



# Compartment Review Presentation

Grayling Forest Management Unit

Compartment 72172

Entry Year 2026

Acreage: 1,661

County: Crawford

Management Area: Kalkaska Sandy Moraines

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**Stand Examiner:** Joan Charlebois

**Legal Description:**

T28N R04W Sections 19, 20 and 21 North Frederic Township, Crawford County

**Identified Planning Goals:**

To maintain forest health, productivity, sustainability, species diversification, and structural diversity throughout the compartment while providing for multiple use and visual management.

**Soil and topography:**

The west side of the compartment is fairly level, on mostly Rubicon sand. Elevation increases moving east and the amount of Rubicon sand decreases.

The most productive soils are in the east half of the compartment and include series such as the Feldhauser fine sandy loam and Blue Lake loamy sand.

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

The compartment borders three blocks of private property that have a mix of year-round and seasonal residences. Landowners in Section 19 access their property by way of two state forest roads crossing the Deward Tract.

**Unique Natural Features:**

There is the potential for rare species to occur along the Upper Manistee River corridor.

**Archeological, Historical, and Cultural Features:**

There are potential concerns within the compartment. All proposed management activities have taken these concerns into consideration.

**Special Management Designations or Considerations:**

West of Manistee River Road is part of the DeWard Tract, a special management area designated to protect the Upper Manistee River. Motorized use is prohibited in the Deward Tract except on trails posted as open. The Upper Manistee is a designated Natural River and a High Conservation Value Area (HCVA).

**Watershed and Fisheries Considerations:**

The Upper Manistee is a designated Natural River and quality trout stream. The work pad for in-stream Sediment Basin (sand trap) #4 is located on the bank of the river and a dredged sand stockpiling site is to the east.

**Wildlife Habitat Considerations:**

There are two maintained wildlife openings in the Deward Tract. The compartment's diverse mix of cover, ranging from mast-producing shrubs, to aspen, oak, pine and northern hardwoods, provide habitat for a wide variety of game and non-game wildlife.

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

No known potential exists for commercial metallic mineral production in this part of the state. The State-owned Kolka Creek sand/gravel pit is less than one mile northeast. The pit is not currently leased but is open and has a history of leasing with the road commission. There is very good potential for sand & gravel within the compartment, but any future development would need to avoid existing oil & gas infrastructure/facilities. The compartment has been developed for Antrim Shale gas and Silurian reef oil & gas, and all State-owned mineral rights in the compartment are leased and held by production. The Antrim play is generally in decline, no new Antrim wells are being drilled, and there has been an increasing trend toward plugging. At current gas prices, drilling of new Antrim wells is not economical. There may still be some potential future discoveries of additional Silurian reef reservoirs beneath the compartment, but this cannot be adequately evaluated without access to proprietary industry data. No recent well permits have been issued in the area. 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:**

County roads include Cameron Bridge Road, Deward Road, and Manistee River Road. Vehicle access within this part of the Deward Tract is limited to two forest roads: Ishwana Trail and Scotch Pine Lane. Several un-named forest roads provide gas well and public access east of Manistee River Road.

**Survey Needs:**

None at this time.

**Recreational Facilities and Opportunities:**

The Blue Bear Snowmobile Trail runs through the compartment in section 19. The Manistee River provides quality trout fishing opportunities. The compartment's uplands provide habitat for game and non-game species.

**Fire Protection:**

The Deward Tract has road closures to limit public access along the Manistee River, but they will not curtail fire suppression equipment access. Outside of the Deward Tract, the existing network of roads provides adequate access. The location of pipelines and wellsites will influence initial attack operations.

**Additional Compartment Information:**

The south line of Section 19 lies north of Cameron Bridge Road, so there is a strip of private property between the road and the state land.

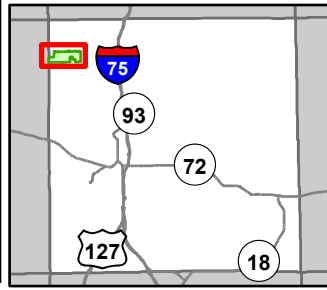
**The following reports from the Inventory are attached:**

- 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**

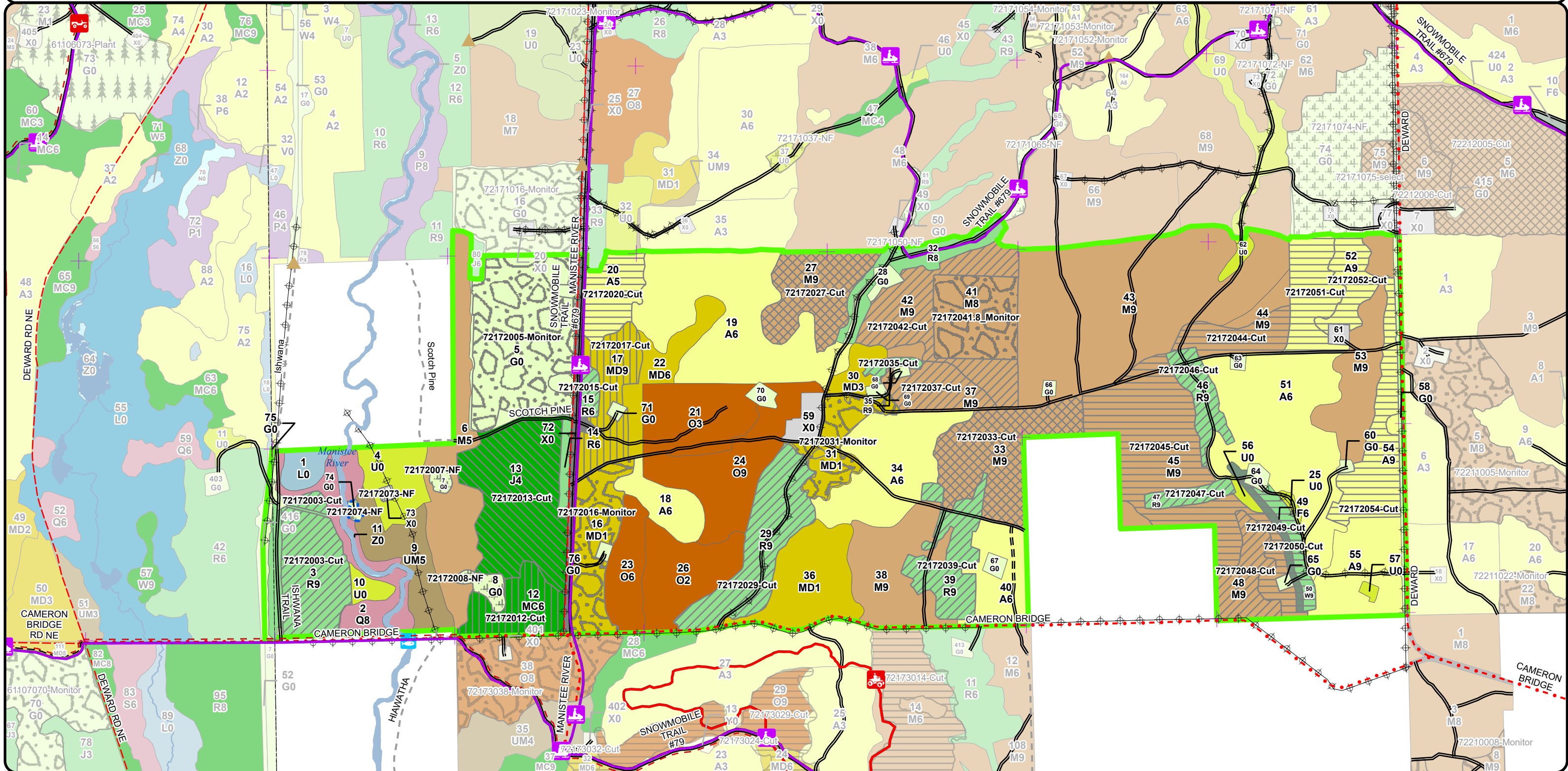
**Cover Type & Treatments Map**



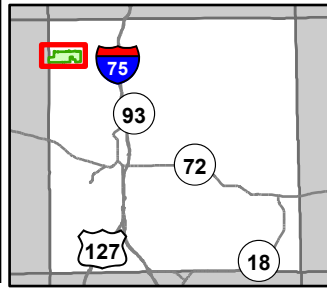
Compartment: 72172  
 T28N, R4W, Sec: 16, 17, 19-21  
 County: Crawford  
 Unit: Grayling  
 Mgmt Area: Kalkaska Sandy  
 Moraines  
 YOE: 2026  
 Acres: 1660.6 GIS Calculated  
 Examiner: Joan Charlebois  
 Map Revised: 10/15/2024  
 Map Phase: Post Review



- |                              |                               |                                   |                              |                                     |
|------------------------------|-------------------------------|-----------------------------------|------------------------------|-------------------------------------|
| Berms                        | Designated ATV Trails         | Lakes and Rivers                  | Shelter Wood (w/Reserves)    | 612 - Lowland Coniferous Forest     |
| Fishing Access Site          | DNR - Secondary Forest Road   | Compartment Boundary              | 411 - Northern Hardwood      | 110 - Low Intensity Urban           |
| Remonumented Section Corners | DNR - Forest Access Route     | Treatments with Site Conditions   | 412 - Oak Types              | 122 - Roads/Parking Lot             |
| ORV Trails                   | County - Gravel Road          | Other Harvest - See Comments      | 413 - Aspen Types            | 310 - Herbaceous Openland           |
| ORV Routes                   | County - Dirt Road (Seasonal) | Other Treatment - See Comments    | 419 - Mixed Upland Deciduous | 330 - Low Density Trees             |
| Snowmobile Trails            | Private - Dirt / Gravel Road  | Selection (Group, Single Tree)    | 421 - Planted Pines          | 500 - Water                         |
| Designated ORV Routes        | Lake/Pond                     | Clearcut (w/Reserves)             | 422 - Natural Pines          | 622 - Lowland Shrub                 |
| Designated Snowmobile Trails | Perennial River               | Thinning (Crown, Low, Systematic) | 423 - Other Upland Conifers  | 790 - Other Bare/Sparsely Vegetated |
|                              | Powerline                     | Regeneration Survey               | 430 - Upland Mixed Forest    |                                     |



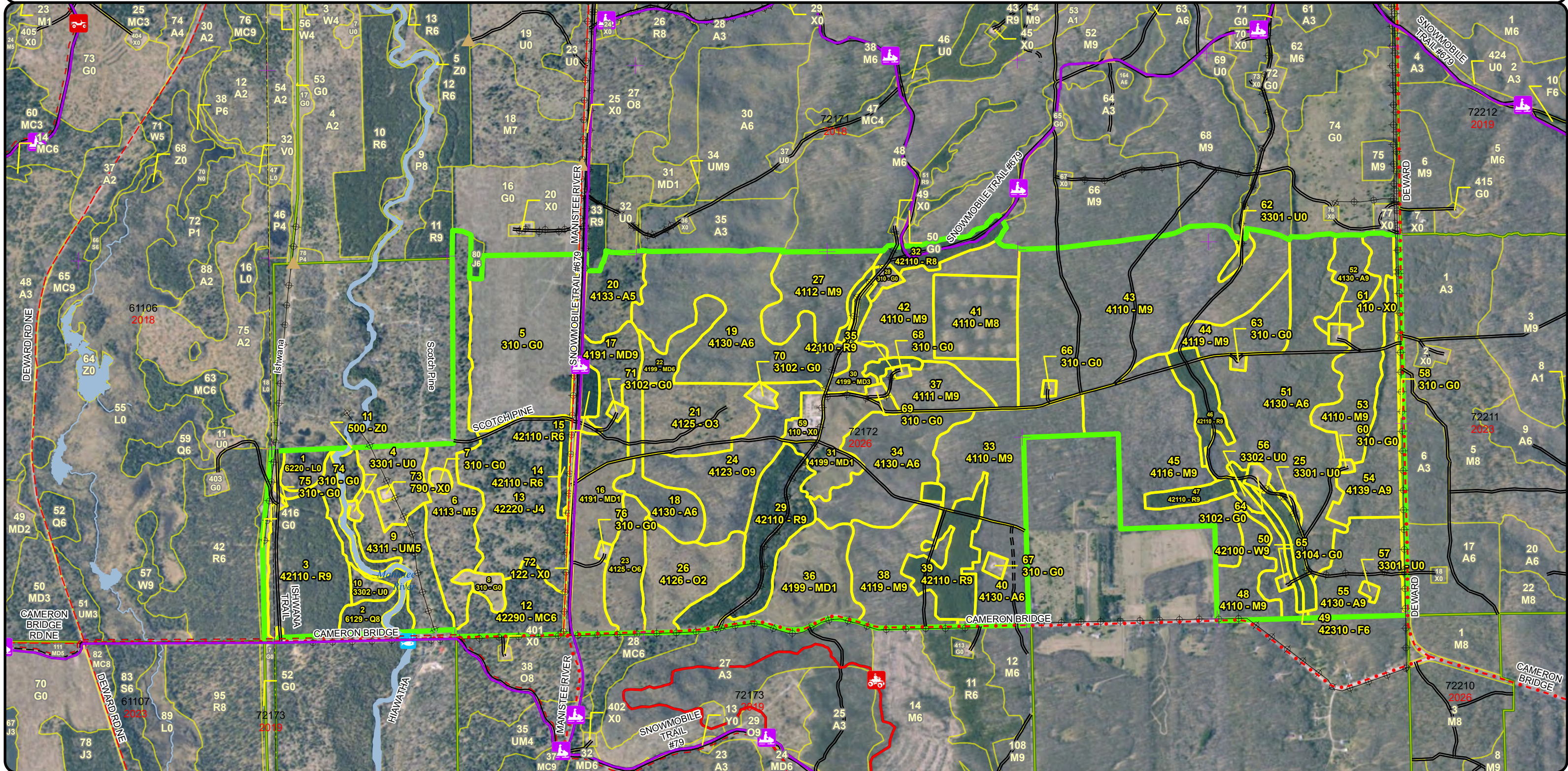
**Stand Boundary Map**



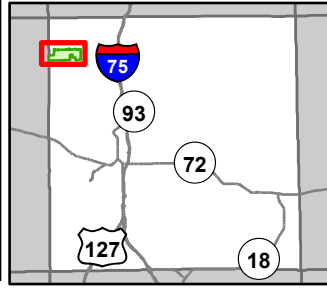
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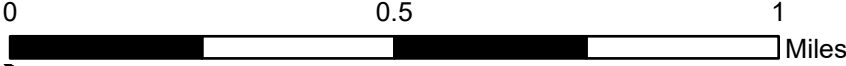
- Berms
- Fishing Access Site
- Remonumented Section Corners
- ORV Trails
- ORV Routes
- Snowmobile Trails
- Designated ORV Routes
- Designated Snowmobile Trails
- Designated ATV Trails
- DNR - Secondary Forest Road
- DNR - Forest Access Route
- County - Gravel Road
- County - Dirt Road (Seasonal)
- Private - Dirt / Gravel Road
- Lake/Pond
- Perennial River
- Powerline
- Lakes and Rivers
- Compartment Boundary
- Stand Boundaries
- 419 - Mixed Upland Deciduous
- 421 - Planted Pines
- 422 - Natural Pines
- 423 - Other Upland Conifers
- 430 - Upland Mixed Forest
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- 412 - Oak Types
- 413 - Aspen Types
- 310 - Herbaceous Openland
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- 500 - Water
- 622 - Lowland Shrub
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**Special Conservation Areas & Site Conditions Map**



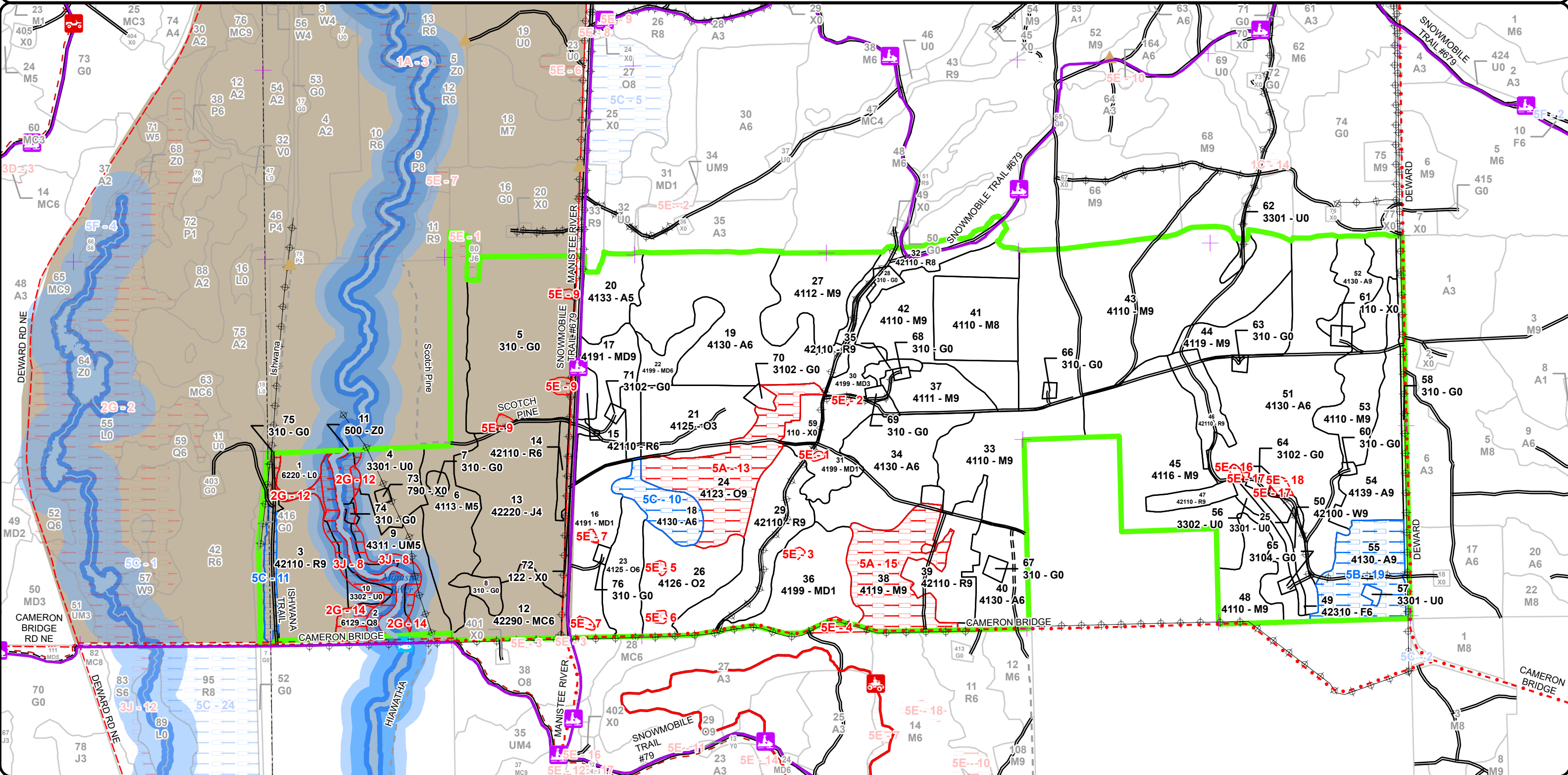
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- Berms
- Fishing Access Site
- Remonumented Section Corners
- ORV Trails
- ORV Routes
- Snowmobile Trails
- Designated ORV Routes
- Designated Snowmobile Trails
- Designated ATV Trails
- DNR - Secondary Forest Road

- DNR - Forest Access Route
- County - Gravel Road
- County - Dirt Road (Seasonal)
- Private - Dirt / Gravel Road
- Lake/Pond
- Perennial River
- Powerline
- Lakes and Rivers
- Cold Water Streams
- Compartment Boundary
- Available w/ Constraints
- Unavailable

- 5B: Maintain for regeneration purposes
- 5C: Delay treatment for age/size class diversity or exceptional site quality
- 2G: Too wet (sensitive soils, does not include access issues)
- 3J: Water quality / BMPs (stream, river, or lake)
- 5A: Not able to obtain desirable regeneration
- 5E: Long-Term Retention
- Stand Boundaries
- Natural Rivers Vegetative Buffer
- Natural Rivers Zoning District
- Dedicated Management Areas
- High Priority Trout Stream Buffer





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	0	0	171	162	0	31	0	0	0	0	0	0	0	0	0	0	363
Bare/Sparsely Vegetated	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Herbaceous Openland	117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	117
Jack Pine	0	0	0	0	0	0	62	0	0	0	0	0	0	0	0	0	0	0	62
Low-Density Trees	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
Lowland Conifers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	0	0	0	27
Lowland Shrub	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Mixed Upland Deciduous	0	87	7	0	0	18	0	0	0	0	0	25	0	0	0	0	0	0	136
Natural Mixed Pines	0	0	0	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	22
Northern Hardwood	0	0	0	0	0	0	0	0	47	145	351	0	0	0	0	0	0	0	542
Oak	0	31	33	0	0	20	0	0	0	0	0	43	0	0	0	0	0	0	126
Red Pine	0	0	0	4	0	0	20	135	0	0	0	0	0	0	0	0	0	0	158
Upland Mixed Forest	0	0	0	0	0	0	26	0	0	0	0	0	0	0	0	0	0	0	26
Upland Spruce/Fir	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	6
Urban	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
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	0	8	0	0	0	0	0	0	0	0	0	0	0	8
<b>Total</b>	<b>182</b>	<b>118</b>	<b>40</b>	<b>4</b>	<b>171</b>	<b>200</b>	<b>144</b>	<b>166</b>	<b>47</b>	<b>145</b>	<b>351</b>	<b>68</b>	<b>0</b>	<b>0</b>	<b>27</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1658</b>



## Report 2 – Treatment Summary

Grayling Mgt. Unit

Year of Entry: 2026

Acres of Harvest

Compartment 172

Total Compartment Acres: 1,661

Commercial Harvest - 581  
 Harvests with Site Condition - 0  
 Next Step Harvest - 31  
 Habitat Cut - 31

### Cover Type by Harvest Method

	Clearcut	Selection	Patch Clearcut	Seed Tree	Shelterwood	Thinning	Overstory Removal	Salvage	Other	Total Acres
Aspen	86	0	0	0	0	0	0	0	0	86
Jack Pine	0	0	0	0	0	0	0	0	60	60
Mixed Upland Deciduous	0	0	0	0	24	0	0	0	0	24
Natural Mixed Pines	0	0	0	0	22	0	0	0	0	22
Northern Hardwood	92	78	0	0	0	77	0	0	0	246
Red Pine	0	0	0	0	0	130	0	0	0	130
Upland Spruce/Fir	5	0	0	0	0	0	0	0	0	5
White Pine	8	0	0	0	0	0	0	0	0	8
<b>Total</b>	<b>190</b>	<b>78</b>	<b>0</b>	<b>0</b>	<b>46</b>	<b>207</b>	<b>0</b>	<b>0</b>	<b>60</b>	<b>581</b>

### Proposed and Next Step Treatments by Method

	Harvest	Site Prep	Planting	Seeding	Burning	Pesticide	Monitoring	Other	Non-Forest Mgt.	Total Acres
Current	581	0	0	0	0	150	0	9	0	739
Next Step	31	0	0	31	0	0	314	0	0	376
<b>Total</b>	<b>612</b>	<b>0</b>	<b>0</b>	<b>31</b>	<b>0</b>	<b>0</b>	<b>464</b>	<b>0</b>	<b>9</b>	<b>1115</b>



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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
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**Proposed Treatments:**

<b>3</b>	<b>72172003-Cut</b>	36.6	42110 - Planted Red Pine	Sawtimber Well	64	201+	Harvest	Low Thinning	4211 - Planted Red Pine	Even-Aged	No
<p><u>Prescription</u> Thin the portion east of the Ishwana Trail corridor. Carry the thinning into the Natural Rivers zone to make the plantation appear more natural.</p> <p><u>Specs:</u></p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable</u></p> <p><u>Regen:</u></p> <p><u>Other</u> Note that there is a strip of private property between the plantation and the cleared county road corridor.</p> <p><u>Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2025</p>											
<b>7</b>	<b>72172007-NF</b>	2.0	310 - Herbaceous Openland	Nonstocked			Unspec NonForestMgt ified	Other - Specify	310 - Herbaceous Openland		No
<p><u>Prescription</u> Periodic opening maintenance, as needed, that may include disking, fertilizing, liming, food plot seeding, mowing, brushing, burning, tree and shrub planting, herbicide application, and removal of invasive species.</p> <p><u>Specs:</u></p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable</u></p> <p><u>Regen:</u></p> <p><u>Other</u></p> <p><u>Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2025</p>											
<b>8</b>	<b>72172008-NF</b>	4.9	310 - Herbaceous Openland	Nonstocked			Unspec NonForestMgt ified	Other - Specify	310 - Herbaceous Openland		No
<p><u>Prescription</u> Periodic opening maintenance, as needed, that may include disking, fertilizing, liming, food plot seeding, mowing, brushing, burning, tree and shrub planting, herbicide application, and removal of invasive species.</p> <p><u>Specs:</u></p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable</u></p> <p><u>Regen:</u></p> <p><u>Other</u></p> <p><u>Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2025</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>12 72172012-Cut</b>	22.2	42290 - Natural Mixed Pine	Poletimber Well	56	81-110	Harvest	Shelterwood	42250 - Pine, Oak	Two-Aged	No
<p><u>Prescription</u> Harvest the JP-RM-A. Leave the WP-RP-O. Spec protecting the oak-pine regen.  <u>Specs:</u>  <u>Next Step</u> Monitoring, Natural Regen (Re-Inventory)  <u>Treatments:</u>  <u>Acceptable</u> A moderately stocked mix of oak and pine, with a minor aspen component..  <u>Regen:</u>  <u>Other</u>  <u>Comment:</u>  <u>Site Condition:</u>  <u>Proposed Start Date:</u> 10/1 /2025</p>										
<b>13 72172013-Cut</b>	59.8	42220 - Natural Jack Pine	Poletimber Poor	57	1-50	Harvest	Other - Specify	3302 - Low Density Conifer Trees		No
<p><u>Prescription</u> Harvest the merch JP-RM. Cut the aspen 2"+ DBH.  <u>Specs:</u>  <u>Next Step</u>  <u>Treatments:</u>  <u>Acceptable</u>  <u>Regen:</u>  <u>Other</u>  <u>Comment:</u>  <u>Site Condition:</u>  <u>Proposed Start Date:</u> 10/1 /2025</p>										
<b>15 72172015-Cut</b>	4.2	42110 - Planted Red Pine	Poletimber Well	64	171-200	Harvest	Low Thinning	4211 - Planted Red Pine	Even-Aged	No
<p><u>Prescription</u> Thin to 120 BA. Mark to ensure minimum 12-foot wide operational paths. Misc species may be designated for removal except avoid cutting  <u>Specs:</u> the xlog open-grown trees unless needed for operability.  <u>Next Step</u>  <u>Treatments:</u>  <u>Acceptable</u>  <u>Regen:</u>  <u>Other</u>  <u>Comment:</u>  <u>Site Condition:</u>  <u>Proposed Start Date:</u> 10/1 /2025</p>										
<b>16 72172016-Monitor</b>	29.5	4191 - Mixed Upland Deciduous with Conifer	Sapling Poor	7	Immature	Monitoring	Natural Regen (Re-Inventory)	4122 - Oak, Pine	Even-Aged	No
<p><u>Prescription</u> check regen  <u>Specs:</u>  <u>Next Step</u>  <u>Treatments:</u>  <u>Acceptable</u> Variable distribution in oak, pine, RM and aspen, with upland shrub inclusions.  <u>Regen:</u>  <u>Other</u>  <u>Comment:</u>  <u>Site Condition:</u>  <u>Proposed Start Date:</u> 10/1 /2033</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>17 72172017-Cut</b>	24.2	4191 - Mixed Upland Deciduous with Conifer	Sawtimber Well	107	51-80	Harvest	Shelterwood	4319 - Mixed Upland Forest	Two-Aged	No
<p><u>Prescription</u> Harvest the BRO &lt;24" DBH, and all JP, RM, A. Protect the oak regen.</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</u> Moderate stocking in RM, oak, pine &amp; aspen, with poorly-stocked inclusions.</p> <p><u>Regen:</u></p> <p><u>Other Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2025</p>										
<b>20 72172020-Cut</b>	18.5	4133 - Aspen, Mixed Pine	Poletimber Medium	47	51-80	Harvest	Clearcut with Retention	4133 - Aspen, Mixed Pine	Two-Aged	No
<p><u>Prescription</u> Final harvest with island retention. Also leave the oak and some of the xlog RP-WP. Protect the oak &amp; pine regen. Protect survey corner</p> <p><u>Specs:</u> witness trees. Add drumming log spec.</p> <p><u>Next Step</u> Monitoring, Natural Regen (Re-Inventory)</p> <p><u>Treatments:</u></p> <p><u>Acceptable</u> Aspen with pine, oak, and upland shrub inclusions.</p> <p><u>Regen:</u></p> <p><u>Other Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2025</p>										
<b>27 72172027-Cut</b>	32.1	4112 - Maple, Beech, Cherry Association	Sawtimber Well	95	111-140	Harvest	Group Selection	411 - Northern Hardwood	Even-Aged	No
<p><u>Prescription</u> Thin to 80 sq. ft. Salvage the beech. Cut all aspen. Create gaps where the aspen will be sprouting. Also focus regen gaps by the quality</p> <p><u>Specs:</u> red oak and other minor species such as paper birch and black cherry. Maintain the trace misc species.</p> <p><u>Next Step</u> Monitoring, Natural Regen (Re-Inventory)</p> <p><u>Treatments:</u></p> <p><u>Acceptable</u> Aspen and northern hardwoods in the gaps.</p> <p><u>Regen:</u></p> <p><u>Other Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2025</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>29 72172029-Cut</b>	40.0	42110 - Planted Red Pine	Sawtimber Well	67	141-170	Harvest	Low Thinning	4211 - Planted Red Pine	Even-Aged	No
<p><u>Prescription</u> Thin to 120 BA. Mark to ensure minimum 12-foot wide operational paths. Where slopes increase, mark operational paths perpendicular to the slope (across rows) to allow for uphill ops where sidehill ops are inadvisable. Misc species may be designated for removal except avoid cutting the xlog open-grown trees unless needed for operability.</p> <p><u>Specs:</u></p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable Regen:</u></p> <p><u>Other Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2025</p>										
<b>33 72172033-Cut</b>	45.6	4110 - Sugar Maple Association	Sawtimber Well	85	111-140	Harvest	Group Selection	411 - Northern Hardwood	Two-Aged	No
<p><u>Prescription</u> Thin to 80 BA. Favor for release the younger age class of HM-basswood poles. Maintain the trace misc species such as hemlock and yellow birch. Create gaps where the aspen occurs.</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> Aspen and northern hardwoods in the gaps.</p> <p><u>Other Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2025</p>										
<b>35 72172035-Cut</b>	3.1	42110 - Planted Red Pine	Sawtimber Well	66	171-200	Harvest	Low Thinning	4211 - Planted Red Pine	Even-Aged	No
<p><u>Prescription</u> Thin to 120 BA. Mark to ensure minimum 12-foot wide operational paths.</p> <p><u>Specs:</u></p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable Regen:</u></p> <p><u>Other Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2025</p>										
<b>37 72172037-Cut</b>	17.7	4111 - S.Maple, Hard Mast Association	Sawtimber Well	94	81-110	Harvest	Crown Thinning	411 - Northern Hardwood	Two-Aged	No
<p><u>Prescription</u> Thin to 80 BA and release crop trees on the SE ~7 acres where the stocking &amp; quality are higher. Remove the beech, aspen, &amp; low-quality RM across the remainder.</p> <p><u>Specs:</u></p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable Regen:</u></p> <p><u>Other Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2025</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>39 72172039-Cut</b>	26.5	42110 - Planted Red Pine	Sawtimber Well	67	201+	Harvest	Low Thinning	4211 - Planted Red Pine	Even-Aged	No
<p><u>Prescription</u> Thin to 120 BA. Mark to ensure minimum 12-foot wide operational paths. Misc species may be designated for removal except avoid cutting the xlog open-grown trees unless needed for operability. There may be embedded fencewire near the south edge.</p> <p><u>Specs:</u></p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable Regen:</u></p> <p><u>Other Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2025</p>										
<b>42 72172042-Cut</b>	40.4	4110 - Sugar Maple Association	Sawtimber Well	98	111-140	Harvest	Crown Thinning	411 - Northern Hardwood	Two-Aged	No
<p><u>Prescription</u> Thin to 80 BA, releasing crop trees. Mark out gaps to release pockets of advanced HM regen.</p> <p><u>Specs:</u> Exclude the steep hill north of the RP plantation stand 35. The draft Rx boundary has been edited to approximate the proposed exclusion.</p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable Regen:</u></p> <p><u>Other Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2025</p>										
<b>45 72172045-Cut</b>	75.6	4116 - Mixed N. Hardwood - Aspen	Sawtimber Well	86	81-110	Harvest	Clearcut with Retention	4139 - Aspen, Mixed Deciduous	Two-Aged	No
<p><u>Prescription</u> Cut 2"+ DBH except protect the HM &amp; basswood less than 8" DBH, leave the trace misc species such as yellow birch, and exclude a retention island in the better-quality patch of thinned NH off the SW end of stand 47. Protect serviceberry but cut the ironwood 2"+ DBH. Add drumming log &amp; shortwood specs. The draft Rx boundary has been edited to approximate the proposed exclusion.</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> Aspen and northern hardwoods.</p> <p><u>Other Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2025</p>										
<b>46 72172046-Cut</b>	12.9	42110 - Planted Red Pine	Sawtimber Well	59	201+	Harvest	Low Thinning	4211 - Planted Red Pine	Even-Aged	No
<p><u>Prescription</u> Thin to 120 BA. Mark to ensure minimum 12-foot wide operational paths. Where slopes increase, mark operational paths perpendicular to the slope (across rows) to allow for uphill ops where sidehill ops are inadvisable. Misc species may be designated for removal except avoid cutting the xlog open-grown trees unless needed for operability. Check LCRC and protect any survey corner witness trees.</p> <p><u>Specs:</u></p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable Regen:</u></p> <p><u>Other Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2025</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
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<b>47</b>	<b>72172047-Cut</b>	6.7	42110 - Planted Red Pine	Sawtimber Well	59	171-200	Harvest	Low Thinning	4211 - Planted Red Pine	Even-Aged	No
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Prescription Thin to 120 BA. Mark to ensure minimum 12-foot wide operational paths. Misc species except WP may be designated for removal. The  
Specs: WP has poor form but some of it will need to be kept in order to have the residual BAs needed to ensure the RP maintains good form.

Next Step  
Treatments:

Acceptable  
Regen:

Other  
Comment:

Site Condition:

Proposed Start Date: 10/1 /2025

<b>48</b>	<b>72172048-Cut</b>	18.9	4110 - Sugar Maple Association	Sawtimber Well	93	111-140	Harvest	Crown Thinning	411 - Northern Hardwood	Two-Aged	No
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Prescription Thin to 80 BA, releasing crop trees. Mark out gaps to release pockets of advanced HM regen. Maintain the trace misc species such as  
Specs: hemlock and yellow birch.

Next Step  
Treatments:

Acceptable  
Regen:

Other  
Comment:

Site Condition:

Proposed Start Date: 10/1 /2025

<b>49</b>	<b>72172049-Cut</b>	4.6	42310 - Planted Spruce	Poletimber Well	59	171-200	Harvest	Clearcut with Retention	4116 - Mixed N. Hardwood - Aspen	Even-Aged	No
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Prescription Final harvest. For retention, leave the portion north of the pipeline access road by wellsite stand 64. Part of that island is WP that will  
Specs: contribute toward stand 50's retention. Protect the HM & basswood regen as much as possible; cut it cleanly where protection isn't possible. Spec shortwood ops. The draft Rx boundary has been edited to approximate the proposed exclusion.

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

Acceptable Northern hardwoods with aspen, spruce & WP.  
Regen:

Other  
Comment:

Site Condition:

Proposed Start Date: 10/1 /2025



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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>50 72172050-Cut</b>	7.6	42100 - Planted White Pine	Sawtimber Well	59	201+	Harvest	Clearcut with Retention	4116 - Mixed N. Hardwood - Aspen	Even-Aged	No
<p><u>Prescription</u> Final harvest. For retention, leave the WP north of the pipeline around wellsite stand 64. Protect the HM &amp; basswood regen as much as possible; cut it cleanly where protection isn't possible. Add shortwood spec. The draft Rx boundary has been edited to approximate the proposed exclusion.</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</u> Northern hardwoods with aspen, spruce and WP.</p> <p><u>Regen:</u></p> <p><u>Other</u></p> <p><u>Comment:</u></p> <p><u>Site Condition:</u></p> <p>Proposed Start Date: 10/1 /2025</p>										
<b>51 72172051-Cut</b>	23.1	4130 - Aspen	Poletimber Well	37	51-80	Harvest	Clearcut	413 - Aspen	Even-Aged	No
<p><u>Prescription</u> Clearcut this portion of stand 51 north of the pipeline concurrent with stand 52. Add drumming log spec. Retention won't be left within the portion harvested this YOY, but will be retained within the parent stand (see Site Condition layer).</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</u> Aspen with hardwoods.</p> <p><u>Regen:</u></p> <p><u>Other</u></p> <p><u>Comment:</u></p> <p><u>Site Condition:</u></p> <p>Proposed Start Date: 10/1 /2025</p>										
<b>52 72172052-Cut</b>	14.0	4130 - Aspen	Sawtimber Well	48	81-110	Harvest	Clearcut	413 - Aspen	Even-Aged	No
<p><u>Prescription</u> Clearcut without retention due to small, narrow stand and aspen objective. Cut stems 2"+ DBH except leave the trace misc species such as elm. Protect the dogwood &amp; juneberry but cut the ironwood 2"+ DBH. Add drumming log spec.</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</u> Aspen with hardwoods</p> <p><u>Regen:</u></p> <p><u>Other</u></p> <p><u>Comment:</u></p> <p><u>Site Condition:</u></p> <p>Proposed Start Date: 10/1 /2025</p>										
<b>54 72172054-Cut</b>	30.4	4139 - Aspen, Mixed Deciduous	Sawtimber Well	65	81-110	Harvest	Clearcut with Retention	4139 - Aspen, Mixed Deciduous	Two-Aged	No
<p><u>Prescription</u> Cut 2"+ DBH and site a retention island to protect the survey corner BTs by the road. Add drumming log &amp; shortwood specs. The draft Rx boundary has been edited to approximate the proposed exclusion.</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</u> Aspen and northern hardwoods.</p> <p><u>Regen:</u></p> <p><u>Other</u></p> <p><u>Comment:</u></p> <p><u>Site Condition:</u></p> <p>Proposed Start Date: 10/1 /2025</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
73 72172073-NF	0.9	790 - Other Bare/Sparsely Vegetated	Nonstocked	0	Unspecified	NonForestMgt	Other - Specify	310 - Herbaceous Openland		No
<p><u>Prescription</u> Dredged sand stockpile site for in-stream Sediment Basin (sand trap) #4. Sand deposits must be periodically spread out and stabilized using DNR-approved seed mixtures.</p> <p><u>Specs:</u></p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable</u></p> <p><u>Regen:</u></p> <p><u>Other</u></p> <p><u>Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2025</p>										
74 72172074-NF	1.0	310 - Herbaceous Openland	Nonstocked		Unspecified	NonForestMgt	Other - Specify	310 - Herbaceous Openland		No
<p><u>Prescription</u> Maintain the work pad for in-stream Sediment Basin (sand trap) #4. This periodic opening maintenance may include mowing &amp; brushing.</p> <p><u>Specs:</u></p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable</u></p> <p><u>Regen:</u></p> <p><u>Other</u></p> <p><u>Comment:</u></p> <p><u>Site Condition:</u> BMPs</p> <p><u>Proposed Start Date:</u> 10/1 /2025</p>										

**Approved Treatments:**

5 72172005-Monitor	69.9	310 - Herbaceous Openland	Nonstocked	0	Unspecified	Monitoring	Artificial Regen(3yr)	4211 - Planted Red Pine	Even-Aged	No
<p><u>Prescription</u> Regen survey</p> <p><u>Specs:</u></p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable</u> Planting to RP.</p> <p><u>Regen:</u></p> <p><u>Other</u> Percent to Treat = 100%</p> <p><u>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>31 72172031-Monitor</b>	19.1	4199 - Other Mixed Upland Deciduous	Sapling Poor	7	Immature	Monitoring	Natural Regen (Re-Inventory)	4131 - Aspen, Oak	Even-Aged	No
<p><u>Prescription</u> regen survey</p> <p><u>Specs:</u></p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable</u> Let stand regenerate naturally. Any combination of oak, aspen, hardwood, conifer is acceptable.</p> <p><u>Regen:</u></p> <p><u>Other</u> Percent to Treat = 100%</p> <p><u>Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 1 /6 /2022</p>										
<b>41 72172041.8_Monitor</b>	31.2	4110 - Sugar Maple Association	Sawtimber Medium	98	111-140	Monitoring	Natural Regen (Intermediate)	411 - Northern Hardwood	Uneven-Aged	No
<p><u>Prescription</u> MSU will monitor regen</p> <p><u>Specs:</u></p> <p><u>Next Step</u> Seeding, Hand Seed; Harvest, Crown Thinning</p> <p><u>Treatments:</u></p> <p><u>Acceptable</u> A diverse mix of northern hardwood species.</p> <p><u>Regen:</u></p> <p><u>Other</u> Percent to Treat = 100%</p> <p><u>Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2022</p>										
<b>44 72172044-Cut</b>	15.9	4119 - Mixed Northern Hardwoods	Sawtimber Well	85	81-110	Harvest	Clearcut with Retention	4139 - Aspen, Mixed Deciduous	Two-Aged	No
<p><u>Prescription</u> Cut 2"+ DBH except protect the HM &amp; basswood less than 8" DBH, leave the trace misc species such as yellow birch, and exclude the better quality NH cover that can be managed with stand 43 next YOY. Protect serviceberry but cut the ironwood 2"+ DBH. Add drumming log &amp; shortwood specs.</p> <p><u>Specs:</u> The draft Rx boundary was edited to approximate the proposed exclusion.</p> <p><u>Next Step</u> Monitoring, Natural Regen (Re-Inventory)</p> <p><u>Treatments:</u></p> <p><u>Acceptable</u> Aspen and northern hardwoods.</p> <p><u>Regen:</u></p> <p><u>Other</u></p> <p><u>Comment:</u></p> <p><u>Site Condition:</u></p> <p><u>Proposed Start Date:</u> 10/1 /2025</p>										

**Total Treatment 739.1**  
**Acres Proposed:**



## Report 4 – Site Conditions

Grayling Mgt. Unit  
Joan Charlebois: Examiner

Compartment: 172  
Year of Entry: 2026



### Availability for Management

Total Acres	Acres Available	Acres Avail		Dominant Site Conditions	Dominant Site Conditions						
		With Condition	Not Available		5B	5C	2G	3J	5A	5E	
363	314	<b>48</b>	1	Aspen	<b>33</b>	<b>15</b>					1
1	1	<b>0</b>	0	Bare/Sparsely Vegetated							
117	113	<b>0</b>	4	Herbaceous Openland				1			3
62	62	<b>0</b>	0	Jack Pine							
30	28	<b>0</b>	3	Low-Density Trees				3			
27	0	<b>0</b>	26	Lowland Conifers			8	18			
7	7	<b>0</b>	0	Lowland Shrub				0			
137	134	<b>0</b>	3	Mixed Upland Deciduous							3
22	22	<b>0</b>	0	Natural Mixed Pines							
543	502	<b>0</b>	41	Northern Hardwood					39		2
126	83	<b>0</b>	44	Oak					43		1
158	150	<b>7</b>	1	Red Pine		<b>7</b>		1			
26	20	<b>0</b>	5	Upland Mixed Forest				5			
5	5	<b>0</b>	1	Upland Spruce/Fir							1
22	22	<b>0</b>	0	Urban							0
5	5	<b>0</b>	0	Water				0			
8	8	<b>0</b>	0	White Pine							0
1,660	1,476	<b>55</b>	129	Total Forested Acres	<b>33</b>	<b>22</b>	8	28	81		11
	89%	<b>3%</b>	8%	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	0	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
2	Unavailable	5E: Long-Term Retention	0	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							

## Report 4 – Site Conditions

Grayling Mgt. Unit  
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3	Unavailable	5E: Long-Term Retention	1	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
4	Unavailable	5E: Long-Term Retention	3	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
5	Unavailable	5E: Long-Term Retention	1	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
6	Unavailable	5E: Long-Term Retention	1	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
7	Unavailable	5E: Long-Term Retention	1	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Ret islands left in stand 16's 2016 YOE harvest.							
8	Unavailable	3J: Water quality / BMPs (stream, river, or lake)	28	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Upper Manistee River's 175-foot Natural Rivers restricted cutting zone.							
9	Unavailable	5E: Long-Term Retention	3	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Retention islands left when stands 2 & 5 were cut in 2018 (#039-16).							

## Report 4 – Site Conditions

Grayling Mgt. Unit  
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10	<b>Available</b>	<b>5C: Delay treatment for age/size class diversity or exceptional site quality</b>	15	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Stand was flagged as an area to address due to the aspen age meeting silvicultural criteria.							
11	<b>Available</b>	<b>5C: Delay treatment for age/size class diversity or exceptional site quality</b>	7	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> This strip is at stocking levels that do not warrant thinning at this time (was thinned in 2020).							
12	<b>Unavailable</b>	<b>2G: Too wet (sensitive soils, does not include access issues)</b>	4	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Portion of the stand that falls outside of the Natural River 175-foot restricted cutting zone.							
13	<b>Unavailable</b>	<b>5A: Not able to obtain desirable regeneration</b>	43	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Large-diameter mature oak is unlikely to sprout vigorously. Beech common in the understory.							
14	<b>Unavailable</b>	<b>2G: Too wet (sensitive soils, does not include access issues)</b>	4	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Portion of the stand that falls outside of the Natural River 175-foot restricted cutting zone.							
15	<b>Unavailable</b>	<b>5A: Not able to obtain desirable regeneration</b>	39	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							

## Report 4 – Site Conditions

Grayling Mgt. Unit  
Joan Charlebois: Examiner

Compartment: 172  
Year of Entry: 2026



16	<b>Unavailable</b>	<b>5E: Long-Term Retention</b>	1	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Retention for proposed stand 49 harvest.							
17	<b>Unavailable</b>	<b>5E: Long-Term Retention</b>	0	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Retention for stand 50's proposed harvest.							
18	<b>Unavailable</b>	<b>5E: Long-Term Retention</b>	1	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Retention for the 23-acre portion of stand 51 that is proposed for 2026 YOE harvest. This Site Condition poly was created in order to track the acreage that needs to be maintained for that treatment but its location within the parent stand may be moved.							
19	<b>Available</b>	<b>5B: Maintain for regeneration purposes</b>	33	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Advanced HM & basswood regen has established under the aspen canopy.							

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	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	Dedicated Management Areas	Such areas are dedicated by the DNR Director for specific management uses through the promulgation of rules, as governed by Part 5, Department of Natural Resources, of the NREPA (MCL 324.502(2) and 324.504). Section 38 of the Administrative Procedures Act (MCL 24.238) provides for public requests for the promulgation of rules. This is an active program, with one proposed site currently under review by the DNR.
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.



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
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1 6220 - Alder/willow Nonstocked 7.2 Unspecified No Tag alder, salix & cattail marsh.

2 6129 - Mixed Coniferous Lowland Forest Sawtimber Medium 26.6 132 51-80 N/A

Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	4	Pole/Sap/Log	7	
Quaking Aspen	10	Log/Pole	10	59
Black Spruce	15	Pole/Log	8	
Balsam Fir	20	Pole/Sap/Log	7	
Northern White Cedar	35	Log/Pole	12	132
Red Pine	1	XLog	20	
White Pine	5	XLog/Log/Pole	22	
Tamarack	10	Pole/Log	8	

Sub-Canopy Species	Density	Avg. Height	Size
Black Cherry	Low	5 - 10 feet	Tall Shrub
Tag Alder	High	10 - 20 feet	Tall Shrub

Variable lowland stand occupies the floodplain, riser and first terrace above the Upper Manistee River. Dense pockets of NWC alternate with sparser spruce-fir, tamarack, aspen, RM, & WP-RP cover. The aspen, which occurs mostly in the north half, has been breaking up. Cedar seedlings were planted and caged in 2011 & 2012 along the river by Trout Unlimited volunteers, part of the Upper Manistee River Northern White Cedar Restoration Project (FTP C72-620).

3 42110 - Planted Red Pine Sawtimber Well 44.6 64 201+ N/A

Canopy Species	% Cover	Size Class	DBH	Age
Jack Pine	2	Log/Pole	12	
White Pine	2	Log/Pole	12	
Red Pine	95	Log/Pole	11	64
Red Maple	1	Log/Pole/Sap	11	

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

RP was planted in 1954 (775 TPA), then fill-in planted in 1960 (560 TPA). Set stand age to the second planting entry. The strip west of Ishwana Trail in Kalkaska Co was shifted over from comp 61106 when the gas transmission line corridor was made the boundary between the two FMUs. Before realignment, that strip was part of a marked thinning completed in 2020 (61-138-18), ave 110 sq ft residual. The Ishwana Tr corridor has sparse WP-RM-JP cover. The main block east of Ishwana Tr was row thinned in 2008 (72-006-06) and BAs ave 200+ excluding the small poorly-stocked pockets that dot the plantation. The stand's overall BA range does not factor in the recently-thinned west strip. Note that there is a strip of private land between the south edge of the stand and the cleared county road corridor.

4 3301 - Low Density Deciduous Trees Nonstocked 18.4 0 Unspecified No BC brush with scattered RM-WP-RP-BRO and small QA clones.

5 310 - Herbaceous Openland Nonstocked 76.7 0 Unspecified 4211 - Planted Red Pine

Sub-Canopy Species	Density	Avg. Height	Size
Black/Red (Hybrid) Oak	Trace	5 - 10 feet	Sapling
Red Pine	Trace	< 5 feet	Seeding
Jack Pine	Low	>20 feet	Pole
Jack Pine	Trace	5 - 10 feet	Sapling
Red Pine	Trace	>20 feet	Pole
White Oak	Trace	5 - 10 feet	Sapling

JP & a 16-acre swath of RP (all planted in 1960) was final harvested by Dec 2018 (#039-16) except island retention. A limited amount of targeted chopping was done Nov 2019 (C72-865) after completing the primary chopping site (comp 171 stand 17). Site was contract trenched May 2020. Helicopter site prep sprayed July 2021. Sept 2022 PUER found 95-100% control on the primary competitors BC-RM-O. 918 linear TPA PRT RP planted May 2022. Yr 1 regen survey Oct 2022 found 884 TPA RP at 100% FTG. RP seedlings seen above the snow are robust. Unsprayed S & E edges along the road/utility corridors have advanced oak regen. Plantation is scheduled for Yr 3 artificial regen survey this year.



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments																																																													
6	4113 - R.Maple, Conifer	Poletimber Medium	46.5	79	51-80	N/A	Stump-origin RM, with open-grown pine, widely-scattered xlog oak, and small patches of aspen, established on an old pine stumpfield in the Deward Tract. Traces of planted WS near stand 9. Cover drifts off either side of 50% canopy closure. There's not a distinct covertime line between this stand and stands 4, 13 & 12.																																																													
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7	310 - Herbaceous Openland	Nonstocked	2.0		Unspecified	Managed Opening	Maintained Wildlife Opening (former gas well site, plugged in 1987) was planted to rye in 2016 (W72-788).																																																													
8	310 - Herbaceous Openland	Nonstocked	4.9		Unspecified	Managed Opening	Maintained Wildlife Opening. Was planted to rye in 2016 (W72-788).																																																													
9	4311 - Pine, Aspen Mix	Poletimber Medium	25.7	53	51-80	N/A	Widely-spaced rows of WP, RP, & traces of WS were planted in the stand's east side when in private ownership; naturally-established RP-WP are scattered at low densities elsewhere. Aspen established in the west side of the stand, with fir increasing toward the river. Stump-origin RM is present throughout. The aspen colonized this old pine stumpfield over time, resulting in a range of ages and size classes. The oldest aspen is breaking up while the expanding perimeters are barely out of the sapling class. A former cabin site is located in the opening on the riverbend. Deer browse on the fir.																																																													
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10	3302 - Low Density Conifer Trees	Nonstocked	4.5		Unspecified	No	BC brush with scattered open-grown WP, RM, JP, fir, spruce & RP.																																																													
11	500 - Water	Nonstocked	5.4		Unspecified	No	Upper Manistee River																																																													
12	42290 - Natural Mixed Pine	Poletimber Well	22.2	56	81-110	N/A	Mixed pine stand established on an old pine stumpfield in the Deward Tract. Species distribution varies across the stand. JP increases to the north and oak increases to the south. The oak is predominantly open-grown and xlog. RP-WP are scattered throughout. Small QA clones in the NE. Well-developed WO-WP understory.																																																													
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<b>13</b>	42220 - Natural Jack Pine	Poletimber Poor	61.6	57	1-50	N/A	JP established in patches scattered across an old pine stumpfield in the Deward Tract. The expanding margins of those patches have advanced JP-RP regen; the interiors are mature J6 clustered around the original seed trees. Open-grown RP saw (doubles common) are scattered throughout and increase in the north end. RM & xlog open-grown oak increase in the SE along with small aspen clones. BC brush separates the patches of J6. JP patch size increases moving east & south.																																																														
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<b>14</b>	42110 - Planted Red Pine	Poletimber Well	3.9	28	1-50	N/A	A dozen rows of RP were planted in 1996 (C72-366) along Manistee River Road within the Deward Tract to discourage off-road driving. JP volunteers established within and between the rows. The stand is still transitioning into the pole class but the 30% benchmark has been met to call it pole overall.																																																														
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<b>15</b>	42110 - Planted Red Pine	Poletimber Well	4.2	64	171-200	N/A	RP was planted in 1960 around a few RM & xlog oak. Was row-thinned in 1998 (#055-96). The RP ave's 8-9" DBH. Row spacing is tight in places. A single plantation row isolated by the pipeline clearing is an inclusion in that road/utility corridor stand. BA swings ave'd 185, range 160-210.																																																														
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<b>16</b>	4191 - Mixed Upland Deciduous with Conifer	Sapling Poor	29.5	7	Immature	N/A	Mixed O-M-pine stand was final harvested in 2017 (#038-16), cutting 2"+ DBH except island retention (1.2 acres). The mature oak was noted as being poor quality and declining. Stump sprouts from the xlog oak tended to fizzle out if they sprouted at all. The smaller diameter oak stumps sprouted vigorously and that regen is largely secure. The single-stem WO seedling class is experiencing heavy deer browse and may never recruit. Advanced WO sapling cover increases in the W1/2 along with JP. There are patches of BTA regen and notable traces of RP seedlings. RM and BRO increase in the E1/2 but canopy closure decreases there and didn't pass the regen survey. Cover across the stand averages in the low end of the forested benchmark. As the JP-RP seedling layer continues to recruit, this stand will become a decent oak-pine-RM-A mix with lower stocked inclusions expected.																																																														
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Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
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**17** 4191 - Mixed Upland Deciduous with Conifer Sawtimber Well 24.5 107 51-80 N/A

Stand established in stages on an old pine stumpfield. Species distribution & stocking varies: the open-grown xlog oak component increases to the east, poor-quality stump-origin RM increases in the NW, and JP increases in the SW. RP-WP are scattered throughout. Canopy closure drifts off either end of 75%. There are pockets of advanced WO regen. The BRO ave diam is 24"+ but had to dial it back to 22" in Mifi in order for the split size class to become available.

Canopy Species	% Cover	Size Class	DBH	Age
Black/Red (Hybrid) Oak	40	XLog/Log/Pole	22	107
Red Maple	25	Pole/Sap/Log	7	75
Red Pine	5	Log/XLog/Pole	15	
White Pine	2	Pole/Log	8	
White Oak	5	Pole/Log/XLog	8	
Bigtooth Aspen	1	Pole/Sap/Log	7	
Jack Pine	20	Pole/Log	8	57

Sub-Canopy Species	Density	Avg. Height	Size
White Oak	Medium	Variable	Sapling
Black Cherry	Low	Variable	Tall Shrub

**18** 4130 - Aspen Poletimber Well 15.2 48 81-110 N/A

Final harvested in 1976 (#024-75), cutting merch A-O-M. Regenerated well to aspen with minor O-RM components. The south half occupies a valley, with diameters increasing on the upper slopes.

Canopy Species	% Cover	Size Class	DBH	Age
White Oak	4	Pole/Sapling	5	
Beech	5	Pole/Sapling	6	
Quaking Aspen	5	Pole	6	48
Black/Red (Hybrid) Oak	10	Pole/Sapling	6	48
Bigtooth Aspen	65	Pole	7	48
Red Pine	1	Log	12	
Red Maple	10	Pole/Sapling	5	48

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

**19** 4130 - Aspen Poletimber Well 80.8 47 81-110 N/A

Most of the stand was final harvested in 1977 (#022-74A), cutting merch A-O-M. On rolling hills that get steeper moving east. Regenerated well to BTA with RM and quality RO (clean-boled, weeded down to 1-2 stems per clump). The MD component occurs at low densities within the aspen clones and is the dominant cover between clones. Not enough of the BTA or RO has edged above 10" DBH to split the size class to Pole/Log. QA tends to occur on the lowest slopes & valleys. Trace species include HM, PB, Beech, YB, BC, PC, WO, WP, IW, & RP. The stand has two inclusions on the flats in the far SE that were not part of the 1977 harvest: 3 acres west of the pipeline had sparse cover before aspen spread into it from the adjacent harvest, and 1.5 acres E of the pipeline have mature RM-A-RO cover.

Canopy Species	% Cover	Size Class	DBH	Age
Sugar Maple	2	Pole/Sapling	5	47
Quaking Aspen	5	Pole	6	47
Bigtooth Aspen	60	Pole	7	47
Red Maple	20	Pole/Sapling	5	47
Beech	1	Sapling/Pole	3	47
Red Oak	10	Pole	7	47
Paper Birch	2	Pole	6	47

Sub-Canopy Species	Density	Avg. Height	Size
Witch Hazel	Low	5 - 10 feet	Tall Shrub
Maple Leaved Viburnum	Trace	< 5 feet	Tall Shrub
Beech	Trace	5 - 10 feet	Sapling
Serviceberry (Juneberry)	Trace	>20 feet	Tall Shrub

**20** 4133 - Aspen, Mixed Pine Poletimber Medium 18.5 47 51-80 N/A

Final harvested in 1977 (#022-74A), cutting merch A-O-M. Pockets of residual RP are scattered across the stand. The quaking aspen is poor quality, starting to top-die and break up. BC brush openings separate the declining clones. Advanced WO, WP & RP regen has established in patches. There are traces of quality pole-log oak that regenerated from the harvest and widely-scattered xlog residual oak.

Canopy Species	% Cover	Size Class	DBH	Age
Quaking Aspen	50	Pole	6	47
Black/Red (Hybrid) Oak	5	Log/XLog/Pole	12	
Red Maple	10	Sapling/Pole	3	
Red Pine	15	Log/XLog/Pole	15	75
Black Cherry	5	Pole	6	
White Pine	5	Pole/Sap/Log	8	
Bigtooth Aspen	5	Pole/Log	8	47
White Oak	5	Pole/Sap/Log	5	

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



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments																																																						
<b>21</b>	4125 - Black, N. Pin Oak	Sapling Well	33.2	16	1-50	N/A	O-M stand w/ minor PB-A-beech components was final harvested in 2008 (#006-06), spec'd to cut 2"+ DBH except oak regen & WP. The dominant BRO stump sprout regen is competitive with the lesser RM component. Most of the WO regen is in secure single-stems. There is a second minor age class in BRO & WO small pole residual that was sub-merch at time of harvest. The WO canopy record was used as a surrogate to represent that age class for both species, even though the WO has more in regen than resid. That was the only way to reflect the stand's two-aged condition within MiFI's current limitations. The harvest also left scattered (often xlog) mature oak. The aspen regen occurs mainly in the S and NE. Stand is on rolling hills. The canopy is more open in the main valley up the middle of the stand and in small frost pocket depressions, but cover overall averages above 75% canopy closure.																																																						
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<b>22</b>	4199 - Other Mixed Upland Deciduous	Poletimber Well	18.0	47	51-80	N/A	North half was final harvested in 1977 (#022-74A) & the south panhandle in 1976 (#024-75), cutting merch A-O-M. The lower slopes have less dense cover, smaller diameters, and more RM, WO, JP, QA. Moving upslope, the site quality and proportion in BRO & BTA increase. On rolling hills with old pine stumps.																																																						
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<b>23</b>	4125 - Black, N. Pin Oak	Poletimber Well	19.5	48	51-80	N/A	Final harvested in 1976 (#002-76), cutting merch hardwoods & aspen. Regenerated well to oak with RM-A. The canopy-dominant oak is generally clean-boled and weeding down to 1-3 stems per stump clump; traces are edging into the small saw class. The RM is stagnating. Stand occupies a ridge. Canopy closure decreases on the west margin; oak form is poorer there. The aspen occurs mainly on the lower slopes.																																																						
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<b>24</b>	4123 - Red Oak	Sawtimber Well	42.5	108	111-140	N/A	Stand occupies steeply rolling hills. The quality RO cover is fairly evenly split between the Log/Xlog size classes, with only a minor xxlog/open-grown component. The open-grown oak is mostly on dry southern aspects where stocking is lower. WO increases on the lower slopes. Beech increases on the hilltops, tends to occur in pockets, is going through progressing BBD mortality. RM throughout, generally suppressed to intermediate in crown position, but some canopy dominant sawtimber in the NE. There are a few small clumps of BTA. PB has been dropping out of the stand. Other trace species include HM, WP, RP, & QA.																																																						
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<b>25</b>	3301 - Low Density Deciduous Trees	Nonstocked	1.5	0	Unspecified	No	Opening with BC and encroaching aspen, WP, HM.																																																						



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
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<b>26</b>	4126 - White, Black, N. Pin Oak	Sapling Medium	31.2	7	Immature	N/A	Mature oak stand was shelterwood harvested in 2008 (#006-06) then final harvested in 2017 (#038-16), cutting 4"+ DBH except island retention. Most of the RM-A is from the first harvest. Most of the oak is from the second harvest although there is a minor 16-year old oak component. The sapling oak is vigorous and competitive in both age classes. The seedling WO is seeing heavy browse but the sapling classes are largely secure. Stand is on steeply rolling terrain. Aspen is mostly in the north end. FTP C72-613 for underplanting WP after the shelterwood was dropped through the 2016 YOE review. Stocking and species distribution varies across the stand but regen passed to M.O. (mixed O-M-A-pine) across at least 70% of the stand.
		<b>Canopy Species</b>		<b>% Cover</b>	<b>Size Class</b>	<b>DBH</b>	<b>Age</b>
		White Pine	1	Pole/Sap/Log	8		
		White Oak	1	Log/XLog	14		
		Bigtooth Aspen	5	Sapling	2	16	
		White Oak	35	Sapling	1	7	
		Black/Red (Hybrid) Oak	25	Sapling	1	7	
		Black/Red (Hybrid) Oak	2	Log/XLog	15	100	
		Beech	1	Sapling	1		
		Red Maple	30	Sapling	2	16	
		<b>Sub-Canopy Species</b>		<b>Density</b>	<b>Avg. Height</b>	<b>Size</b>	
		Serviceberry (Juneberry)	Trace	< 5 feet	Tall Shrub		
		White Oak	Low	< 5 feet	Seeding		
		Witch Hazel	Trace	5 - 10 feet	Tall Shrub		

<b>27</b>	4112 - Maple, Beech, Cherry Association	Sawtimber Well	32.1	95	111-140	N/A	Lower-quality NH stand on rolling to steep terrain has significant RM & beech components. HM (heavy to poles) is majority cover in the NE. Moving S & W, the RM & beech increase. The minor RO & overmature BTA components occur mostly in the W1/2. Best quality is seen in the minor RO component. Beech distribution is patchy; larger trees are dropping out due to BBD. Trace canopy species include WO, QA, & IW.
		<b>Canopy Species</b>		<b>% Cover</b>	<b>Size Class</b>	<b>DBH</b>	<b>Age</b>
		Paper Birch	1	Log/Pole	10		
		Black Cherry	1	Log/Pole	11		
		Sugar Maple	35	Pole/Log	9	95	
		Red Maple	35	Log/Pole/XLog	14	98	
		Bigtooth Aspen	3	Log/Pole/XLog	14		
		Red Oak	5	Log/XLog/Pole	16		
		Beech	20	Log/Pole/XLog	12		
		<b>Sub-Canopy Species</b>		<b>Density</b>	<b>Avg. Height</b>	<b>Size</b>	
		Ironwood	Low	Variable	Sapling		
		Beech	High	Variable	Sapling		

<b>28</b>	310 - Herbaceous Openland	Nonstocked	4.1		Unspecified	No	NF stand includes a former wellsite (SWEPI LP, State Frederic 4-20A, plugging approved), the wide cleared pipeline corridor that served it, and a half-acre of stand 32 that was salvaged in 2020 SW of the wellsite. RP has been establishing on the edges of the wellsite & pipeline corridor. WO, beech & HM have also been colonizing the corridor. Wellsite mostly snow-covered; some knapweed, grass, & exposed soil visible.
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<b>29</b>	42110 - Planted Red Pine	Sawtimber Well	40.0	67	141-170	N/A	RP was planted in 1957 around open-grown oak (much of it now xlog). Was thinned in 1998 (#055-96), cutting marked RP. Row spacing gets tight where they swerved to avoid residual oak. East half of the stand is solidly in the saw class except where suppressed by residual O-RM. Moving west, the cover is majority pole-sized. By the 30% MiFI rule, have to call the stand Log-sized overall. Took 11 BA swings: Total BA's ave 160, range 120-220, with 50% at 170+. The RP alone aves 140, range 40-180.
		<b>Canopy Species</b>		<b>% Cover</b>	<b>Size Class</b>	<b>DBH</b>	<b>Age</b>
		White Oak	3	XLog/Log	20		
		Black/Red (Hybrid) Oak	6	XLog/Log	22		
		Quaking Aspen	1	Pole/Log	8		
		White Pine	3	Pole/Log/Sap	7		
		Red Maple	2	Pole/Sap/Log	8		
		Red Pine	85	Log/Pole	10	67	
		<b>Sub-Canopy Species</b>		<b>Density</b>	<b>Avg. Height</b>	<b>Size</b>	
		Red Maple	Low	Variable	Sapling		
		Black/Red (Hybrid) Oak	Low	Variable	Sapling		
		Beech	Medium	Variable	Sapling		
		White Oak	Medium	Variable	Sapling		



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
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<b>30</b>	4199 - Other Mixed Upland Deciduous	Sapling Well	7.4	16	Immature	N/A	A-HWs stand was final harvested in 2008 (#006-06), spec'd to cut 2"+ DBH. Hill in the north is majority RM stump-sprout regen. Aspen increases moving downslope. Residual HM poles are scattered across the stand; the HM stump sprout regen has lower vigor than the RM. Trace amounts of beech, PB, IW & WP. A line of mature residual sawtimber was left along the pipelines & wellsite.			
<b>Canopy Species</b>		<b>% Cover</b>	<b>Size Class</b>	<b>DBH</b>	<b>Age</b>	<b>Sub-Canopy Species</b>		<b>Density</b>	<b>Avg. Height</b>	<b>Size</b>
Sugar Maple		10	Pole/Sapling	6		Beech		Trace	5 - 10 feet	Sapling
Red Maple		1	Log	11		Black Cherry		Low	5 - 10 feet	Tall Shrub
Beech		2	Sapling/Pole/Log	1						
White Oak		1	Log	11						
White Oak		2	Sapling	2						
Northern Pin Oak		3	Sapling	3	16					
Red Maple		45	Sapling	2	16					
Black/Red (Hybrid) Oak		1	Log	12						
Quaking Aspen		14	Sapling	2	16					
White Pine		1	Pole/Sapling	7						
Bigtooth Aspen		20	Sapling	3	16					

<b>31</b>	4199 - Other Mixed Upland Deciduous	Sapling Poor	21.6	7	Immature	N/A	Mixed O-M stand w/ minor beech-A-WP-basswood components was final harvested in 2017 (#038-16), cutting 2" + DBH except island retention. This small stand is on steeply rolling terrain dissected with roads and pipeline corridors. Regen is mostly RM but there is a vigorous BRO component that has recruited, along with patches of WO and dense aspen clones. Uneven stocking and species distribution (-25 to 75+% cover), varies with the terrain. Aspen increases on the lower slopes in the SW. Beech increases in the NE. Does not pass to moderate stocking across at least 70% of the stand but it is recommended to accept the current regen due to site limitations.			
<b>Canopy Species</b>		<b>% Cover</b>	<b>Size Class</b>	<b>DBH</b>	<b>Age</b>	<b>Sub-Canopy Species</b>		<b>Density</b>	<b>Avg. Height</b>	<b>Size</b>
Beech		10	Sapling	1		Blackberry/Raspberry		Low	< 5 feet	Tall Shrub
Black/Red (Hybrid) Oak		15	Sapling	1	7	Black Cherry		Low	5 - 10 feet	Tall Shrub
White Oak		5	Sapling	1	7	Serviceberry (Juneberry)		Low	5 - 10 feet	Tall Shrub
Bigtooth Aspen		10	Sapling	1	7	Beech		Low	< 5 feet	Seeding
Red Maple		1	Log	11		Witch Hazel		Low	5 - 10 feet	Tall Shrub
Red Maple		35	Sapling	1	7					
Quaking Aspen		20	Sapling	1	7					
White Pine		4	Log/Pole/Sap	12						

<b>32</b>	42110 - Planted Red Pine	Sawtimber Medium	16.5	66	111-140	N/A	RP plantation was established in 1957-1958 (800 TPA) and replanted in 1961 (320 TPA). Set plantation age to the dominant entry (1958). Was thinned in 1997 (#55-96), cutting marked RP & all A-HWs. Thinned again in 2020 (#001-18), 128 sq ft residual BA, with additional volume removed in salvaging a mortality pocket SW of the former wellsite (merged w/ that NF stand). No fading seen in the RP by that salvaged pocket. The harvest temporarily set back the hardwood understory.			
<b>Canopy Species</b>		<b>% Cover</b>	<b>Size Class</b>	<b>DBH</b>	<b>Age</b>	<b>Sub-Canopy Species</b>		<b>Density</b>	<b>Avg. Height</b>	<b>Size</b>
Red Pine		100	Log/Pole	11	66	White Oak		Low	Variable	Sapling
						Red Maple		Low	5 - 10 feet	Sapling
						Beech		Medium	Variable	Sapling
						Sugar Maple		Medium	Variable	Sapling



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments				
<b>33</b>	4110 - Sugar Maple Association	Sawtimber Well	45.6	85	111-140	N/A	Two-aged HW stand with a minor aspen component. Gaps in the 80+ year old log-pole canopy filled in with HM-basswood poles 50-55 years old. Due to a MiFI limitation, the younger HM & basswood could not be recorded separately, so the basswood canopy record was chosen as a surrogate to represent the minor younger age class present in both the HM & basswood. The mature to overmature aspen scattered across the stand has been breaking up. The stand picks up outlier RP by stand 39's plantation. There is xlog HM present but not enough to split the size class for that canopy record. That poor-quality xlog material tends to occur where cover was sparser, such as off the N peninsula of the RP plantation. Trace canopy species include AE, WP, PB, YB, IW.				
Canopy Species		% Cover	Size Class	DBH	Age	Sub-Canopy Species		Density	Avg. Height	Size	
Red Maple		2	Log/XLog/Pole	16		Beech		High	Variable	Sapling	
Red Pine		1	Log/Pole	11	67	Ironwood		Medium	Variable	Sapling	
Red Oak		4	Pole/Log/XLog	8							
Sugar Maple		60	Log/Pole	11	85						
Ironwood		1	Pole	7							
Bigtooth Aspen		4	Log/XLog	15	80						
Basswood		20	Log/Pole/XLog	14	53						
Beech		3	Log/Pole/XLog	11							
Quaking Aspen		5	Log/Pole/XLog	14							
<b>34</b>	4130 - Aspen	Poletimber Well	45.9	36	51-80	N/A	A-HWs stand was final harvested in 1988 (#010-87). Regenerated well to aspen with HM-RM, a minor but generally good-quality RO component, and traces of PB, beech, WP, WO, BC, pin cherry, & ironwood. Some of the oak is edging into the small saw class. There is residual xlog oak widely scattered near the perimeter in the S1/2. Stand is on rolling hills. Site quality & growth increases on the upper slopes. The QA mostly occurs in the valleys.				
Canopy Species		% Cover	Size Class	DBH	Age	Sub-Canopy Species		Density	Avg. Height	Size	
Beech		2	Sapling/Pole	3	36	Witch Hazel		Trace	5 - 10 feet	Tall Shrub	
Sugar Maple		10	Sapling/Pole	3	36	Serviceberry (Juneberry)		Trace	>20 feet	Tall Shrub	
Paper Birch		2	Pole	6	36						
Quaking Aspen		10	Pole	5	36						
Bigtooth Aspen		60	Pole	6	36						
Red Oak		5	Pole/Sap/Log	6	36						
White Pine		1	Pole/Log	8							
Red Maple		10	Sapling/Pole	4	36						
<b>35</b>	42110 - Planted Red Pine	Sawtimber Well	3.1	66	171-200	N/A	RP plantation patch was established in 1958 (800 TPA) and replanted in 1961 (320 TPA). Set plantation age to the dominant entry (1958). Was thinned in 1997 (#55-96), cutting marked RP & all A-HWs. The plantation is dotted with small gaps. BA swings ranged from 120-210. Full HW understory; reaches into the bottom of the canopy in the gaps.				
Canopy Species		% Cover	Size Class	DBH	Age	Sub-Canopy Species		Density	Avg. Height	Size	
Red Pine		100	Log/Pole	11	66	Sugar Maple		High	>20 feet	Sapling	
						Beech		Medium	>20 feet	Sapling	
						Red Oak		Trace	>20 feet	Sapling	
						Ironwood		Medium	>20 feet	Sapling	
<b>36</b>	4199 - Other Mixed Upland Deciduous	Sapling Poor	36.0	7	Immature	N/A	O-M-A stand w/ minor basswood & beech components was final harvested in 2017 (#038-16), cutting 2"+ DBH except island retention. On steeply rolling terrain. Beyond the dense aspen clones in the west, patches of oak in the south, and beech in the east, cover barely makes the forested benchmark with a combination of RM and oak. The oak is vigorous and most of it is secure, but there isn't a lot of it. What makes the canopy appear fuller are widespread pin cherry shrub thickets. Does not pass regen survey across at least 70% of the stand. Terrain would limit supplemental cultivation. The current cover will be accepted.				
Canopy Species		% Cover	Size Class	DBH	Age	Sub-Canopy Species		Density	Avg. Height	Size	
Red Maple		35	Sapling	1	7	Witch Hazel		Trace	5 - 10 feet	Tall Shrub	
White Oak		5	Sapling	1		Serviceberry (Juneberry)		Low	5 - 10 feet	Tall Shrub	
Quaking Aspen		5	Sapling	1	7	Blackberry/Raspberry		Low	< 5 feet	Tall Shrub	
Bigtooth Aspen		20	Sapling	1	7	Pin Cherry		High	5 - 10 feet	Tall Shrub	
Black/Red (Hybrid) Oak		4	XLog	22							
Beech		10	Sapling	1							
White Pine		1	Log/Pole/Sap	12							
Black/Red (Hybrid) Oak		20	Sapling	1	7						



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments		
<b>37</b>	4111 - S.Maple, Hard Mast Association	Sawtimber Well	17.7	94	81-110	N/A	<p>Most of the stand was thinned in 2008 (#001-06), cutting marked stems, cruised residual 75 sq ft. NW corner between the two wellsites was not part of the harvest. Terrain is flat in the SE 7 acres, then slopes down gradually to the NW. M9 cover in the SE is in the 110-140 BA range, with decent quality HM sawtimber and basswood. Moving downslope to the N &amp; W, tree quality, diameter, &amp; stocking decreases and the proportion in RM, BTA, beech, RO &amp; IW increases. QD plots in the poorer-quality N &amp; W dragged the stand's ave BA down. The HM has a significant portion in poles but they're in the same age class as the sawtimber. The aspen is mature to overmature. Trace canopy species include QA, PB, WO. Understory has full cover in IW-beech, and only traces of basswood &amp; HM regen. The RM regen is on the flats in the north end.</p>		
Canopy Species	% Cover	Size Class	DBH	Age	Sub-Canopy Species	Density		Avg. Height	Size
Ironwood	2	Pole	6		Beech	Medium		Variable	Sapling
Beech	10	Pole/Log	8		Bigtooth Aspen	Trace		>20 feet	Sapling
Bigtooth Aspen	7	Log/XLog	14		Ironwood	High		Variable	Sapling
Red Maple	10	Log/XLog/Pole	12		Basswood	Trace		>20 feet	Sapling
Sugar Maple	60	Log/Pole	11	94	Red Maple	Low		Variable	Sapling
Basswood	8	Log	12						
Red Oak	3	Log	15						
<b>38</b>	4119 - Mixed Northern Hardwoods	Sawtimber Well	38.7	93	111-140	N/A		<p>Low quality across all species except the RO. The HM is heavy to knobby poles and multiple-stem clumps. The beech is dying. The aspen is mature to overmature and breaking up. The RM is RM. DWD building as the beech &amp; aspen break up. Windthrow on the W edge by the cc. Species distribution varies across the stand. RM &amp; RO increase on the steeply rolling terrain in the W &amp; NW. The RO includes a minor xlog component 24-30" DBH. Beech increases in the SW &amp; NE. Bass increases in the SE. Proportion in HM increases moving east; HM quality improves somewhat on the east edge. Largest pockets of BTA are in the south end. The stand picks up outlier RP by the plantation. Trace canopy species include WP, YB. Beech regen throughout.</p>	
Canopy Species	% Cover	Size Class	DBH	Age	Sub-Canopy Species	Density	Avg. Height		Size
Red Maple	15	Log/Pole/XLog	12		Beech	High	Variable		Sapling
Red Pine	1	Log/Pole	12	67	Ironwood	Low	Variable		Sapling
Sugar Maple	45	Pole/Log	9	93					
Beech	15	Log/Pole	11						
Basswood	4	Log/Pole	11						
Red Oak	11	Log/XLog/Pole	16						
Bigtooth Aspen	7	Log/XLog	13						
Paper Birch	2	Pole/Log	8						
<b>39</b>	42110 - Planted Red Pine	Sawtimber Well	26.5	67	201+	N/A	<p>RP planted in 1957. Was thinned in 1997 (#055-96), cutting marked RP &amp; most A-HWs. Terrain is fairly level. Row spacing is tight (10') in places. E1/2 of the plantation is dotted with small gaps. BA swings outside of those gaps ranged 210-260, ave 240. The most suppressed RP poles have been dropping out. There is dense HM regen on the plantation perimeter; beech regen increases interior. Outlier RP (scattered &amp; in patches) are inclusions in the adjacent HW stands. Old RR tie fence runs just inside the stand's S edge.</p>		
Canopy Species	% Cover	Size Class	DBH	Age	Sub-Canopy Species	Density		Avg. Height	Size
Red Pine	95	Log/Pole	11	67	Red Oak	Trace		Variable	Sapling
Red Maple	1	Pole	7		Beech	Medium		Variable	Sapling
Sugar Maple	1	Log/Pole/XLog	14		Sugar Maple	Low		Variable	Sapling
Red Oak	1	Pole	7						
Quaking Aspen	1	Log/Pole	11						
Beech	1	Pole/Sapling	6						
<b>40</b>	4130 - Aspen	Poletimber Well	22.6	36	81-110	N/A	<p>A-HWs stand was final harvested in 1988 (#010-87). Regenerated well to aspen with northern HWs. High-end site for aspen; under 40 yet traces have edged into the saw class. The MD component is predominantly HM-basswood, with lesser amounts of PB, RM, quality RO, BC, IW, beech, WO, AE, &amp; YB. Traces of alternate leaf dogwood in the understory. Remains of an old RR tie pagewire fence runs just within the east edge.</p>		
Canopy Species	% Cover	Size Class	DBH	Age	Sub-Canopy Species	Density		Avg. Height	Size
Sugar Maple	10	Sapling/Pole	4	36	Sugar Maple	Medium		5 - 10 feet	Sapling
Red Maple	3	Pole	6	36	Serviceberry (Juneberry)	Trace		>20 feet	Tall Shrub
Bigtooth Aspen	30	Pole	8	36					
Paper Birch	3	Pole/Sapling	5	36					
Ironwood	1	Sapling/Pole	4						
Basswood	4	Pole/Sapling	5	36					
Red Oak	3	Pole/Sap/Log	7	36					
Black Cherry	1	Pole	7						
Quaking Aspen	45	Pole	7	36					



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments		
<b>41</b>	4110 - Sugar Maple Association	Sawtimber Medium	31.1	98	111-140	N/A	<p>This portion of stand 42 was harvested by variance in 2017 (#012-17) as part of the MWR hardwoods research project. The group selection treatment created 20 gaps (0.3 to 1 acre in size, totaling 12.5 acres), by cutting stems 2"+ DBH &amp; chipping the slash. The gaps were herbicided in June 2020 (FTP C72-850) &amp; scarified in July 2020. MSU established regen survey plots within the gaps &amp; the surrounding M9 &amp; will monitor them for at least five years following treatment. The stand had previously been thinned in 1997 (#057-96), cutting marked stems down to 80 sq ft cruised residual. The QD plots were taken only in the uncut M9 cover. The sawtimber quality is good. The 50-75% canopy closure category factors in the 40% of the stand area that was cut. Walked through 14 of the 20 gaps: they still had 80%+ snow cover but it was less than a foot deep. Visible above the snow: rubus, thistle, goldenrod, mullen. Where the ground was visible, it was largely grown over with sedge &amp; moss. Traces of IW &amp; HM regen were seen on the perimeters. Under the M9, there was a carpet of HM seedlings less than a foot tall, &amp; dense pockets of HM sapling cover 5-10 ft tall. That HM sapling cover was locally full but averaged out to medium because the distribution is patchy. Beech &amp; IW were minor understory associates. The Sub-Canopy records only reflect species and coverage under the M9.</p>		
Canopy Species	% Cover	Size Class	DBH	Age	Sub-Canopy Species	Density		Avg. Height	Size
Sugar Maple	97	Log/Pole	12	98	Ironwood	Low		Variable	Sapling
Basswood	3	Log	14		Sugar Maple	Medium		5 - 10 feet	Sapling
					Beech	Low		Variable	Sapling
					Sugar Maple	High	< 5 feet	Seeding	
<b>42</b>	4110 - Sugar Maple Association	Sawtimber Well	42.5	98	111-140	N/A	<p>NH stand was thinned to 80 BA in 1997 (#057-96), cutting marked stems except for on a steep hill along the SW edge. Species distribution, ave diameters, &amp; quality vary with the terrain. On the stand's upper slopes and plateau, the dominant cover is good quality HM sawtimber, with the exception of 2 acres south of an old fenline in the far SE that may have been grazed (quality &amp; diameter decrease there). The excluded steep hill on the SW edge has lower-quality cover, more beech, &amp; traces of BTA. Moving downslope to the west, HM quality decreases (smaller diam, more multiple-stem clumps), the proportion in RM crosses 50%, &amp; beech increases. Moving downslope to the north, cover stays predominantly HM but the quality decreases and it shifts to majority pole-sized. Trace canopy species include PB, YB, WO, IW. The understory HM is almost all on the plateau, with locally full coverage by stand 41.</p>		
Canopy Species	% Cover	Size Class	DBH	Age	Sub-Canopy Species	Density		Avg. Height	Size
Beech	3	Log/Pole/XLog	11		Sugar Maple	Trace		5 - 10 feet	Sapling
Basswood	5	Log/XLog	14		Beech	Medium		5 - 10 feet	Sapling
Red Maple	13	Log/XLog/Pole	14		Ironwood	Low		5 - 10 feet	Sapling
Bigtooth Aspen	2	Log	14		Sugar Maple	Low		< 5 feet	Seeding
Red Oak	1	XLog	24						
Black Cherry	1	Log	13						
Sugar Maple	75	Log/Pole/XLog	12	98					
<b>43</b>	4110 - Sugar Maple Association	Sawtimber Well	137.2	95	81-110	N/A	<p>Good quality HM stand was thinned in 2008 (#001-06), cutting marked stems, cruised residual 75 sq ft. Green-marked trees were spec'd to be girdled. Most of the snags created through girdling are on the ground. A few of the trees survived girdling. Uniform tree cover &amp; quality except in the NE peninsula &amp; south edge by the pipeline, where diameters are smaller and tree form isn't as good. Trace canopy species include QA, IW &amp; BC. Regen is heavy to IW-beech, with traces of basswood &amp; less than recordable levels of HM regen.</p>		
Canopy Species	% Cover	Size Class	DBH	Age	Sub-Canopy Species	Density		Avg. Height	Size
Yellow Birch	1	Log/Pole	14		Beech	Medium		5 - 10 feet	Sapling
Red Maple	1	Log	16		Ironwood	Medium		Variable	Sapling
Basswood	10	Log/XLog	15		Basswood	Trace		>20 feet	Sapling
Beech	1	XLog/Log	20		Blackberry/Raspberry	Medium		< 5 feet	Tall Shrub
Sugar Maple	87	Log/Pole/XLog	14	95					





Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments				
<b>44</b>	4119 - Mixed Northern Hardwoods	Sawtimber Well	21.1	85	81-110	N/A	Generally lower-quality HW sawtimber with aspen and a good-quality pole-sapling HW class. The log-xlog HM has a low proportion in crop tree stems except in the NE by stand 43. Pockets of quality HM & basswood regen established below the aspen and in larger gaps; some of the regen is now pole-sized (50-55 years old) and part of the canopy. Due to a MiFI limitation, the younger HM & basswood could not be recorded separately, so the basswood canopy record was chosen as a surrogate to represent the younger age class present in both the HM & basswood. IW regen throughout. The aspen is mature to overmature and is dropping out of the canopy. The stand picks up outlier RP by stand 46's plantation. Trace canopy species include AE, RM, YB, RO, BC & NPO.				
Canopy Species		% Cover	Size Class	DBH	Age	Sub-Canopy Species		Density	Avg. Height	Size	
Bigtooth Aspen		10	Log/XLog/Pole	15		Sugar Maple		Low	Variable	Sapling	
Ironwood		4	Pole	6		Ironwood		High	Variable	Sapling	
Beech		5	Pole/Log	9		Serviceberry (Juneberry)		Trace	>20 feet	Tall Shrub	
Basswood		15	Log/Pole/XLog	14	52	Beech		Low	5 - 10 feet	Sapling	
Sugar Maple		60	Log/Pole/XLog	12	85						
Red Pine		1	Log/Pole	12	59						
Quaking Aspen		5	Log/XLog/Pole	16							
<b>45</b>	4116 - Mixed N. Hardwood - Aspen	Sawtimber Well	78.2	86	81-110	N/A		Generally lower-quality HW sawtimber with a significant overmature aspen component and a good-quality pole-sapling HW class. The log-xlog HM has a decreasing proportion in crop tree stems moving south. The aspen has been breaking up for a while. Quality HM & basswood regen established below the aspen and in larger gaps; some of the regen is now pole-sized (50-55 years old) and recorded in the canopy. IW regen throughout. Beech regen under the M9. Heavy DWD from the aspen dropping out. Eleven acres south of the RP plantation were thinned in 2008 as part of stand 48, but aside from 3 acres of decent sawtimber in the SW, the quality is low. Trace species include AE, BC, WP, YB, RO, PB. The stand's ave aspen age is likely older than 60 years; the overmature cohort has so much rot that a younger-looking sound 14" DBH aspen was cored for age. BAs ranged 40-160, ave 103, with 1/3 of plots >110.			
Canopy Species		% Cover	Size Class	DBH	Age	Sub-Canopy Species			Density	Avg. Height	Size
Basswood		25	Log/Pole/XLog	12		Sugar Maple			Medium	Variable	Sapling
Quaking Aspen		30	Log/Pole	14	60	Beech			Medium	Variable	Sapling
Bigtooth Aspen		2	Log	13		Ironwood			High	>20 feet	Sapling
Ironwood		3	Pole/Sapling	6		Serviceberry (Juneberry)			Trace	>20 feet	Tall Shrub
Sugar Maple		35	Log/Pole/XLog	10	86	Basswood			Trace	>20 feet	Sapling
Beech		5	Log/Pole	11		Sugar Maple			Low	< 5 feet	Seeding
<b>46</b>	42110 - Planted Red Pine	Sawtimber Well	12.9	59	201+	N/A	RP was planted in 1965. Was thinned in 1997 (#055-96), cutting marked RP & all A-HWs. Stand occupies a valley; E1/2 is on a sidehill. Tight row spacing is common. Plantation is dotted with small gaps that have filled in with A-HWs. The largest gap in the SW is 0.4 acres. Outside of the gaps, BA swings ran 180-250. The most suppressed poles have been dropping out. Dense, tall HM understory.				
Canopy Species		% Cover	Size Class	DBH	Age	Sub-Canopy Species			Density	Avg. Height	Size
Red Pine		96	Log/Pole	11	59	Beech		Low	Variable	Sapling	
Quaking Aspen		4	Pole/Sapling	5	27	Sugar Maple		Full	>20 feet	Sapling	
<b>47</b>	42110 - Planted Red Pine	Sawtimber Well	6.7	59	171-200	N/A	RP was planted in 1965 along with 3 partial rows of WP in the middle of the stand. Was thinned in 1997 (#055-96), cutting marked RP & all A-HWs. The WP stocking did not hold up; tree form is poor, with crooks & forked tops common. The plantation is gappy; the largest opening is 0.2 acres on the SE edge, filled in with A-HWs. BA swings varied widely, from 120-230. Dense, tall HM understory.				
Canopy Species		% Cover	Size Class	DBH	Age	Sub-Canopy Species		Density	Avg. Height	Size	
Quaking Aspen		3	Pole/Sapling	5	27	Beech		Low	Variable	Sapling	
Red Pine		90	Log/Pole	11	59	Sugar Maple		Full	>20 feet	Sapling	
White Pine		7	Log/XLog	15	59						



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments	
<b>48</b>	4110 - Sugar Maple Association	Sawtimber Well	18.9	93	111-140	N/A	Decent quality NH stand was thinned in 2009 (#028-06), cutting marked trees and all aspen except those designated for girdling. Cruised residual 65 sq ft. Tsale prep had noted areas of lower quality, possibly due to past grazing. That low-quality peninsula S of the RP plantation has been shifted to stand 45. The stand 48 boundary now only includes the more intact M9 cover. Quality is best on the level ground in the south half, with trees growing mostly as single stems vs. in multiple stem clumps. Quality decreases moving downslope along the east edge (trees occur more in multiple-stem clumps & the proportion in basswood increases); the lower slopes were also shifted to stand 45. IW & beech regen throughout. The S1/2 on the flats also has pockets of dense HM regen. The HM seedling layer is being browsed; the 5-10' regen is secure. The canopy gaps that the HM recruited in were small (<50 ft). The basswood regen includes more basal sprouts on living sawtimber than stump sprouts or seed-origin saplings. Trace canopy species include YB, BC, AE, PB, & hemlock.	
<b>Canopy Species</b>		<b>% Cover</b>	<b>Size Class</b>	<b>DBH</b>	<b>Age</b>	<b>Sub-Canopy Species</b>		
Sugar Maple		70	Log/Pole/XLog	13	93	Black Cherry		
Basswood		25	Log/Pole/XLog	14		Basswood		
Bigtooth Aspen		1	Log	15		Ironwood		
Beech		3	Pole/Log/XLog	9		Sugar Maple		
Quaking Aspen		1	Log/XLog	14		Sugar Maple		
						Beech		
						Alternate-leaved Dogwood		
						Bigtooth Aspen		
<b>49</b>	42310 - Planted Spruce	Poletimber Well	5.5	59	171-200	N/A	WS planted in 1965 (1200 TPA). Picks up 0.2 acres of the WP plantation NW of the wellsite. Spruce on the open west edge have 100% LCR. Interior, the LCR is 25% or less but all dead branches persist down to the ground. Aside from self-thinning in the most suppressed stems, the spruce appears healthy. Mature aspen is scattered across the plantation; the overmature aspen has been breaking up.	
<b>Canopy Species</b>		<b>% Cover</b>	<b>Size Class</b>	<b>DBH</b>	<b>Age</b>	<b>Sub-Canopy Species</b>		
Quaking Aspen		6	Log/Pole	12		Sugar Maple		
White Spruce		90	Pole/Log	9	59	Black Cherry		
Black Cherry		1	Pole	7				
White Pine		3	Log/Pole/XLog	14	59			
<b>50</b>	42100 - Planted White Pine	Sawtimber Well	7.9	59	201+	N/A	WP planted in 1965 (800 TPA). Crook, forked tops, & heavy persistent dead limbs are nearly universal. The most suppressed poles have been dropping out of the stand. Most of the stand's aspen is in its N1/4; the oldest aspen has been breaking up. Well-established HM understory with traces of basswood.	
<b>Canopy Species</b>		<b>% Cover</b>	<b>Size Class</b>	<b>DBH</b>	<b>Age</b>	<b>Sub-Canopy Species</b>		
Black Cherry		1	Pole	8		Sugar Maple		
Quaking Aspen		7	Log/Pole	10				
White Pine		92	Log/Pole	10	59			
<b>51</b>	4130 - Aspen	Poletimber Well	102.6	37	51-80	N/A	Basswood-A-HM stand was final harvested in 1987 (#017-87), spec'd to cut 2"+ DBH. Regenerated well to A-HWs, with small NF inclusions and widely-scattered residual HM. Terrain slopes down to the south. Aspen on the lower slopes (mostly QA) is smaller-diam. BTA increases uphill; edging into the saw class north of the pipeline. Trace species include AE, WO, BRO, RP, WP, WS, balsam poplar, hawthorn & alternate leaf dogwood.	
<b>Canopy Species</b>		<b>% Cover</b>	<b>Size Class</b>	<b>DBH</b>	<b>Age</b>	<b>Sub-Canopy Species</b>		
Basswood		3	Pole/Sapling	5	37	Basswood		
Quaking Aspen		45	Pole	7	37	Black Cherry		
Red Maple		5	Pole/Sapling	7	37	Serviceberry (Juneberry)		
Ironwood		5	Sapling/Pole	3		Sugar Maple		
Black Cherry		2	Pole	7		Red Maple		
Sugar Maple		10	Pole/Sapling	6	37	Ironwood		
Bigtooth Aspen		30	Pole	8	37			



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
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<b>52</b>	4130 - Aspen	Sawtimber Well	14.0	48	81-110	N/A	
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Canopy Species	% Cover	Size Class	DBH	Age
Black Cherry	1	Pole	7	
Red Maple	3	Pole/Log	7	
Ironwood	2	Pole/Sapling	6	
Sugar Maple	15	Pole/Sap/Log	6	
Bigtooth Aspen	50	Log/Pole	11	48
American Elm	1	Pole	7	
Basswood	3	Pole	6	48
Quaking Aspen	25	Pole/Log	9	48

Sub-Canopy Species	Density	Avg. Height	Size
Serviceberry (Juneberry)	Trace	>20 feet	Tall Shrub
Sugar Maple	Low	Variable	Sapling
Beech	Trace	5 - 10 feet	Sapling
Ironwood	Medium	Variable	Sapling
Alternate-leaved Dogwood	Trace	10 - 20 feet	Tall Shrub

Merch A-HWs were cut across most of the stand in 1976 (#034-74, #052-76, #074-76). leaving scattered poor-quality log-xlog HM (mostly in an E-W swath across the middle of the stand). The BTA is solidly in the saw class. The QA is declining. IW-HM regen is recruiting into the canopy where the QA is dropping out.

<b>53</b>	4110 - Sugar Maple Association	Sawtimber Well	33.2	94	81-110	N/A	
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Canopy Species	% Cover	Size Class	DBH	Age
Sugar Maple	64	Log/Pole/XLog	12	94
Beech	10	Log/Pole/XLog	12	
Bigtooth Aspen	1	Log/XLog	15	
Quaking Aspen	3	Log/XLog	16	
Yellow Birch	1	Log/Pole/XLog	12	
Ironwood	1	Pole	6	
Basswood	20	Log/XLog/Pole	14	

Sub-Canopy Species	Density	Avg. Height	Size
Ironwood	Medium	Variable	Sapling
Beech	Medium	Variable	Sapling

Long, narrow NH stand on a shallow ridge. HM-basswood-beech distribution varies across the stand. The beech is breaking up. The scattered overmature aspen have been dropping out of the canopy. Heavy beech-IW understory. Quality decreases on the margins--and this stand has a lot of edge. Trace canopy species include AE & PB. BAs ranged 60-130, with half of plots 110 or less and half 120-130. The lower-quality 4.5 acres of this stand south of the wellsite were shifted to stand 54.

<b>54</b>	4139 - Aspen, Mixed Deciduous	Sawtimber Well	31.4	65	81-110	N/A	
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Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	5	Pole/Log/Sap	7	
Bigtooth Aspen	7	Log/Pole/XLog	12	
Sugar Maple	30	Log/XLog/Pole	12	98
Yellow Birch	1	Pole/Log/XLog	8	
Beech	5	Log/Pole/XLog	11	
Black Cherry	2	Log/Pole	10	
Quaking Aspen	40	Log	14	65
Ironwood	4	Pole/Sapling	6	
Basswood	5	Log/XLog/Pole	14	
Black/Red (Hybrid) Oak	1	Pole/Log	9	

Sub-Canopy Species	Density	Avg. Height	Size
Beech	Medium	Variable	Sapling
Sugar Maple	Medium	Variable	Sapling
Ironwood	Medium	Variable	Sapling
Serviceberry (Juneberry)	Trace	>20 feet	Tall Shrub
Basswood	Low	Variable	Sapling

Shallow valley stand of overmature aspen and two-aged HWs. The QA (mostly on the lower terrain) has been breaking up. Dense single-stem HM & basswood regen established below the aspen, along with IW regen; some of that HM-bass is pole-sized & recorded in the canopy. Moving uphill toward Deward Rd, there are pockets of generally poor-quality northern HW sawtimber & small BTA clones. Moving uphill in the SW, the stand picks up 4.5 acres of low-quality HWs that had been part of stand 53. Trace species include PB, AE, WP, WS. The beech is breaking up. Dense beech-IW regen established below the HWs. The ave aspen age is likely older than 65 ys; the overmature cohort is loaded with conks so a smaller (12" DBH) sound aspen was cored for age.



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments																																																																						
<b>55</b>	4130 - Aspen	Sawtimber Well	32.6	49	51-80	N/A	Merch A-HWs except basswood were final harvested across most of the stand in 1975 (#033-74). Aspen, HM, basswood, & RM regenerated after the harvest. In addition to the scattered residual basswood within the harvest, there are two uncut mature inclusions: a 2-acre strip along the south edge & a 3-acre patch on the E-center edge (both with HM, basswood, beech & scattered overmature aspen). The HM in the E patch tends to have poor form. The beech has BBD. The pole regen & log residual had to be listed in combined canopy records for the HM & basswood due to a MiFI limitation. The 49-year old QA is declining. Dense advanced HM regen established below the aspen and is reaching into the canopy. Beech & IW regen established under the M9. Stand has tall serviceberry, some of it pole-sized and in the canopy. There are also traces of canopy PB, YB, & RO. See Draft Rx notes.																																																																						
<table border="1"> <thead> <tr> <th>Canopy Species</th> <th>% Cover</th> <th>Size Class</th> <th>DBH</th> <th>Age</th> </tr> </thead> <tbody> <tr> <td>Basswood</td> <td>10</td> <td>Log/Pole/XLog</td> <td>12</td> <td>95</td> </tr> <tr> <td>Beech</td> <td>2</td> <td>Log/Pole/XLog</td> <td>14</td> <td></td> </tr> <tr> <td>Bigtooth Aspen</td> <td>5</td> <td>Log/Pole</td> <td>10</td> <td>49</td> </tr> <tr> <td>Black Cherry</td> <td>1</td> <td>Pole</td> <td>8</td> <td>49</td> </tr> <tr> <td>Ironwood</td> <td>2</td> <td>Pole/Sapling</td> <td>5</td> <td></td> </tr> <tr> <td>Sugar Maple</td> <td>20</td> <td>Pole/Sap/Log</td> <td>6</td> <td></td> </tr> <tr> <td>Red Maple</td> <td>5</td> <td>Pole</td> <td>7</td> <td>49</td> </tr> <tr> <td>Quaking Aspen</td> <td>55</td> <td>Pole/Log</td> <td>9</td> <td>49</td> </tr> </tbody> </table>		Canopy Species	% Cover	Size Class	DBH	Age		Basswood	10	Log/Pole/XLog	12	95	Beech	2	Log/Pole/XLog	14		Bigtooth Aspen	5	Log/Pole	10	49	Black Cherry	1	Pole	8	49	Ironwood	2	Pole/Sapling	5		Sugar Maple	20	Pole/Sap/Log	6		Red Maple	5	Pole	7	49	Quaking Aspen	55	Pole/Log	9	49	<table border="1"> <thead> <tr> <th>Sub-Canopy Species</th> <th>Density</th> <th>Avg. Height</th> <th>Size</th> </tr> </thead> <tbody> <tr> <td>Sugar Maple</td> <td>High</td> <td>&gt;20 feet</td> <td>Sapling</td> </tr> <tr> <td>Beech</td> <td>Low</td> <td>5 - 10 feet</td> <td>Sapling</td> </tr> <tr> <td>Ironwood</td> <td>Medium</td> <td>&gt;20 feet</td> <td>Sapling</td> </tr> <tr> <td>Serviceberry (Juneberry)</td> <td>Low</td> <td>&gt;20 feet</td> <td>Tall Shrub</td> </tr> <tr> <td>Basswood</td> <td>Trace</td> <td>Variable</td> <td>Sapling</td> </tr> <tr> <td>Serviceberry (Juneberry)</td> <td>Trace</td> <td>&gt;20 feet</td> <td>Pole</td> </tr> </tbody> </table>		Sub-Canopy Species	Density	Avg. Height	Size	Sugar Maple	High	>20 feet	Sapling	Beech	Low	5 - 10 feet	Sapling	Ironwood	Medium	>20 feet	Sapling	Serviceberry (Juneberry)	Low	>20 feet	Tall Shrub	Basswood	Trace	Variable	Sapling	Serviceberry (Juneberry)	Trace	>20 feet	Pole
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<b>56</b>	3302 - Low Density Conifer Trees	Nonstocked	1.9	0	Unspecified	No	Opening with BC and colonizing WS, HM, WP, RP & A.																																																																						
<b>57</b>	3301 - Low Density Deciduous Trees	Nonstocked	1.1	0	Unspecified	No	Grassy opening with BC, staghorn sumac, ground juniper, and encroaching A-HM.																																																																						
<b>58</b>	310 - Herbaceous Openland	Nonstocked	8.4	0	Unspecified	No	Cleared pipeline, powerline, and road corridor.																																																																						
<b>59</b>	110 - Low Intensity Urban	Nonstocked	6.2		Unspecified		Fenced H2S processing facility. Lambda Energy, State Frederic 3-20. Fence picks up some wooded inclusions in the SW.																																																																						
<b>60</b>	310 - Herbaceous Openland	Nonstocked	0.8		Unspecified		Natural gas well: Riverside Energy, State Frederic, C4-21																																																																						
<b>61</b>	110 - Low Intensity Urban	Nonstocked	1.9		Unspecified		Oil well: Lambda Energy, State Frederic 2-21 HD1																																																																						
<b>62</b>	3301 - Low Density Deciduous Trees	Nonstocked	2.9	0	Unspecified	No	Valley opening with BC and encroaching HM-A.																																																																						
<b>63</b>	310 - Herbaceous Openland	Nonstocked	1.1		Unspecified		Natural gas well: Riverside Energy, State Frederic VII B3-21																																																																						
<b>64</b>	3102 - Grass	Nonstocked	2.2		Unspecified		Oil well site: Lambda Energy Resources, State Frederic 3-21																																																																						
<b>65</b>	3104 - Degraded	Nonstocked	0.9		Unspecified		Natural gas well: Riverside Energy, State Frederic VII, D3-21																																																																						
<b>66</b>	310 - Herbaceous Openland	Nonstocked	0.9		Unspecified		Natural gas well: Riverside Energy, State Frederic VII, B1-21																																																																						



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
67	310 - Herbaceous Openland	Nonstocked	1.8		Unspecified	Managed Opening	Plugged natural gas well: Lambda Energy, State Frederic 2-20. Wellsite reclamation started in 2023. Tree spade was used to transplant saplings onto the site, including RP, basswood, IW, HM, and a scotch pine. Too much snow to see groundcover. Access road was closed off with snowfence and signs.
68	310 - Herbaceous Openland	Nonstocked	0.8		Unspecified	No	Natural gas well: Riverside Energy, State Frederic VII B3-20
69	310 - Herbaceous Openland	Nonstocked	1.3		Unspecified		Natural gas well: Lambda Energy, State Frederic 1-20
70	3102 - Grass	Nonstocked	2.3		Unspecified		Natural gas well: Lambda Energy, State Frederic 3-20
71	3102 - Grass	Nonstocked	1.0		Unspecified		Natural gas well: Riverside Energy, State Frederic VII B4-19
72	122 - Road/Parking Lot	Nonstocked	13.9	0	Unspecified	No	County road and pipeline corridors. Uncleared strip with variable tree cover between the two. Created this stand during sale closing updates for stand 5.
73	790 - Other Bare/Sparsely Vegetated	Nonstocked	0.9	0	Unspecified		Sand stockpiling site for Sediment Basin #4.
74	310 - Herbaceous Openland	Nonstocked	1.0		Unspecified		Work pad for in-stream Sediment Basin (sand trap) #4. FTP F72-535 was in effect for the 2006 YOY. Pipeline crosses through south end.
75	310 - Herbaceous Openland	Nonstocked	6.0	0	Unspecified	No	Cleared pipeline and road corridors.
76	310 - Herbaceous Openland	Nonstocked	1.0		Unspecified	No	Natural gas well: Riverside Energy, State Frederic VII D4-19