

Pre-Operations Report

Operation Name: Mackey Creek

County: Marion

Management Basin: Scattered

Table 1. Operation Areas, Types and Acres

Area	Type of Operation	Gross Acres	Net Acres
	PC-H	121	110
Total		121	110

I. PHYSICAL DESCRIPTION OF OPERATION AREA:

The operation is located within a temperate climate area. Typically the fall and winter seasons are wet. This area receives approximately 70 to 90 inches of rainfall per year. The operation is located within the *Tsuga heterophylla* Zone (Natural Vegetation of Oregon and Washington, Franklin & Dyrness, 1973).

The landforms are moderate to very steep side-slopes on both sides of the Mackey Creek canyon in approximately the middle of the stream length. The underlying rocks are sedimentary & igneous origin mapped as “Undifferentiated tuffaceous sedimentary rocks.”

The soil approximately 300 feet on either side of the existing road through the middle of the operation is classified as a gravelly and sandy loam. This is a well drained soil with rapid permeability in the surface soil. The site index is 140 feet for Douglas-fir at 100 years old. The surface erosion potential is classified as moderate. The soil for the rest of the operation is classified as a gravelly and clay loam. The soil is well drained with rapid permeability in the surface soil. The site index for Douglas-fir at 100 years old is 110 feet. The surface erosion potential is classified as severe. The elevation for the operation ranges from 1,700 to 3,000 feet. The slopes within the operation range from 5 to 100%.

II. CURRENT STAND CONDITION:

This operation is adjacent to an area that is being developed for residential use to the west and southwest. The rest of the operation is adjacent to USFS lands.

(see attached map) A portion of this operation also supports the municipal water intake for the town of Detroit.

The operation is made up of a 68 year-old stand (12392) and a 52 year-old stand (12391). Stand 12392 is currently classified as Understory. The majority of the overstory consists of Douglas-fir with small amounts of western hemlock and big leaf maple scattered throughout. The understory consists of dwarf Oregon grape, salal and vine maple. There are very few snags per acre within the stand. There is an average of 350 cubic feet of sound down wood per acre; and 1,900 cubic feet of down wood per acre in all decay classes. (SLI 2005)

Stand 12391 is currently classified as Understory. The overstory contains a mixture of Douglas-fir, western hemlock and a small amount of western red cedar. There are existing scattered old growth trees located in the eastern portion of this stand. The understory consists of dwarf Oregon grape, vine maple and ferns. There is an average of 9 snags per acre; 760 cubic feet per acre of sound down wood; and 4,080 cubic feet per acre of down wood in all decay classes. (SLI 2005)

Table 2. Stand Inventory Information

Area	Prescription	Stand ID ¹	Species	Age	DBH	BA	TPA	SDI	Acres ²
	PC-H	12392	DFWH	68	14	211	211	57	74
		12391	DF	52	13	204	217	56	47
		Target ³			14	115	100	25	

1 The source of stand inventory information is SLI from 2005 for trees 8 inches DBH and greater.

2 The acres are based on GIS and include roads, streams buffers, reserve areas, etc.

3 The Target identifies expected stand characteristics (DBH, BA, TPA and SDI) after harvesting has been completed.

III. DESIRED STAND CONDITION:

This operation is located in the Scattered Basin. This basin is a diverse mixture of ownership, stand ages, species mixtures, and site quality. As indicated by its name, the Scattered Basin is a conglomeration of scattered ODF ownership parcels that range in size from 40 acres to 1000 acres. The operation is located within a parcel which is approximately 160 acres in size. Most of the smaller parcels within the basin are viewed as land exchange candidates due to the intermingled nature of the ownership. The Mackey Creek operation is on the land exchange candidate list.

The Mackey Creek operation has a DFC of Complex Structure. (*North Cascade District Implementation Plan, 2003*) This is driven largely by the location of the property (next to the City of Detroit), and an easement granted to the City of Detroit for a municipal water system. The water system utilizes Mackey Creek,

an in stream reservoir, a water line, and a treatment plant, all located on State Forest property.

The DFC for this operation (SLI types 12391 and 12392) is OFS. Given the low site class of these stands, it may take longer to achieve the DFC.

The **Anticipated Pathway for the stand** begins with thinning the Douglas-fir overstory.

- A heavy thinning as a first entry commercial thinning is desired to open the stand canopy. The heavy thinning is designed to encourage the understory to respond. Both brush species and tree species should respond to the thinning.
- Additional thinnings may not be an option for this stand due to the low site and potential future impacts to the municipal water system. The stands will be evaluated at a later date to see how they are progressing toward the desired DFC.

Table 3. Stand Structure Information

Area	Stand ID	Current	Post Harvest ¹	Desired Future	Acres
	12392	UDS	UDS	OFS	74
	12391	UDS	UDS	OFS	47

¹ The stand is expected to develop into this condition in the five to ten years after this operation is completed.

IV. PROPOSED MANAGEMENT PRESCRIPTION:

The **proposed management prescription for timber sale** is:

- All trees greater than 8 inches DBH thin to: basal area of 115; TPA 100; ave. DBH 14 inches; and about an SDI 25%.
- Reserve all hardwoods, western red cedar and western hemlocks from cutting. These trees will count towards meeting the target SDI above.
- All old growth trees will be reserved from harvest, however, they may not count towards meeting the residual SDI target.
- Slash loads along the western and south-western borders will be treated. All slash within 200 feet of these property lines may be hauled away, piled in small piles and burned, or chipped. The method for disposal will be approved during the contract writing. This work is being done to reduce the fuels loading along lands adjacent to residential areas.
- Maintain existing snags which do not pose a safety hazard and down wood.
- Snags and down wood will not be added at this entry because the tree size limits the utility and duration of the structural benefit.
- The **Total Residual Stand (overstory and understory) will be:** basal area of 115; TPA 100; ave. DBH 14 inches; and about an SDI 25%.

V. ESTIMATED TIMBER AND REVENUE INFORMATION:

Table 4. Timber and Revenue

Ownership		Sale Type	
BOF	CSL	Cash	Recovery
100%	%	<input type="checkbox"/>	x
Planned Quarter:		4	

	Conifer	Hardwood	Total
Net Volume (MBF)	1,320	0	1,320
Stumpage Value (\$/MBF)	\$300		
Estimated Gross Value	\$396,000	0	\$396,000
		Project Costs:	\$32,000
		Estimated Net Value:	\$364,000

VI. TRANSPORTATION PLANNING AND HARVESTING:

Several options have been evaluated and continue to be evaluated for harvesting in this sale. The 160 acre area currently has only one road accessing the middle of the parcel. Constructing access from the north and from the east over USFS roads was evaluated and ruled out. Steep grades and excessive amounts of road construction eliminated both options. Since this sale is in the Detroit watershed one of the main concerns is to maintain high water quality.

1. One option for harvesting the unit is to use a helicopter and fly logs to two landings within the unit or possibly another landing outside the area. This option will be further investigated with a representative from a helicopter company to evaluate the economics and feasibility of helicopter logging the sale. The advantage of this option is that no additional roads would be required and helicopter logging has the least impact on the watershed. The main disadvantage is the high cost and it could make it more difficult to reduce fuel loading on the unit which is one of the goals for the sale.
2. The other option is for conventional logging with a cable yarder and some ground yarding. This option requires the construction of a 1,400 foot spur out to a ridge to the west 40 acres and would facilitate uphill logging for about 45 acres. The north 40 acres would be cable logged downhill to landings placed on an existing but abandoned 800 foot road requiring some improvements. The east and center 80 acres would also be yarded downhill to two or three landings on the existing road. The preliminary evaluation of downhill logging indicates that skyline deflection is good, logs could be fully suspended over sensitive areas. There are several questions to answer with this option:

- Will down hill logging adversely affect water quality?
- Will down hill logging adversely affect the residual timber stand?
- Will the additional road construction create water quality issues?
- How will the timber sale be viewed by the public?
- Are cable systems better suited for fuel reductions practices?

Table 5. Transportation Planning Summary (Miles).

Activity	Mainline	Collector	Rocked Spur	Dirt Spur
Construct	0	0	0.26	0
Improve	0	0.3	0.15	0
Maintain	0	0.3	0.4	0
Close/Block	0	0	0.66	0
Vacate	0	0	0	0

For determination of road class either use results of the Harvest and Habitat roads classifications, or if this information is not available then low use roads are spurs, medium use roads are collectors and high use roads are mainlines. Use these same criteria when comparing the total for all AOP sales to the IP plans.

VII. AQUATIC RESOURCES AND WATER QUALITY:

There are no listed fish within the streams in the operation. There are 2 small perennial streams and 7 small potential seasonal streams located within the operation. The beneficial use (i.e. fish bearing or not) is unknown for these streams. The beneficial use will be determined during sale layout. The overstory along these streams consist of Douglas-fir. The minimal understory along these streams consists of vine maple and dwarf Oregon grape. These streams will be looked at further during sale layout to determine if all 7 draws do indeed run water during the winter. It will also be determined at that time if the seasonal streams are high energy reaches or potential debris flow track reaches so that the proper RMA can be applied to the streams.

A domestic use water intake for the town of Detroit is located within one of the perennial streams. The pipe from the intake runs along the draw for awhile before it connects with the containment ponds which are also located on State Forest property. At times the pipe is under ground and at times it is on the surface. All of the equipment associated with the water intake will be protected during the operation. Protection measures include 50 foot no harvest buffers along the stream, directional felling away from the stream and pipe, full suspension of logs while yarding over the stream and possible seasonal restrictions.

Management activities within riparian areas of the remaining streams will focus on achieving properly functioning aquatic and riparian habitat conditions over time. Riparian Management Areas (RMAs) will be established immediately adjacent to streams for the purpose of protecting aquatic and riparian resources and maintaining the functions and ecological processes of the streams. The Management Standards for Aquatic and Riparian Areas found in the *NWO State Forests Management Plan* (pg. J-1 – J-16) will be followed within these RMAs.

The following measures will be used to minimize impacts to streams: 1. No ground based equipment will be allowed within 25 feet of the non-fish streams, 2. There will be seasonal restrictions as to when ground yarding and road construction will be allowed (i.e. during dry seasons), 3. Erosion control measures will be used on areas of soils exposed during road construction or improvement, 4. Road ditches will be disconnected from streams, 5. Road maintenance will be required during log hauling.

VIII. T&E SPECIES CONSIDERATIONS:

This operation was surveyed for Northern Spotted owls during the 2005 survey season with two responses from a nearby owl site. (the operation is not located within any owl sites) It will be surveyed again in 2006.

The operation area was checked against District knowledge for any listed plant location. The operation area was also checked against the Oregon Natural Heritage Program's database of known listed plant locations. No listed plant records were identified within the operation area.

IX. SLOPE STABILITY AND GEOTECHNICAL ISSUES:

There are bands of steep slopes with scattered very steep slopes throughout the sale area. The initial hazard and risk assessment from the geotechnical specialist is high. The geotechnical specialist has been consulted and a field visit was done. Upon field examination of the Southwest boundary it was noted that although there are structures adjacent; none of them were determined to be within channels that would provide a path for a debris flow. It was also discussed to have a buffer on Mackey Creek North and East channel above the city of Detroit water intake. The North channel will have a minimum 25 foot buffer posted above the high water mark. The East channel will be posted out of the sale at the slope break or at a point where there is sufficient soil development to support operations. Actual boundary location will be determined by field conditions during sale lay out and could exceed 150 feet from the channel if conditions warrant.

X. RECREATION RESOURCES:

There are no developed recreational activities located within the operation.

XI. CULTURAL RESOURCES:

Pre-operation reconnaissance revealed no visible cultural resource features or artifacts. If discovery is made, the cultural resource will be protected and field staff will consult with the Cultural Resource Specialist in Salem.

XII. SCENIC RESOURCES:

This operation is adjacent to residential areas and can be seen from Highway 22, the town of Detroit and also from Detroit Lake. The heavy thinning option on this operation will help make cable corridors less visible if this sale is harvested using a cable system. Using a helicopter may make the operation have less of a visual impact since there would be no cable corridors. However, there may need to be larger landings to accommodate the helicopter logging, and these landings would be more visible than a landing for a cable setting. If possible, landings will be located in areas that have the least visual impact on the town or lake.

XIII. OTHER RESOURCE CONSIDERATIONS:

There are no other resource considerations at this time.

XIV. LMCS:

Area 1 contains Focused Stewardship, Aquatic and Riparian Habitat for two perennial Type N stream. See Section VII, Aquatic Resources and Water Quality, for the management guidelines to be utilized.

Area 1 contains Special Stewardship, Domestic Water Use. See Section VII, Aquatic Resources and Water Quality, for the management guidelines to be utilized.