ROSCOMMON FOREST MANAGEMENT UNIT
COMPARTMENT REVIEW PRESENTATION

COMPARTMENT # 194 ENTRY YEAR: 2011

Compartment Acreage: County: Roscommon

Revision Date: 11-03-2008

Stand Examiner: J. Hartman

Legal Description: T23N R1W sections 1, 12, 13, 24

Management Goals: Thin northern red oak stands and overstocked pine plantations. Regenerate pin oak/ quaking aspen mixtures. Stagger bigtooth aspen ages by harvesting a portion of the largest stands in the compartment. Prioritize treatments as there is a large amount of acreage meeting silvicultural criteria.

Soil and Topography: The hills on the west side are a mix of Graycalm and Montcalm sands creating a high end PArVHa/PArVVb transition habitat type. The flat areas on the east side are a mix of Rubicon and AuGres soils with high water tables and intersecting wetlands creating a PArVHa/PArVCo habitat type transition in many areas. The northeast corner of the compartment is also coded as a Rubicon sand, but falls into the AFO habitat type.

Ownership Patterns, Development, and Land Use in and Around the Compartment: State ownership is fragmented. The compartment is also located at the edge of overall state ownership. Large farmland areas are located directly to the east.

Unique, Natural Features: Hill's thistle record to northwest. Alleghany plum to west. Rough fescue to northwest. Historical fragile prickly-pear record to southwest. Kirtland's warbler record to the north. Bald eagle records to west and south. Common loon documented to east and west. Wood turtle to northeast. Potential for massasauga and Blanding's turtle in marshes and nearby uplands. Potential for goshawk.

Archeological, Historical, and Cultural Features: A Late Woodland Era pit was excavated long ago (prior to 1930) in section 20. The precise location is unknown. There is also a homestead foundation just off of Lentz Road in section 22 and an old mill site in the southeast corner of stand 90.

Special Management Designations or Considerations: None designated at this time.

Watershed and Fisheries Considerations: The headwaters of Prior Creek originate in the northeast corner of the compartment. Part of the Rifle River Watershed.

Wildlife Habitat Considerations:

Mineral Resource and Development Concerns and/or Restrictions: Surface sediments consist of ice-contact and glacial outwash sand and gravel and postglacial alluvium. The glacial drift thickness varies between 200 and 400 feet. Beneath the glacial drift is the Mississippian Michigan Formation. The Michigan is quarried for gypsum elsewhere in the State. A gravel pit is located in Section 10 and potential should be

good. The Rose City Fields are located four miles to the north. The fields have produced over 9.3 million BO and 9.9 Bcf gas from the Devonian Richfield Formation and are in secondary recovery operations currently. The main field also produces from the Prairie du Chien, and has produced over 31 Bcf gas and 200,000 BO. Most of the State lands in the Compartment are leased for oil and gas exploration.

Vehicle Access: There is relatively good access to most areas except for the contiguous ownership at the edge of Esmond Road. Esmond is plowed until it hits state ownership.

Survey Needs: None needed at this time.

Recreational Facilities and Opportunities: The Ambrose Lake to Ogemaw hills route; a combined ORV and MCCCT route exists in the southwest corner.

Fire Protection: The is good access and little in the way of hazardous fuels.

Additional Compartment Information:

- **The following 5 reports from the Operations Inventory System (OIPC) are attached:**
  - **Cover Type by Age Class**
  - **Cover Type by Management Objective**
  - **Compartment Volume Summary**
  - **Proposed Treatments – No Limiting Factors**
  - **Proposed Treatments – With Limiting Factors**

- **The following information is displayed, where pertinent, on the attached compartment maps:**
  - **Base feature information, stand numbers, cover types**
  - **Proposed treatments**
  - **Proposed road access system**
  - **Suggested potential old growth**

Cover Type & Treatment Map

Compartment 194
T23N, R02E, Sec. 15-17, 20-22
County: Ogemaw
Unit: Roscommon
YOE: 2011
Acres: 2,146 GIS Calculated
Stand Examiner: Jason Hartman
Map Revised: 8/28/2009
Map Phase: Pre-Review

Legend

- Miris Corners
- Powerlines
- Paved Road
- County Gravel Road
- County Poor Dirt Road
- Poor Dirt Road
- Roads Subject to Closure
- Trails
- Intermittent Stream/Drain
- Stream
- ORV Trails
- MCCCT Trails
- Motorcycle Trails
- Ski Trails
- Bike Trails
- Hiking Trails
- Lakes and Rivers

Treatments

- Clearcut (w/Reserves, Patch/Strip)
- Shelter Wood (w/Reserves)
- Thinning (Crown, Low, Systematic)

Forest Stands

Level 3

- 411 - Northern Hardwood
- 412 - Oak Types
- 413 - Aspen Types
- 419 - Mixed Upland Deciduous
- 421 - Planted Pines
- 422 - Natural Pines
- 431 - Upland Mixed Forest
- 611 - Lowland Deciduous Forest
- 612 - Lowland Coniferous Forest
- 613 - Lowland Mixed Forest

Non-Forest Stands

Level 3

- 310 - Herbaceous Openland
- 330 - Low-Density Trees
- 500 - Water
- 629 - Mixed non-forested wetland

17 16 15
20 21 22

N

DEPARTMENT OF NATURAL RESOURCES · DNR · MICHIGAN

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

Houghton Creek Rd
Stoney Ridge Rd
W Scribner Rd
Northview Ave
Center Ave
J d Ave
Eastview Ave
Bryant Ct
Houghto
Wallin Lake Dr
Lentz Rd
Prior Creek
Prior Lake
Esmond Rd
Number 240 Rd
W Sage Lake Rd
Dubay Rd
Piper Lake Rd
Sage Lake Rd
N Fairview Rd
Ryan Rd

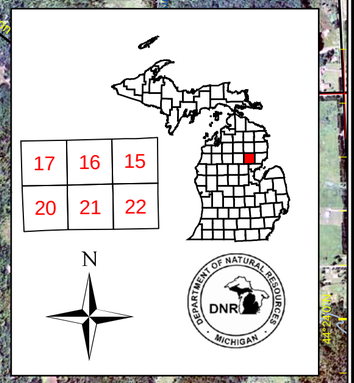
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 78 79 80 81 83 84 85 86 87 88 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118

1 0.5 0 1 Miles

84°15'0"W 84°14'0"W 84°13'0"W 84°12'0"W 84°11'0"W 84°10'0"W 84°9'0"W
44°23'0"N 44°22'0"N

Stand Boundary Map

Compartment 194
T23N, R02E, Sec. 15-17, 20-22
County: Ogemaw
Unit: Roscommon
YOE: 2011
Acres: 2,146 GIS Calculated
Stand Examiner: Jason Hartman
Map Revised: 8/28/2009
Map Phase: Pre-Review



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

Legend

- Miris Corners
- Powerlines
- Paved Road
- County Gravel Road
- County Poor Dirt Road
- Poor Dirt Road
- Closed Road
- Trails
- Intermittent Stream/Drain
- Stream
- ORV Trails
- MCCCT Trails
- Motorcycle Trails
- Ski Trails
- Bike Trails
- Hiking Trails
- Stand Boundaries

Forest Stands
- Level 3
  - 411 - Northern Hardwood
  - 412 - Oak Types
  - 413 - Aspen Types
  - 419 - Mixed Upland Deciduous
  - 421 - Planted Pines
  - 422 - Natural Pines
  - 431 - Upland Mixed Forest
  - 611 - Lowland Deciduous Forest
  - 612 - Lowland Coniferous Forest
  - 613 - Lowland Mixed Forest

Non-Forest Stands
- Level 3
  - 310 - Herbaceous Openland
  - 330 - Low-Density Trees
  - 500 - Water
  - 629 - Mixed non-forested wetland

1 0.5 0 1 Miles

Dedicated & Proposed Special Conservation Area Map

Compartment 194
T23N, R02E, Sec. 15-17, 20-22
County: Ogemaw
Unit: Roscommon
YOE: 2011
Acres: 2,146 GIS Calculated
Stand Examiner: Jason Hartman
Map Revised: 8/28/2009
Map Phase: Pre-Review

Legend

- Miris Corners
- Stand Boundaries

Dedicated Special Conservation Areas

- Cold Water Streams
- Natural Rivers Vegetative Buffer
- Natural Rivers Zoning District
- Kirtland Warbler Habitat
- OI Special Conservation Areas
- Campgrounds

Forest Stands

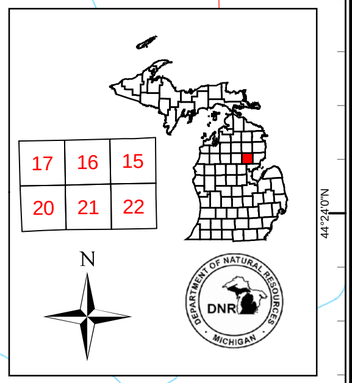
Level 3

- 411 - Northern Hardwood
- 412 - Oak Types
- 413 - Aspen Types
- 419 - Mixed Upland Deciduous
- 421 - Planted Pines
- 422 - Natural Pines
- 431 - Upland Mixed Forest
- 611 - Lowland Deciduous Forest
- 612 - Lowland Coniferous Forest
- 613 - Lowland Mixed Forest

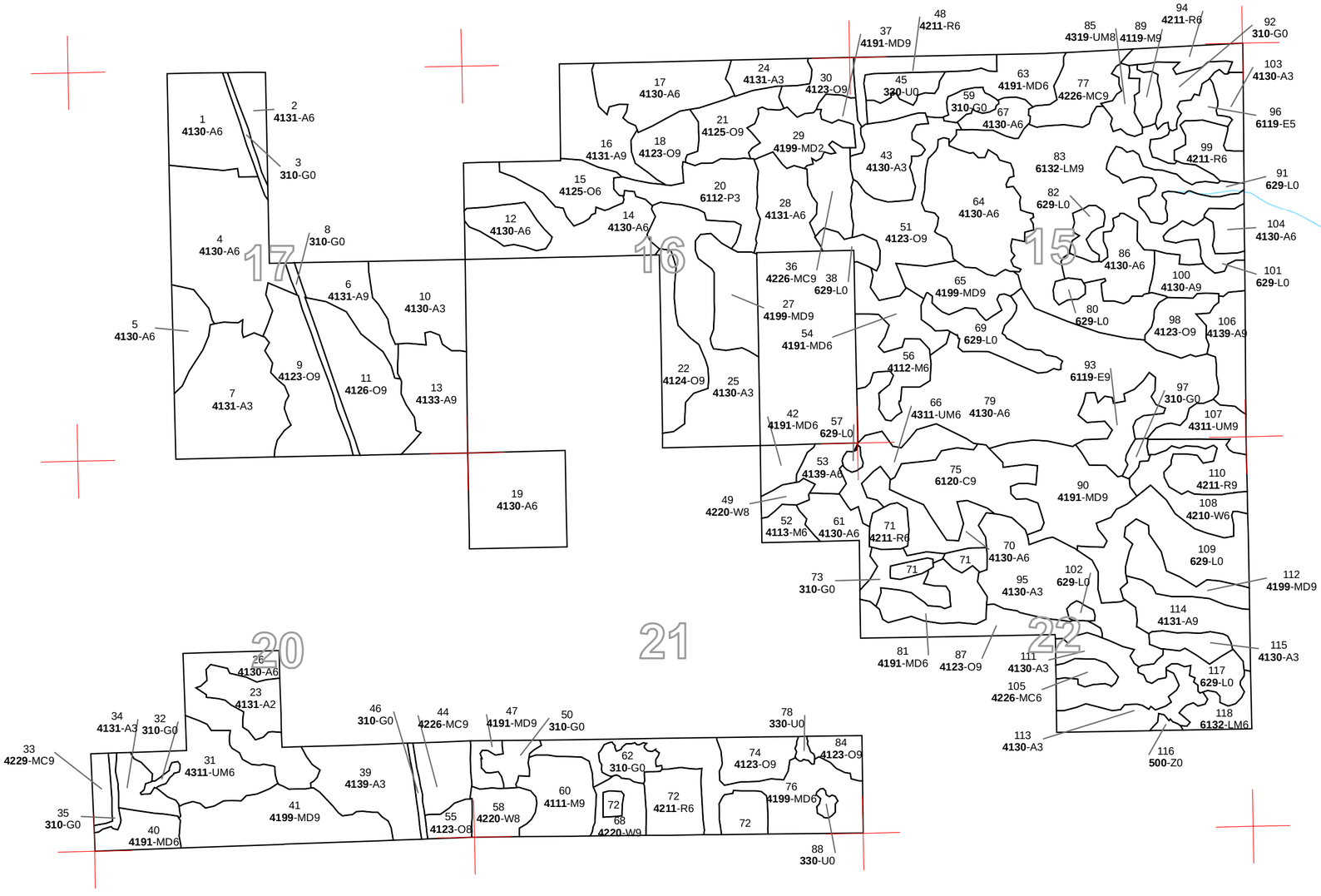
Non-Forest Stands

Level 3

- 310 - Herbaceous Openland
- 330 - Low-Density Trees
- 500 - Water
- 629 - Mixed non-forested wetland



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



1 0.5 0 1 Miles

Covertype, Acres, and Age summary

(Level 3 Cover Type)

Roscommon Mgt. Unit

Compartment 194 Year of Entry 2011

Report Date: 08/28/2009

Age Class

	Non-Forested	1-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120 +	Uneven Age	Total
Aspen Types	0	10	216	158	234	172	93	46	0	0	16	0	0	0	0	**945**
Herbaceous Openland	58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**58**
Low-Density Trees	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**11**
Lowland Coniferous Forest	0	0	0	0	0	0	0	0	0	0	34	0	0	0	0	**34**
Lowland Deciduous Forest	0	0	25	0	0	0	9	0	0	0	17	0	0	0	0	**51**
Lowland Mixed Forest	0	0	0	0	0	0	0	0	0	0	114	0	0	0	0	**114**
Mixed non-forested wetland	103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**103**
Mixed Upland Deciduous	0	57	0	0	19	64	15	5	0	0	120	0	0	0	0	**279**
Natural Pines	0	0	0	0	0	5	0	0	0	0	79	0	0	0	0	**85**
Northern Hardwood	0	0	0	0	6	18	0	0	0	0	27	0	0	0	0	**52**
Oak Types	0	0	0	0	19	0	0	0	0	133	92	0	0	0	0	**245**
Planted Pines	0	0	0	0	0	39	67	0	0	0	0	0	0	0	0	**106**
Upland Mixed Forest	0	0	0	0	28	0	25	0	0	0	12	0	0	0	0	**64**
Water	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Total	**173**	**67**	**241**	**158**	**306**	**298**	**207**	**51**	**0**	**133**	**511**	**0**	**0**	**0**	**0**	**2146**

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
6	71194006-Cut	19.2	4131 - Aspen, Oak	High Density Log	40	Harvest	Clearcut with Reserves	Aspen, Oak

Rev Cmnt:

Rev Spec: Mark large crown oak and pine with good form to leave for retention and manage for aspen regeneration.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
9	71194009-Cut	34.9	4123 - Red Oak	High Density Log	89	Harvest	Shelter Wood with Reserves	Oak, Pine

Rev Cmnt:

Rev Spec: Shelterwood leaving 50 ft where quality stems exist. Leave all pine. Mark some red maple with good form and some hollow aspen for retention as well.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
11	71194011-Cut	35.8	4126 - White, Black, N. Pin Oak	High Density Log	89	Harvest	Shelter Wood with Reserves	Oak, Pine

Rev Cmnt:

Rev Spec: Shelterwood leaving 50 ft where quality stems exist. Leave all pine. Mark some red maple with good form and some hollow aspen for retention as well.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
13	71194013-Cut	20.2	4133 - Aspen, Mixed Pine	High Density Log	55	Harvest	Shelter Wood with Reserves	Aspen, Oak

Rev Cmnt: Fresh survey along the south

Rev Spec: High risk mixed oak with low quality quaking aspen. Aspen has smaller diameter in some spots and larger overmature stems in others. Spec cut aspen, red maple, and oak and leave all rp/wp and mark oak to leave. Treatment line wouldn't match stand line. A big depression and an area of thicker pine along the road would be left out and used as aspen retention.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
16	71194016-Cut	24.0	4131 - Aspen, Oak	High Density Log	68	Harvest	Clearcut with Reserves	Aspen, Oak

Rev Cmnt: Landowner to sw has yellow stakes along lot line. didn't find his corner, but found lot corner to w.

Rev Spec: Clear-cut w/ reserves. Mark large crowned oak and pine with good form to leave for retention.Leave out thick white pine to nw.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
18	71194018-Cut	14.4	4123 - Red Oak	High Density Log	89	Harvest	Crown Thinning	Red Oak

Rev Cmnt:

Rev Spec: Crop tree release and thin from below. Mark red maple as well.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
21	71194021-Cut	17.6	4125 - Black, N. Pin Oak	High Density Log	89	Harvest	Clearcut with Reserves	Aspen, Oak

Rev Cmnt:

Rev Spec: Has high risk oak and patches of aspen of various sizes. Heavy red maple in some spots, but advance oak regen in others. Use a dormant season spec to get better sprouting. Mark mast trees to leave for retention.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
30	71194030-Cut	11.0	4123 - Red Oak	High Density Log	89	Harvest	Crown Thinning	Red Oak

Rev Cmnt:

Rev Spec: Crop tree release and thin from below. Don't spec red maple to cut. Mark all species except aspen.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
44	71194044-Cut	14.6	42260 - Natural Pine, Mixed Deciduous	High Density Log	98	Harvest	Crown Thinning	Natural White Pine, Mixed Deciduous

Rev Cmnt: Corner with cap found at ne side.

Rev Spec: Mark pine and oak to cut and spec cut aspen and red maple. Aspen will regenerate in some portions of this stand.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
48	71194048-Cut	11.8	42110 - Planted Red Pine	High Density Pole	52	Harvest	Low Thinning	Planted Red Pine, Mixed Deciduous

Rev Cmnt:

Rev Spec: 2nd thin. Thin from below. Run red line south of Scribner to leave thick oak regen and big wolf trees out of sale acres.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
63	71194063-Cut	24.6	4191 - Mixed Upland Deciduous with Conifer	High Density Pole	95	Harvest	Crown Thinning	Natural White Pine, Mixed Deciduous

Rev Cmnt:

Rev Spec: West arm is red maple, white pine, and a little bit of oak. Aspen has a couple different age classes. Would spec cut aspen and mark oak and pine to cut.. Low priority if done.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
65	71194065-Cut	18.2	4199 - Other Mixed Upland Deciduous	High Density Log	95	Harvest	Crown Thinning	Red Oak

Rev Cmnt:

Rev Spec: Pockets of hummocky ground with heavy white ash component.Mark for best tree in place. Gradually transition to uneven-aged mgmt.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
67	**71194067-Cut**	7.6	4130 - Aspen	High Density Pole	59	Harvest	Clearcut with Reserves	Aspen, Oak

Rev Cmnt:

Rev Spec: Mostly aspen, but has some nice pole-sized oak. Leave all oak unless marked to cut.

Next Steps:

68	**71194068-Cut**	9.8	42200 - Natural White Pine	High Density Log	95	Harvest	Crown Thinning	Natural Pine, Mixed Deciduous

Rev Cmnt:

Rev Spec: A few different age classes present. Should be thinned to remove defect with the surrounding red pine.

Next Steps:

71	**71194071-Cut**	12.6	42110 - Planted Red Pine	High Density Pole	40	Harvest	Systematic Thinning	Planted Red Pine, Mixed Deciduous

Rev Cmnt:

Rev Spec: 3rd row thin and mark the suppressed in the remaining two rows to catch this multipart stand up with the rest of the red pine in the compartment. Too small to do by itself next time.

Next Steps:

72	**71194072-Cut**	26.3	42110 - Planted Red Pine	High Density Pole	49	Harvest	Low Thinning	Planted Red Pine

Rev Cmnt:

Rev Spec: 2nd thin. Thin from below. Remove defect..

Next Steps:

74	**71194074-Cut**	13.4	4123 - Red Oak	High Density Log	98	Harvest	Crown Thinning	Red Oak

Rev Cmnt:

Rev Spec: Crop tree release.. Looks like only aspen was taken out in past treatment. Lots of codominants. Good road access. More white pine to northeast.

Next Steps:

79	**71194079-Cut_small**	47.4	4130 - Aspen	High Density Pole	45	Harvest	Clearcut with Reserves	Aspen, Oak

Rev Cmnt:

Rev Spec: Split from a larger stand to help balance age classes. Leave all oak, pine, and birch unless marked to cut. Long-term objective would be a mixed stand.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
84	**71194084-Cut**	7.0	4123 - Red Oak	High Density Log	95	Harvest	Crown Thinning	Red Oak

Rev Cmnt:

Rev Spec: Thin from below for best tree in place.. Excellent quality red oak with a small pocket of bta along pvt line to the east.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
86	**71194086-Cut**	17.9	4130 - Aspen	High Density Pole	45	Harvest	Clearcut with Reserves	Aspen

Rev Cmnt:

Rev Spec: Has some various age classes of aspen. Mixed quaking and bigtooth. Mark oak to leave for retention. Hummocky ground and access would make winter or late summer harvesting necessary.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
89	**71194089-Cut**	5.3	4119 - Mixed Northern Hardwoods	High Density Log	95	Harvest	Crown Thinning	Mixed N. Hardwood - Pine

Rev Cmnt:

Rev Spec: Crop tree release. Focus on sugar maple seed source.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
94	**71194094-Cut**	9.6	42110 - Planted Red Pine	High Density Pole	55	Harvest	Low Thinning	Planted Red Pine, Mixed Deciduous

Rev Cmnt:

Rev Spec: 2nd thin. Thin from below

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
98	**71194098-Cut**	13.7	4123 - Red Oak	High Density Log	98	Harvest	Crown Thinning	Mixed N. Hardwood - Pine

Rev Cmnt: Stand is located on an east facing slope.

Rev Spec: Crop tree release and thin to favor sugar maple. Leave all aspen greater than 8'dbh. Nice little hunting spot on a birch knob in the northeast corner that would be left out of the sale. Trace of yellow birch present.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
99	**71194099-Cut**	11.7	42110 - Planted Red Pine	High Density Pole	55	Harvest	Low Thinning	Planted Red Pine

Rev Cmnt:

Rev Spec: 2nd thin. Thin from below and remove defect

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
108	**71194108-Cut**	17.9	42100 - Planted White Pine	High Density Pole	55	Harvest	Crown Thinning	Natural White Pine, Mixed Deciduous

Rev Cmnt:

Rev Spec: Thin and remove defect.

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective
110	**71194110-Cut**	15.9	42110 - Planted Red Pine	High Density Log	55	Harvest	Low Thinning	Planted Red Pine

Rev Cmnt:

Rev Spec: 2nd thin. Thin from below and remove defect. Heavy white pine regen in some places.

Next Steps: Gradually transition to a natural mixed pine stand.

Total Treatment Acreage Proposed: **462.2**

Roscommon Mgt. Unit
Inventory Method: IFMAP

PROPOSED TREATMENTS WITH LIMITING FACTORS

Compartment: 194 Entry Yr: 2011
Date 08/28/2009

Stand	Treatment Name	Acres	Stage1 Cover Type	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective

Limiting Factor and Comment:

Rev Cmnt:

Rev Spec:

Next Steps:

No Treatment Reason

Total Treatment Acreage Proposed: **0**

PROPOSED SPECIAL CONSERVATION AREA* (SCA) DETAILS

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

Inventory Method: IFMAP

Stand	SCA Name	Acres	Comments

DEDICATED CONSERVATION AREA DETAILS

* This is a list of Dedicated Biodiversity Areas for this compartment along with a 1/4 mile buffer surrounding the compartment. Refer to Dedicated Conservation Area Map for areas that the below listed Conservation Areas are located.

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

Conservation Area	Type	Description
SCA	Archaeological Site	An aquatic or terrestrial area of the State that contains physical remains of human occupation. These are sites of cultural and historical significance that may occur upon terrestrial areas and Great Lakes bottomlands. They include thousands of Native American settlements and burial sites, as well as French and British outposts, nineteenth century logging camps, mines and homesteads. Beneath the waters of the Great Lakes, there are shipwrecks and other remains documenting the maritime trade. Such sites may be identified by Natural heritage data from the State Historic Preservation Office. Proposed treatments in this compartment will be implemented in such a manner as to maintain the integrity of these sites. Due to the sensitive nature of this information, no further detail about location is available.
SCA	Cold Water Stream	A coldwater stream has temperature and dissolved oxygen conditions that allow naturally-reproduced or stocked trout populations and those of other coldwater fish species (e.g., slimy sculpin) to persist from year to year. Coldwater streams in Michigan typically provide these conditions due to substantial contributions of groundwater to their stream flows. Such streams are established by Director's action and designated as trout resources by Fisheries Order 210.