwater pumping, dam operations*)
 - Commercial & Industrial Development: *factories, stand-alone shopping centers, office parks, train yards, docks, ship yards, airports, landfills*)
 - Farms & Plantations Agricultural operations - *commercial farms, industrial plantations, feed lots, aquaculture*
 - Housing & Urban Development Expansion of cities, towns, settlements, non-housing development - *urban areas, suburbs, villages, homes, shopping areas, offices, schools, hospitals*
 - Military Activities Actions by formal or paramilitary forces (*military bases, defoliation, munitions testing* :
 - Natural System Modifications Actions that convert or degrade habitat to “managing” natural systems for human welfare - *dam construction, land reclamation, wetland filling, rip-rap along shoreline, levees and dikes*
 - Recreation Areas Recreation sites with a substantial footprint *ski areas, golf courses, resorts, county parks*
 - Other:
-
- B. Transportation Infrastructure** – Long narrow corridors **altering, fragmenting, and disturbing** natural habitat and species, including soil erosion/sedimentation, and providing routes for invasive or problematic species.
- Flight Paths :
 - Railroads:
 - Roads and Trails:
 - Shipping Lanes:
 - Trails:
 - Utility Lines.
 - Stream Crossings - *culverts, bridges* :
 - Other:
-
- C. Energy & Mining** – Production of non-biological resources **having negative impacts** to conservation values.
- Mining – *Exploring, developing, and producing.*
 - Oil & Gas Drilling **none current, but some anticipated in the near future**
 - Renewable Energy – *Exploring, developing, and producing.*
-
- D. Biological Resource Harvesting** –Over or under consumption of “wild” resources **resulting in loss** of conservation values.
- Gathering – *Harvesting plants, fungi, and other non-timber/non-animal products for commercial, recreation, or subsistence purposes.*
 - Grazing
 - Hunting, Trapping & Fishing
 - Timber Harvesting:

E. : INITIAL PRIMARY THREATS ASSESSMENT TO ESTABLISH BASELINE CONDITION

CHECK ALL THAT THERE IS ACTUAL EVIDENCE FOR AND DESCRIBE THE EVIDENCE BRIEFLY AND/OR ATTACH PHOTOS

DO THIS INITIALLY FROM AERIAL PHOTOS, LOCAL KNOWLEDGE, AND EXISTING DATA FOLLOWED BY A SITE VISIT.

- E. Recreation & Research** – Non-consumptive uses of biological resources **resulting in damage** to natural resources.
- Human-Powered Recreation – *mountain bikes, hikers, backpackers, cross-country skiers, rock climbers, canoeists, kayakers, hang-gliders, birdwatchers, photographers*
 - Motor-Powered Recreation - *Traveling outside of established transport corridors: off-road vehicles, motorcycles, motorboats, jet-skis, snowmobiles, ultra-light planes.*
 - Scientific Research – *Ecosystem manipulations*
-
- F. Pollution** – Introduction of exotic and/or excess materials from point and non-point sources with **evidence of resource damage**.
- Chemicals & Toxins
 - Greenhouse Gasses –*CO₂, methane*
 - Light Pollution
 - Noise Pollution
 - Nutrient Loads
 - Radioactive Materials
 - Salt/Brine
 - Solid Waste – *garbage, litter*
 - Thermal Pollution
 - Waste & Residual Materials – *dredge spoil, water treatment residuals, slash, mine tailings, excess sediment loads.*
-
- G. Invasive & Other Problematic Species & Genes** – Aquatic or terrestrial non-native and native species or genetic materials that have or are predicted to have harmful effects on biodiversity following their introduction, spread and/or increase in abundance.
List species, extent of infestation and fill out Forest Health Form.
- Introduced Genetic Material
 - Invasive Species:
 - Problematic Native Species:
 - Hybrid Species
-
- H. Climate Change** – Evidence of impacts from long-term changes linked to global warming and other climate issues.
- Climate Variability – Intensification and/or alteration of normal weather patterns - *droughts, high wind or rain event.*
 - Habitat Shifting & Alteration
-
- I. Other**
-

SECTION 4: RECOMMENDED MANAGEMENT GOALS AND ACTIVITIES

LIST GOAL(S). FOR EACH VALUE, RELATED THREAT ABATEMENT, MAINTENANCE OR ENHANCEMENT NEED IDENTIFIED IN SECTIONS 2 AND 3

CHECK ALL GOAL CATEGORIES THAT APPLY

- NATURAL COMMUNITY MAINTENANCE OR ENHANCEMENT GOALS**
- ECOLOGICAL SYSTEMS MAINTENANCE OR ENHANCEMENT GOALS**
- SPECIES MAINTENANCE OR ENHANCEMENT GOALS**
- SPECIES RESTORATION GOALS**
- SOCIAL ECONOMIC GOALS**
- INFRASTRUCTURE/FACILITIES GOALS**
- ADMINISTRATIVE GOALS– PROTECTION STATUS; CAPACITY BUILDING; FUNDING, VOLUNTEERS**

GOALS AND DESCRIPTION DERIVED FROM SECTIONS 2 AND 3 (REPEATED ON SUMMARY PAGE)

GOAL 1: MAINTAIN BOG COMMUNITY THROUGH ALLOWING NATURAL PROCESSES TO OCCUR WITHIN BOG AND ADJACENT UPLAND BUFFERS.

- OBJECTIVE 1: USE MINIMUM IMPACT SUPPRESSION TECHNIQUES WHEN FEASIBLE WHEN SUPPRESSING WILDFIRE IN AND AROUND THE BOGS**
- OBJECTIVE 2: PERIODICALLY MONITOR FOR INVASIVE SPECIES THROUGH INVENTORY PROCESS**
- OBJECTIVE 3: USE THE RDR PROCESS TO IDENTIFY RESOURCE DAMAGE ISSUES AS THEY DEVELOP.**
- OBJECTIVE 4: USE THE ROAD CLOSURE PROCESS TO ADDRESS ACCESS INTO THE AREA AS NEEDED.**
- OBJECTIVE 5: MAINTAIN FORESTED BUFFERS.**

GOAL 2: MAINTAIN CURRENT NON-MOTORIZED RECREATIONAL USES.

- OBJECTIVE 1: CONTINUE TO WORK WITH RECREATION PROGRAM TO MONITOR USES AND ADDRESS FUTURE NEEDS.**
MAY BE MORE PENDING WILDLIFE ON SITE REVIEW.

GOAL 3: ACCEPT RECOMMENDATIONS OF THE LOST LAKE AND NORTH LOST LAKE BOG COMPLEX FOR BIODIVERSITY STEWARDSHIP AREA CONSIDERATION THROUGH THE BIODIVERSITY PLANNING PROCESS.