



GRAYLING FOREST MANAGEMENT UNIT COMPARTMENT REVIEW RESENTATION

COMPARTMENT # 185 ENTRY YEAR: 2007

GIS Compartment Acreage: 1931 County: Crawford

Revision Date: September 21, 2005

Stand Examiner: Joan Charlebois

Legal Description: T26N R4W Sections 28, 29 & 30

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

Soils and Topography: The terrain transitions from nearly level ground in the valley bottom, up 15-30% slopes to the ridge tops, with gently rolling hills beyond. The best soils are Graycalm-Klacking complex and Graycalm-Grayling sands that occur primarily in Section 28. Grayling sands of varying slope dominate the rest of the compartment.

Ownership Patterns, Development, and Land Use in and Around the Compartment: Most of the Michigan Army National Guard's Camp Grayling lies within this compartment, as well as the fenced Small Arms Ranges and related installations. The compartment consists entirely of Military Board ownership and lies within the Hanson Military Reserve. Hanson Reserve Lands were given to the National Guard, DMA by Rasmus Hanson in 1913, with several deed restrictions as outlined under the management goals. These restrictions have tasked the DNR with managing the natural resources on these lands, as long as management activities do not conflict with military needs. In addition, hunting is prohibited on these lands.

Unique, Natural Features: Stand 5, bordering Lake Margrethe, contains a mix of hemlock, cedar and white pine that is uncommon in Crawford County.

Archeological, Historical, and Cultural Features: The military's long history of use in the area is evidenced by decommissioned structures and improvements in the vicinity of Camp Grayling.

Special Management Designations or Considerations: Hanson Reserve Lands, as designated through original deed restrictions.

Watershed and Fisheries Considerations: The compartment lies immediately southwest of Lake Margrethe and encompasses a 17-acre swamp stand with two small slough drainages that empty into the lake.

Wildlife Habitat Considerations: Opportunities for specific wildlife habitat management activities are limited due to military use, however, a wide variety of both game and non-game species would benefit by maintaining the current mix of grass, jack pine, oak and aspen cover types.

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 400 and 600 feet. Beneath the glacial drift are the Coldwater Shale and Marshall Sandstone formations. The Marshall was previously used as a building stone. A gravel pit is located in Section 34 and potential is good in the upland areas. The compartment is not leased for oil and gas development, given that it is Military Board land.

Vehicle Access: Howe Road, a paved road that runs the length of the compartment, is gated where it intersects Camp Grayling's cantonment fence. Inside the cantonment fence, there is a well-developed network of improved and paved streets. Beyond the fence, sandy two-tracks associated with military training maneuvers crisscross the compartment.

Survey Needs: None

Recreational Facilities and Opportunities: The compartment has no developed recreational facilities except for those associated with the camp itself. Military training needs take precedence over all other considerations, and any recreation – even if dispersed – cannot be allowed to conflict with military activities. Hunting is specifically prohibited per Hanson Reserve Lands deed restrictions.

Fire Protection: The compartment has a large block of jack pine, but the stand's density is relatively low and it is proposed for an overstory removal treatment. Access is good through a network of two-tracks off of Howe Road, but fences associated with the Camp developments and various ranges may hinder fire responders. There is the potential for encountering unexploded military ordinance during firefighting operations. Camp Grayling's fire department has two 6x6 engines that are equipped to fight wildland fires.

Additional Compartment Information:

LOTS Compartment Acreage: ___1936_____

- **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**

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Michigan Department of Natural Resources - Operations Inventory System
Individual Compartment Report

AUSABLE STATE FOREST

GRAYLING FOREST MGT UNIT

CRAWFORD COUNTY

COMPARTMENT: 185

Table 3

(acres shown in boxes)

STAND AGE CLASS

COVER TYPE	Not Coded	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	150-159	All Aged	Total
Aspen					10														10
Grass	239																		239
Jack Pine			3				306												309
Local Name	206																		206
Mx Swmp Cnfr													17						17
Oak									95	737	318								1150
Total	445		3		10		306		95	737	318		17						1931

AUSABLE STATE FOREST

GRAYLING FOREST MGT UNIT

CRAWFORD COUNTY

COMPARTMENT: **185**

Table 10 - COMPARTMENT VOLUME SUMMARY - ALL STANDS

COMPARTMENT SUMMARY			
TOTAL VOLUME		CUT VOLUME	
Hardwood	9234 Cds	Hardwood	4370 Cds
Hardwood	5110 Mbf	Hardwood	2370 Mbf
Softwood	2150 Cds	Softwood	1315 Cds
Softwood	199 Mbf	Softwood	119 Mbf
Sum TotVol	22002 Cds	Sum CutVol	10663 Cds
Total Cmpt Acres		Acres Proposed For Cut.....	
1931		848	

GRAYLING FOREST MGT UNIT

**Proposed Treatments
With NO Limiting Factors**

Compartment: 185 Entry Year: 2007

Stand	Cover Type	Acres	Age	Site Index	Mgt Obj	Condition	Method Cut	Harvest Priority	Cultural Need	FD Status
3	O5	8	85	48	oak	mature	final harvest	3	planting	
<p>comnts Fmd : Narrow stand between barracks & cantonment fence: poor-quality, breaking-up NPO & JP, with <10 BA WO that is doing the best on the site. If maintaining tree cover over the long term is desired here, I'd recommend cutting the JP & NPO, leaving the WO, & hand-planting WP/RP in meandering rows around the residual. To maintain more continuous cover while the planted pine develops, 10 BA of the NPO could be reserved, along with the WO, and be allowed to senesce. O4/O7/J4</p>										
7	O9	68	89	63	aspen (upland)	two aged	final harvest	1	natural regeneration	
<p>comnts Fmd : Terrain slopes down toward the lake with a series of ravines. Good to v. good RO saw (SI upper 60's) sharing the high ground with overmature BTA; shorter, poorer-quality oak (SI mid 50's) in the ravines. BTA is a larger component than what my plot data picked up: there are areas scattered throughout the stand that have 75%+ BTA (SI 80, but core was difficult to age). Best sites also have more RM small poles. Recommend: final harvest except for leave islands that will be thinned. The leave islands will serve two purposes: mitigating the visual impact of the treatment as seen from the camp, & allowing for the conservation & development of some of the stand's small-diameter high-quality RO sawtimber. Stand 6 will serve as a good visual buffer for the lower slopes of this stand, so locate leave islands on the upper slope & ridgetop. Within that zone, delineate islands (4 @ 3-7 acres for a total of ~20 acres) containing the highest concentration of quality RO sawtimber & the least aspen. Within the islands, remove all BTA, RM & economically mature RO saw, and thin down to 70 BA, retaining good-quality RO crop trees. Across the entire treatment area, leave any WP/RP for diversity. Areas outside of the leave islands will be quickly occupied by aspen regeneration and by those oak stump sprouts that manage to escape deer browsing. Harvest in winter, after the oak & aspen have gone dormant, to help ensure that maximum root resources will be available for sprouting. Harvesting equipment must not cross the buried pipeline running off the NW corner of Stand 403. O8/A7/O4/M4</p>										
9	O9	19	74	67	oak	two aged	thinning	1		
<p>comnts Fmd : Very good quality RO saw on the high ground, with poorer quality sawtimber & poor-form RO wolf trees at the stand's lower S margin. BTA saw & poles occur in pockets throughout -- there is more aspen within the stand than what my plots landed in. The stand is inside the cantonment fence and snakes across an open area to pick up pockets of good-quality RO saw within the adjacent stand of young aspen poles to the east. This stand is very similar to stand 7, but I propose a thinning so that this stand can serve as a visual buffer for stand 7's final harvest. Cut all aspen & thin the oak, down to a residual of 60 BA, favoring good-quality small saw oak for residual, along with good form red maple. Also leave individual wolf-oak trees at the stand's S edge. This thinning will release the quality small saw this is left, & the species removal will regenerate the overmature BTA. The overall effect of the treatment will be an increase in the proportion of the stand that is occupied by aspen. O8/A7/M7/M4</p>										
10	O9	27	86	65	aspen (upland)	two aged	final harvest	1	natural regeneration	
<p>comnts Fmd : OK-to-high quality RO saw, dense overmature BTA (w/ rot) at E & W ends, large RM saw & poles in clumps. Stand age excludes wolf trees & young saw. Final harvest except leave 1 wolf oak (red or white) per acre for vertical diversity/visuals & wildlife dens (given their large diameter, this will result in 10-20 BA residual). The stand will quickly be occupied by BTA & RM regen. There should be some oak stump sprouting also, but recent adjacent cuts showed low sprouting vigor & heavy deer browsing. Harvest after the oak & aspen have gone dormant in order to ensure maximum root resources are available for sprouting. O8/A7/M5</p>										
11	O9	26	89	63	aspen (upland)	two aged	final harvest	1	natural regeneration	
<p>comnts Fmd : Decent-to-very good quality RO saw (75-90 yrs old) with overmature BTA nearly as common (~70 yrs old). Red maple is unfortunately well-established within the stand. With the amount of aspen & RM that will sprout post-harvest, it would be very difficult to secure viable seed-source oak in this stand. I recommend: final harvest & manage for aspen before it declines too far, and secure what oak we can through stump sprouting. Reserve any WP/RP for diversity. Limit cutting to after the aspen & oak have gone dormant so that it has maximum root resources for sprouting. O8/A8/M4</p>										
13	O9	164	86	55	oak	two aged	seed tree	1	natural regeneration	
<p>comnts Fmd : Except for a steep ridge to the N, the stand occupies a series of shallow ridges with fair-to-good quality RO saw (SI low 60's) on the higher ground, & poorer RO, WO & NPO (SI low 40's) mixed with JP on the low ground. There is mature BTA mixed in with the better oak on much of the high ground. Poor-form WO & RO wolf trees are present throughout, but the smaller diam 85 yr old RO saw are the most common. The RO is holding up well for its age, but the NPO, suppressed WO & overmature JP are suffering dieback & mortality. Where there is seed source, there is good WP & RP regen, but overall the stand is open below. This stand was split from Stand 12 along a two-track in order to divide the former stand into smaller management blocks. There is seed-source oak in some of the small natural openings. Apply a seed-tree cut, reserving 20 BA of oak. Leave any WP/RP for additional seed source. Delineate 5, ~5-acre leave islands along the ridge top or higher ground on the stand's N & E edges where oak quality is the highest, but avoid pockets of dense aspen. Within the islands, thin to 70 BA residual in the oak, favoring future crop trees, & remove all aspen & RM. The islands will break up the treatment's apparent size, allow for the development of some of the best oak sawtimber, & increase age-class diversity. Cut after the oak & aspen have gone dormant. O8/O4</p>										
15	J5	306	56	44	oak	two aged	delayed removal	1	natural regeneration	
<p>comnts Fmd : Stand occupies a valley bottom: primarily JP that filled in over time, resulting in 2+ age classes, with mortality in the overmature JP. Terrible quality & health NPO mixed in & heavier along the stand margins. Good, advanced seed-source oak regen, O1-O3, 4-15' tall. Highly variable overstory stocking density with scattered openings & a lot of trail roads. Remove JP >6" DBH & oak >6" DBH (includes some red oak), remove all RM. Leave all WP & RP for additional seed source. Goals are to release the existing oak, JP, RP & WP regen. Stand boundary intentionally picks up denser oak along the edges -- it tends to be poorer quality oak that would be best to final harvest anyway. J4/J7/O7</p>										

GRAYLING FOREST MGT UNIT

**Proposed Treatments
With NO Limiting Factors**

Compartment: 185 Entry Year: 2007

Stand	Cover Type	Acres	Age	Site Index	Mgt Obj	Condition	Method Cut	Harvest Priority	Cultural Need	FD Status
16	O5	36	86	50	oak	low quality	delayed removal	1	natural regeneration	
comnts Fmd : Very poor-quality oak, mostly NPO, with mature JP & scattered RP poles. The oak is breaking up, but has seeded in good advanced regen. Treat along with stand 15 & apply the same harvest specs. O4/O7/J4										
71	O9	3	89	63	oak	two aged	thinning	1		
comnts Fmd : Terrain slopes down toward the lake with a series of ravines. Good to v. good RO saw (SI upper 60's) sharing the high ground with overmature BTA; shorter, poorer-quality oak (SI mid 50's) in the ravines. BTA is a larger component than what my plot data picked up: there are areas scattered throughout the stand that have 75%+ BTA (SI 80, but core was difficult to age). Best sites also have more RM small poles. Recommend: final harvest except for leave islands that will be thinned. The leave islands will serve two purposes: mitigating the visual impact of the treatment as seen from the camp, & allowing for the conservation & development of some of the stand's small-diameter high-quality RO sawtimber. Stand 6 will serve as a good visual buffer for the lower slopes of this stand, so locate leave islands on the upper slope & ridgetop. Within that zone, delineate islands (4 @ 3-7 acres for a total of ~20 acres) containing the highest concentration of quality RO sawtimber & the least aspen. Within the islands, remove all BTA, RM & economically mature RO saw, and thin down to 70 BA, retaining good-quality RO crop trees. Across the entire treatment area, leave any WP/RP for diversity. Harvest in winter, after the oak & aspen have gone dormant, to help ensure that maximum root resources will be available for sprouting. Areas outside of the leave islands will be quickly occupied by aspen regeneration and by those oak stump sprouts that manage to escape deer browsing. O8/A7/O4/M4										
72	O9	4	89	63	oak	two aged	thinning	1		
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73	O9	9	89	63	oak	two aged	thinning	1		
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74	O9	8	89	63	oak	two aged	thinning	1		
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GRAYLING FOREST MGT UNIT

**Proposed Treatments
With NO Limiting Factors**

Compartment: 185 Entry Year: 2007

Stand	Cover Type	Acres	Age	Site Index	Mgt Obj	Condition	Method Cut	Harvest Priority	Cultural Need	FD Status
101	O9	55	85	55	oak	two aged	final harvest	1	planting	
<p>comnts Fmd : Stand lies within the fenced Small Arms Range: 80-85 yr old mostly RO sawtimber over spindly, suppressed WO poles, with large-crowned wolf oak (100+ yrs old) scattered throughout and old pine stumps common. Terrain is rolling, with up to 35% slope. Site & oak quality decreases with elevation, with JP & declining NPO in the valleys. WO poles are dying individually. The RO is in much better shape, with only large branch dieback in the lower crown. RM doesn't have a strong hold yet, represented mostly by large saplings from stump sprouts. There is a lot of deer use and the RM seedlings were heavily browsed. Oak seedlings were not making it above the browse line. There is a 1/4 acre patch that had been cleared SE of plot 8 that has good quality RO stump sprouts 15-20' tall. Stand also contains 1-2 acre pockets of mature BTA. There is an FIA/FHM plot N of the Range 5 structures. The protocol is to apply planned treatments through these plots. Stand yr of origin based on "younger" component. Recommend: break out that portion of the stand (~50 acres) on the high, more level ground that is on better soil (Graycalm-Grayling Sands) & final harvest & plant to a mixture of RP/WP (avoid planting where BTA is going to sprout). Harvest after the oak has gone dormant in order to ensure maximum root resources are available for sprouting. O8/O4</p>										
131	O9	5	86	55	oak	two aged	thinning	1		
<p>comnts Fmd : Except for a steep ridge to the N, the stand occupies a series of shallow ridges with fair-to-good quality RO saw (SI low 60's) on the higher ground, & poorer RO, WO & NPO (SI low 40's) mixed with JP on the low ground. There is mature BTA mixed in with the better oak on much of the high ground. Poor-form WO & RO wolf trees are present throughout, but the smaller diam 85 yr old RO saw are the most common. The RO is holding up well for its age, but the NPO, suppressed WO & overmature JP are suffering dieback & mortality. Where there is seed source, there is good WP & RP regen, but overall the stand is open below. This stand was split from Stand 12 along a two-track in order to divide the former stand into smaller management blocks. There is seed-source oak in some of the small natural openings. Apply a seed-tree cut, reserving 20 BA of oak. Leave any WP/RP for additional seed source. Delineate 5, ~5-acre leave islands along the ridge top or higher ground on the stand's N & E edges where oak quality is the highest, but avoid pockets of dense aspen. Within the islands, thin to 70 BA residual in the oak, favoring future crop trees, & remove all aspen & RM. The islands will break up the treatment's apparent size, allow for the development of some of the best oak sawtimber, & increase age-class diversity. Cut after the oak & aspen have gone dormant. O8/O4</p>										
132	O9	6	86	55	oak	two aged	thinning	1		
<p>comnts Fmd : Except for a steep ridge to the N, the stand occupies a series of shallow ridges with fair-to-good quality RO saw (SI low 60's) on the higher ground, & poorer RO, WO & NPO (SI low 40's) mixed with JP on the low ground. There is mature BTA mixed in with the better oak on much of the high ground. Poor-form WO & RO wolf trees are present throughout, but the smaller diam 85 yr old RO saw are the most common. The RO is holding up well for its age, but the NPO, suppressed WO & overmature JP are suffering dieback & mortality. Where there is seed source, there is good WP & RP regen, but overall the stand is open below. This stand was split from Stand 12 along a two-track in order to divide the former stand into smaller management blocks. There is seed-source oak in some of the small natural openings. Apply a seed-tree cut, reserving 20 BA of oak. Leave any WP/RP for additional seed source. Delineate 5, ~5-acre leave islands along the ridge top or higher ground on the stand's N & E edges where oak quality is the highest, but avoid pockets of dense aspen. Within the islands, thin to 70 BA residual in the oak, favoring future crop trees, & remove all aspen & RM. The islands will break up the treatment's apparent size, allow for the development of some of the best oak sawtimber, & increase age-class diversity. Cut after the oak & aspen have gone dormant. O8/O4</p>										
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134	O9	3	86	55	oak	two aged	thinning	1		
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GRAYLING FOREST MGT UNIT

**Proposed Treatments
With NO Limiting Factors**

Compartment: 185 Entry Year: 2007

Stand	Cover Type	Acres	Age	Site Index	Mgt Obj	Condition	Method Cut	Harvest Priority	Cultural Need	FD Status
135	O9	3	86	55	oak	two aged	thinning	1		
<p>comnts Fmd : Except for a steep ridge to the N, the stand occupies a series of shallow ridges with fair-to-good quality RO saw (SI low 60's) on the higher ground, & poorer RO, WO & NPO (SI low 40's) mixed with JP on the low ground. There is mature BTA mixed in with the better oak on much of the high ground. Poor-form WO & RO wolf trees are present throughout, but the smaller diam 85 yr old RO saw are the most common. The RO is holding up well for its age, but the NPO, suppressed WO & overmature JP are suffering dieback & mortality. Where there is seed source, there is good WP & RP regen, but overall the stand is open below. This stand was split from Stand 12 along a two-track in order to divide the former stand into smaller management blocks. There is seed-source oak in some of the small natural openings. Apply a seed-tree cut, reserving 20 BA of oak. Leave any WP/RP for additional seed source. Delineate 5, ~5-acre leave islands along the ridge top or higher ground on the stand's N & E edges where oak quality is the highest, but avoid pockets of dense aspen. Within the islands, thin to 70 BA residual in the oak, favoring future crop trees, & remove all aspen & RM. The islands will break up the treatment's apparent size, allow for the development of some of the best oak sawtimber, & increase age-class diversity. Cut after the oak & aspen have gone dormant. O8/O4</p>										
171	O9	23	82	52	oak	two aged	final harvest	1	natural regeneration	
<p>comnts Fmd : 70-85 yr old RO & WO sawtimber & suppressed poles on rolling terrain with 110+ yr old wolf oak trees scattered throughout. Heavily-burnt pine stumps everywhere. Site & oak quality & density drops with elevation, with more NPO & WO in valleys. WO poles are small-crowned & spindly, with individual trees dying. Near universal dieback in the NPO. Lg. branch dieback in old wolf trees. Occasional old RP with associated regen. Scattered mature BTA on ridgetops, mostly in N 1/2 of stand. No oak regen except in isolated openings & under JP. JP in low areas within the stand & mixed in along the stand's boundary. Up to 35% slope on the W side. Treatment: split out three units (total ~70 acres) in this stand on the higher ground (avoiding the steeper slopes) where the oak crown cover is the densest -- this is where the oldest oak is concentrated -- and final harvest within these units, with the goal of achieving stump sprouts. Design the unit boundaries to follow landforms and minimize the treatments' visual impact. Leave any WP/RP for diversity. Harvest after the oak has gone dormant. Treat the remainder of the stand next YOE. O8/O4</p>										
172	O9	32	82	52	oak	two aged	final harvest	1	natural regeneration	
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Total Acres..... 848

**Proposed Treatments
With Limiting Factors**

Compartment: 185 Entry Year: 2007

Stand	Cover Type	Acres	Age	Site Index	Mgt Obj	Condition	Method Cut	Harvest Priority	Cultural Need	FDF Status
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TREATMENT LIMITING FACTORS:

Total Acres..... 0

