Compartment Review Presentation

Grayling Forest Management Unit

Compartment 72203
Entry Year 2021
Acreage: 1,335
County Crawford
Management Area: Camp Grayling

Revision Date: 2019-07-09

Stand Examiner: Joan Charlebois

Legal Description:

T26N R4W Sections 10, 11, 14

Identified Planning Goals:

This compartment is comprised mainly of Hanson Reserve Lands, which contain the following deed restrictions: The lands are to 1.) be used as a permanent encampment and maneuvering ground for the military, 2) serve as a game preserve for the breeding and protection of game, and 3) 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. Outside of the Hanson Grant lands, 120 acres within the compartment were deeded to the Military Board.

Soil and topography:

Most of the compartment is on shallow outwash terrain, with steep hills in the south end. Organic soils (Kinross and Leafriver mucks) underlay the center third of the compartment. Typical soil series across the uplands are Grayling, Croswell, and Graycalm sands.

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

Most of the Military Board lands within the compartment are part of the Hanson Military Reserve. Hanson Reserve Lands were given to the National Guard, Department of Military Affairs (DMA) by Rasmus Hanson in 1913, with several deed restrictions as outlined under the Planning Goals. These restrictions have tasked the DNR with managing the natural resources on these lands, as long as management activities do not conflict with military needs. In addition, hunting is prohibited on the Hanson Reserve Lands. Military Board lands aquired outside of the Hanson Grant include the SESE of Section 10 and the S1/2SW of Section 11. Section 14 contains the core facilities associated with the Hanson Hills Recreation Area. Adjacent private property has a mix of residential and commercial development.

Unique Natural Features:

There is the potential for rare plants and animals to be associated with the compartment's swamp covertypes.

Archeological, Historical, and Cultural Features:

Section 14 has a deep history of developed recreational use, starting as the Grayling Winter Sports Park and continuing today as the all-season Hanson Hills Recreation Area.

Special Management Designations or Considerations:

This compartment is designated as a Military Special Conservation Area (SCA). It is also part of the Hanson Military Reserve, with goals and restrictions as noted above. Section 14 is leased to the Grayling Recreation Authority for management of the Hanson Hills Recreation Area.

Watershed and Fisheries Considerations:

The compartment is situated between Lake Margrethe and the AuSable River, but is separated from those features by private property.

Wildlife Habitat Considerations:

Specific wildlife management is limited within the Hanson Hills Recreation Area lease. Concentrated deer use within the compartment's uplands has made it difficult to secure oak regeneration.

Mineral Resource and Development Concerns and/or Restrictions

An active sand/gravel pit is located three miles to the southeast, and there is good potential for sand & gravel within the compartment. There is no current or past oil & gas production in the area and no wells have been drilled within three miles of the compartment. Oil & gas potential within the compartment is considered low at this time. There is no known metallic mineral potential in this part of the state. The state does not own any of the mineral rights within the compartment; they are controlled by the DMVA.

Vehicle Access:

State highways (M-72 and M-93) provide the primary access, along with county roads (AuSable Trail, Old Lake Road, and Lake Margrethe Boulevard). State forest roads provide secondary access off of M-72. Roads within the Hanson Hills Recreation Area are limited to non-motorized public use.

Survey Needs:

None at this time.

Recreational Facilities and Opportunities:

The Hanson Hills Recreation Area's core developments are located within the compartment and include their lodge & maintenance facilities, indoor archery range, downhill ski runs, tubing hill, mountain bike and cross country ski trailheads, sports fields (baseball, soccer, disc golf), campground, and playground. Snowmobile Trail #7 crosses through the compartment. The segment of snowmobile trail north of the M-72 trailhead parking lot is also an ORV route.

Fire Protection:

Access to the compartment's upland types is adequate on the existing network of roads.

Additional Compartment Information:

The following reports from the Inventory are attached:

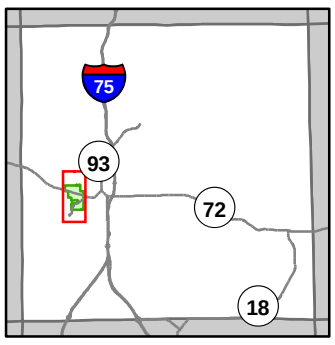
- **Total Acres by Cover Type and Age Class**
- **Cover Type by Harvest Method**
- **Proposed Treatments – No Limiting Factors**
- **Proposed Treatments – With Limiting Factors**
- **Stand Details (Forested and Nonforested)**
- **Dedicated and Proposed Special Conservation Areas**
- **Site Condition 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: 203
T26N, R04W, Sec. 10, 11, 14
County: Crawford
Unit: Grayling
Mgmt Area: Camp Grayling
YOE: 2021
Acres: 1,335 GIS Calculated
Examiner: Joan Charlebois
Map Revised: 12/10/2019
Map Phase: Post-Review

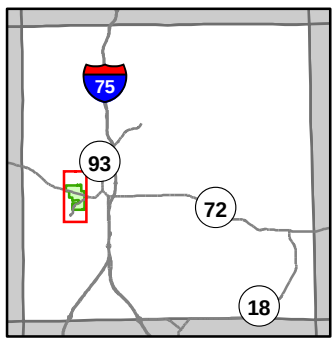


N

- Miris Corners
- Remonumented Section Corners
- Field 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
- DNR - Management Access
- Ski Trails
- ORV Routes
- Snowmobile Trails
- Designated Bicycle Trails
- Designated Ski Trails
- Designated ORV Route
- Designated Snowmobile Trails
- Island in Lake or River
- Lake/Pond
- Perennial River
- Lakes and Rivers
- Berms
- Gate
- Fishing Access Site
- Parking Lot
- Pipeline
- Powerline
- Fence
- Compartment Boundary
- Treatments with Site Conditions
- 8, 2
- Other Harvest - See Comments
- Clearcut (w/Reserves)
- Thinning (Crown, Low, Systematic)
- 411 - Northern Hardwood
- 412 - Oak Types
- 413 - Aspen
- 419 - Mixed Upland Deciduous
- 421 - Planted Pines
- 422 - Natural Pines
- 429 - Mixed Upland Conifers
- 430 - Upland Mixed Forest
- 611 - Lowland Deciduous Forest
- 612 - Lowland Coniferous Forest
- 613 - Lowland Mixed Forest
- 122 - Roads/Parking Lot
- 310 - Herbaceous Openland
- 330 - Low Density Trees
- 350 - Parks/Golf Courses
- 500 - Water
- 622 - Lowland Shrub
- 710 - Sand/Soil

Stand Boundary Map

Compartment: 203
T26N, R04W, Sec. 10, 11, 14
County: Crawford
Unit: Grayling
Mgmt Area: Camp Grayling
YOE: 2021
Acres: 1,335 GIS Calculated
Examiner: Joan Charlebois
Map Revised: 12/10/2019
Map Phase: Post-Review



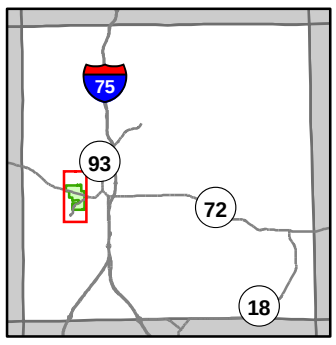
N

- Miris Corners
- Remonumented Section Corners
- Field 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
- DNR - Management Access
- Ski Trails
- ORV Routes
- Snowmobile Trails
- Designated Bicycle Trails
- Designated Ski Trails
- Designated ORV Route
- Designated Snowmobile Trails
- Island in Lake or River
- Lake/Pond
- Perennial River
- Lakes and Rivers
- Berms
- Gate
- Fishing Access Site
- Parking Lot
- Pipeline
- Powerline
- Fence
- Compartment Boundary
- Stand Boundaries
  - 411 - Northern Hardwood
  - 412 - Oak Types
  - 413 - Aspen
  - 419 - Mixed Upland Deciduous
  - 421 - Planted Pines
  - 422 - Natural Pines
  - 429 - Mixed Upland Conifers
  - 430 - Upland Mixed Forest
  - 611 - Lowland Deciduous Forest
  - 612 - Lowland Coniferous Forest
  - 613 - Lowland Mixed Forest
  - 122 - Roads/Parking Lot
  - 310 - Herbaceous Openland
  - 330 - Low Density Trees
  - 350 - Parks/Golf Courses
  - 500 - Water
  - 622 - Lowland Shrub
  - 710 - Sand/Soil

0 0.5 1 Miles

Special Conservation Areas

Compartment: 203
T26N, R04W, Sec. 10, 11, 14
County: Crawford
Unit: Grayling
Mgmt Area: Camp Grayling
YOE: 2021
Acres: 1,335 GIS Calculated
Examiner: Joan Charlebois
Map Revised: 12/10/2019
Map Phase: Post-Review



N

- Miris Corners
- Remonumented Section Corners
- Field 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
- DNR - Management Access
- Ski Trails
- ORV Routes
- Snowmobile Trails
- Designated Bicycle Trails
- Designated Ski Trails
- Designated ORV Route
- Designated Snowmobile Trails
- Island in Lake or River
- Lake/Pond
- Perennial River
- Lakes and Rivers
- Berms
- Gate
- Fishing Access Site
- Parking Lot
- Pipeline
- Powerline
- Fence
- Compartment Boundary
- Available w/ Constraints
- Unavailable
  - 5B: Maintain for regeneration purposes
  - 5C: Delay treatment for age/size class diversity or exceptional site quality
  - 5T: Contigency Treatment for Forest Health Concerns
  - 2F: Too steep
  - 2G: Too wet (sensitive soils, does not include access issues)
  - 3D: Recreational / Scenic values
  - 3F: Military easement / lease
  - 3G: Other Influence zones - See comments
  - 5A: Not able to obtain desirable regeneration
- Stand Boundaries
- Ecological Reference Areas
- Natural Rivers Vegetative Buffer
- Natural Rivers Zoning District
- Cold Water Streams
- Cold Water Lakes
- High Priority Trout Stream Buffer
- Research, Development, and Military Lands

Report 1 – Total Acres by Cover Type and Age Class

Grayling Mgt. Unit **Compartment 203 Year of Entry 2021**

Joan Charlebois : Examiner

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	0	23	7	0	0	28	0	0	0	0	0	0	0	0	0	0	0	**57**
Cedar	0	0	0	0	0	0	0	0	0	0	0	0	29	28	0	0	0	0	**57**
Herbaceous Openland	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**75**
Jack Pine	0	0	0	29	0	0	0	0	0	0	15	0	0	0	0	0	0	0	**44**
Low-Density Trees	63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**63**
Lowland Aspen/Balsam Poplar	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
Lowland Conifers	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	18	0	0	**38**
Lowland Mixed Forest	0	0	0	0	0	0	0	0	0	12	0	0	11	0	0	0	0	0	**23**
Lowland Shrub	73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**73**
Lowland Spruce/Fir	0	0	0	0	0	0	19	37	0	0	0	0	0	0	0	0	0	0	**55**
Mixed Upland Deciduous	0	0	0	0	6	0	0	0	0	0	29	0	20	7	0	0	0	0	**62**
Natural Mixed Pines	0	0	0	0	0	14	26	0	0	0	0	0	0	0	0	0	0	0	**40**
Northern Hardwood	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	**8**
Oak	0	0	0	0	46	0	0	0	0	0	0	167	20	0	0	0	0	0	**232**
Planted Mixed Pines	0	0	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**42**
Red Pine	0	46	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	**50**
Sand, Soil	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
Tamarack	0	0	0	7	0	0	18	0	9	0	0	0	89	0	0	0	0	0	**122**
Upland Conifers	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	**20**
Upland Mixed Forest	0	0	0	0	5	0	127	0	0	0	31	15	0	0	0	0	0	0	**178**
Urban	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**68**
Water	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
White Pine	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	**15**
Total	**287**	**46**	**65**	**46**	**77**	**29**	**218**	**45**	**9**	**32**	**75**	**182**	**173**	**35**	**0**	**18**	**0**	**0**	**1333**

Report 2 – Treatment Summary

Grayling Mgt. Unit

Year of Entry: 2021

Acres of Harvest

Compartment 203

Total Compartment Acres: 1,335

Commercial Harvest - 154

Harvests with Site Condition - 24

Next Step Harvest - 0

Habitat Cut - 0

Cover Type by Harvest Method

	Clearcut	Selection	Patch Clearcut	Seed Tree	Shelterwood	Thinning	Oversatory Removal	Salvage	Other	Total Acres
Aspen	27	0	0	0	0	0	0	0	0	**27**
Jack Pine	14	0	0	0	0	0	0	0	0	**14**
Low-Density Trees	35	0	0	0	0	0	0	0	16	**51**
Oak	65	0	0	0	0	0	0	0	0	**65**
Red Pine	0	0	0	0	0	5	0	0	0	**5**
Upland Mixed Forest	16	0	0	0	0	0	0	0	0	**16**
Total	**157**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**16**	**178**

Proposed and Next Step Treatments by Method

	Harvest	Site Prep	Planting	Seeding	Burning	Pesticide	Monitoring	Other	Non-Forest Mgt.	Total Acres
Current	178	0	0	0	0	0	0	46	0	**224**
Next Step	0	211	106	0	0	211	263	106	0	**897**
Total	**178**	**211**	**106**	**0**	**0**	**211**	**263**	**152**	**0**	**1121**

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

Approved Treatments:

1	72203001-thin	4.7	42210 - Natural Red Pine	Sawtimber Well	116	141-170	Harvest	Crown Thinning	4221 - Natural Red Pine	Even-Aged	No

Prescription Specs: Thin the RP concurrent with the adjacent oak final harvest.

Next Step Treatments:

Acceptable Regen:

Other Comment:

Site Condition

Proposed Start Date: 10/1 /2020

3	72203003-ccr	55.1	4122 - Oak, Pine	Sawtimber Poor	101	1-50	Harvest	Clearcut with Retention	4211 - Planted Red Pine	Even-Aged	No

Prescription Specs: Final harvest 1"+ DBH, including the dead oak. For retention, exclude the SW edge of the stand that is on Kinross-AuGres organic soils. Follow up with cultivation steps as needed, that may include herbicide, roller-chopping, and pre-commercial thinning, to ensure successful RP establishment.

Next Step Treatments: SitePrep, Trenching; Pesticide, Skidder - Site Prep; Planting, Initial Plant; Pesticide, Skidder - Release; Monitoring, Artificial Regen(1yr); Monitoring, Artificial Regen(3yr); SitePrep, Roller Chopping; Other, Pre-Commercial Thinning - Han

Acceptable Regen: Full stocking in planted RP

Other Comment:

Site Condition

Proposed Start Date: 10/1 /2020

6	72203006-cc	15.8	4310 - Pine, Oak Mix	Sawtimber Poor	97	1-50	Harvest	Clearcut	4211 - Planted Red Pine	Even-Aged	No

Prescription Specs: Final harvest 1"+ DBH, including the dead oak. No retention, treating only the west half of the stand this YOE. Follow up with cultivation steps as needed, that may include herbicide, roller-chopping, and pre-commercial thinning, to ensure successful RP establishment.

Next Step Treatments: SitePrep, Trenching; Pesticide, Skidder - Site Prep; Planting, Initial Plant; Pesticide, Skidder - Release; Monitoring, Artificial Regen(1yr); Monitoring, Artificial Regen(3yr); SitePrep, Roller Chopping; Other, Pre-Commercial Thinning - Han

Acceptable Regen: Full stocking in planted RP.

Other Comment: Add Rec Trail protection specs and limitations on use of the M-72 Trailhead Parking Lot.

Site Condition

Proposed Start Date: 3 /13/2019

Stand	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Habitat Cut
7	72203007-cc	34.8	3303 - Mixed Low Density Trees	Nonstocked		Immature	Harvest	Clearcut	4211 - Planted Red Pine	Even-Aged	No

Prescription Specs: Final harvest 1"+ DBH, including the dead oak. No retention. Follow up with cultivation steps as needed, that may include herbicide, roller-chopping, and pre-commercial thinning, to ensure successful RP establishment.

Next Step Treatments: SitePrep, Trenching; Pesticide, Skidder - Site Prep; Planting, Initial Plant; Pesticide, Skidder - Release; Monitoring, Artificial Regen(1yr); Monitoring, Artificial Regen(3yr); SitePrep, Roller Chopping; Other, Pre-Commercial Thinning - Han

Acceptable Regen: Full stocking in planted RP

Other Comment:

Site Condition

Proposed Start Date: 10/1 /2020

Stand	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Habitat Cut
16	72203016-cc	27.4	4133 - Aspen, Mixed Pine	Poletimber Medium	57	51-80	Harvest	Clearcut	4139 - Aspen, Mixed Deciduous	Even-Aged	No

Prescription Specs: Final harvest 2"+ DBH except protect the patches of advanced oak regen where possible, leave the RP, and mark or otherwise designate WP to leave for visual management relative to the private property. No island retention due to declining aspen & oak health.

Next Step Treatments: Monitoring, Natural Regen (Re-Inventory)

Acceptable Regen: Moderate stocking in aspen with oak, RM & WP. Areas that are sparse pre-harvest are expected to have some in-growth but not meet minimum stocking standards.

Other Comment: Add Rec Trail protection specs if the haul route utilizes or crosses the snowmobile trail.

Site Condition

Proposed Start Date: 10/1 /2020

Stand	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Habitat Cut
22	72203022-tsi	46.4	42111 - Planted Red Pine, Mixed Deciduous	Sapling Poor	6	1-50	Other	Other	4211 - Planted Red Pine	Even-Aged	No

Prescription Specs: Manually remove competition to reach acceptable free-to-grow levels for the planted RP.

Next Step Treatments:

Acceptable Regen: RP

Other Comment:

Site Condition

Proposed Start Date: 10/1 /2020

Stand	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Habitat Cut
25	72203025-salvage	15.7	3303 - Mixed Low Density Trees	Nonstocked		Immature	Harvest	Other - Specify	320 - Upland Shrub		No

Prescription Specs: Salvage the dead and dying oak. Cut to stand 16's specifications.

Next Step Treatments:

Acceptable Regen: Some aspen clone expansion will occur, but the stand is expected to remain non-forested overall.

Other Comment:

Site Condition

Proposed Start Date: 10/1 /2020

Stand	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Habitat Cut
44	72203044-ccr	14.0	6126 - Lowland Jack Pine	Sawtimber Well	99	81-110	Harvest	Clearcut with Retention	613 - Lowland Mixed Forest	Two-Aged	No

Prescription Specs: This harvest treatment may be initiated at the request of Hanson Hills Recreation Area management if forest health concerns worsen: Cut the merch JP, spruce and RM. Cut sapling RM only as needed for operability.

Next Step Treatments: Monitoring, Natural Regen (Intermediate)

Acceptable Regen: RM with mixed conifer components.

Other Comment: Dry summer or frozen winter harvest. 3D archery course and snowshoe trail within stand.

Site Condition: Contingency Treatment

Proposed Start Date: 10/1 /2020

Stand	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Habitat Cut
50	72203050-cc	10.0	4123 - Red Oak	Sawtimber Well	101	111-140	Harvest	Clearcut with Retention	4199 - Other Mixed Upland Deciduous	Even-Aged	No

Prescription Specs: Work with Hanson Hills Recreation Area staff to site an oak regeneration demonstration harvest. Final harvest stems 2"+ DBH except white pine, red pine, and large diameter open-grown oak with wildlife den potential. Install fence around the perimeter to exclude deer and protect the regeneration. Hand plant pine if needed to supplement natural regeneration.

Next Step Treatments: Monitoring, Natural Regen (Intermediate)

Acceptable Regen: A moderately stocked mix of oak, red maple, aspen and white pine.

Other Comment: Treat only if fencing can be installed.

Site Condition: Contingency Treatment

Proposed Start Date: 10/1 /2020

Total Treatment Acreage Proposed: 223.9

Report 4 – Site Conditions

Grayling Mgt. Unit

Joan Charlebois : Examiner

Compartment: 203

Year of Entry: 2021

Availability for Management

Total Acres	Acres Available	*Acres Avail With Condition*	Acres Not Available		Dominant Site Conditions									
					5B	***5C***	***5T***	2F	2G	3B	3D	3F	3G	5A
57	57	***0***	0	**Aspen**										
57	0	***0***	57	**Cedar**		***0***								57
75	75	***0***	0	**Herbaceous Openland**										
44	29	***15***	0	**Jack Pine**			***15***							
63	63	***0***	0	**Low-Density Trees**				0						
3	3	***0***	0	**Lowland Aspen/Balsam Poplar**										
38	0	***20***	18	**Lowland Conifers**		***20***			18					
23	0	***21***	2	**Lowland Mixed Forest**		***21***								2
73	73	***0***	0	**Lowland Shrub**										
55	55	***0***	0	**Lowland Spruce/Fir**										
61	6	***7***	48	**Mixed Upland Deciduous**		***7***					28		20	0
40	40	***0***	0	**Natural Mixed Pines**										
8	8	***0***	0	**Northern Hardwood**										
232	102	***60***	70	**Oak**	***15***	***35***	***10***	35				36		
42	42	***0***	0	**Planted Mixed Pines**										
51	51	***0***	0	**Red Pine**										
3	3	***0***	0	**Sand, Soil**										
123	25	***0***	98	**Tamarack**					98					
20	20	***0***	0	**Upland Conifers**										
178	145	***19***	14	**Upland Mixed Forest**		***19***				14				
68	68	***0***	1	**Urban**		***0***								1
5	5	***0***	0	**Water**										
15	15	***0***	0	**White Pine**										
1,335	885	***141***	309	Total Forested Acres	***15***	***101***	***25***	35	116	14	28	36	20	60
	66%	***11%***	23%	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**	**3D: Recreational / Scenic values**	28	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

Hanson Hills campground. Was salvage harvested in 2010, leaving the WO & RM.

2	**Unavailable**	**2G: Too wet (sensitive soils, does not include access issues)**	9	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

Sparse, declining tamarack over L3. Difficult to tell with the deep snow, but likely also too wet.

3	**Unavailable**	**5A: Not able to obtain desirable regeneration**	57	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

Cutting this cedar is likely to accelerate the stand's conversion to L3. Deer numbers are higher and the hydrology has been altered by road and residential construction since the cedar established.

4	**Unavailable**	**3B: Threatened, endangered, and special concern species**	15	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

Narrow stand between M-72 ROW and shrub wetland. Snowmobile trail that runs through the east half has to be gated outside of winter due to seasonal high water table and associated concerns. See locked comments.

5	**Available**	**5C: Delay treatment for age/size class diversity or exceptional site quality**	6	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

In 2005, this swath of stand 11 was thinned along the subdivision while the rest of the stand was shelterwood harvested.

6	**Available**	**5C: Delay treatment for age/size class diversity or exceptional site quality**	5	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

Small stand bounded by M-72 and private property and split by Danish Landing Road. The 2-acre poly west of Danish Landing is on Kinross-AuGres muck soils.

7	**Unavailable**	**2G: Too wet (sensitive soils, does not include access issues)**	89	5A: Not able to obtain desirable regeneration	Unspecified	Unspecified	Unspecified

Comments:

Need to check snow-off to verity if the stand is too wet, but that was the impression gained from the dense L3 understory and small diameter of the tamarack for its age. Transition ground and drier "islands" would be operable. Also concerned about achieving regeneration on the core low ground (see stand 28).

8	**Unavailable**	**2F: Too steep**	5	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

Small stand, all hill, bordering cemetery and overlooking tubing hill.

9	**Available**	**5C: Delay treatment for age/size class diversity or exceptional site quality**	21	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

Stands with significant supercanopy WP-RP components over RM on PArVCo site. Windthrow risk is high with partial harvests on that ground.

10	**Available**	**5C: Delay treatment for age/size class diversity or exceptional site quality**	20	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

Stands with significant supercanopy WP-RP components over RM on PArVCo site. Windthrow risk is high with partial harvests on that ground.

11	**Available**	**5B: Maintain for regeneration purposes**	15	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

Heavy deer browse pressure. Harvest when sprout-origin regen has better chance of recruiting.

12	**Unavailable**	**2G: Too wet (sensitive soils, does not include access issues)**	18	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

Marginal cull RM, supercanopy WP and sparse spruce over L3. Difficult to tell with the deep snow, but likely too wet.

13	**Unavailable**	**3G: Other Influence zones - See comments**	20	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

Long, narrow multi-poly stand bordering Old Lake Road and the core developed area of Hanson Hills where the facilities are concentrated.

14	**Unavailable**	**2F: Too steep**	14	3D: Recreational / Scenic values	Unspecified	Unspecified	Unspecified

Comments:

Some of the hillsides are in excess of 20% slope. Hilltop portion has old downhill ski lift infrastructure and borders the current active ski runs and lift facility.

15	**Available**	**5C: Delay treatment for age/size class diversity or exceptional site quality**	15	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

Proposed treating area west of snowmobile trail this YOE.

16	**Available**	**5C: Delay treatment for age/size class diversity or exceptional site quality**	33	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

Proposed treating south 2/3rds of stand this YOE.

17	**Unavailable**	**3F: Military easement / lease**	36	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

Hanson Hills groomed XC ski trails and disc golf course.

18	**Available**	**5T: Contigency Treatment for Forest Health Concerns**	15	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

The harvest treatment may be initiated at the request of Hanson Hills Recreation Area management if forest health concerns worsen.

19	**Unavailable**	**2F: Too steep**	16	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

Too steep for thinning.

20	**Available**	**5T: Contigency Treatment for Forest Health Concerns**	10	Unspecified	Unspecified	Unspecified	Unspecified

Comments:

Implement treatment with concurrence of Hanson Hills Recreation Area managment and if the deer browse concern can be addressed through fencing.

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

Comments

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	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. To view specific Zoning Districts and Vegetative Buffers for each Natural River see the table located on the I:\Documentation\GDSE data folder.

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
1	42210 - Natural Red Pine	Sawtimber Well	4.4	116	141-170	N/A	RP stand with xlog WP and minor RM-spruce canopy components. Starts on Croswell sands, then shifts onto Kinross-AuGres organic soils moving west. Heavy understory of large sap RM. Was left last YOE for diversity & seed source.

Canopy Species	% Cover	Size Class	DBH	Age
White Pine	15	XLog	24	
Red Pine	75	Log/XLog	17	116

Sub-Canopy Species	Density	Avg. Height	Size
Red Maple	High	>20 feet	Sapling

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
2	122 - Road/Parking Lot	Nonstocked	29.5		Unspecified	Managed Opening	M-72, and The Snowmobile trail parking lot.

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
3	4122 - Oak, Pine	Sawtimber Poor	90.9	101	1-50	N/A	The stand's S & W was thinned in 2005 (#055-02), cutting merch RM-JP & orange marked (ave cruised residual 70 BA). The stand's SW edge is on Kinross-AuGres organic soils; a trace of canopy RM was left there. Two deer exclosures were installed for monitoring browse pressure (C72-519). The stand's NE was shelterwood harvested in 2005 (#055-02), cutting merch stems except RP-WP & green-marked (ave cruised residual 30 BA). Declining NPO with extensive mortality brought the thinned portion into shelterwood-seed range. Proportion in WP increasing. Minor WO & RP components. Canopy closure drifts off either side of the 25-50% category. Stump-origin regen from the cut is mostly RM, with traces of secure NPO. Oak seedling layer browsed. WP regen has a browse line. Branch flagging in the pole-sized WP. History of heavy deer browse pressure; 2001 YOE noted deer eating the bark off of red maple saplings & poles.

Canopy Species	% Cover	Size Class	DBH	Age
White Oak	7	Log/Pole/XLog	15	
White Pine	35	Log/Pole	10	54
Northern Pin Oak	55	Log/XLog	16	101

Sub-Canopy Species	Density	Avg. Height	Size
Red Maple	Low	10 - 20 feet	Sapling
White Pine	Trace	Variable	Sapling
Black Cherry	Low	Variable	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
4	42260 - Natural Pine, Mixed Deciduous	Sawtimber Medium	14.1	45	51-80	N/A	Most of the stand was final harvested in 1981 (#039-81), cutting merch stems (TCR only scaled oak). There was also an FTP in the SE for manually cutting aspen for emergency deer feed in 1982 (W71-167). Small clumps of older WP & RP seeded in the majority younger pine cover that is generally short & limby; open growing conditions made for log-sized ave diameters that do not meet saw standards. Because of the open growing conditions, the oak stump-sprouts have been slow to weed down to fewer stems per clump. Couldn't call the stand 2-aged because there wasn't a 20-year spread between regen from the cut (37 yrs) & the cored WP (ave 45 yrs).

Canopy Species	% Cover	Size Class	DBH	Age
Northern Pin Oak	25	Pole/Sapling	5	37
White Pine	50	Log/Pole	11	45
Red Pine	10	Log/Pole	12	
Jack Pine	10	Log/Pole	12	

Sub-Canopy Species	Density	Avg. Height	Size
Jack Pine	Trace	5 - 10 feet	Sapling
Black Cherry	Low	Variable	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
5	4319 - Mixed Upland Forest	Sawtimber Well	3.5	54	51-80	N/A	Small stand bounded by M-72 and private property and split by Danish Landing Road. Most of the west half is on Kinross-AuGres muck, heavier to WP-RM. The cedar & hemlock are in the SW. The east half is on Croswell sands, with more NPO than WP-RM. A lot of deer use; even browsing spruce.

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	20	Log/Pole	12	77
Northern Pin Oak	25	Log/Pole/XLog	15	97
White Pine	34	Log/Pole	14	54

Sub-Canopy Species	Density	Avg. Height	Size
Balsam Fir	Low	10 - 20 feet	Sapling
Quaking Aspen	Medium	Variable	Pole
White Pine	Trace	Variable	Sapling
Black Cherry	Low	Variable	Tall Shrub
Northern Pin Oak	Trace	10 - 20 feet	Sapling
Black Spruce	Trace	Variable	Sapling
Tag Alder	Trace	5 - 10 feet	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
6	4310 - Pine, Oak Mix	Sawtimber Poor	31.4	97	1-50	N/A	Declining open-grown NPO with WP recruiting into the canopy. BC brush, scattered pine saplings and small patches of oak regen in the large canopy gaps. Branch flagging present in the WP. Two-acre patch of J5 east of the snowmobile trail. Traces of aspen around the former township dump (use permits issued in the 1960's and 1970's) that was located east of the JP patch.

Canopy Species	% Cover	Size Class	DBH	Age
Jack Pine	15	Pole/Log	8	
Northern Pin Oak	55	Log/XLog	16	97
White Pine	25	Log/Pole	11	45

Sub-Canopy Species	Density	Avg. Height	Size
White Pine	Low	Variable	Sapling
Jack Pine	Low	Variable	Sapling
Black Cherry	Medium	Variable	Tall Shrub
Northern Pin Oak	Low	Variable	Sapling
Northern Pin Oak	Low	< 5 feet	Seeding

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
7	3303 - Mixed Low Density Trees	Nonstocked	34.7		Immature	No	Grassy opening with BC brush and scattered NPO-WP-JP. Was typed-out as an O7 last YOE but continued mortality in the oak has dropped it into the non-forested category. The NW was part of the adjacent 2005 shelterwood harvest, but extensive mortality in the residual oak there has also dropped the canopy closure below 25%.

Sub-Canopy Species	Density	Avg. Height	Size
Northern Pin Oak	Low	>20 feet	Log
Jack Pine	Low	>20 feet	Pole
White Pine	Low	>20 feet	Pole
Black Cherry	Medium	Variable	Tall Shrub
Northern Pin Oak	Trace	5 - 10 feet	Sapling
White Pine	Low	>20 feet	Log
Jack Pine	Trace	5 - 10 feet	Sapling
Red Maple	Trace	10 - 20 feet	Sapling

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
8	4199 - Other Mixed Upland Deciduous	Sawtimber Well	7.2	127	51-80	N/A	The main east poly was thinned in 2005 (#055-02), cutting orange-marked stems (ave cruised residual 80 BA). All of the RM (stump-origin clumps) was left, forming an intermediate canopy layer below the dominant xlog BRO/NPO. Scattered RP-WP and traces of BTA and spruce. WP regen increases to the south. Branch flagging present in the younger WP. The 1.7-acre west poly was not thinned, but has similar canopy structure.

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	35	Pole/Sap/Log	7	85
Black/Red (Hybrid) Oak	55	XLog/Log	20	127

Sub-Canopy Species	Density	Avg. Height	Size
Black Cherry	Low	5 - 10 feet	Tall Shrub
White Pine	Low	Variable	Sapling

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
9	42120 - Planted Jack Pine	Sapling Well	28.7	23	1-50	N/A	Most of the stand was final harvested in 1994 (#058-91), cutting stems 2"+ DBH except WP. JP was machine-seeded around the residual WP in 1996 (C72-351). The seeded JP & natural NPO regen from the cut are the featured canopy, with the residual WP representing a super-canopy layer. The seeding was extended south of the harvest area to reforest an adjacent LDT type that still has JP poles scattered above. Excessive stocking common in the seeded JP rows. WP tends to have open-grown form. Odd patch of BC poles in S-center. Traces of QA.

Canopy Species	% Cover	Size Class	DBH	Age
Northern Pin Oak	10	Sapling/Pole	3	25
White Pine	25	Log/Pole	11	45
Jack Pine	60	Sapling	3	23

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
10	4311 - Pine, Aspen Mix	Poletimber Well	5.0	35	81-110	N/A	Was manually cut 1"+ DBH in 1984 (W711-248) for emergency deer feed. Canopy of QA pole regen & WP regen & residual from the cut. Scattered NPO stump sprouts. Black canker present on the QA. Older residual aspen left on the north edge. Not enough age spread between the aspen and the WP to call the stand 2-aged.

Canopy Species	% Cover	Size Class	DBH	Age
Quaking Aspen	55	Pole/Sapling	6	35
White Pine	43	Log/Pole	11	43

Sub-Canopy Species	Density	Avg. Height	Size
Black Cherry	Low	5 - 10 feet	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
11	42250 - Pine, Oak	Sawtimber Medium	26.1	53	51-80	N/A	Ten acres in the stand's west half were shelterwood harvested in 2005 (#055-02), cutting merch stems except WP-RP & green-marked (ave cruised residual 30 BA). Three acres in the stand's east end were within a seed tree harvest in early 2012 (#645-11), cutting stems 2"+ DBH except RM, RP, WP & green-marked oak, but this portion had residual levels in the shelterwood range. Four acres along the highway were non-forested on the 1938 photos and have slowly filled in to shelterwood levels. There is a half-acre of planted RP poles along the highway. WP forms the main canopy, with declining overmature NPO scattered above. The canopy closure drifts off either end of the 50-75% category. Branch flagging present in the sapling-small saw WP. RM regen from the cut increases to the west. The trace of BTA regen is in the SW. MDOT ROW markers deep in the stand's east end. History of heavy deer browse pressure.

Canopy Species	% Cover	Size Class	DBH	Age
Northern Pin Oak	35	Log/XLog	16	101
White Pine	50	Log/Pole	10	53

Sub-Canopy Species	Density	Avg. Height	Size
Northern Pin Oak	Trace	5 - 10 feet	Sapling
Black Cherry	Medium	Variable	Tall Shrub
White Pine	Low	Variable	Sapling
Serviceberry (Juneberry)	Trace	10 - 20 feet	Tall Shrub
Red Maple	Medium	10 - 20 feet	Sapling
Bigtooth Aspen	Trace	10 - 20 feet	Sapling

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
12	42200 - Natural White Pine	Poletimber Medium	15.1	45	51-80	N/A	Was partially harvested in 1994 (#058-91), cutting only the JP 2"+ DBH west of the snow trail, and all species 2"+ DBH except WP east of the snow trail. There was also an earlier FTP in the SW for manually cutting aspen for emergency deer feed in 1982 (W71-167). That area will be merged with stand 4. The canopy is pole-sap-small saw WP, with mature NPO mixed in west of the snow trail. There are patches of natural JP regen in the large canopy gaps in the W1/2 & machine-seeded JP in the E1/2 (1996, C72-351). There is pole-sapling NPO regen from the cut in the canopy east of the snow trail, but MiFI wouldn't allow recording it separate from the mature NPO. Supercanopy xlog WP are scattered across the stand. Between the cut history & how the WP has been filling in, there are 3+ age classes in the stand and a blurred line between the over- & understory. Only aged the majority WP pole cover. Second age estimate on the mature NPO was drawn from the current NPO age in stand 6.

Canopy Species	% Cover	Size Class	DBH	Age
Northern Pin Oak	22	Log/XLog/Pole	16	97
White Pine	65	Pole/Sap/Log	7	45
Jack Pine	10	Pole	5	

Sub-Canopy Species	Density	Avg. Height	Size
Jack Pine	Medium	10 - 20 feet	Sapling
Black Cherry	Low	5 - 10 feet	Tall Shrub
White Pine	Low	5 - 10 feet	Sapling
Northern Pin Oak	Low	10 - 20 feet	Sapling

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
13	6229 - Mixed lowland shrub	Nonstocked	1.0		Unspecified	612 - Lowland Coniferous Forest	One acre out of the four that were set up was final harvested in 2010 (#600-11-02), cutting merch stems (mostly JP with some spruce). This small harvest was a lowland forest management demonstration site, toured in conjunction with an SAF conference. NPO & RM saplings along the old RR grade. Scattered residual WP & spruce saplings. Traces of WP, spruce & tamarack seedlings visible above the heavy snowpack. Site re-visited snow-off: post-harvest seedling establishment occurred only in the isolated patches of bare soil. Everywhere else, the low shrub and sphagnum mat is too thick for the spruce or tamarack to establish. Full cover in leatherleaf, sheep laurel, blueberry and sphagnum moss. Failed regen survey.

Sub-Canopy Species	Density	Avg. Height	Size
Red Maple	Low	5 - 10 feet	Sapling
Northern Pin Oak	Low	< 5 feet	Sapling
White Pine	Low	5 - 10 feet	Sapling
Black Spruce	Low	5 - 10 feet	Sapling
Black Spruce	Trace	< 5 feet	Seeding
White Pine	Trace	< 5 feet	Seeding
Tamarack	Trace	5 - 10 feet	Sapling

Stand 14 — 6127 - Lowland Pine | Sawtimber Well | 19.7 Acres | 80 Stand Age | 81-110 BA Range | N/A Managed Site

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	35	Log/Pole/XLog	12	80
White Pine	20	XLog/Log/Pole	22	115
Red Pine	20	Log/Pole/XLog	17	
Jack Pine	15	Log/Pole	10	91

Sub-Canopy Species	Density	Avg. Height	Size
Red Maple	Medium	>20 feet	Sapling
White Pine	Medium	Variable	Sapling
Black Spruce	Trace	Variable	Sapling

The stand is on Kinross-AuGres complex soils (very poorly drained, dominant texture: muck). Deep snow and heavy deer browse prevented Kotar typing, but between the soil series and the tip-up mound topography, it is likely PArVCo. The stand's common thread is cull RM (stump-origin clumps) with varying distribution in supercanopy RP-WP and overmature JP. Oak mixes in on the drier north edge. Black spruce mixes in on the lower south edge. The traces of overmature QA have largely died out. The JP has also been dropping out of the canopy. The subcanopy ranges from medium WP cover (branch flagging present) to full RM cover (often under the overmature JP).

Stand 15 — 4133 - Aspen, Mixed Pine | Sapling Well | 6.8 Acres | 25 Stand Age | 1-50 BA Range | N/A Managed Site

Canopy Species	% Cover	Size Class	DBH	Age
Quaking Aspen	55	Sapling/Pole	3	25
Red Maple	10	Sapling/Pole	3	25
White Pine	20	Pole	7	56

Sub-Canopy Species	Density	Avg. Height	Size
White Pine	Low	Variable	Sapling
Black Cherry	Low	5 - 10 feet	Tall Shrub
Northern Pin Oak	Low	Variable	Sapling

Was partially harvested in 1994 (#058-91), cutting stems 2"+ DBH except RP-WP >8" DBH. The aspen regen is the featured canopy, with pockets of pole-sap-saw WP occupying the same general layer, and a string of xlog WP-RP in a super-canopy layer. Could not reflect the younger WP's pole/sap/saw size range in the canopy record due to a MiFI limitation.

Stand 16 — 4133 - Aspen, Mixed Pine | Poletimber Medium | 27.6 Acres | 57 Stand Age | 51-80 BA Range | N/A Managed Site

Canopy Species	% Cover	Size Class	DBH	Age
Quaking Aspen	50	Pole/Log	8	57
Northern Pin Oak	20	Log/XLog	17	108
White Pine	25	Pole/Log/Sap	8	

Sub-Canopy Species	Density	Avg. Height	Size
Red Maple	Trace	Variable	Sapling
White Pine	Low	Variable	Sapling
Northern Pin Oak	Low	Variable	Sapling
Black Cherry	Medium	Variable	Tall Shrub

Mature NPO has been dying out of the stand, leaving declining QA clones, and a WP component that is increasing in the W end. The remaining living NPO is scattered across the stand, along with small amounts of RM & RP. Patches of advanced oak regen under the aspen clones.

Stand 17 — 4310 - Pine, Oak Mix | Sawtimber Poor | 102.6 Acres | 52 Stand Age | 1-50 BA Range | N/A Managed Site

Canopy Species	% Cover	Size Class	DBH	Age
Northern Pin Oak	40	Log/XLog	16	100
White Pine	50	Log/Pole	11	52

Sub-Canopy Species	Density	Avg. Height	Size
White Pine	Low	Variable	Sapling
Northern Pin Oak	Low	5 - 10 feet	Sapling
Red Pine	Trace	5 - 10 feet	Sapling
Red Maple	Trace	5 - 10 feet	Sapling
Northern Pin Oak	Low	< 5 feet	Seeding
Quaking Aspen	Trace	10 - 20 feet	Sapling
Jack Pine	Low	5 - 10 feet	Sapling

Most of this over-mature oak stand was shelterwood harvested in 2004 (#037-02), cutting merch stems except green-marked and WP-RP (cruised residual 30-40 BA). The strip south of the snowmobile trail and near the private property in the NE was thinned under the same contract, cutting merch JP and orange-marked stems (cruised residual 70-80 BA), but continued mortality in the overmature oak has reduced the canopy to shelterwood levels. RP was trenched and planted across 46 acres of the stand's south half in 2006 (C72-517), focusing on areas where the canopy was sparsest. Most of that interplanted area was split out as stand 23, but this stand picks up some of planted RP around stand 23. Extensive mortality in the NPO, particularly in the NE. The WP is responsible for keeping most of the stand in the forested category. Canopy closure drifts off either end of the 25-50% closure category. There is a minor amount of secure stump-origin NPO regen from the cut, and a heavily-browsed seedling layer. Traces of uncut JP-RM-A. Half-acre patch of planted RP poles in SW by M-72.

Stand 18 — 6122 - Black Spruce | Poletimber Well | 36.8 Acres | 62 Stand Age | 81-110 BA Range | N/A Managed Site

Canopy Species	% Cover	Size Class	DBH	Age
Black Spruce	65	Pole	7	62
Jack Pine	20	Pole/Log	8	87

Sub-Canopy Species	Density	Avg. Height	Size
Black Spruce	Low	Variable	Sapling
Tag Alder	Trace	5 - 10 feet	Tall Shrub
Tamarack	Trace	Variable	Sapling
White Pine	Low	Variable	Sapling

Black spruce with JP. RP & WP scattered throughout; increases on the north edge. Tamarack presence low west of the former RR grade; increases to the east. Broadly 2-aged in the spruce & the JP, with majority poles in their 60's and older pole-saw stems in their 80's. Did not average the cored JP but listed the older age for that species to represent the stand's two-aged condition. The older JP has been dying out. Lowland ground but not too wet.

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
19	6122 - Black Spruce	Poletimber Well	18.5	57	51-80	N/A	Lowland ground but somewhat drier than the tam-over-L3 of stand 32. This stand has smaller diameter spruce with more saplings in the canopy and less pine than stand 18. Tamarack occurs in small pockets.

Canopy Species	% Cover	Size Class	DBH	Age
Black Spruce	80	Pole/Sapling	6	57
Tamarack	19	Pole/Sapling	6	66

Sub-Canopy Species	Density	Avg. Height	Size
Black Spruce	Low	Variable	Sapling
Tamarack	Low	Variable	Sapling
Tag Alder	Trace	5 - 10 feet	Tall Shrub
Bog Birch	Trace	5 - 10 feet	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
20	429 - Mixed Upland Conifers	Poletimber Medium	19.7	36	1-50	N/A	JP stand with minor amounts of O-A-Spruce was final harvested in 1983 (#015-82A), cutting merch stems except scattered spruce & tamarack in the south half. FTP C71-105 was submitted in 1980 for mechanically seeding the site with JP prior to harvest, but documentation of completion was not found. On transition ground, shifts from majority JP on the drier north part to more spruce-tamarack toward the swamp.

Canopy Species	% Cover	Size Class	DBH	Age
Quaking Aspen	10	Pole/Sapling	5	36
Black Spruce	15	Pole/Sapling	6	
Jack Pine	40	Pole/Sapling	6	36
Tamarack	20	Pole/Sapling	5	36

Sub-Canopy Species	Density	Avg. Height	Size
Chokeberry	Trace	5 - 10 feet	Tall Shrub
Tag Alder	Medium	5 - 10 feet	Tall Shrub
Wild Raisin	Trace	< 5 feet	Tall Shrub
Black Cherry	Low	5 - 10 feet	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
21	4130 - Aspen	Sapling Well	22.5	15	Immature	N/A	Aspen stand with 3 acres of JP in the NW was final harvested in 2004 (#037-02), cutting stems 2"+ DBH except WP. The aspen regen is the featured canopy, with residual WP scattered across the stand. The pocket where JP was cut has JP sapling cover with a distinct browse line. Small BC brush inclusions.

Canopy Species	% Cover	Size Class	DBH	Age
Quaking Aspen	80	Sapling	2	15

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
22	42111 - Planted Red Pine, Mixed Deciduous	Sapling Poor	46.4	6	1-50	N/A	Most of a mature NPO stand was seed tree harvested in early 2012 (#645-11), cutting stems 2"+ DBH except RM, RP, WP & green-marked oak (cruised residual BA: 15 NPO, 3 RM, 2 WP, 1 RP). A sub-acre stand of mature JP along M-72 was merged with this stand at re-inventory. 37 acres were trenched fall of 2012 (C72-720) and supplemental planted with RP in 2013 at 620 trees/acre, staying outside of the drip lines of residual trees. Passed Yr 3 regen survey. FTP completed. The planted RP is now the featured canopy, with scattered residual above: declining NPO, open-grown WP, RM clumps (mostly on S edge) & the JP inclusion along the hwy. Deer browse on the planted RP is concentrated on the swamp edge, otherwise the saplings are healthy. BC brush throughout. Unplanted west edge with heavier residual was shifted to adjacent stand.

Canopy Species	% Cover	Size Class	DBH	Age
Northern Pin Oak	25	Log/XLog	16	92
White Pine	6	Log/Pole	12	
Red Pine	60	Sapling	1	6

Sub-Canopy Species	Density	Avg. Height	Size
Black Cherry	Medium	Variable	Tall Shrub
Serviceberry (Juneberry)	Trace	10 - 20 feet	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
23	42141 - Planted Mixed Pine, Mixed Deciduous	Sapling Medium	42.0	13	1-50	N/A	Most of this over-mature oak stand was shelterwood harvested in 2004 (#037-02), cutting merch stems except green-marked and WP-RP (cruised residual 30-40 BA). The strip south of the snowmobile trail was thinned under the same contract, cutting merch JP and orange-marked stems (cruised residual 70-80 BA), but continued mortality in the overmature oak has reduced much of the canopy there to shelterwood levels. RP was trenched and planted across 46 acres in 2006 (C72-517), focusing on areas where the canopy was sparsest. This majority planted portion was split out as stand 23 where the regen is the featured canopy, and the residual NPO-WP-RP occupies a supercanopy layer. Second age estimate on the mature NPO was drawn from the oak cored in parent stand 17.

Canopy Species	% Cover	Size Class	DBH	Age
Northern Pin Oak	20	Log/XLog	16	100
White Pine	10	Log/Pole/Sap	12	
Red Pine	50	Sapling	2	13
Northern Pin Oak	7	Sapling	2	

Sub-Canopy Species	Density	Avg. Height	Size
Black Cherry	Low	Variable	Tall Shrub
Serviceberry (Juneberry)	Trace	10 - 20 feet	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
24	4319 - Mixed Upland Forest	Sawtimber Well	20.8	53	51-80	N/A	This stand was originally part of the larger oak type to the west, but was thinned (instead of shelterwood harvested) in 2004 (#037-02), cutting orange-marked stems, along with merch JP south of the snowmobile trail (cruised residual 70-80 BA). Continued mortality in the overmature oak in the thinning unit's northwest has reduced the canopy to shelterwood levels, so that area was merged back into stand 17. Continued mortality in the NPO; still a live mature component, but pole WP-RM are now significant canopy codominants. Scattered mature BTA along AuSable Trail. Branch flagging in the WP; some sapling & pole mortality.
25	3303 - Mixed Low Density Trees	Nonstocked	15.5		Immature	No	Extensive mortality in the mature NPO has dropped this stand into LDT range. Variable cover in BC brush with declining xlog NPO, scattered WP-RP, top-dying QA, and patches of advanced NPO regen.
26	4125 - Black, N. Pin Oak	Poletimber Medium	46.0	37	1-50	N/A	Oak stand with a minor aspen component was final harvested in 1982 (#014-82A), cutting merch stems. Two acres in the south edge were trenched and planted to RP in 2006 when stand 23 was underplanted (C72-517). Canopy dominant NPO stump-origin stems with small aspen clones. Stocky WP-RP scattered throughout. BC brush inclusions.
27	6220 - Alder/willow	Nonstocked	11.3	0	Unspecified	No	Tag alder and salix with scattered flood-stressed spruce, RM, WP, NWC & tamarack. Dead black ash in the SW. The stand is seasonally flooded as snowmelt water converges and flows west across it during the spring. The former RR grade impedes that spring runoff, expanding this stand by flood-killing adjacent timber.
28	6220 - Alder/willow	Nonstocked	33.5	0	Unspecified	No	Evidence of significant harvesting across much of the stand is visible on the 1952 air photos. That harvest activity extended into stand 32, but the areas picked up by stand 32 have forested levels of residual and regen. This stand had sparse residual (NWC, tamarack, spruce, WP & RM) and little regen (BF, RM, PB & tamarack). The stand is a lowland shrub thicket of tag alder with locally high cover in winterberry. Traces of aronia. Perimeter salix, bog birch & leatherleaf.
29	622 - Lowland Shrub	Nonstocked	1.1	0	Unspecified	No	Bog birch and salix with Canada bluejoint in open areas. Perimeter tag alder and leatherleaf.

Stand 24

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	30	Pole/Sap/Log	6	
Northern Pin Oak	25	Log	15	99
White Pine	40	Log/Pole/Sap	10	53

Sub-Canopy Species	Density	Avg. Height	Size
White Pine	Low	Variable	Sapling
Black Cherry	Low	5 - 10 feet	Tall Shrub

Stand 25

Sub-Canopy Species	Density	Avg. Height	Size
Black Cherry	Medium	Variable	Tall Shrub
Northern Pin Oak	Low	>20 feet	Log
Northern Pin Oak	Low	Variable	Sapling
Quaking Aspen	Low	>20 feet	Pole
White Pine	Low	>20 feet	Log
Red Pine	Trace	>20 feet	Log
White Pine	Low	Variable	Sapling

Stand 26

Canopy Species	% Cover	Size Class	DBH	Age
Bigtooth Aspen	15	Pole/Sapling	6	37
Northern Pin Oak	67	Pole/Sapling	5	37

Sub-Canopy Species	Density	Avg. Height	Size
Black Cherry	Medium	Variable	Tall Shrub
Red Pine	Trace	5 - 10 feet	Sapling

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
30	4310 - Pine, Oak Mix	Sawtimber Well	15.0	108	81-110	N/A	Portions of the stand along the snowmobile trail and adjacent wetland are on organic, seasonally flooded soils. The dry ground has mature NPO with traces of aspen. The transition ground by stand 33 and the lowland inclusions have overmature JP with younger WP. Supercanopy RP & WP are scattered across the stand. Locally full RM understory below the JP. Locally full WP cover under the oak; branch flagging present.

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	10	Pole/Sap/Log	7	
Northern Pin Oak	35	Log/XLog	17	108
White Pine	20	Log/Pole/XLog	13	75
Red Pine	9	Log/XLog	17	
Jack Pine	20	Log/Pole	10	97

Sub-Canopy Species	Density	Avg. Height	Size
White Pine	Medium	10 - 20 feet	Sapling
Black Cherry	Low	5 - 10 feet	Tall Shrub
Bog Birch	Medium	5 - 10 feet	Tall Shrub
Tag Alder	Trace	5 - 10 feet	Tall Shrub
Red Maple	Medium	10 - 20 feet	Sapling
Michigan Holly	Low	5 - 10 feet	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
31	6121 - Tamarack	Sapling Medium	6.6	24	Immature	N/A	Tamarack filled in over bog birch. Traces of JP & WP saps on the perimeter.

Canopy Species	% Cover	Size Class	DBH	Age
Black Spruce	10	Sapling/Pole	4	
Tamarack	90	Sapling	2	24

Sub-Canopy Species	Density	Avg. Height	Size
Tag Alder	Trace	5 - 10 feet	Tall Shrub
Willow spp.	Low	5 - 10 feet	Tall Shrub
Bog Birch	High	5 - 10 feet	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
32	6121 - Tamarack	Poletimber Well	88.5	110	51-80	N/A	The small islands of slightly higher ground have dense cover in black spruce &/or RP-WP-JP. The majority lower ground has tamarack over a tag alder-ilex thicket. Top mortality common on that wetter ground. Patches of the stand's south edge bordering stand 28 were visible as having been partially harvested on the 1952 aerial photos; canopy cover in those areas is sparser but still meets the forested benchmark.

Canopy Species	% Cover	Size Class	DBH	Age
Black Spruce	20	Pole/Sapling	6	85
Tamarack	65	Pole/Sapling	6	110

Sub-Canopy Species	Density	Avg. Height	Size
Michigan Holly	Medium	5 - 10 feet	Tall Shrub
Chokeberry	Trace	5 - 10 feet	Tall Shrub
Tag Alder	High	5 - 10 feet	Tall Shrub
Bog Birch	Trace	5 - 10 feet	Tall Shrub
Wild Raisin	Trace	5 - 10 feet	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
33	6229 - Mixed lowland shrub	Nonstocked	22.7	0	Unspecified	No	Bog birch and salix, with Canada bluejoint in open areas. Perimeter tag alder, leatherleaf & spiraea. Tamarack & spruce colonizing. Small islands with JP-WP-RP.

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
34	6120 - Lowland Cedar	Sawtimber Poor	28.2	120	51-80	N/A	Low and lower ground. The slightly drier islands have dense NWC cover with RM mixed in. The majority lower ground has sparse flood-stressed tree cover, with top-mortality and windthrow common, over dense tag alder and ilex. The canopy black ash died out last YOE. The locally high cover in ash regen is being hit by EAB when it reaches 2" DBH.

Canopy Species	% Cover	Size Class	DBH	Age
Northern White Cedar	74	Log/Pole	11	120
Red Maple	15	Log/Pole	12	87

Sub-Canopy Species	Density	Avg. Height	Size
Black Spruce	Trace	Variable	Sapling
Black Ash	Medium	10 - 20 feet	Sapling
Tag Alder	High	10 - 20 feet	Tall Shrub
Michigan Holly	Low	5 - 10 feet	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
35	6120 - Lowland Cedar	Poletimber Medium	23.4	113	51-80	N/A	Cedar stand was partially cut on its north & east edges, as seen on the 1952 aerial photos. That perimeter has more black spruce and tamarack, over dense lowland shrub cover. The black ash component was heaviest in the SW; it died out last YOE, leaving sparser NWC cover there. The stand's core NWC cover is smaller diameter; the outlier cedar are saw-sized. RM is scattered throughout and increases along the south edge.

Canopy Species	% Cover	Size Class	DBH	Age
Black Spruce	20	Pole	7	
Northern White Cedar	60	Pole/Log	9	113

Sub-Canopy Species	Density	Avg. Height	Size
Black Spruce	Trace	5 - 10 feet	Sapling
Michigan Holly	Medium	5 - 10 feet	Tall Shrub
Tag Alder	High	5 - 10 feet	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
36	6139 - Mixed Lowland Forest	Poletimber Well	11.5	82	51-80	N/A	The stand is on Kinross-AuGres complex soils (very poorly drained, dominant texture: muck). Deep snow and heavy deer browse prevented Kotar typing, but between the soil series and the tip-up mound topography, it is likely PArVCo. Supercanopy WP-RP above black spruce & RM. The canopy RM is log-xlog by the swamp edge but pole-sapling interior. The stand's SW 1.5 acres is pole-sapling RM & BRO with some QA. The poly south of M-93 has less of the supercanopy WP but similar black spruce with pole-sapling RM, and oak on the drier SW edge.
37	6220 - Alder/willow	Nonstocked	1.7	0	Unspecified	No	Tall tag alder over bog birch. Scattered tamarack poles on the perimeter.
38	122 - Road/Parking Lot	Nonstocked	14.8		Unspecified	No	M-93 and Old Lake Road cleared corridors. Snowmobile trail runs along the north ditch of M-93.
39	6128 - Lowland Coniferous, Mixed Deciduous	Sawtimber Poor	18.1	148	1-50	N/A	Sparse canopy of struggling RM, stressed supercanopy WP, & spindly spruce over a full understory of tag alder. High degree of cull in the RM; incredibly slow-growing. The NWC is concentrated along M-93. The overmature JP inclusion is in the SE. Locally full RM understory. Cover gets denser further away from M-93. May be due to sub-surface flow backing up along the highway.
40	6121 - Tamarack	Poletimber Poor	9.4	77	1-50	N/A	Sparse canopy of small-diameter top-dying tamarack. Full cover in tag alder, with leatherleaf and sheep laurel patches also visible above the deep snow. Tree size and health decrease moving north toward the highway, possibly due to subsurface flow backing up against the road corridor.
41	6121 - Tamarack	Poletimber Well	18.4	50	51-80	N/A	This stand appears largely non-forested on the 1938 aerial photos, with scattered trees in the south end. It regenerated to tamarack with JP (increases to the south & east) and black spruce (increases to the southwest). The stand's second age is on the older spruce in the SW. The balsam poplar occurs near the former sewage lagoon and access road to the ponds. The stand's BA range is low for 75-100% canopy closure, but is due to the significant amount of large-sapling tamarack that is part of the canopy. Sheep laurel and leatherleaf visible in patches above the deep snow. Tag alder mostly on the stand's west & south sides.
42	6111 - Lowland Balsam Poplar	Poletimber Medium	3.0	28	51-80	N/A	Earthen berm perimeter and north row of former sewage settling ponds, colonized by balsam poplar and mixed conifers. Some above-ground piping still visible. Remnants of old barbed wire fence on the perimeter. With how the site has been progressively colonized, there is likely a range of ages present, but only one median BP pole was cored.

36

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	30	Pole/Sap/Log	6	
Black Spruce	35	Pole/Log	9	82
White Pine	15	XLog	28	120

Sub-Canopy Species	Density	Avg. Height	Size
Red Maple	Medium	>20 feet	Sapling
Wild Raisin	Trace	5 - 10 feet	Tall Shrub
White Pine	Low	Variable	Sapling
Black Cherry	Trace	5 - 10 feet	Tall Shrub

39

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	34	Log/Pole/XLog	10	148
Black Spruce	25	Pole	7	104
White Pine	25	XLog/Log/Pole	20	

Sub-Canopy Species	Density	Avg. Height	Size
Red Maple	Low	>20 feet	Sapling
Black Spruce	Low	Variable	Sapling
White Pine	Trace	Variable	Sapling
Tag Alder	Full	5 - 10 feet	Tall Shrub

40

Canopy Species	% Cover	Size Class	DBH	Age
Black Spruce	13	Pole/Sapling	6	
Tamarack	85	Pole/Sapling	5	77

Sub-Canopy Species	Density	Avg. Height	Size
Black Spruce	Low	5 - 10 feet	Sapling
Tag Alder	Full	5 - 10 feet	Tall Shrub

41

Canopy Species	% Cover	Size Class	DBH	Age
Black Spruce	20	Pole/Log/Sap	7	96
Jack Pine	20	Pole/Log	8	61
Tamarack	54	Pole/Sapling	6	50

Sub-Canopy Species	Density	Avg. Height	Size
Tamarack	Low	Variable	Sapling
Black Spruce	Low	Variable	Sapling
Red Maple	Low	>20 feet	Sapling
Tag Alder	Low	5 - 10 feet	Tall Shrub

42

Canopy Species	% Cover	Size Class	DBH	Age
Balsam Poplar	65	Pole/Sap/Log	6	28
Tamarack	15	Pole/Sapling	6	

Sub-Canopy Species	Density	Avg. Height	Size
Willow spp.	Low	10 - 20 feet	Tall Shrub
Black Spruce	Low	Variable	Sapling

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
43	3102 - Grass	Nonstocked	3.0	0	Unspecified	No	Noted as sewage lagoons in previous inventory. The clearing with three rows of ponds first shows up on the 1978 air photos. Ponds appear to have been decommissioned over time, starting from the north and progressing south. The perimeter earthen berms and north ponds have been colonized by balsam poplar & tamarack (split off as stand 42). Still some above-ground piping. Traces of colonizing salix & balsam poplar, otherwise little visible above the snow in the ponds.
44	6126 - Lowland Jack Pine	Sawtimber Well	15.0	99	81-110	N/A	Overmature JP, with black spruce concentrated in the west half. On Kinross muck with a band of slightly drier Kinross-AuGes complex up the middle where the two-track road cuts through (traces of NPO along it). RM large sapling-small pole component has been steadily transitioning into the overstory, particularly where the overmature JP has been thinning out. Snowshoe trail crosses through. 3D archery course roped off within the stand.
45	4191 - Mixed Upland Deciduous with Conifer	Sawtimber Well	19.7	111	81-110	N/A	Variable stand with a significant amount of transition ground on its long border with the lake and swamps. The drier part of the stand is on Croswell and AuGres sands, with mainly NPO & small saw WP. The rest of the stand is on Kinross-AuGres organic soils, with more RM and supercanopy WP. The main poly contains part of the 3D archery course and snowshoe trail.
46	500 - Water	Nonstocked	5.0	0	Unspecified	No	Shallow pond dug during the early decades of the Hanson Hills winter sports park. Two small islands in the east half.
47	350 - Parks and Golf Courses	Nonstocked	72.4	0	Unspecified	No	Hanson Hills Recreation Area lodge & maintenance facilities, indoor archery range, downhill ski runs, tubing hill, mountain bike and XC ski trailhead, sports fields (baseball, soccer, disc golf), campground, and playground. Oak & pine occur in strips between the ski runs and scattered along the perimeter of maintained open areas. Also some planted Norway spruce.
48	6229 - Mixed lowland shrub	Nonstocked	1.9	0	Unspecified	No	Rubus and tag alder, with colonizing tamarack, WP & birch. Traces of salix.
49	3301 - Low Density Deciduous Trees	Nonstocked	12.7	0	Unspecified	No	This area appears recently-cleared on the 1952 aerial photos, with widely-scattered residual trees on the perimeter. The stand occupies a frost pocket valley and hillsides dissected with sandy two-track road corridors. Strips of brushy oak and BC cover between the two-tracks don't meet the forested benchmark. Non-native bush honeysuckle clumps established under the patches of tree cover but haven't spread into the general opening. Traces of RM-A on the perimeter. XC ski trails cross through.

Stand 44

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	14	Pole/Sapling	5	
Black Spruce	30	Pole/Log	8	87
Jack Pine	50	Log	11	99

Sub-Canopy Species	Density	Avg. Height	Size
Red Maple	Medium	>20 feet	Sapling
Black Spruce	Low	Variable	Sapling
White Pine	Low	Variable	Sapling
Tag Alder	Trace	5 - 10 feet	Tall Shrub

Stand 45

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	30	Pole/Sap/Log	7	58
Northern Pin Oak	30	Log/XLog/Pole	16	111
White Pine	20	XLog/Log/Pole	20	
Jack Pine	10	Log	12	

Sub-Canopy Species	Density	Avg. Height	Size
Red Maple	Low	10 - 20 feet	Sapling
Black Spruce	Trace	Variable	Sapling
White Pine	Medium	Variable	Sapling
Tag Alder	Trace	5 - 10 feet	Tall Shrub

Stand 49

Sub-Canopy Species	Density	Avg. Height	Size
Honeysuckle (spp.)	Low	5 - 10 feet	Tall Shrub
Northern Pin Oak	Medium	>20 feet	Pole
Northern Pin Oak	Low	5 - 10 feet	Sapling
Black Cherry	Medium	>20 feet	Tall Shrub
White Oak	Trace	>20 feet	Log
White Pine	Trace	5 - 10 feet	Sapling

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
50	4123 - Red Oak	Sawtimber Well	57.0	101	111-140	N/A	Most of the stand was thinned by 1993 (#039-91), cutting aspen and orange-marked trees (stated target residual 60 BA with higher amounts left for visual along the XC ski trails). Roughly 3 cd/ac oak, 3 cd/ac BTA, & a trace of RM were removed. Most of the material removed was in small patches in the stand's north & SW. Those canopy gaps visible on the imagery are where the BTA and RM regen is found. The thinning left almost all of the intermediate-suppressed RM (stump-origin clumps) and didn't address much of the suppressed oak pole component; those poles continue to drop out of the canopy. More RM representation by BA than canopy percentage (as seen from above). WO component increases in the SW, with open-grown xlog individuals common. The supercanopy RP increases there also. Traces of supercanopy WP seeded in locally full understory in the SW (branch flagging present). Terrain is hilly to steep, with traces of uncut mature BTA. XC Ski trails and disc golf course throughout.

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	10	Pole/Sapling	6	
White Oak	18	Log/Pole/XLog	11	
Red Oak	70	Log/Pole	13	101

Sub-Canopy Species	Density	Avg. Height	Size
Red Maple	Trace	>20 feet	Sapling
White Pine	Low	Variable	Sapling
Bigtooth Aspen	Low	>20 feet	Sapling
Witch Hazel	Low	5 - 10 feet	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
51	4124 - Red with White Oak	Sawtimber Well	20.0	114	111-140	N/A	Narrow stand between M-93 cutbanks, Margrethe Blvd and adjacent subdivision. Steep hill in the middle. Bare portion of that hillside above a former borrow pit (?) is informally used for sledding. Mature oak cover, with supercanopy RP & WP mostly in the north end. WO increases in the SW. Overmature BTA mixed in along the SE edge. The suppressed oak poles have largely died out. The RM is intermediate to suppressed, with more representation by BA than canopy (as seen from above). A lot of deer use, including bedding down in the stand.

Canopy Species	% Cover	Size Class	DBH	Age
White Oak	20	Log/Pole/XLog	12	
Red Oak	60	Log/XLog	14	114
Red Maple	7	Pole/Sapling	6	

Sub-Canopy Species	Density	Avg. Height	Size
White Pine	Medium	Variable	Sapling

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
52	122 - Road/Parking Lot	Nonstocked	24.0		Unspecified	No	M-93 and Margrethe Blvd cleared corridors. Snowmobile trail runs along the east ditch of M-93.

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
53	4199 - Other Mixed Upland Deciduous	Sawtimber Poor	28.8	95	1-50	N/A	Mortality from oak wilt and age-related decline prompted a salvage harvest in fall 2010 (#640-10), cutting all stems in the Red Oak group and a minor amount of BTA. Residual consists of WO & RM (stump-origin clumps), with traces of Norway spruce, RP & WP. There are traces of oak and RM regen (SW edge), BTA regen on the SE edge, and advanced WP regen concentrated near the highway. The harvest encompassed the old campground and more recent trailer park. The trailer park area was merged with the adjacent non-forested recreation fields at re-inventory. In addition to the harvest, a root-graft barrier was installed by vibratory plow (C72-699) in order to control the underground spread of the oak wilt. That plow line was established along the harvest's SW edge where there were no natural barriers. Four acres in the harvest's SE were subsequently cleared in 2014; that area has also been merged with the adjacent non-forested stand 47. A lot of deer activity, one dead in NW. Even some browse on the spruce.

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	40	Pole/Log/Sap	7	82
White Oak	56	Log/Pole/XLog	11	95

Sub-Canopy Species	Density	Avg. Height	Size
Bigtooth Aspen	Low	5 - 10 feet	Sapling
Northern Pin Oak	Trace	5 - 10 feet	Sapling
Red Maple	Low	5 - 10 feet	Sapling
White Pine	Low	5 - 10 feet	Sapling
Norway Spruce	Trace	5 - 10 feet	Sapling
Witch Hazel	Trace	5 - 10 feet	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
54	4124 - Red with White Oak	Sawtimber Well	4.5	101	81-110	N/A	Small stand on steep knob. Fenced U.S. Government Military Cemetery on its east edge, overlooking the tubing hill. Oak on the south aspect is shorter, more open-grown. More typical form on the north aspect. First age estimate drawn from stand 50's cored age. The stand's south and west edges were within the 1952-visible harvest area and have younger pole-sapling oak cover (second age estimate set to stand 55's cored age within the same harvest). Within the disc golf course.

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	6	Pole/Sapling	6	
White Oak	20	Log/Pole	12	
Red Oak	60	Log/Pole	13	101
Black/Red (Hybrid) Oak	10	Pole/Sapling	6	67

Sub-Canopy Species	Density	Avg. Height	Size
White Pine	Low	Variable	Sapling

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
55	4119 - Mixed Northern Hardwoods	Poletimber Well	8.2	67	81-110	N/A	This stand appears recently-cleared on the 1952 air photos, with scattered regen visible on the upper slopes and widely-scattered residual trees on the north perimeter. Regenerated to RM with oak and scattered aspen. Stump-origin clumps the typical form, with a minority in single-stems. XC ski trail and disc golf course.

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	75	Pole/Sap/Log	6	67
White Oak	15	Pole/Sapling	7	
Black/Red (Hybrid) Oak	8	Pole/Sap/Log	7	

Sub-Canopy Species	Density	Avg. Height	Size
Witch Hazel	Medium	5 - 10 feet	Tall Shrub
White Pine	Low	Variable	Sapling

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
56	710 - Sand, Soil	Nonstocked	2.8	0	Unspecified	No	Former borrow pit, first visible on the 1952 air photos. Encroaching RM-BC-A-O on the perimeter.

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
57	4199 - Other Mixed Upland Deciduous	Poletimber Medium	5.7	32	1-50	N/A	Valley stand dissected by three parallel trail road corridors. 1952 aerial photos showed scattered large-crowned trees and fairly open understory. The stand filled in since with oak and RM while the over-mature NPO has almost entirely died out. Scattered log-pole aspen on the perimeter. Non-native bush honeysuckle present in small patches below the oak pole-sapling cover. XC ski trail crosses through. Only cored one small oak pole for age.

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	40	Pole/Sapling	5	
Northern Pin Oak	50	Pole/Sapling	5	32

Sub-Canopy Species	Density	Avg. Height	Size
Serviceberry (Juneberry)	Trace	10 - 20 feet	Tall Shrub
Honeysuckle (spp.)	Low	5 - 10 feet	Tall Shrub
Black Cherry	Medium	10 - 20 feet	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
58	4123 - Red Oak	Sawtimber Well	14.0	100	111-140	N/A	Stand occupies a steep ridge. The east half is cut by former ski hill runs, with remnants of old lift equipment on the hilltop. The northeast edge borders the current operational ski lift infrastructure. Mature NRO with WO & RM associates typical for this area. Suppressed oak poles dying out of the canopy. Scattered overmature BTA. WP regen increases on the lower slopes of the old downhill ski runs. Disc golf course and MtB trail within the stand.

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	6	Pole/Sapling	6	
White Oak	10	Log/Pole	11	
Red Oak	75	Log/Pole	13	100
Bigtooth Aspen	7	Log	11	

Sub-Canopy Species	Density	Avg. Height	Size
White Oak	Trace	< 5 feet	Seeding
White Pine	Low	5 - 10 feet	Sapling
Witch Hazel	Low	5 - 10 feet	Tall Shrub

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
59	6139 - Mixed Lowland Forest	Sawtimber Well	11.4	114	111-140	N/A	The stand is on mainly Kinross-AuGres complex soils (very poorly drained, dominant texture: muck), with some Croswell-AuGres sands. Deep snow and heavy deer browse prevented Kotar typing, but between the soil series and the tip-up mound topography, it is likely PArVCo. Supercanopy WP & RP with BRO on the drier south edge and more large cull RM and spruce toward the swamp. The younger WP canopy record would read 12" diam Log-Pole if not prevented by a MiFl "rule".

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	25	Log/Pole/XLog	13	122
Black/Red (Hybrid) Oak	6	Log/XLog	16	
White Pine	30	XLog	24	114
Red Pine	15	Log/XLog	17	
White Pine	15	Pole	9	

Sub-Canopy Species	Density	Avg. Height	Size
Black Spruce	Trace	10 - 20 feet	Sapling
White Pine	Low	Variable	Sapling
Red Maple	Low	10 - 20 feet	Sapling

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
60	6120 - Lowland Cedar	Poletimber Medium	5.5	118	81-110	N/A	The stand's drier south edge has larger diameter, healthy NWC with RM, WP, PB & hemlock (in SW). The majority lower ground has smaller diameter, dying NWC. The thinning crowns and root-tip there dropped the canopy closure into the 50-75% category.

Canopy Species	% Cover	Size Class	DBH	Age
Northern White Cedar	70	Pole/Log	8	118
Red Maple	10	Log/Pole	12	
Hemlock	10	Log	14	

Sub-Canopy Species	Density	Avg. Height	Size
Tag Alder	Low	5 - 10 feet	Tall Shrub