

## Chapter 5 – Appendices

### A. Acronyms

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ACS – Aquatic Conservation Strategy

AMA – Adaptive Management Area

ATM – Access and Travel Management

BA – Biological Assessment

BO – Biological Opinion

CEQ – Council on Environmental Quality

CHU – critical habitat unit

CWD – coarse woody debris

dbh – diameter at breast height

DNR – Department of Natural Resources

EA – Environmental Assessment

EO – Executive Order

EUI – Ecological Unit Inventory

FEIS – Final Environmental Impact  
Statement

FSR – Forest Service Road

GIS – Geographic Information Systems

GMU – geomorphic mapping unit

HPA – hydraulic project approval

KV – Knudson-Vandenberg

LRMP – Land and Resource Management  
Plan

LSR – Late Successional Reserve

LWD – large woody debris

MOA – Memorandum of Agreement

MOU – Memorandum of Understanding

MIS – Management Indicator Species

NEPA – National Environmental Policy Act

NMFS – National Marine Fisheries Service

NOAA – National Oceanic and Atmospheric  
Administration

NWFP – Northwest Forest Plan

OAHP – Office of Archeology and Historic  
Preservation

OHV – Off Highway Vehicle

OSHA – Occupational Safety and Health  
Administration

PBO – Programmatic Biological Opinion

QMD – quadratic mean diameter

RDDF – Relative density for Douglas fir

REO – Regional Ecosystem Office

RM – River mile

ROD – Record of Decision

SHPO – State Historic Preservation Office

spp. – species

TES – Threatened and Endangered Species

USDA – United States Department of  
Agriculture

USDI – United States Department of the  
Interior

USFS – United States Forest Service

US FWS – United States Fish and Wildlife  
Service

WDFW – Washington Department of Fish  
and Wildlife

WEPP – Water Erosion Prediction Project

## B. Silvicultural Data

Table 35. Tree layer data (from 2002 stand exam)

Unit	Overstory								Understory			
	Major Species <sup>1</sup>	Minor Species	BA <sup>2</sup>	TPA <sup>3</sup>	QMD <sup>4</sup>	Ht <sup>5</sup>	Age <sup>6</sup>	YO <sup>7</sup>	Species	TPA	QMD	Ht <sup>8</sup>
1	DF	WH, WRC, RA, BLM	237.5	370.0	10.8	115	63	1939	WRC, WH, DF	367	1.8	8.4
2	DF, WH	WRC, RA	246.0	339.5	11.5	100	52	1950	WRC, WH, DF	326	1.6	8.7
3	DF, WH	WRC, RA	246.7	311.6	12.0	116	69	1933	WH, WRC, PY	142	3.0	26.2
4	DF, WH	WRC	268.1	395.7	11.1	115	66	1936	WH, WRC, DF, PY	710	1.0	5.6
5	DF	WH, WRC, RA, BLM, NBC, BC	232.0	280.6	12.3	120	67	1935	WH, DF, WRC	73	1.1	8.8
6	DF, WRC	WH, RA, BLM	242.7	219.5	14.2	115	71 <sup>9</sup>	1930	WRC, WH, DF	240	1.9	12.0
7	WH, DF, WRC		247.5	433.9	10.2	90	56	1946	WH, WRC	200	2.2	11.7
8	DF, WH	WRC, PSF, RA, WWP	256.7	302.4	12.5	97	49	1953	WH, WRC	333	1.0	6.2
9	DF, WH	WRC, RA	253.3	317.5	12.1	97	71	1931	WH, WRC, DF	67	1.3	6.5
10	WH, DF, PSF	RA, WRC	272.0	407.9	11.0	94	65	1937	PSF, WH, WRC	580	1.9	11.2
11	WH, DF	RA, BLM, WRC	297.7	370.5	12.1	106	70	1932	WH, WRC	211	1.9	12.7
16	DF, WH	RA, WRC	227.5	234.3	13.3	110	66	1936	WRC, WH	62	0.5	7.0
17	DF, WH	WRC, RA, PSF, WWP	252.0	249.6	13.6	98	59	1943	WH, WRC	100	1.4	9.3

Unit	Overstory								Understory			
	Major Species <sup>1</sup>	Minor Species	BA <sup>2</sup>	TPA <sup>3</sup>	QMD <sup>4</sup>	Ht <sup>5</sup>	Age <sup>6</sup>	YO <sup>7</sup>	Species	TPA	QMD	Ht <sup>8</sup>
18	DF, WH	RA, WRC	286.5	409.3	11.3	103	59	1943	WH, WRC, DF	242	2.1	14.5
20	DF, WH	WRC	286.6	265.4	14.1	126	103	1899	WH, DF, WRC	242	2.3	12.5
21	DF	WH, WRC, BLM	330.0	167.9	18.9	142	114	1888	WH, DF, WWP	25	2.4	16.0
22	DF	WH	360.0	173.7	19.5	136	110	1892	WH, DF	67	1.9	12.2
23	DF, WH		310.0	241.3	15.3	106	101	1891	WH, WRC, DF	117	2.2	12.6
24	DF	WH, WRC	336.0	178.2	18.6	135	112	1890	WH, DF, WRC, PSF	50	2.3	19.0

Notes: 1. Species with >10% of the stand BA, ordered by predominant basal area: BC=bitter cherry, BLM=bigleaf maple, DF=Douglas-fir, PSF=Pacific silver fir, PY=Pacific yew, RA=red alder, WH=western hemlock, WRC=western redcedar, WWP=western white pine

2. Basal area, sq. ft./ac.

3. Trees per acre

4. Quadratic mean diameter, inches

5. Average height of the tallest measured tree per plot, feet

6. Average total age in 2002, oldest measured tree per plot

7. Year of origin based on total age in 2002

8. Average height in feet, weighted by TPA

9. 5.9 TPA avg 133 years total age.

**Table 36. Silvics**

Unit	Diameter Growth <sup>1</sup>	Live Crown Ratio <sup>2</sup>	Crown Closure	H/D <sup>3</sup> Ratio	RD <sub>DF</sub> <sup>4</sup>	RD <sub>WH</sub> <sup>5</sup>	Site Class (King, 50-yr index)	SPTH <sup>6</sup> (ft)	Damage Agents	% TSE Plots with Root Rot
1	1.2	44	80	74	72.3		High 3	174	Root rot, bear, dumping	33
2	1.5	40	95	70	72.5		Mid 3	160	Root rot, bear	23
3	1.4	38	85	75	71.3	0.576	High 3	169	Root rot, bear	17
4	1.7	45	90	79	80.0	0.636	Mid 3	160	Root rot	10
5	1.6	35	85	72	66.2		Mid 3	162	Root rot	20
6	1.6	41	85	69	64.4	0.510	High 3	174	Root rot, bear	27
7	2.2	49	90	77	77.5	0.577	Low 3	150	Bear, hemlock mistletoe	
8	2.3	53	90	71	72.6	0.545	High 3	172	Root rot, bear	25
9	1.7	43	85	70	72.8	0.548	Mid 4	132	Bear, root rot	0
10	1.9	42	95	72	82.0	0.594	Mid 3	163	Wind	
11	1.2	42	95	75	85.6	0.662	Low 3	146	Hemlock mistletoe, root rot	8
16	1.5	42	90	68	62.4	0.475	Low 3	151	Wind, root rot, hemlock mistletoe, bear	0 <sup>7</sup>
17	1.8	43	95	71	68.3	0.516	Low 3	146	Bear, root rot	10
18	1.7	29	95	75	85.2	0.654	Mid 3	158	Wind, bear	
20	1.2	33	95	67	76.3	0.636	Mid 3	173	Wind, root rot	8
21	1.3	29	95	61	75.9		Low 3	164	Root rot, wind	0 <sup>8</sup>
22	1.0	31	80	58	83.5		High 4	155	Root rot	0 <sup>9</sup>
23	1.4	31	90	65	79.3	0.610	Mid 4	131	Wind	
24	1.4	28	90	58	77.9		High 4	156	Wind, root rot	0 <sup>10</sup>

Notes: 1. Inches per decade, trees 8+ inches DBH

2. Trees of average diameter and larger, percentage of tree height

3. Height/Diameter, in feet

4. Curtis Relative Density for Douglas-fir, percentage of maximum

5. Flewelling, Wiley, and Drew Relative Density for western hemlock, fraction of maximum

6. Site Potential Tree Height in feet—95% 300-year potential height growth for DF

7. 17% of walk-through exam points had indicators of root rot

8. 62% of walk-through exam points had indicators of root rot

9. 67% of walk-through exam points had indicators of root rot

10. 43% of walk-through exam points had indicators of root rot

**King's Site Class Height Ranges for 50-year-old Trees**

Site Class	Height Range at Age 50 (feet)
Mid 4	81-88
High 4	89-94
Low 3	95-100
Mid 3	101-108
High 3	109-114

**Table 37. Snags, coarse woody debris, old-growth trees, ground cover, and plant associations.**

Unit	Dec Aid	Snags (from TSE)			Legacy Snags <sup>4</sup> (TPA)	CWD Cover <sup>5</sup> %	Old-growth Trees?	Cover <sup>6</sup> Grnd Veg %	Plant Associations <sup>7</sup>
		D Class <sup>1</sup> (inches)	TPA <sup>2</sup>	QMD <sup>3</sup>					
1	SM	5.0-10.9	16.8	5.4	0	3.0		45	TSHE/GASH-BENE, TSHE/BENE/POMU
		11.0-18.9	1.5	18.1					
		19.0+	3.7	19.9					
2	SM	5.0-10.9	47.2	6.6	1.0	4.8	One patch of 5 trees plus 10-12 legacy snags	37	TSHE/RHMA-GASH, TSHE/GASH-BENE, TSHE/BENE/POMU
		11.0-18.9	3.1	7.8					
		19.0+	1.4	19.9					
3	SM	5.0-10.9	116	6.5	0.5	3.6	At least three individual or groups of 2-5 DF	45	TSHE/RHMA-GASH, TSHE/BENE/POMU, TSHE/RHMA/POMU
		11.0-18.9	0	0					
		19.0+	0	0					
4	SM	5.0-10.9	23.6	7.8	1.4	6.6		18	TSHE/RHMA-GASH, TSHE/GASH-BENE
		11.0-18.9	0	0					
		19.0+	1.0	27.1					
5	SM	5.0-10.9	32.7	6.7	2.0	6.0		40	TSHE/RHMA-GASH
		11.0-18.9	10.9	13.4					
		19.0+	0.9	32.8					
6	SM	5.0-10.9	37.4	6.3	0.5	3.6	Several groups of 2 DF and WRC, plus one patch of 25-30 DF mid-stand	46	TSHE/GASH-BENE, TSHE/BENE/POMU
		11.0-18.9	1.6	17.6					
		19.0+	4.8	22.6					
7	SM	5.0-10.9	25.7	7.4	2.5	9.0	3-4 trees and snags NW corner	12	TSHE/RHMA/POMU, TSHE/GASH/POMU
		11.0-18.9	2.0	18.6					
		19.0+	0	0					
8	SM	5.0-10.9	0	0	0.5	15.4		20	TSHE/RHMA/POMU, TSHE/RHMA-BENE
		11.0-18.9	3.7	12.8					
		19.0+	0	0					
9	SM	5.0-10.9	0	0	3.8	7.2		31	TSHE/RHMA-GASH, TSHE/GASH-POMU, TSHE/RHMA-BENE, TSHE/RHMA/POMU
		11.0-18.9	7.4	15.7					
		19.0+	8.5	24.0					
10	SM	5.0-10.9	140	6.1	0	15.8	Several trees and snags in "finger" jutting into stand, SW side	7	TSHE/RHMA/POMU, TSHE/BENE/POMU, TSHE/RHMA
		11.0-18.9	0	0					
		19.0+	0	0					
11	SM	5.0-10.9	26.8	7.8	1.2 <sup>8</sup>	7.6	Several WRC and DF in unlogged area E end of stand	10	TSHE/BENE/POMU, TSHE/POMU/TITR
		11.0-18.9	0	0					
		19.0+	0.6	63.8					
16	SM	5.0-10.9	0	0	0.7	2.2		50	TSHE/RHMA/POMU, TSHE/RHMA-BENE
		11.0-18.9	0	0					
		19.0+	0	0					

Environmental Assessment for Jackson Thinning

Unit	Dec Aid	Snags (from TSE)			Legacy Snags <sup>4</sup> (TPA)	CWD Cover <sup>5</sup> %	Old-growth Trees?	Cover <sup>6</sup> Grnd Veg %	Plant Associations <sup>7</sup>
		D Class <sup>1</sup> (inches)	TPA <sup>2</sup>	QMD <sup>3</sup>					
17	SM	5.0-10.9	0	0	2.5	3.8		60	TSHE/RHMA-BENE, TSHE/RHMA-GASH, TSHE/RHMA/POMU
		11.0-18.9	4.1	13.4					
		19.0+	0	0					
18	SM	5.0-10.9	131.5	6.1	0 <sup>9</sup>	8.7		10	TSHE/RHMA/POMU, TSHE/RHMA-BENE, TSHE/BENE/POMU
		11.0-18.9	13.7	13.3					
		19.0+	2.1	29.5					
20	SM-LT <sup>10</sup>	5.0-10.9	106	7.2	4.0	8.0		19 <sup>11</sup>	TSHE/RHMA, TSHE/RHMA-BENE, TSHE/RHMA/POMU
		11.0-18.9	16.6	13.5					
		19.0+	1.7	26.9					
21	SM-LT <sup>12</sup>	5.0-10.9	0	0	0	3.5		82	TSHE/GASH/POMU, TSHE/RHMA-GASH
		11.0-18.9	4.5	11.6					
		19.0+	0	0					
22	SM-LT <sup>13</sup>	5.0-10.9	0	0	0	2.1		88	TSHE/GASH/POMU, TSHE/RHMA-GASH, TSHE/RHMA/POMU
		11.0-18.9	6.2 <sup>14</sup>	14.1					
		19.0+	0	0					
23	SM	5.0-10.9	38.9	6.9	0.9	4.2		67	TSHE/RHMA-GASH, TSHE/RHMA-BENE
		11.0-18.9	6.8	13.4					
		19.0+	2.6	21.7					
24	SM-LT <sup>15</sup>	5.0-10.9	20.4	6.0	0	3.1		85	TSHE/RHMA-GASH
		11.0-18.9	12.9	13.1					
		19.0+	0	0					

Notes: 1. Diameter Class

2. Trees Per Acre
3. Quadratic Mean Diameter
4. Trees Per Acre, from Winter 2006 walk-through exams
5. Coarse Woody Debris ground cover, from Winter 2006 walk-through exams
6. Shrub and herb (Ground Veg) cover, from Winter 2006 walk-through exams
7. From Winter 2006 walk-through exams: BENE=Oregon grape, GASH=salal, POMU=swordfern, RHMA=rhododendron, TITR=three-leaf foamflower, TSHE=western hemlock
8. 0.5 legacy snags per acre if unlogged portion on east end of stand is excluded
9. While no legacy snags were observed during the walk-through exam, the formal stand exam's 2.1 snags per acre in the 19+ size class are most likely legacy snags.
10. The 90 biggest trees/acre had a QMD of 20.1 inches.
11. 32% cover lower N and NW sides; 6% cover upper S and E sides
12. The 100 biggest trees/acre had a QMD of 22.4 inches.
13. The 109 biggest trees/acre had a QMD of 22.9 inches.
14. This number may be low—the walk-through exam revealed more and larger snags present
15. The 130 biggest trees/acre had a QMD of 20.7 inches.

**Table 38. Blowdown Risk Assessment**

Blowdown Risk Assessment	Stand																							
	1	2	3	4	5	6	7	8	9	10	11	16	17	18	20	21	22	23	24					
1. Predominantly hemlock and Sitka spruce stands – shallow rooting (Harris, 1989)							X			X														
2. Hemlock/spruce stands on mound and pit topography or with a high percentage of trees growing on old stumps and/or down logs (history of blowdown)																								
3. Where gaps are created that allow storm winds to channel into the stand (Smith, 1962)	1 X	1 X	1 X	1 X	1 X	1 X	1 X	1 X	1 X	1 X	1 X	1 X	1 X	1 X	2	2	3 X	2	2					
4. Heavily thinned stands (Harris, 1989)																								
5. Stands adjacent to clearcuts that occur within a year or two after thinning (Kugel Thin, 1992-93)																								
6. Stands with H/D ratios approaching or exceeding 100 (Oliver)																								
7. Large flats (David Peter, Sol Duc Watershed Analysis, 1995)																								
8. Exposure to storm winds (Harris, 1989)	X				X	X	X					X			X	X	X	X	X	X	X	X	X	
9. Wet soils (David Peter, Sol Duc Watershed Analysis, 1995)																								
10. Shallow soils to impervious layer (Harris, 1989)																								
11. Stands that have not been thinned in the past (Smith, 1962)	X		X		X	X	X			X	X			X	X	X	X	X	X	X	X	X	X	
12. Narrow buffer strips between clearcuts and roads																								
13. Stands extensively infected with root rots	X					X		X								X	X						X	
Number of Risk Factors	4	1	2	1	3	4	4	2	1	3	2	2	1	2	2	3	4	2	3					
Overall Blowdown Risk	M	L	L	L	L	M	M	L	L	M	L	L	L	L	L	M	M	L	L					



**Table 39. Stand prescription notes.**

<b>Unit</b>	<b>Boundaries</b>	<b>Other Skip Areas</b>	<b>Diameter Limits</b>	<b>Other</b>
1	Specified riparian no-cut buffer along Rocky Brook	100 ft no-cut buffer around identified remnant old-growth (OG) trees	20" upper 8" lower	Lay out small clearcuts in 5 identified Phellinus pockets up to 1.5 ac Allow thinning among cedars (only cedars to "cut" other cedars) above 2620 Rd Allow thinning among hardwoods (only hardwoods to "cut" other hardwoods); cut 20 ft radius around BLM >16 in DBH
2	Specified riparian no-cut buffer along Rocky Brook	100 ft no-cut buffer around OG trees SW side	20" upper 8" lower	
3		100 ft no-cut buffer around OG trees in middle and W end	20" upper 8" lower	Lay out small clearcuts in 3 identified Phellinus pockets up to 1.5 ac
4		100 ft no-cut buffer around identified OG tree(s)	20" upper 8" lower	
5		Doghair patch upper mid stand; Rock outcrops SE corner; 100 ft no-cut buffer around identified OG tree(s)	20" upper 8" lower	
6	Boundary out park-like alder patch lower NW end adjacent to Stand 5	100 ft no-cut buffer around several OG trees, small groups, OG patch.	20" upper 8" lower	Allow thinning among cedars where dense
7		Brushy areas and legacy snag patch area between converging streams SW side; 100 ft no-cut buffer around identified OG tree(s)	20" upper 8" lower	
8	Avoid older, unlogged stand along SW edge	100 ft no-cut buffer around identified OG tree(s)	20" upper 8" lower	
9		Alder patch NE corner; 100 ft no-cut buffer around identified OG tree(s)	20" upper 8" lower	

<b>Unit</b>	<b>Boundaries</b>	<b>Other Skip Areas</b>	<b>Diameter Limits</b>	<b>Other</b>
10	Avoid finger of DF OG trees and snags SW side		20" upper 8" lower	
11	Boundary out unlogged natural stand area at E end; Also area already thinned by Turner CT in 1986	1-2 ac triangle bounded by Jackson Ck, Turner CT stand, and 2620030	20" upper 8" lower	Move temp road location to avoid 60" OG DF at E end of stand
16			20" upper 8" lower	
17		1 ac area short, small trees N side of stand	20" upper 8" lower	PSF and WWP would be additional "ghost trees" (besides RA and WRC)
18			20" upper 8" lower	
20		No-cut buffers around blowdown patches N ridge and SE draw	24" upper 8" lower	
21	Pull unit boundary in 66 feet from ownership bndy	100 ft no-cut buffer around identified OG tree(s)	24" upper 8" lower	
22		Area between trail and stream plus 66 ft no-cut buffer along trail	26" upper 10" lower	WH would be additional "ghost tree"
23	Pull unit boundary in 66 feet from ownership bndy	Rock outcrops near ridge	24" upper 8" lower	
24	Pull unit boundary in 66 feet from ownership bndy		24" upper 8" lower	WH would be additional "ghost tree"

## C. Summary Tables of Roads Proposed for Use<sup>35</sup>

**Table 40. Temporary Roads Proposed for Use**

Route #	Road Type	Proposed Road Use	Post Harvest Treatment	Alt. A (miles)	Alt. B (miles)	Alt. C (miles)	Alt. D (miles)
2620001	New temporary rd	Temporary rd	Decommission	0.1	0.1	0.1	0.1
2620002	New temporary rd	Temporary rd	Decommission	0.1	0.1	0.1	0.1
2620044	Decommissioned rd	Temporary rd	Decommission	0.4	0.4	0.0	0.4
2620046	Decommissioned rd	Temporary rd	Decommission	0.2	0.2	0.0	0.2
2620105	New temporary rd	Temporary rd	Decommission	0.3	0.3	0.0	0.3
2620106	New temporary rd	Temporary rd	Decommission	0.6	0.0	0.0	0.0
2620107	New temporary rd	Temporary rd	Decommission	0.8	0.8	0.0	0.8
2620110	New temporary rd	Temporary rd	Decommission	0.4	0.4	0.0	0.4
2620111	New temporary rd	Temporary rd	Decommission	0.4	0.4	0.0	0.4
2620119	Decommissioned rd	Temporary rd	Decommission	0.4	0.4	0.0	0.0
2620122	New temporary rd	Temporary rd	Decommission	0.1	0.1	0.1	0.1
2730015	New temporary rd	Temporary rd	Decommission	0.1	0.0	0.1	0.1
2730034	New temporary rd	Temporary rd	Decommission	0.03	0.0	0.0	0.0
2730035	New temporary rd	Temporary rd	Decommission	0.04	0.0	0.0	0.0
			<b>Total new temp roads</b>	<b>3.8</b>	<b>3.1</b>	<b>0.4</b>	<b>3.2</b>
2620104	Unclassified, abandoned rd	Temporary rd	Decommission	0.1	0.1	0.1	0.1
2620107	Unclassified, abandoned rd	Temporary rd	Decommission	0.1	0.1	0.0	0.1
2620108	Unclassified, abandoned rd	Temporary rd	Decommission	0.7	0.7	0.0	0.7
2620109	Unclassified, abandoned rd	Temporary rd	Decommission	0.4	0.4	0.0	0.0
2620110	Unclassified, abandoned rd	Temporary rd	Decommission	0.2	0.2	0.0	0.2
2620115	Unclassified, abandoned rd	Temporary rd	Decommission	0.2	0.2	0.0	0.2
2620116	Unclassified, abandoned rd	Temporary rd	Decommission	0.3	0.3	0.0	0.3
2620117	Unclassified, abandoned rd	Temporary rd	Decommission	0.2	0.2	0.2	0.2
2620117	Unclassified, abandoned rd	Temporary rd	Decommission	0.1	0.1	0.1	0.1
2630020	Unclassified, abandoned rd	Temporary rd	Decommission	0.4	0.4	0.0	0.4
			<b>Total unclassified, abandoned rd</b>	<b>2.4</b>	<b>2.4</b>	<b>0.4</b>	<b>2.0</b>
			<b>Total Temp. Roads</b>	<b>6.2</b>	<b>5.5</b>	<b>0.7</b>	<b>5.2</b>

<sup>35</sup> Values given are approximate and based on computer mapping and other calculations. These values may differ from actual project layout and implementation.

**Table 41. Summary table of system roads proposed for use.**

<b>Route #</b>	<b>Current Operational Maintenance Level</b>	<b>Work Proposed (if used as part of alternative)</b>	<b>Post Harvest Maintenance Level</b>	<b>Alt. A (miles)</b>	<b>Alt. B (miles)</b>	<b>Alt. C (miles)</b>	<b>Alt. D (miles)</b>	
2620	Level 2	spot surfacing	Level 2	11.6	11.6	11.6	11.6	
2620030	Level 2	spot surfacing, culvert replacements	Level 2	9.7	9.7	9.7	9.7	
2620032	Level 2	spot surfacing	Level 2	0.0	0.0	0.5	0.5	
2620034	Level 1	spot surfacing	Level 1	0.1	0.1	0.1	0.1	
2620035	Level 2	spot surfacing	Level 2	1.0	1.0	1.0	1.0	
2620050	Level 2	spot surfacing	Level 2	0.1	0.1	0.1	0.1	
2620051	Level 2	spot surfacing	Level 1; decommission if funds are available	0.3	0.3	0.3	0.3	
2620060	Level 2	spot surfacing	Level 2	1.5	1.5	1.5	1.5	
2630	Level 2	spot surfacing, culvert replacements	Level 2	4.9	4.9	4.9	4.9	
2630020	Level 2	spot surfacing	Level 1; decommission if funds are available	0.9	0.9	0.9	0.9	
2730	Level 3	spot surfacing	Level 3	3.8	0.0	3.8	3.8	
2730011	Level 2	spot surfacing	Level 2	0.6	0.0	0.6	0.6	
				<b>Total System Roads =</b>	<b>34.5</b>	<b>30.1</b>	<b>35.0</b>	<b>35.0</b>
				<b>Total Temporary &amp; System Roads =</b>	<b>43.3</b>	<b>38.2</b>	<b>35.8</b>	<b>40.2</b>

## D. Road Definitions

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Forest roads. As defined in Title 23, Section 101 of the United States Code (23 U.S.C. 101), any road wholly or partly within, or adjacent to, and serving the National Forest System and which is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources.

National Forest System road. A classified forest road under the jurisdiction of the Forest Service. The term “National Forest System roads” is synonymous with the term “forest development roads” as used in 23 U.S.C. 205.

New Road Construction. Activity that results in the addition of forest classified or temporary road miles (36 CFR 212.1).

Public roads. Any road or street under the jurisdiction of and maintained by a public authority and open to public travel (23 U.S.C. 101(a)).

Road. A motor vehicle travel way over 50 inches wide, unless designated and managed as a trail. A road may be classified, unclassified, or temporary (36 CFR 212.1).

a. Classified Roads. Roads wholly or partially within or adjacent to National Forest System lands that are determined to be needed for long-term motor vehicle access, including State roads, county roads, privately owned roads, National Forest System roads, and other roads authorized by the Forest Service (36 CFR 212.1).

b. Temporary Roads. Roads authorized by contract, permit, lease, other written authorization, or emergency operation not intended to be a part of the forest transportation system and not necessary for long-term resource management (36 CFR 212.1).

c. Unclassified Roads. Roads on National Forest System lands that are not managed as part of the forest transportation system, such as unplanned roads, abandoned travel ways, and off-road vehicle tracks that have not been designated and managed as a trail; and those roads that were once under permit or other authorization and were not decommissioned upon the termination of the authorization (36 CFR 212.1).

Road Decommissioning. Activities that result in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1), (FSM 7703).

Decommissioning includes applying various treatments, which may include one or more of the following:

- a. Reestablishing former drainage patterns, stabilizing slopes, and restoring vegetation;

- b. Blocking the entrance to a road;
- c. Removing culverts, installing water bars and reestablishing drainage-ways, removing unstable fills, pulling back road shoulders, and scattering slash on the roadbed;
- d. Completely eliminating the roadbed by restoring natural contours and slopes; or other methods designed to meet the specific conditions associated with the unneeded roads.

Road maintenance. The ongoing upkeep of a road necessary to retain or restore the road to the approved road management objective (FSM 7712.3).

Road maintenance level. Maintenance levels define the level of service provided by, and maintenance required for, a specific road. Maintenance levels must be consistent with road management objectives and maintenance criteria. There are road five maintenance levels:

- a. Level 1. Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level.
- b. Level 2. Assigned to roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level.
- c. Level 3. Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities.
- d. Level 4. Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds.
- e. Level 5. Assigned to roads that provide a high degree of user comfort and convenience.

Road Reconstruction. Activity that results in improvement or realignment of an existing road<sup>36</sup>

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<sup>36</sup> For the purposes of this analysis, the term reconstruction is used to reference construction on system roads, as well as unclassified, abandoned road grades.

## E. Response to Comments

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Topic	Comment	Author	Response
Agency mandate	Under the Organic Act of 1897 and the Multiple Sustained Yield Act of 1960, the U.S. Forest Service is mandated to manage the land for a variety of uses, including timber production, wildlife, and recreation uses. We urge the Olympic National Forest to proceed with this project and others that have like goals.	Malcolm Dick, Jr (American Forest Resource Council)	Thank you for your comment.
Alternatives	We are very happy to see Units 13 and 14 on the east slope of Mt. Turner dropped from consideration. Unit 6, however, is an LSR stand that could be considered over 80 years old, already exhibits a suite of late successional characteristics, is designated critical habitat with “potential constituent elements” for marbled murrelets and, thus, should also be dropped from consideration for thinning.	Jim Scarborough (Olympic Forest Coalition), Tim McNulty (Olympic Park Associates)	Thank you for your comment. Based on stand exam tree data, the year of origin for the majority of the stand is 1930, which is the basis for determining stand age. Due to 1) the amount of potential murrelet nest and legacy trees exist through much of Unit 6 and a portion of Unit 1 that would be buffered and not cut under any alternative and 2) the nearness of Unit 6 to the 80 year age limit for silvicultural treatments, all of Unit 6 and the southernmost portion of Unit 1 are dropped from the final decision.

Topic	Comment	Author	Response
Alternatives	<p><b>Support for Alternative A.</b> The only reason to choose Alternative B is to appease the radical environmental groups and the closet radical environmentalists within the Forest Service. There are both rules concerning habitat protection, as well as putting up economically feasible (i.e., profitable thinning projects) to potential bidders. Don't exclude quality wood (i.e., "older wood") from the project.</p>	Eric Bower (Bower Logging)	Thank you for your comment.
Alternatives	<p><b>Support for Alternative A</b> because: 1) the age class of timber proposed for this thinning has significant economic value, 2) we support the thinning of the maximum number of acres, 3) this proposed thinning will produce both economic and ecological benefits, and 4) the long term gain of this project will mitigate any short term loss of recreational opportunities. We do not support Alternative B, C, or D because of the smaller acreage to be treated and the decommissioning of roads. Alternative C and the</p>	Carol Johnson (North Olympic Timber Action Committee)	Thank you for your comment.



Topic	Comment	Author	Response
	<p>proposed minimal use of roads would indicate the greater use of helicopter logging, which would greatly increase costs and decrease revenue.</p>		
<p>Alternatives</p>	<p><b>Support for the No Action Alternative or Alternative B.</b> Both of these alternatives would protect Mt. Walker and Unit 6. Mt. Walker serves as a beacon for visitors to the Quilcene area. Thinning on Mt. Walker would impact tourism, local recreation opportunities, and aesthetics. There is also concern regarding sediment-related impacts to water quality.</p>	<p>Mike Anderson (Quilcene, WA); Connie Gallant (RV Consumer Group, Quilcene Citizens Coalition, Olympic Forest Coalition, Jefferson County Democrats); Shirley Smith-Moore (Brinnon, WA); JD Gallant (Jefferson County Planning Commissioner) ; Eric Anderson and Sandy Shea (Quilcene,</p>	<p>Thank you for your comment.</p>

Topic	Comment	Author	Response
		WA); Hazel Munday (Brinnon, WA); Donna Winter (Pt. Townsend, WA); Kristin Olson (Quilcene, WA); Larry and Arleen Schinke for the Jay Schinke Family, Adams Family, Favro Family, Rollo Family, Stark Family, Hall Family, and Patricelli Family	
Alternatives	<p><b>Support Alternative C.</b>                      Having hiked extensively in the Mt. Walker area, I recognize that the forest on Mt. Walker is not a climax old growth forest. There are many doghair stands that should be thinned to promote growth of older trees and reduce the catastrophic fire hazard. This alternative would accomplish the thinning without building new roads as recommended</p>	Graham Wright (Hollister, CA)	Thank you for your comment.

Topic	Comment	Author	Response
	in the other alternatives.		
Alternatives	<b>Support Alternative B</b> because it would fairly accomplish the U.S. Forest Service goals while somewhat protecting the watershed above us. Our cabin's water is supplied by a gravity spring system and is very vulnerable to excessive runoff caused by logging and road construction.	Ed and Kate Kennell (part-time resident and landowner on the west side of Dabob Bay at the base of Mt. Walker)	Thank you for your comment.
Alternatives	Support <b>Alternative B</b> because it would have the least environmental impact. Jefferson county is heavily dependent upon the tourism generated by the natural beauty of our forestlands, particularly the vistas, trails, and campsites adjacent to Highway 101 and around Mt. Walker.	John Austin (Jefferson County Commissioner)	Thank you for your comment.
Alternatives	Favor whichever alternative decommissions the most roads and reserves the use of helicopters for areas most unfeasible for cable or road-based logging activities.	Rory Henneck (Seattle, WA)	Thank you for your comment.

Topic	Comment	Author	Response
Alternatives	Oppose any timber thinning in the proposed areas at this time.	Hazel Munday (Brinnon, WA), Bill Summers (Pt. Angeles, WA), Nancy Davies (Lilliwaup, WA)	Thank you for your comment.
Alternatives	Support <b>Alternative B</b> because, while it is difficult to distinguish between “thinning” by the U.S. Forest Service and DNS and clearcutting by the logging industry, it would be marginally better for the environment.	John and Carole Gusoskey (Quilcene, WA)	Thank you for your comment.
Alternatives	Preference to not thin on Mt. Walker, but by thinning 25% instead of 33% and tagging trees to be cut, a compromise for the good of all parties is possible.	Dick and Leah Jo Patricelli (Quilcene, WA)	<p>Thank you for your comment. Doing a lighter thinning as you suggest may not allow enough light through the forest canopy to stimulate growth of understory plants or the development of multiple canopy layers, which are components of the late successional and old growth habitat characteristics that this project seeks to develop. In general, approximately 60%-90% canopy would still be maintained across the treated units under the project's thinning prescription. Research also shows that the level of thinning would be light enough to limit blowdown subsequent to thinning.</p> <p>While individual trees will not be tagged, compliance with harvest specifications are still verifiable by examining the stumps of the cut trees, which indicate tree sizes, tree species, and number and spacing of trees cut.</p>
Alternatives	Encourage the Forest Service to avoid logging the area that contains the hiking trail and to	Hal Beattie (Brinnon, WA)	Thank you for your comment. Thinning treatments on Mt. Walker is not included in the final decision.

Topic	Comment	Author	Response
	leave a buffer around the road. Believe that <b>Alternative B</b> would address this concern.		Measures, however, such as having a 66-foot no-cut buffer around the Mt. Walker trail and minimizing disturbance within 100-feet of the trail were incorporated into all alternatives that considered thinning on Mt. Walker.
Alternatives	Support the Jackson Thinning project at the highest output level for the following reasons: 1) Judicial timber harvest substantially will broaden flora quality and quantity and fauna; 2) Timber production is among the multiple uses mandated for National Forests and will provide employment as well as domestic, rather than imported, forest products; and 3) Harvest will enhance recreation and visual opportunities for permanent residents and visitors alike.	Malcolm Dick, Jr (American Forest Resource Council)	Thank you for your comment.
Alternatives	Support for <b>Alternative B</b>	Duane Worthington, Rebekah Ross (Brinnon, WA), John Kennell, Patricia Thomsen (Quilcene, WA)	Thank you for your comment.
Alternatives	Support for <b>Alternative B</b> to protect the recreation opportunities provided by Mt. Walker.	Penelope Hill Walker (Brinnon, WA)	Thank you for your comment.

Topic	Comment	Author	Response
Alternatives	Support for <b>Alternative B</b> because of sediment and water quality concerns.	Cathy Kain (Quilcene, WA)	Thank you for your comment.
Alternatives	Support for <b>Alternative A</b> for the long term health of our forests.	Davis Steelquist (Quilcene, WA)	Thank you for your comment.
Alternatives	Support for <b>Alternative B</b> . This alternative would still allow thinning on approximately 1600 acres. Mt. Walker is a source of great pride and joy. Do not let it become yet another one of the U.S. Forest Service’s clearcut eyesores.	Jane Hall- Lazelle and Keith Lazelle (Quilcene, WA)	Thank you for your comment. The Olympic National Forest, however, stopped clearcutting over 12 years ago and is often assumed to be responsible for activities on state and private land. This project does not propose to clear cut forest. Trees are being proposed for removal to enhance the diversity of the understory and the structural diversity of the forest. Rather than a “clearcut eyesore,” this project would not be noticeable to casual visitors after implementation of the thinning. Please see the visual quality section of the environmental assessment (EA p. 180-187) for descriptions, pictures, and modeling results, particularly for Mt. Walker.
Alternatives	Recommend a hybridized version of <b>Alternatives B and C</b> without the inclusion of Unit 6. An acceptable sale would include the majority of units in Alternative B’s original non-modified form, but accessed through the methods stipulated in Alternative C – with minimal road construction/reconstruction and liberal use of helicopters for the purpose of riparian/aquatic integrity. However, an additional request is to remove the	Jim Scarborough (Olympic Forest Coalition), Marcy Golde (Seattle, WA) , Tim McNulty (Olympic Park Associates)	Thank you for your comment.

Topic	Comment	Author	Response
	planned 0.3 miles of road reconstruction within Riparian Reserve that is included in Alternative C.		
Alternatives	Advocates minimizing any impact on the slopes of Mt. Walker, especially the southwestern trail.	Gary Webb	<p>Thank you for your comment. Thinning on Mt. Walker is not included in the decision for this project.</p> <p>Under all alternatives that considered thinning on Mt. Walker, however, ample mitigation measures to prevent impacts to the Mt. Walker trail were included. In particular, visual quality would be preserved, and in the long term, enhanced. The only unavoidable impact if Mt. Walker were thinned would be the loss of access to the trail and summit during project implementation.</p>
Climate change	We applaud the Forest Service for acknowledging the role of climate change variables in the project's design, but note the agency's silence regarding the increased rain-on-snow events expected on the Olympic Peninsula over time. This phenomenon results in severe damage to mountain road systems and correspondingly, our watersheds	Jim Scarborough (Olympic Forest Coalition)	<p>Thank you for your response. Our review of climate forecasts for the Pacific Northwest did not reveal any strong evidence for increased rain-on-snow events on the Olympic Peninsula. Two local climate scientists reviewed a draft of the EA's climate change section prior to the public comment period. During the review one of the scientists, David Peterson, commented that "[t]he climate forecasts concerning precipitation are so uncertain that they are hardly worth considering. The biggest changes (due to temperature increase) will be changes in seasonality of snowmelt and streamflow, but I don't think that would lead to more effects on roads unless you have stream channels that are filling with sediment, thereby decreasing stream channel volume and increasing flooding. This can occur if you have a lot of debris flows in a particular location. The effects of more rain-on-snow events will vary by watershed with respect to potential for more flooding." At this time, the Olympic National Forest does not have any information about specific watersheds' likelihood for increased rain-on-snow events.</p> <p>The University of Washington's Climate Impacts Group web site (<a href="http://cses.washington.edu/cig/pnwc/ci.shtml">http://cses.washington.edu/cig/pnwc/ci.shtml</a>) ranks predicted</p>

Topic	Comment	Author	Response
			<p>impacts from climate change by confidence level. The likelihood of winter flooding in rain-dominated basins and coastal flooding were given a medium confidence level. Annual streamflow volumes and landslides were assigned to the lowest confidence level.</p> <p>No road-related impacts due to climate change are expected, however, given that this project is likely to be completed within the next five to ten years, and mitigation measures for this project require that all road culverts in place for longer than one year must accommodate 100-year flows.</p>
Economics	Mt. Walker is an asset to the community, and the thinning would have a major and adverse economic impact to the local area.	JD Gallant (Jefferson County Planning Commissioner)	Thank you for your comment.
Economics	The EA does not provide cost or revenue assumptions, including economic analysis by road segments. The Tee EA from the Gifford Pinchot National Forest provided one of the best economic sections and can be used as an example.	Derek Churchill (Conservation Northwest)	As stated in the EA, the economic analysis was determined using the Forest Service's regional TEA.ECON economic analysis tool. This tool is made up of 10 spreadsheets of calculations for each alternative. While underlying assumptions can be disclosed, detailed descriptions of the analysis are difficult to present in the EA. For those who are interested, however, the analysis information is always available upon request.



Topic	Comment	Author	Response
Ecosystems	Mt. Walker should be left undisturbed and left to develop into old growth habitat on its own.	Mike Anderson (Quilcene, WA), Christie Taylor (Chimacum, WA), Jim Scarborough (Olympic Forest Coalition)	Thank you for your comment.
Ecosystems	Concerned about cutting trees that support the ecosystem, and are part of the pristine beauty, clean air, and lifestyle that the Peninsula provides.	Shirley Smith-More (Brinnon, WA)	Thank you for your comment. We also value healthy ecosystems, and seek to use the same tool of cutting trees in a different way to develop habitats (late successional and old-growth habitats) that past clear cut logging eliminated.
Environmental assessment	This EA is impressive in both scope and detail, while assisting the reader to better understand the questions and issues involved in what is indisputably a large project. The current EA reflects a good bit of work by your staff as well as input from the environmental community. It is a comprehensive document, and we appreciate your effort.	Jim Scarborough (Olympic Forest Coalition), Tim McNulty (Olympic Park Associates)	Thank you for your comment.

Topic	Comment	Author	Response
Environmental impact	Concern voiced about environmental damage the Jackson Thin may produce on the mountain slopes.	JD Gallant (Jefferson County Planning Commissioner)	<p>Thank you for your comment and concerns. Commercial thinning treatments on Mt. Walker are not included in the final decision.</p> <p>The project, however, was designed to minimize environmental impacts to Mt. Walker. The purpose of this project is to enhance the forest stand structure and diversity, not to degrade it.</p>
Environmental impact	Not enough thought and consideration has been put into resulting effects, both environmental and economic, that thinning would have on the surrounding streams, rivers, and Hood Canal itself. Already struggling, the Hood Canal does not need any increased runoff from poorly designed logging operations.	Hazel Munday (Brinnon, WA), Bill Summers (Pt. Angeles, WA), Nancy Davies (Lilliwaup, WA)	<p>Numerous design criteria measures and the riparian no-cut buffer prescription were developed to minimize effects to aquatic habitats and shall be implemented for the project. These design criteria are described in the EA, beginning on page 41.</p> <p>See the aquatic habitat and fisheries section of EA, beginning on page 135 for effects of sedimentation to aquatic habitat conditions.</p>

Topic	Comment	Author	Response
Environmental impact	With respect to public concerns that thinning fire regenerated stands over 80 years old may harm, rather than help, natural development of those stands, a properly managed thinning operation has a low failure risk. An operational failure in any one operation is not a disaster. We revel in our successes, but we learn from our mistakes	Malcolm Dick, Jr (American Forest Resource Council)	Thank you for your comment.
Fire	A major concern is that if more thinning is done it will open up the canopy, which would allow for the forest floor to dry up quicker, making it more susceptible to combustion. It would behoove all residents of Quilcene and Brinnon not to have any forest fires because, as witnessed in other areas of the country, fires are very unpredictable and can quickly wipe out large areas of wilderness and human habitat.	Connie Gallant (RV Consumer Group, Quilcene Citizens Coalition, Olympic Forest Coalition, Jefferson County Democrats)	<p>Fuels Management Analysis Program Plus (FMA Plus) was used to model the potential fire behavior and fire size prior to treatment and post treatment in the proposed project area. FMA Plus uses fuel moistures and the amount of fuel in tons per acre in various size classes to predict potential fire behavior and fire size. Modeling was done for pre- treatment and post treatment conditions in the proposed project area. The fuel moistures used in the modeling of the potential fire size and behavior only occur 10 percent or less of the time between the months June through September at local weather stations. Although thinning will allow more sunlight and wind to the ground they should not reduce the fuel moistures below those used in the fire modeling</p> <p>The leading cause of fires on the Olympic National Forest is human activities. (i.e., camping, vehicles, and smoking). The mitigation measures in the EA are designed to limit the risk of humans caused fires and to allow local resources to be effective during initial attack.</p>

Topic	Comment	Author	Response
Implementation	Concern that the environmental assessment does not address human factors such as enforcement of standards for contractors that will complete the thinning itself. Concern voiced that limited supervision by the Forest Service will not adequately protect the species and ecological function that this report addresses. This is because the plants, distance and size designations, and masses are often difficult to determine by the technician in the field	Rory Henneck (Seattle, WA)	Thank you for your comment. The timber sale administration team on the Olympic National Forest is highly trained in contract law and compliance. The thinning prescriptions and cutting guidelines are written to a specific standard which does not allow the contractor any variance. Cutting guidelines are monitored on the ground for compliance; any deviation by the contractor would result in breach of contract, and/or a timber theft investigation by federal law enforcement personnel, and/or disbarment.

Topic	Comment	Author	Response
Implementation	Trees to be thinned should be tagged. We are not convinced that any logging company existing today is capable of following the contract to the letter and the intent of the contract when they are allowed the choice of what to cut. Weekly inspections are totally inadequate when it comes to managing a for-profit company that is allowed the freedom to make those selections. Daily inspections may not even be enough. We see no way you could feel comfortable in managing a cut of this magnitude without pinning the loggers to only cut trees you have marked. It is a big job, but the no tagging method seems clearly inadequate for this area.	Dick and Leah Jo Patricelli (Quilcene, WA)	As stated in the previous response, the timber sale administration team on the Olympic National Forest is highly trained in contract law and compliance. The thinning prescriptions and cutting guidelines are written to a specific standard which does not allow the contractor any variance. Cutting guidelines are monitored on the ground for compliance; any deviation by the contractor would result in breach of contract, and/or a timber theft investigation by federal law enforcement personnel, and/or disbarment.
Landscape Analysis	Considerable landscape level analysis is included, both new analysis and from the watershed analyses and LSR assessment. Doing even more landscape level analysis is strongly encouraged for subsequent planning areas.	Derek Churchill (Conservation Northwest)	Thank you for your comment. A more detailed explanation, however, would be helpful to understand what additional landscape level analysis is suggested and the specific concerns that such analysis would address.

Topic	Comment	Author	Response
Logging systems	The U.S. Forest Service should review harvest systems chosen. Helicopter harvest is often proposed when it could be harvested by other means. Helicopter harvest is a very useful tool when properly used, but it is expensive and should be used where less expensive harvest systems will not meet the management objectives.	Malcolm Dick, Jr (American Forest Resource Council)	Thank you for your comment. Consideration of logging systems options were considered with respect to both economics, as well as resource concerns.
Logging systems	The phrase “if possible” should be removed, so ground-based landings are required to be located on existing roadways or on existing landings to provide the eventual purchaser(s) with less ambiguous standards for operation.	Jim Scarborough (Olympic Forest Coalition)	Using only existing roadways and landings will not be sufficient to treat the stands identified in the final decision. The number and extent of new landings and spur roads constructed, however, will be minimized where possible. For example, some identified landing locations could be used at separate times for ground-based yarding and helicopter yarding purposes, therefore, minimizing the number of landings needed. Proposed landing locations, however, must be agreed upon by both the purchaser and the Forest Service timber sale administrator. Given that landing locations and other components of project implementation must follow project design criteria, purchasers do not have ambiguous standards.

Topic	Comment	Author	Response
Northwest Forest Plan	Dispute the statement on p. 15 of the environmental assessment that "timber activities on the Olympic National Forest are well within the guidelines of the Northwest Forest Plan. The Forest Service has a chronic disregard of Riparian Reserves (with repeated instances of these zones being roaded and logged), cumulatively dozens of miles of legally discouraged road construction in LSRs, and the agency's stated intent to boost annual timber volume three-fold beyond that intended in the Northwest Forest Plan.	Jim Scarborough (Olympic Forest Coalition)	<p>Despite popular interpretations, the Northwest Forest Plan's purpose is to meet the needs of both providing forest habitat and timber products.</p> <p>Riparian Reserve designations are not intended to prohibit silvicultural treatments. The Northwest Forest Plan standards and guidelines for Riparian Reserves states the following for timber management, "Apply silvicultural practices for Riparian Reserves to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy objectives" (C-32). The objective of this project includes enhancing forest stand structure and plant diversity in Riparian Reserve while protecting aquatic habitat. No-cut buffers within Riparian Reserves are designated to protect fish habitat and/or water quality from ground disturbance (EA p. 22).</p> <p>While road construction is discouraged in the Northwest Forest Plan, it is not prohibited in either Late Successional Reserves or Riparian Reserves (see p. C-16 and C-32 of the 1994 Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl). Careful consideration was given to the proposed roads and associated logging system in the planning area.</p>

Topic	Comment	Author	Response
Recreation	Not only does Mt. Walker serve as a tourist destination for the area, it also provides recreational opportunities for Olympic Peninsula locals. Mt. Walker is one of the few, pristine, and tranquil places that are accessible to anyone in the general public, as it's accessible by trail and automobile.	Allan and Mary Kollar (Quilcene, WA), Donna Winter (Pt. Townsend, WA), Bill Summers (Pt. Angeles, WA), Nancy Davies (Lilliwaup, WA), Libby Pease (former Brinnon resident), Hal Beattie (Brinnon, WA), Rebekah Ross (Brinnon, WA), Penelope Hill Walker (Brinnon, WA), Gary Webb, Nancy Gannon (Lilliwaup, WA)	Thank you for your comment.



Topic	Comment	Author	Response
Recreation	The Quilcene and Brinnon areas are dependent upon a fragile tourist economy. Any disruptions to the tourist attraction areas would have a major effect. Helicopter lifts will disrupt the peace and tranquility of the area, and logging trucks will increase the already heavily traveled Highway 101 and create slowdowns.	Mike Anderson (Quilcene, WA), Bill Summers (Pt. Angeles, WA), Nancy Davies (Lilliwaup, WA)	Thank you for your comment.
Recreation	In hiking the Mt. Walker trail this summer, we notice that erosion is already significant. With fewer trees, it would be hazardous as a trail.	Allan and Mary Kollar (Quilcene, WA)	<p>The decision to implement Alternative B (modified) will result in no activities in the Mount Walker area.</p> <p>The Forest Service is aware of the trail erosion on the upper 1/3 portion of the Mt. Walker Trail that is located at approximately 2,000 to 2,600' elevation. Plans are being developed to address the erosion sites in 2008. This area is well upslope of the harvest unit (Unit 22) that spanned the Mount Walker trail. Only about 10% of the trail would have been located within this harvest unit, and a 66 foot no-cut buffer on each side of the trail was designated (EA page 44) to protect the trail from logging activities.</p>
Recreation	The views from the top of Mt. Walker are superb and do not need improvement.	Hazel Munday (Brinnon, WA), Bill Summers (Pt. Angeles, WA), Nancy Davies (Lilliwaup, WA)	Thank you for your comment.

Topic	Comment	Author	Response
Recreation	Regarding public concerns that thinning on Mt. Walker would negatively impact recreation experience, a properly thinned stand is aesthetically pleasing to most people. A wall of unthinned trees may look like an opportunity to many foresters, but it is dark and foreboding to many citizens. An open, light stand is much more appealing, regardless of age or how it got to its more open condition. Open stands also are much more appealing to a wide variety of wildlife and bird species. Openings also can benefit streams by increasing biomass production.	Malcolm Dick, Jr (American Forest Resource Council)	Thank you for your comment.
Restoration	The activities listed under the “Potential Additional Restoration/Improvement Opportunities” section of the EA are mediocre. Some of the options listed are in no way restorative or improvements. Such activities include conifer release and understory plantings, as well as recreation improvements on Mt. Walker. We recommend	Jim Scarborough (Olympic Forest Coalition) , Tim McNulty (Olympic Park Associates)	Thank you for your comment.

Topic	Comment	Author	Response
	that any restoration or improvement activity focus instead on the ten other options listed. Hopefully, sale receipts will allow the decommissioning of the modest system road mileage identified on page 53.		
Riparian	Logging near riparian buffers should be limited to late spring when stream flows and precipitation are low.	Rory Henneck, (Seattle, WA)	Thank you for your comment. Rashin et al. (2006) have reported that a 10 meter (approximately 33 feet) buffer can be expected to prevent sediment delivery to streams from about 95 percent of harvest-related erosional features. For the Jackson Thinning, the minimum buffer on a non-fish bearing stream is 66 feet, and 100 feet for fish bearing streams. Numerous other project design criteria are listed in the EA, beginning on page 41. These criteria and buffers are adequate to address erosion, sedimentation, and slope instability concerns associated with sensitive riparian zones during all seasons. Other timber sale contract measures will be in place to temporarily suspend logging and haul activities if weather conditions warrant.

Topic	Comment	Author	Response
Riparian Reserve	Post-harvest canopy openings and helicopter landings should be placed entirely outside Riparian Reserve boundaries, not just 100 feet "from floodplains and stream valley floors" and outside riparian no-cut buffers, as currently proposed.	Jim Scarborough (Olympic Forest Coalition)	<p>Thank you for your comment. Standards and Guidelines for Riparian Reserves do not forbid roads or landings, but states that the Aquatic Conservation Strategy be met by "minimizing road and landing locations in Riparian Reserve." Project design criteria specify that existing landing be used where possible, and landings in Riparian Reserves will, if possible, be located on existing roadways that do not require expansion of the road prism or on existing landings that may require only minimum reconstruction to be made suitable for use." The project also require the mulching and replanting of newly constructed helicopter landings that remove conifers and the subsoiling of compacted and rutted soils following project implementation.</p> <p>Field investigations were used to develop the riparian no-cut buffer prescriptions described in the EA on page 22. These buffers have been determined to be adequate for the protection of riparian reserve values described in the Northwest Forest Plan.</p>

Topic	Comment	Author	Response
Roads	We do not support the decommissioning of any roads mentioned in Alternative A. The existing forest road system should be maintained and upgraded for the many values they provide such as access for future harvest and recreational opportunities, and fire breaks and access in the event of a fire. We continue to urge the Forest Service to upgrade and maintain the forest road system that is in place with no decommissioning.	Carol Johnson (North Olympic Timber Action Committee)	Thank you for your comment. We are aware of the benefits that roads provide, but we no longer have the funds to maintain the current road system. As such, roads are deteriorating to the point of posing a risk to aquatic resources. We will continue to work towards providing an adequate road system while protecting natural resources.
Roads	Roads associated with thinning tend to invite human abuses, including illegal fires, even when closed after the sale is complete. Please reduce the number of new roads built or else we will have more road problems to deal with in the future.	Connie Gallant (RV Consumer Group, Quilcene Citizens Coalition, Olympic Forest Coalition, Jefferson County Democrats)	Thank you for your comment. All temporary roads built in association with the proposed thinning will be fully decommissioned to prevent the illegal activities you described.

Topic	Comment	Author	Response
Roads	Concerns of local property owners about their water systems have gone unanswered. The disruption of local water systems by planned logging roads need to be addressed.	Hazel Munday (Brinnon, WA), Bill Summers (Pt. Angeles, WA)	With adherence to Project Design Criteria listed in the EA, sediment impacts to streams would be minimal (see sediment section of EA). No-cut buffers on streams are designed to prevent sediment delivery to streams from yarding and felling operations. Sediment delivery to streams would primarily be attributed to log haul, impacts are expected to be minor with adherence to Project Design Criteria, and monitoring of roads by Timber Sale Administrators. The decision, however, drops Units 13, 14, 20, 21, 22, 23, and 24 from any treatment, which would completely avoid any potential impacts to current legal local water systems, within the Seal Rock/Turner Creek area and Mount Walker/Spencer Creek area.
Roads	We do not support road construction and reconstruction in LSR and Riparian Reserves, as would occur in most of the alternatives presented for this project. Road expansion, even if temporary, violates the basic protective mechanisms of the Northwest Forest Plan (including the Aquatic Conservation Strategy), while negating the watershed analyses' emphasis on reduced road densities. Road (re)construction in these zones should be limited to uncommon exceptions with adequate, individual rationales and justification, in keeping with the letter and	Jim Scarborough (Olympic Forest Coalition)	<p>Thank you for your comment. While road construction is discouraged in the Northwest Forest Plan, it is not prohibited in either Late Successional Reserves or Riparian Reserves (see p. C-16 and C-32 of the 1994 Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl). Careful consideration was given to the proposed roads and associated logging system in the planning area. New temporary road construction in sensitive erosional landforms were dropped from the planning area.</p> <p>Careful consideration, however, was given to the road locations and design, along with associated logging systems in the Jackson planning area. The decision to implement Alternative B (modified) will result in the 0.9 miles of new and unclassified temporary roads and maintenance of 9.8 miles of existing Forest Service roads within the Riparian Reserve. All unclassified and new temporary roads will be decommissioned after use. Several of these existing unclassified roads are in a detrimental condition, with compacted road surfaces and altered hillslope hydrology impacts. Benefits of using these roads will result in long term improvements to these resources.</p>

Topic	Comment	Author	Response
	<p>spirit of the Northwest Forest Plan. In our 2005 scoping comments, we pointed to a number of empirical studies detailing the risks of such roads and incorporate by reference the same in our current comments. As noted in the EA, new road corridors also increase the risk of predation on murrelet nests.</p>		<p>References to research papers in your scoping response addressing the negative effects of roads have been reviewed and considered. Both the potential beneficial and potential negative resource effects of the proposed roads, whether new temporary road construction or abandoned road reconstruction, were addressed in the Affected Environment and Environmental Consequences chapter of the EA.</p>
Roads	<p>The Forest Service's distinction between new road construction and reopening old (and oftentimes nearly invisible) non-system grades is arbitrary and weak. There is essentially no difference in the ecological degradation and habitat fragmentation inflicted by both categories.</p>	<p>Jim Scarborough (Olympic Forest Coalition) , Tim McNulty (Olympic Park Associates)</p>	<p>The differences in impact between new road construction and reopening old, non-system roads differ by resource area. For soil considerations, there are difference between new road construction and reconstruction of existing unclassified, abandoned roads. Some of these differences are described in the EA (p 23-24), and in the Environmental Consequences sections for Soils. New road construction generally will remove more conifers of larger size than reconstructed unclassified roads. Impacts to soils and hydrology are also greater than reconstruction of unclassified roads, since no road prism "footprint" exists on the landscape prior to the construction. However, the Soils environmental consequences section does address both unclassified and new road construction as both being in a detrimental soil condition.</p> <p>The wildlife analysis of road-related effects in this EA, on the other hand, used the total miles of temporary roads (new construction and re-opening old unclassified roads) from Table 14 (p. 141) to compare road effects across alternatives for wildlife species. It took a biologically conservative stance in not distinguishing between the two categories in a tacit recognition that the terrestrial wildlife effects from new construction and re-opening are often indistinguishable. The terrestrial effects of re-opening old roads, however, can vary</p>

Topic	Comment	Author	Response
			along a continuum depending on how long the road has been allowed to re-vegetate.
Roads	Page 50 of the EA states that “any proposed removal of any tree larger than 36 inches dbh for road construction will require Forest Service wildlife biologist review.” Request clearer language in the EA and subsequent contracts to prohibit removal of legacy trees outright in all cases.	Jim Scarborough (Olympic Forest Coalition)	<p>Thank you for your comment. In addition to the conservation measure you mention, there are other conservation measures listed on pages 48 and 50 of the EA that protect, buffer, or retain residual old-growth trees or those with suitable murrelet or spotted owl nesting structure, which would likely include trees larger than 36 inches dbh. The net result would, in the vast majority of cases, preclude their removal before even reaching the biologist review stage, which provides an additional measure of oversight.</p> <p>While the intent of the project is to avoid removal of any trees larger than 36 inches dbh for road construction, the Responsible Official has decided to maintain some flexibility to evaluate such circumstances, if they arise.</p>



Topic	Comment	Author	Response
Roads	Building and rebuilding and use of roads for log haul will cause extensive new sediment to move into the aquatic system. The number of road miles is directly related to stream degradation. In addition adding additional road miles needing post-harvest obliteration to the tremendous backlog already needing putting to bed is bad policy. To add to the road problems just when you are cooperating with WA State and the conservation community on getting federal funding from Norm Dicks to do the necessary road obliteration is just plain nonsensical.	Marcy Golde (Seattle, WA)	<p>Thank you for your comment. These road locations are generally away from stream-adjacent riparian areas, with few stream crossings, and on stable landforms. Numerous project design criteria that address roads, riparian areas, fisheries and logging activities associated focused on minimizing erosion and sedimentation will be implemented, and listed in Chapter 2, beginning on page 41. Impacts of sedimentation to the aquatic system are recognized, and described in the Fisheries section of the Environmental Consequences.</p> <p>All of the temporary new road construction and reconstruction roads will be decommissioned after use and are factored into the cost of the project (i.e., paid for and completed as part of the project and not added onto any road maintenance/decommissioning backlog).</p> <p>Contrary to the comment about this project adding to the road problem, opportunities may exist to utilize revenue generated from timber sale receipts to implement additional road decommissioning in the planning area, as outlined on page 53.</p>
Roads	There is an existing, old, unclassified road just above the 2620-107 in Unit 5 that is not shown on the EA maps. It appears that the proposed new temp road could be eliminated and the existing road prism reconstructed instead. Also, dropping most of Unit 6 due to legacy tree buffers will eliminate the need for much of road 2620106.	Derek Churchill (Conservation Northwest)	Thank you for your comment. A road grade does exist here, however it does not exist far enough to the west to enable cable yarding of Unit 5. Proposed road 2620-107 does extend far enough to the west to support the cable yarding operation.

Topic	Comment	Author	Response
Roads	Temporary spur roads and their landings often result in invasive weed issues and dispersed recreational sites. Keeping landings next to the existing road network where possible will limit these impacts. Given non of the roads used for this sale appear to be major recreational roads, building new spurs for safety reasons seems overkill. While it does involve extra costs, posting flaggers or simply closing roads while yarding is taking place makes more sense, especially on the smaller roads from which the majority of the yarding will take place.	Derek Churchill (Conservation Northwest)	Thank you for your comment. As part of the project design, as many existing roads and landings as possible were identified as potential landing locations to minimize the need for temporary roads. It is not always possible to use existing roads for landings, however, due to existing road grades, landing size requirements, logging feasibility issues, and safety of the public and workers.

Topic	Comment	Author	Response
Roads	<p>While I have seen many true temporary roads on the Forest that have been properly decommissioned, there are also examples of unnecessarily wide roads that appear to be engineered to permanent road standards. Providing clear design standards in the EA in terms of temporary road width, clearing widths, graveling, etc. would help build confidence that the temp roads will really be small, low impact roads. The contract provision that allows temp roads to be open for up to 5 years should be changed. Contractors should decommission roads when they are done yarding, plain and simple. If they have to suspend operations, partial decommissioning should be done. Five years is stretching the term “temporary” and also fosters mistrust when roads are left open for so long after thinning is completed.</p>	<p>Derek Churchill (Conservation Northwest)</p>	<p>Thank you for your comment. Engineered temporary roads are no longer current practice on the Olympic National Forest.</p> <p>The project design criteria contained in the EA do provide clear standards for the construction, maintenance, and decommissioning of temporary roads to reduce resource impacts while still ensuring safety (see EA pp. 45-48). For example, roads will follow the contours of the terrain and roll grades where possible. This reduces and/or eliminates the need for cut and fills, thus resulting in lower impacts. The clearing limits will be minimized to what is necessary for safe haul (typically are 16 feet on the level and 20 feet on curves). Purchasers are responsible for monitoring and maintaining functional road drainage, as well as preventing sediment from entering stream channels.</p> <p>There are no contract provisions that stipulate that temporary roads may be open for up to 5 years. Temporary roads may be left open for the length of the sale, if needed. Purchasers, however, would bear the additional cost of installing culverts to accommodate 100-year floods for roads that are not decommissioned within a year and perform erosion control and maintenance for as long as the road is left open. Therefore, purchasers do not have an incentive to leave temporary roads open unnecessarily. The five-years used in for the fisheries effects analysis in the EA assumes the longest time a temporary road is likely to be open, and state that “timber sales have the potential to last up to five years. Thus, temporary roads for each timber sale have the potential to be open for up to five years, with timber haul occurring intermittently over that same time.” Nowhere does the EA state that roads would be left open for so long after thinning is completed. In fact, the project design criteria require that temporary roads be decommissioned upon the last entry by the purchaser.</p>

Topic	Comment	Author	Response
Silviculture	Major issue is how well the thinning is managed. In an area so dependent on outdoor activities thinning to approximately 110 trees per acre seems very severe. If errors are to be made, please err on the side of less rather than more thinning.	Dick and Leah Jo Patricelli (Quilcene, WA)	Generally thinning will be done to a 35%-40% relative density that leaves a range of numbers of trees per acre, depending on average tree diameter. More trees are left where they are smaller. A picture of a stand immediately after thinning is shown in Figure 4 of the EA (p. 8) and likely is not as sparse as you are imagining.
Silviculture/ botany	Too few trees are removed from typical U.S. Forest Service thinnings to adequately benefit sub-arboreal flora for more than a short time period.	Malcolm Dick, Jr (American Forest Resource Council)	Thank you for your comment. Experience has shown that ground vegetation responds adequately to thinnings as typically prescribed on the Olympic NF over the past 15 years. More heavily thinned patches will be provided for in prescriptions and through storm events that cause breakage and blowdown subsequent to thinning.
Silviculture/ wildlife	The Mt. Walker area has relatively few openings in an otherwise dense forest canopy. Needs of all wildlife, including large ungulates, feline predators, bear and the multitude of neotropical and other bird life that thrive on openings and flora produced in those openings should be considered.	Malcolm Dick, Jr (American Forest Resource Council)	Thank you for your comment. Thinning treatments on Mt Walker are not included in the final decision. No openings were proposed on Mt. Walker, itself, because of visual quality concerns. Other areas in the project would be considered for openings (referred to as “gaps” in the environmental assessment) that would amount to as much as 5% of thinning units. In addition, the nature of variable density thinning would, in itself, create small scale openings that would be available to these wildlife species due to heavier thinning in places. Larger scale early successional openings would also be available to these species on the non-Forest Service lands surrounding three sides of Mt Walker.

Topic	Comment	Author	Response
Silviculture/ implementation	Helicopter logging safety and cost considerations would be enhanced when thinning is heavy enough to allow visibility through the canopy	Malcolm Dick, Jr (American Forest Resource Council)	Thank you for your comment. The visibility needs of helicopter logging were considered during the analysis process. The inclusion of gaps and slight increase in spacing provides the visibility and economics needed for helicopter yarding.
Silviculture	Question and oppose the need to clear root rot pockets and replant them with hardwoods or white pine. Allowing these naturally self-limiting disease pockets to persist would do far more for heterogeneity of surrounding forest stands, as supported by the third paragraph on page 74 of the environmental assessment.	Jim Scarborough (Olympic Forest Coalition)	<p>Only a handful of selected larger root rot pockets are proposed for the creation of wildlife openings. Root rot is common throughout the stands where the openings are proposed. The remaining root rot pockets would be thinned to a lighter intensity and left in the stand to add to the stand heterogeneity.</p> <p>Although recognized as an important habitat element in the watershed (USDA 1999, USDA and WDNR 1994), deciduous habitat is limited in the area. The clearing of selected root rot pockets offers the opportunity to 1) add additional diversity to the stand through the planting of deciduous species that would provide multiple values including seed food sources, neotropical bird habitat, and structural diversity in the forest stands, as well as 2) provide potential elk forage.</p>
Silviculture	Endorse the stated need for an unthinned buffer around residual legacy trees.	Jim Scarborough (Olympic Forest Coalition)	Thank you for your comment.

Topic	Comment	Author	Response
Silviculture	Many parts of unit 1, especially the southeast portion of the unit, are already very complex in terms of species diversity, understory development, vertical canopy development, and horizontal patchiness. Other sections of this unit do appear suitable for thinning, however. A simple solution would be to only thin the structurally simple sections of this unit and leave the rest unthinned.	Derek Churchill (Conservation Northwest)	Thank you for your comment. The southeast portion of Unit 1 is not included in the final decision. While originally included in the analysis, thinning around existing buffers would not be practical.
Silviculture	Consider options to include additional complexity in the silvicultural prescription. Suggestions include preserving the clumping or clustering of dominant and co-dominant trees by lowering the upper diameter limit, not cutting western redcedar or hardwoods in any units, no-cutting western hemlock, unless it is the dominant or co-dominant species, and not cutting any green damaged trees for wildlife benefits.	Derek Churchill (Conservation Northwest)	Thank you for your comment. Prescriptions often utilize upper diameter limits for the purpose of retaining clumped dominant trees. We are not proposing cutting cedar in most cases, where we might propose cutting cedar, it would only be done to provide more growing space to other cedars; most hardwoods scattered through stands will be retained as “ghost” trees. Green damaged trees will not be targeted for thinning under the prescriptions. Logging and subsequent storm events will soon replace any damaged trees removed by the thinning.

Topic	Comment	Author	Response
Soils	Overall, the analysis of sediment delivery is well detailed, and I agree with the conclusions. However, quantitative analysis would be helpful in supporting these decisions.	Derek Churchill (Conservation Northwest)	Using sedimentation models, for example WASHINGTON Road Surface Erosion Model (WARSEM) or Watershed Erosion Prediction Project (WEPP), and the level of resolution which they would be run would only come up with a numbers for erosion rates or bedload movement which at best are estimates, and which may or may not reflect or predict actual erosion rates very accurately. An accurate quantitative analysis of sediment generated from the project would be difficult to determine because of the variables associated with project activities. Uncertainties include when work would occur, weather conditions (rainfall amount, duration and intensity) during project implementation, the number of active streamcourses when the work would be taking place, condition of the road surfaces, and the intensity of timber haul. Although a quantitative analysis could potentially provide a gross estimate of the amount of sediment generated, it would not relate directly to impacts on fish or water quality because it would not be able to determine how much sediment would be captured by mitigation measures and how much sediment would actually reach stream channels. The fate and routing of fine sediment through stream channels is also largely unknown. The resulting figures from these models would ultimately be used to compare effects qualitatively on a relative scale between alternatives.
Soils	The statement that “no irreversible or irretrievable commitments of resources are associated with any alternative” on EA page 200 contradicts what is said on page 130 that compacted soil beneath temporary roads, skid trails, and landings “is unlikely to return to its original condition and productivity.”	Jim Scarborough (Olympic Forest Coalition)	<p>The impacts of temporary roads, skid trails and landings to soils are disclosed in the EA as you point out. Numerous design criteria and rehabilitation listed in the EA, however, will be implemented to minimize soil impacts and to improve soil conditions post-treatment. The Miller paper that is cited in EA regarding skid trails concluded that soil productivity, as it relates to tree height and volume, did not differ significantly between conifers planted in skid trails and those outside of compacted areas 7-8 years after harvest.</p> <p>The EA, however, has been updated to note that soil productivity would be lost or reduced to some degree on temporary roads and</p>

Topic	Comment	Author	Response
			landings due to soil displacement. Full recovery of productivity in these areas would not be anticipated despite efforts to restore these areas. The losses in productivity mentioned above are disclosed in the effects analysis as detrimental soil conditions. Implementing Alternative B would result in an increase in detrimental soil conditions of up to 2.7% of the project area over existing conditions (total of approximately 7.2% of the project area).
Visual quality	What would the view be like if this project is undertaken? While a resident of Brinnon I observed all types of logging practices and regardless of how well the areas are rehabilitated it takes many years for the site to regenerate to its previous beauty. It would be a shame to see this happen to such a superb environment.	Libby Pease (former Brinnon resident)	Thank you for your comment. The Forest Service has designated Mt. Walker and the Highway 101 corridor, in particular, as having high scenic value and is committed to maintaining that value. The primary purpose of the proposed thinning is to promote growth of the understory vegetation and the development of forest structure. In this way, the thinning differs substantially from clear cut harvesting commonly associated with logging. Please see our environmental assessment for numerous pictures of our recent thinning projects to understand how the views and landscape would or would not change. The pictures in Figures 3 through 6 of the environmental assessment s (EA pp. 7-9) show an unthinned stand, a stand immediately after thinning, and some time after thinning. Pictures of our temporary roads before and after decommissioning are shown in Figures 8 and 9 (EA pp. 24-25). Middleground and background views of similar thinning projects are shown in Figures 22 and 23 (EA pp. 186-187). Our visual quality section of our environmental assessment (EA pp. 180-187) for descriptions, pictures, and visual modeling results for our proposed thinning.



Topic	Comment	Author	Response
Water quality	It would be a shame to further subject the already heavily silted Quilcene Bay to further degradation resulting from increased forest road use in the Big Quilcene drainage. Greatly increased truck traffic on existing or re-commissioned logging roads in that drainage would be expected to impact adjacent and intersected streams. I would encourage the U.S. Forest Service to act in a way to avoid significant impacts to the Big Quilcene drainage.	Mike Anderson (Quilcene, WA)	Thank you for your comment. The preferred Alternative B, does not have any harvest or road building within the Big Quilcene watershed. There is potential for log haul to occur on FSR 2620 within the Big Quilcene watershed, (see sediment section of EA for effects) however, effects would be minimal with adherence to Project Design Criteria outlined in the roads section, and the Timber Sale Administrator's authority to stop operation if excessive amounts of sediment are observed being delivered to streams.
Water quality	The proposed thinning may create erosion into Quilcene Bay and Hood Canal, jeopardizing the shellfish industry.	Allan and Mary Kollar (Quilcene, WA), Kristin Kennell (Quilcene, WA)	The selected Alternative B (modified), does not have any harvest or road building within the Big Quilcene watershed. The designated no-cut buffers on streams and Project Design Criteria have been developed to minimized sediment delivery to streams. With these protective project elements in place impacts to water quality should be minor. For further details of water quality concerns see sediment section of EA.

Topic	Comment	Author	Response
Water quality	<p>The preferred Alternative B would entail 1.7 miles of road in Riparian Reserves with three new stream crossings. The table on page 139 of the EA suggests this project may well violate State of Washington water quality standards, primarily through increased sediment delivery and turbidity. Temporary roads with little, if any, monitoring assurances would have a life of five years or more, well beyond the window of heaviest aquatic damage early one would be expected to violate objectives #2, #3, and #5 of the Aquatic Conservation Strategy (ACS). ACS objective #8 may also be violated due to reduced large woody debris following thinning in Riparian Reserve.</p>	<p>Jim Scarborough (Olympic Forest Coalition)</p>	<p>With adherence to Project Design Criteria under Fisheries, Riparian Areas, Roads sediment impacts to streams are anticipated to be minimal (see sediment section of EA). The level of sedimentation to streams from project activities would not rise to the level or threshold which would violate State water quality standards or violate any of the Aquatic Conservation Strategy Objectives. Sediment effects of the proposed commercial thinning are primarily associated with implementation of harvest activities. After temporary roads are decommissioned and log haul ends, sediment effects would return to pre-harvest conditions and would not lead to chronic, lasting erosional sources post-harvest. Timber sale administrators do actually monitor timber sale activities such as log haul and would implement Project Design Criteria that are designed to prevent sediment delivery to streams.</p> <p>The EA has been updated to correct Table 13 (p. 140). Effects to drainage network increase from Alternatives A and B should be “M” (maintain) instead of “D” (degrade).</p>

Topic	Comment	Author	Response
Water systems	<p>Concern raised about the water system(s) on the property owned by my mother (Donita F. Cook) which lie directly below the proposed thinning. These spring-fed systems are situated up near the top of her property on a steep hillside bordering the National Forest units proposed to be thinned. No concern or answer has been forthcoming about runoff and road-building damage these water sources/systems may incur during and after the thinning project. Request an answer from people about any concerns, considerations and/or studies about these spring-fed systems that provide water for three residences and a business here on my mother's property.</p>	Hazel Munday (Brinnon, WA)	<p>With adherence to project design criteria sediment impacts to streams would be minimal (see sediment section of EA). No-cut buffers on streams are designed to prevent sediment delivery to streams from yarding and felling operations. Sediment delivery to streams would primarily be attributed to log haul, but impacts are expected to be minor with adherence to Project Design Criteria, and monitoring of roads by Timber Sale Administrators. Under Alternative B Units 13, 14, 20, 21, 22, 23, 24 have been dropped, which would avoid any impacts to current legal local water systems, within the Seal Rock/Turner Creek area and Mount Walker/Spencer Creek area.</p>

Topic	Comment	Author	Response
Wildlife	Areas where local wildlife can thrive have diminished vastly in the past few years. Mt. Walker is one of the few places left not in the Olympic National Park where wildlife such as blacktail deer, black bear, cougar, bobcat on down to the smallest kangaroo mouse can reproduce relatively undisturbed. Logging any part of it would disturb too much wildlife.	Hazel Munday (Brinnon, WA), Christie Taylor (Chimacum, WA), Bill Summers (Pt. Angeles, WA), Nancy Davies (Lilliwaup, WA)	Thank you for your comment. Thinning treatments on Mt Walker are not included in the final decision, so there will be no disturbance effects to the species you list as a result of that action. In general, timing restrictions meant to reduce effects on federally-listed species would also act to benefit a variety of species since their breeding seasons overlap to some extent.

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## F. References

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