



# Compartment Review Presentation

## Grayling Forest Management Unit

Compartment 72180

Entry Year 2024

Acreage: 1,624

County Crawford

Management Area: Camp Grayling

**Stand Examiner:** Scott McClarren

### Legal Description:

T27N R04W Sections 31,32,33. Frederic Township

### Identified Planning Goals:

This compartment is comprised of Hanson Reserve Lands which contain the following deed restrictions: 1) The lands are to be used as a permanent encampment and maneuvering ground for the military, 2) it is to serve as a game preserve for the breeding and protection of game, and 3) it is to serve as a forest reserve. The management goal is to maintain forest health, productivity, sustainability, species diversification, and structural diversity throughout the compartment while meeting the deed restrictions.

### Soil and topography:

Hills on the east side sloping down to flat land in the middle and continuing west to the Manistee River. There is well-drained Grayling sand in the west side and Graycalm in the east with pockets of poorly drained Croswell and AuGres in the middle.

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

The compartment consists of Military Board land except for the 26.4 acres in the SW1/4NW1/4 in section 31. This parcel of land is tax-reverted state land and contains the Manistee River State Forest Campground. Public ownership is fairly consolidated, bordering on private parcels of various sizes, on the east and west ends of the compartment. Camp Shawano, a juvenile correction facility, is located in Section 32, south of Howes Lake.

### Unique Natural Features:

The compartment contains unique Northern Wet Prairie with Houghton's goldenrod (state threatened, *solidago houghtonii*), Clintons bulrush (state threatened, *scirpus clintonii*), Long leaved aster (special concern, *aster longifolius*). Secretive locust has been found in Section 32. There is the potential for massasauga, hill's thistle, dusted skipper, and calypso bulbosa. The compartment to the north (comp 179) is managed for Kirtlands Warbler (endangered, *dendroica kirtlandii*). The Manistee River is a designated Natural River.

### Archeological, Historical, and Cultural Features:

None.

### Special Management Designations or Considerations:

Work within the guidelines for the National Guard training needs. Watch visual management along M-72, Arrowhead Rd, Manistee River Rd, and Camp Shawano. Protect and preserve the threatened and special concern species.

### Watershed and Fisheries Considerations:

This compartment is in CLMMU. The Manistee River is a designated trout stream and Natural River which flows through private land and touches one side of the Manistee River Campground in section 31. Howes Lake is a small lake on the north side of Camp Shawano used mainly by the National Guard for training during the summer time.

### Wildlife Habitat Considerations:

To maintain the existing Jack Pine, Aspen and Oak types for the deer, rabbits, and grouse. The east side of the compartment gets a lot of hunting pressure.

### Mineral Resource and Development Concerns and/or Restrictions

No known potential exists for commercial metallic mineral production in this part of the state. The nearest known active sand/gravel pit is five miles to the southeast. There appears to be some good potential for sand & gravel in the east half of the compartment. There is no known significant potential for hydrocarbons from known producing formations beneath the compartment. Approximately 10 years ago, Encana tested the Collingwood Formation roughly six miles west, and while the formation did produce (and some of the wells are still producing), the play hasn't proven to be economical to date, and there has been no recent interest in developing the Collingwood. No active State mineral leases exist within several miles of the compartment. Most of the compartment is within the Camp Grayling reservation area and includes lands deeded to

the DMVA. The majority of State-owned mineral rights in the compartment have been classified as Non-Leasable. The State does not own all the mineral rights within the compartment. Because the mineral estate is the dominant estate, the surface owner must provide the owner of the mineral rights reasonable access to the surface for mineral exploration and development.

**Vehicle Access:**

M-72, Arrowhead Rd, Manistee River Rd, Howes Lake Rd, Pollak Bridge Rd and two track trails provide more than adequate access. All new trails created for timber sales will be closed upon completion of the sale.

**Survey Needs:**

None

**Recreational Facilities and Opportunities:**

This compartment receives heavy recreational use. Manistee River Bridge State Forest Campground is located in Section 31. The Manistee River, which runs through Section 31, is host to fishing and canoeing. Section 32 contains Howes Lake which is used for fishing and swimming to a limited extent. There is a large amount of camping around the lake which has resulted in some erosion problems. Section 33 contains a portion of an ORV route, the Blue Bear Snowmobile trail (Trail number 7), and part of the horse trail. East of Howes Lake Rd receives moderate to heavy hunting pressure. There is a river access site along M-72.

**Fire Protection:**

The older jack pine along Arrowhead Rd and M-72 Has been cut and replanted. Those cuttings and the current road system is adequate to provide fire breaks for the fire prone jack pine types. The Manistee River and Howes Lake will provide the closest, accessible water source. There is a dry hydrant at the M-72 river access site.

**Additional Compartment Information:**

None.

**The following reports from the Inventory are attached:**

- Total Acres by Cover Type and Age Class**
- Cover Type by Harvest Method**
- Proposed Treatments – No Limiting Factors**
- Proposed Treatments – With Limiting Factors**
- Stand Details (Forested and Nonforested)**
- Dedicated and Proposed Special Conservation Areas**
- Site Condition Details**

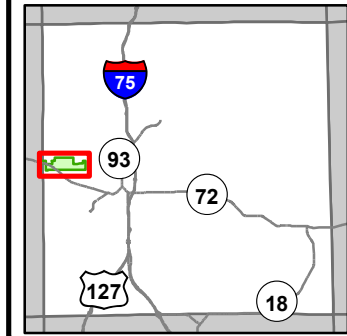
**The following information is displayed, where pertinent, on the attached compartment maps:**

- Base feature information, stand boundaries, cover types, and numbers**
- Proposed treatments**
- Site condition boundaries**
- Details on the road access system**

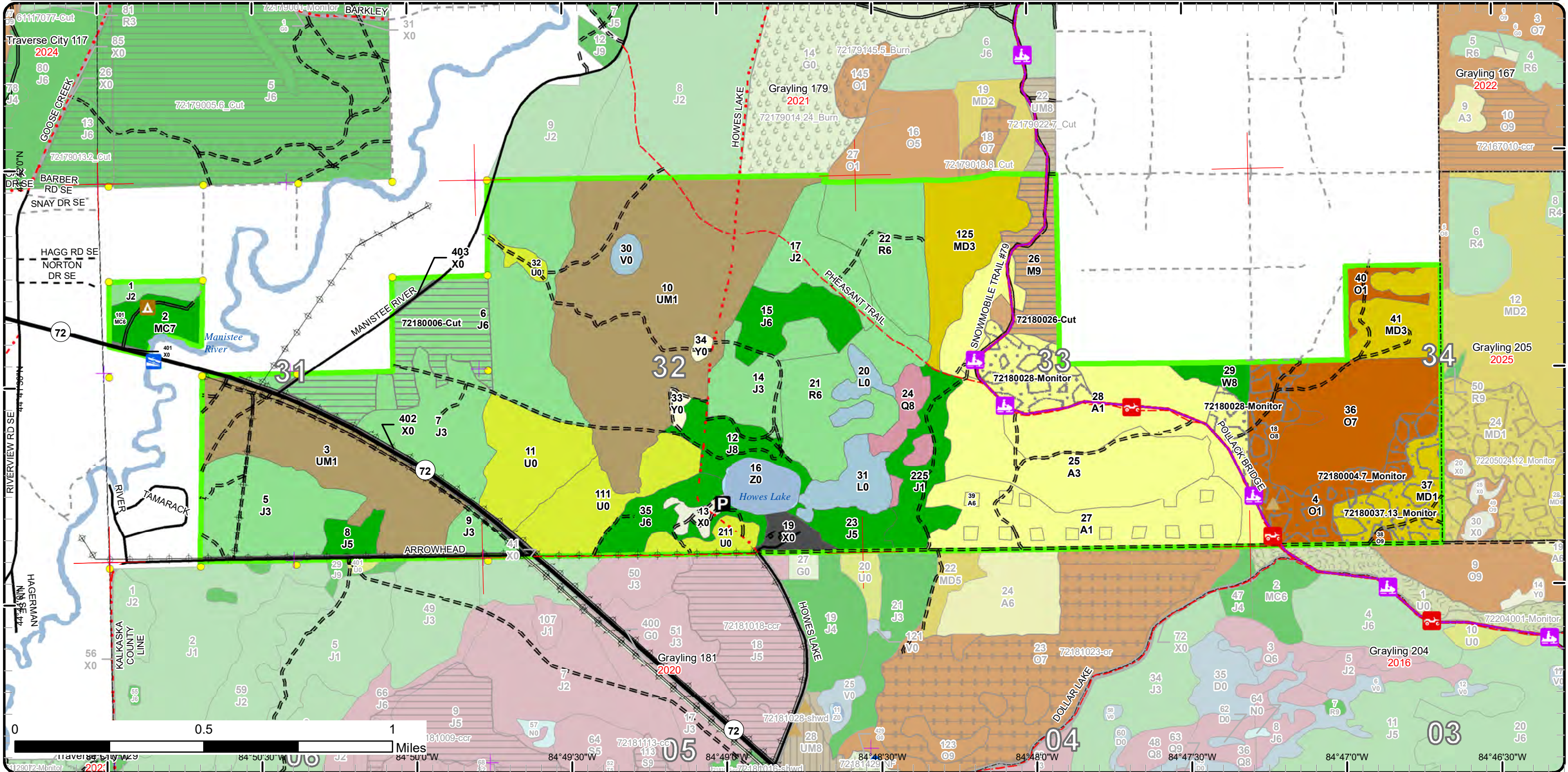


# Cover Type & Treatments Map

Compartment: 180  
 T27N, R04W, Sec. 31-34  
 County: Crawford  
 Unit: Grayling  
 Mgmt Area: Camp Grayling  
 YOE: 2024  
 Acres: 1624.2 GIS Calculated  
 Examiner: Scott McClarren  
 Map Revised: 12/27/2022  
 Map Phase: Post-Review



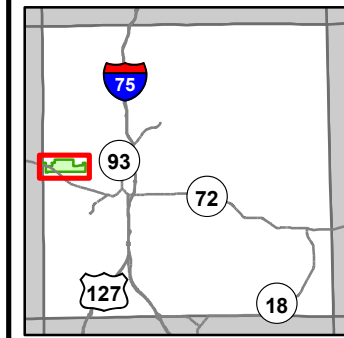
- Miris Corners
- + Remonumented Section Corners
- Survey Grade Corners
- Counties
- DNR - Secondary Forest Road
- DNR - Forest Access Route
- Federal / State Highway
- Federal / State / County - Paved Road
- Federal / State - Dirt / Gravel Road
- County - Dirt Road (Seasonal)
- Private - Dirt / Gravel Road
- ORV Routes
- Snowmobile Trails
- Designated ORV Route
- Designated Snowmobile Trails
- ▲ Berms
- Boating Access Site
- ▲ Campground
- P Parking Lot
- Lake/Pond
- Perennial River
- Lakes and Rivers
- Powerline
- - - Fence
- Compartment Boundary
- Clearcut (w/Reserves)
- Regeneration Survey
- 411 - Northern Hardwood
- 412 - Oak Types
- 413 - Aspen
- 419 - Mixed Upland Deciduous
- 421 - Planted Pines
- 422 - Natural Pines
- 430 - Upland Mixed Forest
- 612 - Lowland Coniferous Forest
- 122 - Roads/Parking Lot
- 123 - Other High Intensity Urban
- 330 - Low Density Trees
- 500 - Water
- 622 - Lowland Shrub
- 710 - Sand/Soil
- 790 - Other Bare/Sparsely Vegetated
- Camp Grayling Fence
- Camp Grayling Tank Trail



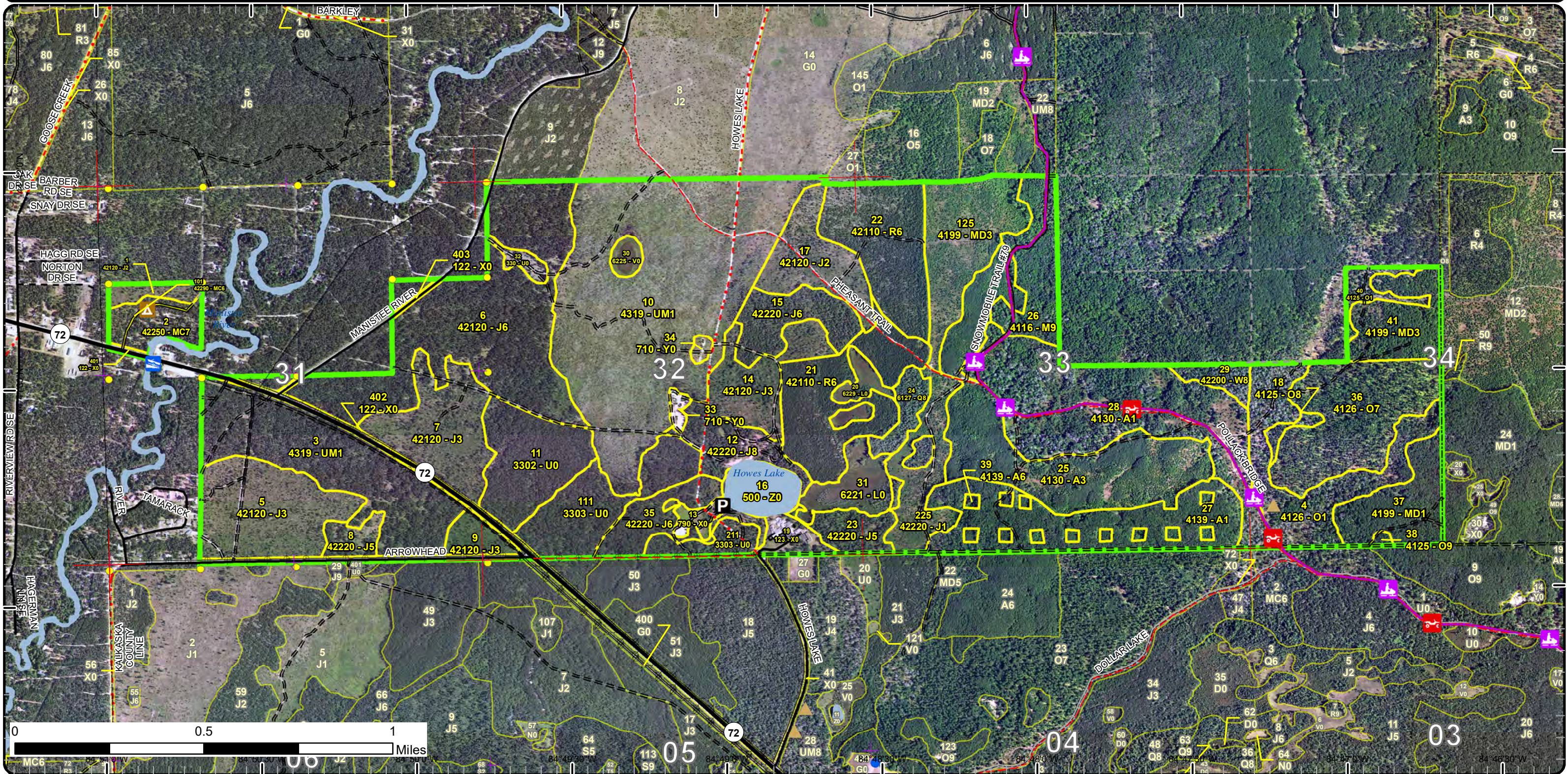


# Stand Boundary Map

Compartment: 180  
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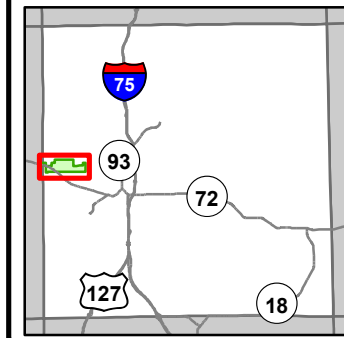
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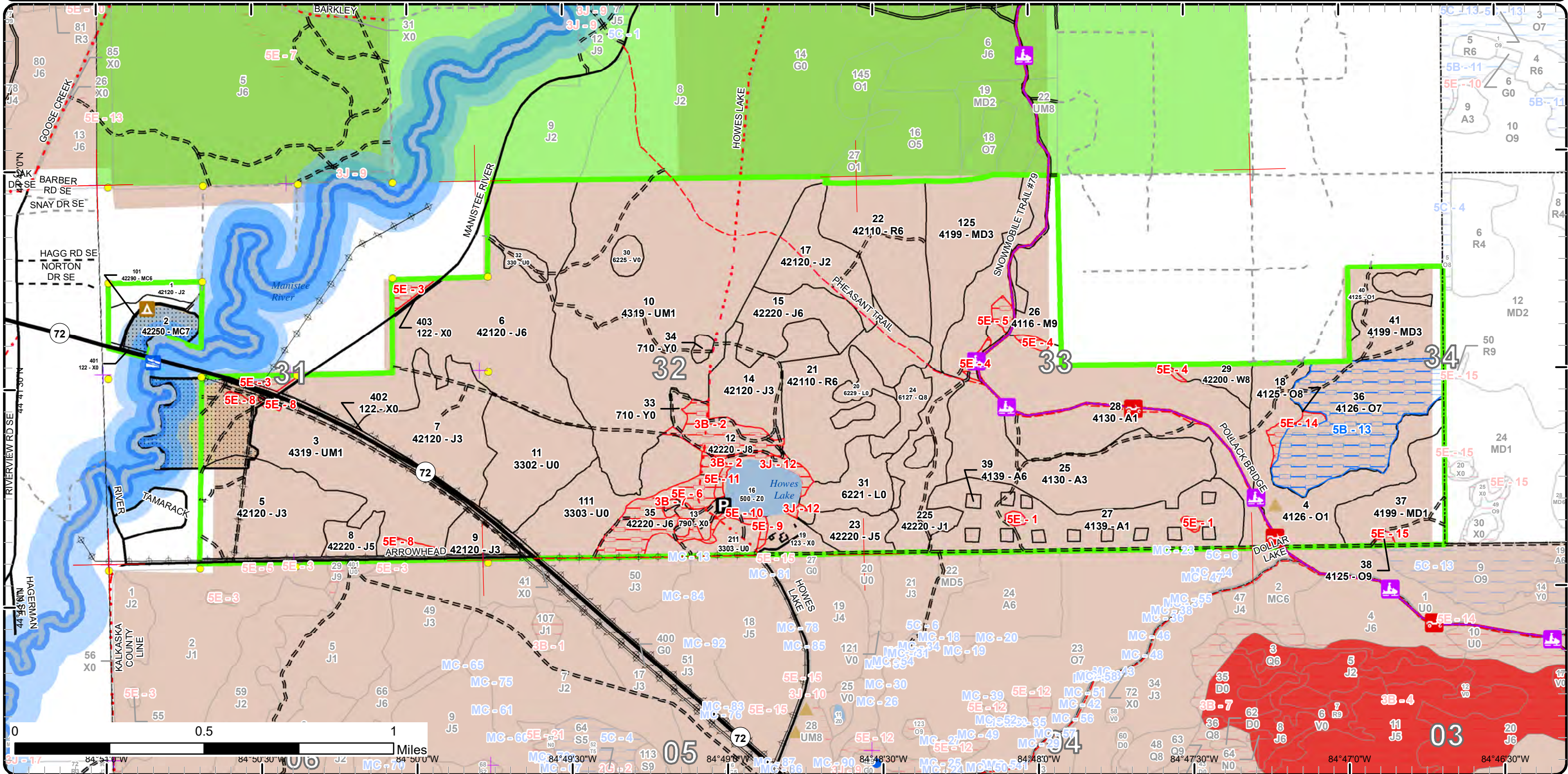


# Special Conservation Areas

Compartment: 180  
 T27N, R04W, Sec. 31-34  
 County: Crawford  
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- Perennial River
- Lakes and Rivers
- Powerline
- Fence
- Compartment Boundary
- Available w/ Constraints
- 5B: Maintain for regeneration purposes
- Unavailable
- 3J: Water quality / BMPs (stream, river, or lake)
- 5E: Long-Term Retention
- Stand Boundaries
- SCA
- Ecological Reference Areas
- Natural Rivers Vegetative Buffer
- Natural Rivers Zoning District
- Kirtland Warbler Habitat
- Cold Water Streams
- Cold Water Lakes
- High Priority Trout Stream Buffer
- Research, Development, and Military Lands
- State Forest Campground
- Camp Grayling Fence
- Camp Grayling Tank Trail







Age Class

	Non-Forest	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120-129	130-139	140-149	150+	Uneven-Aged	Total
Aspen	0	175	97	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	280
Bare/Sparsely Vegetated	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Bog	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Jack Pine	0	0	213	0	0	26	184	0	22	0	0	0	0	0	0	0	0	0	444
Low-Density Trees	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99
Lowland Conifers	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	15
Lowland Shrub	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
Mixed Upland Deciduous	0	32	48	0	31	0	0	0	0	0	0	0	0	0	0	0	0	0	111
Natural Mixed Pines	0	0	0	0	6	0	13	0	0	0	0	0	0	0	0	0	0	0	18
Northern Hardwood	0	0	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	32
Oak	0	53	0	0	9	0	0	0	3	0	67	0	0	0	0	0	0	0	131
Red Pine	0	0	0	0	105	0	0	0	0	0	0	0	0	0	0	0	0	0	104
Sand, Soil	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Upland Mixed Forest	0	84	207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	291
Urban	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
Water	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
White Pine	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	8
<b>Total</b>	<b>191</b>	<b>344</b>	<b>565</b>	<b>9</b>	<b>145</b>	<b>32</b>	<b>216</b>	<b>21</b>	<b>37</b>	<b>3</b>	<b>0</b>	<b>67</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1624</b>



## Report 2 – Treatment Summary

Grayling Mgt. Unit

Year of Entry: 2024

Acres of Harvest

Compartment 180

Total Compartment Acres: 1,624

Commercial Harvest - 83  
 Harvests with Site Condition - 0  
 Next Step Harvest - 0  
 Habitat Cut - 0

### Cover Type by Harvest Method

	Clearcut	Selection	Patch Clearcut	Seed Tree	Shelterwood	Thinning	Overstory Removal	Salvage	Other	Total Acres
Jack Pine	54	0	0	0	0	0	0	0	0	54
Northern Hardwood	29	0	0	0	0	0	0	0	0	29
<b>Total</b>	<b>83</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>83</b>

### Proposed and Next Step Treatments by Method

	Harvest	Site Prep	Planting	Seeding	Burning	Pesticide	Monitoring	Other	Non-Forest Mgt.	Total Acres
Current	83	0	0	0	0	0	123	0	0	206
Next Step	0	0	0	0	0	0	83	0	0	83
<b>Total</b>	<b>83</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>206</b>	<b>0</b>	<b>0</b>	<b>289</b>



Stand	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Habitat Cut
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**Approved Treatments:**

<b>4</b>	<b>72180004.7_Monitor</b>	52.1	4126 - White, Black, N. Pin Oak	Sapling Poor	4	1-50	Monitoring	Natural Regen (Intermediate)	4191 - Mixed Upland Deciduous with Conifer	Even-Aged	No
<p><u>Prescription</u> check regen -- if inadequate, initiate supplemental planting</p> <p><u>Specs:</u></p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable Regen:</u> goal is a moderately-stocked mix of natural &amp; artificial regen including oak, aspen &amp; RM, along with planted JP. If pre-trenching recon finds overall moderate stocking in natural regen, cancel the planting prescription.</p> <p><u>Other Comment:</u> Percent to Treat = 100%</p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2019</p>											
<b>6</b>	<b>72180006-Cut</b>	54.0	42120 - Planted Jack Pine	Poletimber Well	55	51-80	Harvest	Clearcut with Retention	4222 - Natural Jack Pine	Even-Aged	No
<p><u>Prescription</u> Harvest all stems greater than 2" DBH. Retention has been established for stand 6 in the isolated parcels west of Manistee River Rd. Include standard military specs.</p> <p><u>Specs:</u></p> <p><u>Next Step</u> Monitoring, Natural Regen (Re-Inventory)</p> <p><u>Treatments:</u></p> <p><u>Acceptable Regen:</u> Natural regenerated jack pine and/or oak is the goal for stand. If stand fails to meet stocking, accept stand as pine barrens per direction of wildlife.</p> <p><u>Other Comment:</u> Treating this portion of stand now due to blow down, heavier mortality, and future green up concerns for stand.</p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2023</p>											
<b>26</b>	<b>72180026-Cut</b>	29.1	4116 - Mixed N. Hardwood - Aspen	Sawtimber Well	51	51-80	Harvest	Clearcut with Retention	4199 - Other Mixed Upland Deciduous	Even-Aged	No
<p><u>Prescription</u> Harvest all stems greater than 2" dbh except leave all white oak and oaks greater than 26" dbh. Retention has been designated in finger west of trail. Add grouse drumming log spec and shrub protection for hawthorn and serviceberry. Include standard military specs. Include trail protection specs.</p> <p><u>Specs:</u></p> <p><u>Next Step</u> Monitoring, Natural Regen (Re-Inventory)</p> <p><u>Treatments:</u></p> <p><u>Acceptable Regen:</u> Mixed upland deciduous is goal. Increasing aspen component is primary objective but, accept any combination of aspen, maple, and oak.</p> <p><u>Other Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2023</p>											





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Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Habitat Cut
<b>28 72180028-Monitor</b>	39.1	4130 - Aspen	Sapling Poor	4	Immature	Monitoring	Natural Regen (Re-Inventory)	4131 - Aspen, Oak	Even-Aged	No
<p><u>Prescription</u> <u>Specs:</u></p> <p><u>Next Step</u> <u>Treatments:</u></p> <p><u>Acceptable Regen:</u> Acceptable regeneration is oak, aspen and maple.</p> <p><u>Other Comment:</u> Percent to Treat = 100%</p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2031</p>										
<b>37 72180037.13_Monitor</b>	31.5	4199 - Other Mixed Upland Deciduous	Sapling Poor	4	Immature	Monitoring	Natural Regen (Intermediate)	4191 - Mixed Upland Deciduous with Conifer	Even-Aged	No
<p><u>Prescription</u> check regen -- if inadequate, initiate supplemental planting of RP</p> <p><u>Specs:</u></p> <p><u>Next Step</u> <u>Treatments:</u></p> <p><u>Acceptable Regen:</u> goal is a moderately-stocked mix of natural &amp; artificial regen including oak, aspen &amp; RM, along with planted RP. If recon finds moderate stocking in natural regen, cancel the planting prescription.</p> <p><u>Other Comment:</u> Percent to Treat = 100%</p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2019</p>										

**Total Treatment Acreage Proposed: 205.8**



## Report 4 – Site Conditions

Grayling Mgt. Unit

Scott McClarren : Examiner

Compartment: 180

Year of Entry: 2024

### Availability for Management

Total Acres	Acres Available	Acres Avail		Acres Not Available		Dominant Site Conditions					
		With Condition				5B	5C	3B	3J	5E	
280	274	0		6	Aspen						6
6	4	0		1	Bare/Sparsely Vegetated				1		
5	5	0		0	Bog						
444	396	0		48	Jack Pine				15	0	32
100	100	0		0	Low-Density Trees						
15	15	0		0	Lowland Conifers						
29	29	0		0	Lowland Shrub						
111	111	0		0	Mixed Upland Deciduous		0				
18	18	0		0	Natural Mixed Pines						
32	29	0		3	Northern Hardwood						3
132	63	64		4	Oak	64					4
104	104	0		0	Red Pine						
5	5	0		0	Sand, Soil						
291	288	0		3	Upland Mixed Forest						3
30	30	0		0	Urban						
15	15	0		0	Water						
8	8	0		0	White Pine						0
1,624	1,494	64		66	Total Forested Acres	64	0	17	0		48
	92%	4%		4%	Relative Percent						

*\*Due to limitations in the current Site Conditions Analysis tool, all nonforested acres are considered available. Future development will enable analysis of nonforested types.*

Site No.	Dominant Site Cond Availability	Dominant Site Condition	Acres	Other Site Condition	Other Site Condition	Other Site Condition	Other Site Condition
1	Unavailable	5E: Long-Term Retention	2	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Retention islands left when stand 27 was harvested in 2018 (#645-14).							
2	Unavailable	3B: Threatened, endangered, and special concern species	15	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							



## Report 4 – Site Conditions

Grayling Mgt. Unit  
Scott McClarren : Examiner

Compartment: 180  
Year of Entry: 2024

3	Unavailable	5E: Long-Term Retention	6	Unspecified	Unspecified	Unspecified	Unspecified
<p><b>Comments:</b> Long-term retention associated with stand 6.</p>							
4	Unavailable	5E: Long-Term Retention	4	Unspecified	Unspecified	Unspecified	Unspecified
<p><b>Comments:</b> Boundary-excluded retention left when stand 28 was cut in 2018 (#645-14). Note that the northeast island was merged with stand 29 during post-sale updates.</p>							
5	Unavailable	5E: Long-Term Retention	3	Unspecified	Unspecified	Unspecified	Unspecified
<p><b>Comments:</b> Long-term retention associated with stand 26.</p>							
6	Unavailable	5E: Long-Term Retention	22	3B: Threatened, endangered, and special concern species	Unspecified	Unspecified	Unspecified
<p><b>Comments:</b> Excluded from stand 11's 2016 harvest in order to buffer and protect Howes Lake and the Mesic Sand Prairie ERA. Since the retention island was established, the ERA boundary was reduced, occupying much less of the island.</p>							
7	Unavailable	3B: Threatened, endangered, and special concern species	2	Unspecified	Unspecified	Unspecified	Unspecified
<p><b>Comments:</b> One of several polygons in the Mesic Sand Prairie ERA. The natural community extent was refined by MNFI after their 2016 field survey of the site.</p>							
8	Unavailable	5E: Long-Term Retention	3	Unspecified	Unspecified	Unspecified	Unspecified
<p><b>Comments:</b> Islands left when stand 3 was cut in 2018.</p>							



## Report 4 – Site Conditions

Grayling Mgt. Unit

Scott McClarren : Examiner

Compartment: 180

Year of Entry: 2024

9	<b>Unavailable</b>	<b>5E: Long-Term Retention</b>	1	3B: Threatened, endangered, and special concern species	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Excluded from stand 11's 2016 harvest in order to buffer and protect Howes Lake and the Mesic Sand Prairie ERA. Since the retention island was established, the ERA boundary was reduced, occupying much less of the island.							
10	<b>Unavailable</b>	<b>5E: Long-Term Retention</b>	2	3B: Threatened, endangered, and special concern species	3J: Water quality / BMPs (stream, river, or lake)	Unspecified	Unspecified
<b>Comments:</b> Excluded from stand 11's 2016 harvest in order to buffer and protect Howes Lake and the Mesic Sand Prairie ERA. Since the retention island was established, the ERA boundary was reduced, occupying much less of the island.							
11	<b>Unavailable</b>	<b>5E: Long-Term Retention</b>	1	3B: Threatened, endangered, and special concern species	3J: Water quality / BMPs (stream, river, or lake)	Unspecified	Unspecified
<b>Comments:</b> Excluded from stand 11's 2016 harvest in order to buffer and protect Howes Lake and the Mesic Sand Prairie ERA. Since the retention island was established, the ERA boundary was reduced, occupying much less of the island.							
12	<b>Unavailable</b>	<b>3J: Water quality / BMPs (stream, river, or lake)</b>	5	3B: Threatened, endangered, and special concern species	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
13	<b>Available</b>	<b>5B: Maintain for regeneration purposes</b>	64	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Shelterwooded in 2008. Oak regen still recruiting. Residual cored showed positive response to release. Leave the overstory this YOY, final harvest next YOY, 1" & up on the RM regen also, and plan to immediately follow-up plant with RP to boost stocking.							

Report 4 – Site Conditions

Grayling Mgt. Unit

Compartment: 180

Scott McClarren : Examiner

Year of Entry: 2024

14	Unavailable	5E: Long-Term Retention	3	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Retention left when stand 16 was harvested in 2018.							
15	Unavailable	5E: Long-Term Retention	1	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Retention island left when stand 23 was harvested in 2018.							



Mgt. Unit

Compartment: #Type!

Year of Entry:



## Report 5 – PROPOSED SPECIAL CONSERVATION AREA\* (SCA) DETAILS

\* This is a partial list of SCAs for this compartment. Not included are those areas identified under other Department initiatives (Natural Rivers, Deer Wintering Areas, etc.). Those will be identified in separate, future map and report products.

SCA Name	SCA Category	Detail Type	Recommendation	Acres
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Comments

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**Report 6 – EXISTING SPECIAL CONSERVATION AREA DETAILS**

\* This is a list of SCA's for this compartment along with a 1/4 mile buffer surrounding the compartment. Refer to the Special Conservation Area Map for locations of the below listed Conservation Areas.

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

Conservation Area	Type	Description
SCA	Cold Water Lake	A coldwater lake has temperature and dissolved oxygen conditions that allow naturally-reproduced or stocked trout populations and those of other coldwater fish species to persist from year to year. Suitable conditions for coldwater fishes may occur in Michigan lakes if they are relatively deep, have substantial groundwater inflows, or are located in colder (northern) areas of the state. Such lakes are established by Director's action and designated as trout resources by Fisheries Order 200.
SCA	Cold Water Stream	A coldwater stream has temperature and dissolved oxygen conditions that allow naturally-reproduced or stocked trout populations and those of other coldwater fish species (e.g., slimy sculpin) to persist from year to year. Coldwater streams in Michigan typically provide these conditions due to substantial contributions of groundwater to their stream flows. Such streams are established by Director's action and designated as trout resources by Fisheries Order 210.
SCA	Research and Military Areas	These areas provide facilities and lands specifically dedicated for research, or other purposes. They include the 5,847 acre Forest Fire Experiment Station, the 12,000 acre Houghton Lake Wildlife Research Area, the Beaver Islands Archipelago Wildlife Research Area (that includes most of Garden Island, all of High and Hog Islands, all state owned land on Beaver, South Fox and North Fox Islands), the Cusino Wildlife Research Area, the 3,000 acre Hunt Creek Fisheries Research Station, the 125 acre Wyman Nursery, and over 144,000 acres of Military Lands.
SCA	Riparian Area	A transitional area between aquatic and terrestrial ecosystems in which the terrestrial ecosystem influences the aquatic ecosystem and vice-versa. Because of the unique conditions adjacent to lakes, streams and open water wetlands, riparian areas harbor a high diversity of plants and wildlife. Riparian communities are ecologically and socially significant in their effects on water quality and quantity, as well as aesthetics, habitat, bank stability, timber production, and their contribution to overall biodiversity.
HCVA	Designated Critical Habitat	Critical habitat areas are established via a consultative and cooperative process between the DNR and the U.S. Fish and Wildlife service for the recovery of threatened and endangered species, as governed by Part 365, Endangered Species Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, and the Federal Endangered Species Act of 1973. This is an active program, with proposed species plans in various stages of review. As of now only two exist, Kirtland Warbler Habitat and Piping Plover Habitat.
HCVA	Natural Rivers	There are two Natural Rivers datasets which are derived from spatial buffers set from an established and approved distance from the river centerlines. The Natural Rivers Zoning District is a 400 foot buffer for most Natural Rivers. The Vegetative Buffer ranges from 25 to 100 feet.
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.





Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments																																																		
1	42120 - Planted Jack Pine	Sapling Medium	7.3	16	1-50	N/A	Split portion of stand 1 not planted to jack pine into separate stand 101. Planted jp is healthy. Pole size residuals left during harvest scattered through stand.  Next to Manistee River Rd. Campground. Harvested under "campground Jack". All trees under 6" were left and jack pine and red pine were planted throughout. Planted stock seems to be growing well, has good survival.																																																		
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2	42250 - Pine, Oak	Sawtimber Poor	12.5	61	1-50	N/A	Stand encompasses campground. Changed age from 54 to 60 but, some of the oaks and declining jack pine look older. Looks like red pine was inter-planted in the 80's.  Old comments- Manistee river campground. some of jack pine is dying, oak seems to be doing alright.																																																		
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3	4319 - Mixed Upland Forest	Sapling Poor	84.3	4	Immature	N/A	JP plantation with heavy portion of canopy occupied by cherry/oak but, should transition to more jp dominated once planted stock puts on some more growth. Was final harvested with reserves by June 2018 (#644-14), cutting stems 2"+ DBH except island retention. The strip of planted RP within the M-72 ROW was also excluded from the harvest. Was trenched and planted to PRT JP in May 2019 (C72-826) except for the two sub-acre triangles NW of Korth Trail. Yr 1 regen survey (DN) found 3.9% mortality (912 TPA) & 65% FTG. Sept 2021 Yr 3 survey: 994 TPA. O-BC are primary competitors. FTP is complete.																																																		
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4	4126 - White, Black, N. Pin Oak	Sapling Poor	53.3	4	1-50	N/A	Mature NPO stand with extensive mortality was final harvested in 2018 (#620-15), cutting stems 1"+ DBH except RP, WP, xlog WO, sapling oak & aspen, and boundary-excluded retention (now stand 48). RM regen pockets that could be worked around were also left. Cruised residual of 3 sq. ft. RP-WP-WO.																																																		
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5	42120 - Planted Jack Pine	Sapling Well	55.9	14	Immature	N/A	Changed age from 29 to 13. Looks like stand was planted same time as stand 7 (2010) across M72 following harvest in 2007 Arrowhead Jack #72-063-04. All merch trees removed, planted around sub merch trees. Confirm during inventory (SM).  Young jack pine plantation with some larger scattered jack pine throughout.																																																		
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Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments																				
6	42120 - Planted Jack Pine	Poletimber Well	136.3	55	51-80	N/A	<p>Most of stand is 1967 origin with a few older trees scattered. A few small blow down pockets towards the west side of stand. There's about 2 acres of jack pine that was planted in 1984 in the southwest (too small to be its own stand). Most of stand is Grayling Outwash PVCd Kotar. Stand is located in EMR circle associated with the Manistee River. Manistee River Road splits through a couple small corners of stand.</p> <p>Old comments- Merchantable Jack Pine stand, has some log sized stuff throughout.</p>																				
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7	42120 - Planted Jack Pine	Sapling Well	46.0	15	1-50	N/A	<p>Residual jp planted around is getting pole size. Planted stock looks healthy. Changed from uneven aged to even aged. Not enough residuals to call stand 2 aged. All jack pine 5" and up was cut in 2007 (arrowhead Jack). It has been trenched and planted. Jack Pine is coming in well and has good survivability throughout. Large red pine along M-72. Was left out of jack pine harvest. Not enough to warrant its own stand.</p>																				
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8	42220 - Natural Jack Pine	Poletimber Medium	8.6	50	1-50	N/A	<p>Changed age from 39 to 49. Stand is healthy at this time. Overall ba is 1-50 but in patches is 81-110. Old comments- Scattered patches of various sized jack pine. Some cherry brush. Good deer cover with lots of edge effect.</p>																				
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9	42120 - Planted Jack Pine	Sapling Well	9.7	14	Immature	N/A	<p>Young jack pine plantation. Planted May 2010. Growing well, 3-5 ft tall some larger jack pine scattered throughout stand.</p>																				
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10	4319 - Mixed Upland Forest	Sapling Poor	206.9	11	Immature	N/A	<p>Stand is filling in and has a pretty steady distribution of jack pine and cherry throughout. Stand has recruited into forested status. Old comments- This is the site of the Howes Lake Fire from 2011. The burnt timber was left per wildlife's request. No salvage was done. There is little to none regeneration of jack pine throughout the stand. A portion of the stand was a warbler plantation. Some cherry brush is about all that is coming back at this time.</p>																				
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11	3302 - Low Density Conifer Trees	Nonstocked	42.7	0		4212 - Planted Jack Pine	<p>Still 0-25% cover but, stocking looks good. Scattered cherry competition but, most trees look free to grow. Was final harvested with reserves by Dec 2016 (#644-14), cutting stems 2"+ DBH except retention along Howes Lake and around the Mesic Sand Prairie ERA polygon. The ERA extent has since been revised downward and occupies less of the retention island. 43 of the harvest acres were trenched &amp; planted with PRT JP in May 2019 (C72-826), with the east side trenched in an experimental KW pattern. The harvest area excluded from planting has ground with a seasonal high water table and other concerns. The strip of planted RP within the M-72 ROW was also excluded from the harvest. Yr 1 regen survey (DN) found 1.8% mortality (932 tpa) &amp; 93% FTG. Sept 2021 Yr 3 survey: 1255 TPA. BC is primary competitor. FTP is complete.</p>																				





Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments																								
12	42220 - Natural Jack Pine	Sawtimber Medium	21.8	76	51-80	N/A	<p>Changed from planted to natural and from 57 to 75. Tough to tell with snow but jack pine looks natural. Split south portions of stand and merged with adjacent stand 35. Stand borders Howes lake. Opening by lake sees a lot of recreational use. Small wet area in north west corner. Jack pine and oak are declining. Not much for sub canopy.Old comments- Outskirts of Howes Lake Fire. Jack Pine plantation, getting to be merchantable throughout.</p>																								
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13	790 - Other Bare/Sparsely Vegetated	Nonstocked	5.8			No	<p>Small pockets of jack pine in and around stand.Old comment-Sand heli-pad utilized by the military.</p>																								
14	42120 - Planted Jack Pine	Sapling Well	31.2	10	1-50	N/A	<p>Scattered residuals that were sub merchantable when harvested are now pole sized. Planted stock is still sapling sized. Some slightly depressed areas with sheep laurel may have something hydrological going on. Changed to upland with lowland but tough to tell with snow on.</p> <p>Old comments- Young jack pine plantation. Good survivability, right on the edge of the Howes Lake Fire. JC update: JP was planted in 2012 (C72-581) around a significant amount of sub-merch JP residual from the 2007 harvest (#063-04). Passed Year 3 regen survey with a mix of planted and naturally-recruited JP and oak stump sprouts.</p>																								
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15	42220 - Natural Jack Pine	Poletimber Well	26.1	41	51-80	N/A	<p>Stand has 2 distinct age classes of jack pine but, due to MIFI standards, could not show both log size jack pine and pole size jack pine in canopy data. Roughly 20% of stand is log size and 80 years old and 80% of canopy is pole size and 40 years old. Looks like there may have been a removal cut where smaller non merchantable stems were left and are 80 years old and dominant canopy position. The older jack pine is healthy looking in the east where the water table is higher. Smaller pole size trees were cored with ages ranging between 35-55 and take most of the canopy cover.</p> <p>Old comments- Jack Pine plantation. Has varying density throughout. Could not locate planting record or cutting record for this stand. Previous inventory says stand year of origin was 1965. Best ring count I could come</p>																								
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16	500 - Water	Nonstocked	15.4			No	Howes Lake																								
17	42120 - Planted Jack Pine	Sapling Medium	32.6	10	Immature	N/A	<p>JP stock looks healthy.Old comments- Freshly planted JP stand. Some larger scattered Jack Pine throughout. Good survivability. JC update: JP was planted in 2012 (C72-581) around a significant amount of sub-merch JP residual from the 2007 harvest (#063-04). Passed Year 3 regen survey with a mix of planted and naturally-recruited JP and oak stump sprouts.</p>																								
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18	4125 - Black, N. Pin Oak	Sawtimber Medium	3.4	83	51-80	N/A	Was part of stand 16 pre-harvest. This portion was split off as retention. Declining NPO with mixed pine.																																										
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19	123 - Other High Intensity Urban	Nonstocked	9.6			No	Old comments- Camp Shawano. Monitoring well on location. Unsure what it is used for monitoring.																																										
20	6229 - Mixed lowland shrub	Nonstocked	9.7			No	Open grass towards middle of lowlands and blueberry around the edges. Multi-part stand.																																										
21	42110 - Planted Red Pine	Poletimber Well	53.5	34	111-140	N/A	Red snakes around a couple bogs with lowland jack pine. Young red pine plantation. Planted in 1988. Seems to be growing well, approaching merchantability.																																										
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22	42110 - Planted Red Pine	Poletimber Well	51.0	34	51-80	N/A	NW corner on a low site that looks like had some mortality. JP mixed throughout plantation. Some openings with cherry brush. Most of stand looks to be around 75% canopy closure. RP looks more widely spaced than stand south of trail (21). Red pine plantation. Survivability is good, quality varies throughout stand.																																										
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23	42220 - Natural Jack Pine	Poletimber Medium	13.9	52	51-80	N/A	Changed stand from J2 to J6 and from 44 years old to 51. Overall log sizev with open pockets and pole size pockets of jack pine. Stand adjacent to Shawano facilities. A couple of low wetter spots seen during walk through. May have been a fire run through stand at some point, charging seen on a couple of older trees. Old comments- Jack Pine stand with open areas, some larger oak throughout. Do nothing at this time.																																										
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24	6127 - Lowland Pine	Sawtimber Medium	14.7	73	51-80	N/A	White pine cored confirmed age at 72 years old however, numerous legacy pines scattered throughout. Large portions of stand dominated by pole size tamarack. Old comments- Multi part stand. There is an island that is in a bit of a depression, has a nice mix of pine throughout. The main part of the stand is not as densely populated, but still has a nice conifer mix throughout. No treatment at this time.																																										
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<b>25</b>	4130 - Aspen	Sapling Well	96.6	16	Immature	N/A	Stand cut 2005/2006, Camp Shawano Block #72-078-04. Getting pole size in places but still immature overall. A couple pockets of pole timber left from old 5-spot cuts. Sub canopy transitions between high red maple and high white oak. Split west side of stand into new stand 125 due to covertype change. This stand became flagged for updates during closure of bordering stand 28's harvest; had to open & save in order to clear flag. Original 6-20-12 examiner's comments: Massive clear cut. It is coming back to a nice mixed stand of hardwoods and pine. Some thick patches of aspen throughout.																																																													
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<b>26</b>	4116 - Mixed N. Hardwood - Aspen	Sawtimber Well	31.6	51	51-80	N/A	North Howes Lake Salvage was cut in 1994 following a wildfire. Currently lots of dead and down jack pine, oak, and aspen. Most live aspen is developing conks. Stand is dominated by 50 year old red maple poles but, has scattered x-log oaks throughout. Changed age from 60 to 50. Some white oak in south west.  Dense Red maple stand. Some larger diameter oak throughout, seems to be poor quality. Occasional jack pine throughout stand. No treatment at this stand. ORV Trail passes through this stand. Cored larger stems, not the regen.																																																													
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<b>27</b>	4139 - Aspen, Mixed Deciduous	Sapling Poor	65.6	4	Immature	N/A	Regen objective met for aspen and maple. Most oak is heavily browsed and under 6'. Hilly topography throughout. Oak cover should increase next cycle once more of it recruits above 6 feet.  Mature oak stand was final harvested with retention in 2018 (#645-14), cutting stems 2"+ DBH except WP and two interior retention islands. Oak sprouted well but wasn't tall enough on average at sale closure to count as canopy cover. Re-inventory regen survey is scheduled.																																																													
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<b>28</b>	4130 - Aspen	Sapling Poor	108.9	4	Immature	N/A	Large open areas of widely spaced cherry, oak, and willow in east and west sides of stand. Most aspen and cherry above browse height now. Maple and oak heavily browsed. Natural regen survey conducted during inventory showed RM 134/ac, NPO 24/ac, and QA 990/ac for stems over 6' tall. However, this was not evenly distributed across stand. Roughly 40 acres total are understocked, 29 acres of the north west are poorly stocked and 10 acres in east are non stocked. Black cherry was not included as an acceptable species but had 293 stems per acre (primarily concentrated in the poorly stocked areas). There is also roughly 800 RM and NPO under 6' due to repeated browse.  Valley with a mosaic of upland shrub openings, aspen clones, and declining NPO cover was final harvested in spring 2018 (#645-14), cutting stems 2"+ DBH except boundary excluded retention. Aspen & oak had sprouted before sale was closed, but wasn't tall enough to meet the new regen standard of 6' in order to count toward stocking. Re-inventory regen survey scheduled. Original examiner's comments: This stand has a major gypsy moth issue. There are hardly any leaves left on the trees throughout the stand. Blue bear trail runs through stand, some pockets of aspen throughout.																																																													
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<b>29</b>	42200 - Natural White Pine	Sawtimber Medium	8.4	60	51-80	N/A	Stand was typed as O9 but, has become W8 due to significant oak overstory mortality. Variable stand with numerous canopy gaps of oak regen where oak overstory has died off. Some low quality aspen pockets. WP is healthy. Oak has lost merchantability. One acre of retention from stand 28's 2018 harvest was merged with this stand during harvest updates; it is shown in the Site Condition layer. Original examiner's comments: Mixed oak stand. Mostly pin oak with some white oak throughout.																																																								
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<b>30</b>	6225 - Bog	Nonstocked	4.6		Immature	No	Old comments- Leatherleaf bog with some conifers along the edges. Was involved in the Howes Lake Fire, June 2011																																																								
<b>31</b>	6221 - Fen	Nonstocked	19.5		Unspecified	No	Portage Creek Ecological Evaluation in 2021 classified this stand as a poor fen. Tag alder around edges and a couple islands of tamarack/spruce sapling/pole.  Old comments- Leatherleaf bog. Has some tamarack in the middle. I only called it a bog because of the species present, but it was not wet at all, could be because its been so dry this year.																																																								
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<b>32</b>	330 - Low-Density Trees	Nonstocked	4.5		Immature	No	Open with scattered jp pockets. Looks like it was probably used as a landing in the past. Old comments- Merchantable Jack Pine stand, has some log sized stuff throughout.																																																								
<b>33</b>	710 - Sand, Soil	Nonstocked	2.7			No	Site doesn't look like a helipad with vegetation present. Appears to be a popular atv/orv mud pit. Old comment: Helipad utilized by the military.																																																								
<b>34</b>	710 - Sand, Soil	Nonstocked	2.0			No	Old comment- Helipad utilized by the military.																																																								
<b>35</b>	42220 - Natural Jack Pine	Poletimber Well	24.3	56	81-110	N/A	Changed stand from planted to natural and age from 69 to 55 years old. Jack pine still healthy. Stand is overall pole size but has some area that are log size. Stand ground appears to have high water table like adjacent stand that was just cut. Sheep laurel through most of understory with hummacky ground in the south and east portions of stand. North and West half seem more upland. Old comments- This portion of stand 11 was split off as retention to buffer Howes Lake and a Mesic Sand Prairie ERA polygon. That ERA boundary has since been reduced. No changes were made to the original stand examiner's 6-19-2012 stand data. Previous comments: merchantable jack pine stand. Most is pole sized with some occasional logs throughout. There is some smaller stuff to the north but all could be cut. Trench and replant with JP.																																																								
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<b>36</b>	4126 - White, Black, N. Pin Oak	Sawtimber Poor	65.6	105	1-50	N/A	Was shelterwood cut by 2008 (#013-05), merch & up except green-marked, stated residual of 30-40 sq. ft. On shallow-rolling terrain. The residual mature oak is decent quality BRO, with WO. The scattered RP & WP residual is concentrated in the stand's west half. The regen is mostly RM stump sprouts, with oak & small pockets of BTA. The best oak cover is in the stand's W & SW. Most of the oak is still within browse range. A lot of deer use. BRO SI 62. See M.C.s																																																	
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<b>37</b>	4199 - Other Mixed Upland Deciduous	Sapling Poor	32.4	4	Immature	N/A	Mature mixed oak stand was final harvested by July 2018 (#620-15), cutting stems 1"+ DBH except RP, WP, sapling O-A, and boundary-excluded retention (now stand 47). RM regen pockets that could be worked around were also left. Had been thinned in 1996 (#025-95), cutting all A-RM & marked oak. On rolling terrain. BRO SI 59.																																																	
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<b>38</b>	4125 - Black, N. Pin Oak	Sawtimber Well	1.1	100	81-110	N/A	Was part of stand 23, split off as retention after the 2018 harvest. Was thinned in 1996 (#025-95), cutting all aspen, RM & marked oak. On rolling terrain. Decent quality small saw BRO & WO with largely-suppressed poles. Understory has RM & oak stump sprouts from the cut along with seed-origin regen of both. Not much above trace cover in WP saplings. A lot of deer use. BRO SI 59. See M.C.'s																																																	
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<b>39</b>	4139 - Aspen, Mixed Deciduous	Poletimber Well	8.9	27	1-50	N/A	patch cuts are variable, most aspen or maple dominated. These 5-spot patches were cut 2"+ DBH in 1995 (#049-94), but were merged with stand 27 during 2014 YOIE inventory. They were split out as stand 39 when updating stand 27's 2018 harvest treatment, and all canopy records were roughed-in based on tsale admin recollections.																																																	
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<b>40</b>	4125 - Black, N. Pin Oak	Sapling Poor	8.5	35	Unspecified	N/A	Was cut by 1987 (#045-85), merch & up. Same harvest as the adjacent stand, but came back more to oak and sparser canopy cover. Poorer site in the valley, on flats. RM reduced to trace. Cherry brush common. Scattered brushy WP, RP, JP. Oak is largely stump-origin, with a portion of stems just into the pole class but not enough to call the stand pole overall. Did not record BA swings in this majority sapling stand.																																																	
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Black Cherry	Medium	Variable	Tall Shrub																																																					
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Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments																																																					
<b>41</b>	4199 - Other Mixed Upland Deciduous	Sapling Well	30.8	35	Unspecified	N/A	Was cut by 1987 (#045-85), merch & up. On shallow rolling terrain, with cover sparser on the lower slopes. Canopy of oak & RM stump-sprouts, BTA regen, and scattered residual WP & RP. The oak is better-developed than the RM, with larger ave diam & fewer stems/clump. Most of the aspen occurs in one clone on the stand's south edge. The stand is transitioning into the pole class, but not enough to call pole overall. See M.C.s																																																					
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<b>101</b>	42290 - Natural Mixed Pine	Poletimber Well	5.9	41	51-80	N/A	New stand split from parent stand 1. This portion of parent stand wasn't planted to jack pine following harvest of Campground Jack. Red pine was inter-planted about 1 chain off the road back in the 80's. No planting record found but, red pine cored looked to be planted around 1985.  Next to Manistee River Rd. Campground. Harvested under "campground Jack". All trees under 6" were left and jack pine and red pine were planted throughout. Planted stock seems to be growing well, has good survival.																																																					
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<b>111</b>	3303 - Mixed Low Density Trees	Nonstocked	40.6	0		No	Unplanted portion split from parent stand 11 (SM). Fair amount of scattered jack pine seedlings poking above the snow. Likely will fill into a mix of poorly stocked jack pine and cherry by next entry. Open conditions were thought to benefit the rare species present on site. Was final harvested with reserves by Dec 2016 (#644-14), cutting stems 2"+ DBH except retention along Howes Lake and around the Mesic Sand Prairie ERA polygon. The ERA extent has since been revised downward and occupies less of the retention island. 43 of the harvest acres were trenched & planted with PRT JP in May 2019 (C72-826). The excluded areas have ground with a seasonal high water table and other concerns. The strip of planted RP within the M-72 ROW was also excluded from the harvest. Yr 1 regen survey (DN) found 1.8% mortality (932 tpa) & 93% FTG.																																																					
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<b>125</b>	4199 - Other Mixed Upland Deciduous	Sapling Well	47.7	15	Immature	N/A	Split large parent stand 25 (aspen) into jack pine dominated (stand 225) and oak dominated (stand 125). Good oak response and a lot of it has gotten above browse height. Parent stand 25 comments: Stand cut 2005/2006, Camp Shawano Block #72-078-04. This stand became flagged for updates during closure of bordering stand 28's harvest; had to open & save in order to clear flag. Original 6-20-12 examiner's comments: Massive clear cut. It is coming back to a nice mixed stand of hardwoods and pine. Some thick patches of aspen throughout.																																																					
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Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments					
211	3303 - Mixed Low Density Trees	Nonstocked	11.8	0		No	Split from parent stand 11 (SM). Only 2.2 acres NE of Howe Road were planted for green-up purposes by the lake (under C72-826, see stand 11 cultivation comments). Rest of stand 211 was excluded from planting due to seasonal high water table.  Was final harvested with reserves by Dec 2016 (#644-14), cutting stems 2"+ DBH except retention along Howes Lake and around the Mesic Sand Prairie ERA polygon. The ERA extent has since been revised downward and occupies less of the retention island.					
								Sub-Canopy Species	Density	Avg. Height	Size	
								Jack Pine	Trace	< 5 feet	Seeding	
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								Northern Pin Oak	Low	< 5 feet	Sapling	
Red Pine	Trace	>20 feet	Log									
225	42220 - Natural Jack Pine	Sapling Poor	30.0	15	Immature	N/A	Split large parent stand 25 (aspen) into jack pine dominated (stand 225) and oak dominated (stand 125). Stand has some lowland areas in the south west. Parent stand 25 comments: Stand cut 2005/2006, Camp Shawano Block #72-078-04. This stand became flagged for updates during closure of bordering stand 28's harvest; had to open & save in order to clear flag. Original 6-20-12 examiner's comments: Massive clear cut. It is coming back to a nice mixed stand of hardwoods and pine. Some thick patches of aspen throughout.					
								Canopy Species	% Cover	Size Class	DBH	Age
								Jack Pine	75	Sapling	2	15
								Black Cherry	7	Sapling	3	
								White Oak	3	Sapling	2	
Black/Red (Hybrid) Oak	15	Sapling	3									
401	122 - Road/Parking Lot	Nonstocked	1.0		Unspecified	No	M-72					
402	122 - Road/Parking Lot	Nonstocked	17.7		Unspecified	No	M-72, Manistee River Rd, and Arrowhead Rd.					
403	122 - Road/Parking Lot	Nonstocked	1.2		Unspecified	No	Manistee River Rd					