

# Appendix E

## Final Environmental Impact Statement

### Tripod Fire Salvage Project

#### Soils

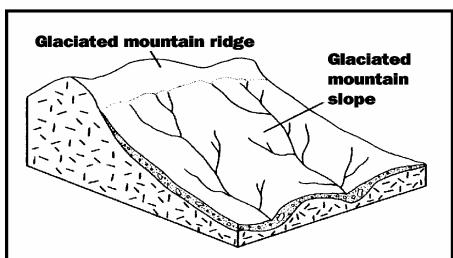
#### CHANGES BETWEEN DRAFT EIS AND FINAL EIS

No Changes

Topographic expression in the project area has been described in the in-service publication *Landtype Associations of Central Washington* (USDA, 2004). Continental glacial processes have shaped all landforms within the project area. This process also helps to explain soil properties and the occurrence of soils across the landscape.

Six dominant landform groups occur within the analysis area, Ia8, Ja8, Jb2, La2, Lb8 and Ou2, (USDA, 2004).

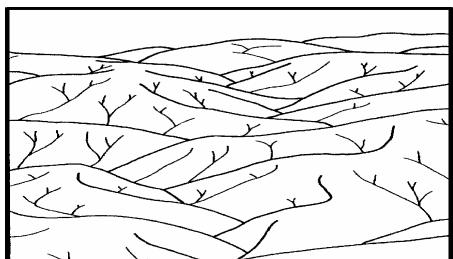
#### I Glaciated Mountain Slopes



This landform, Ia8, occurs on moderate relief mountain slopes and smooth, moderately broad convex ridges mantled with glacial till. Landforms were shaped by continental or alpine glacial ice sheets. Glacial till deposits occur typically in deeper draws and north facing slopes and are shallow or absent along ridges. Slopes are commonly less than 45%. Bedrock and geologic structure often control

topographic expression but vegetation patterns are influenced by depth of glacial deposits and elevation. Valleys are mildly V-shaped to U-shaped. Slopes are dissected by well defined, moderate to high gradient, intermittent and perennial streams in a sub-parallel to dendritic pattern. Streams are moderately to deeply incised. Seeps and springs are common along concave lower slopes.

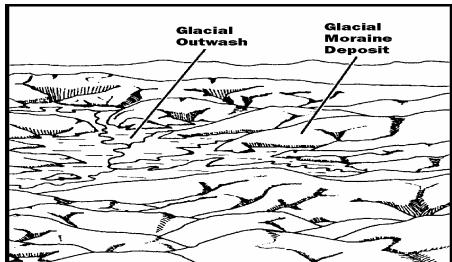
#### J Dissected Glaciated Mountain Slopes



These landforms, Ja8 and Jb2 occur on relatively steep, high relief mountain slopes with moderately narrow ridgetops and steep sideslopes. Slopes form relatively V-shaped valleys. Landforms were shaped by fluvial erosion and locally with some continental glaciation. Slope gradients range from 35-65%. Glacial till deposits if present, occur on north-facing slopes. Differential surface erosion influences

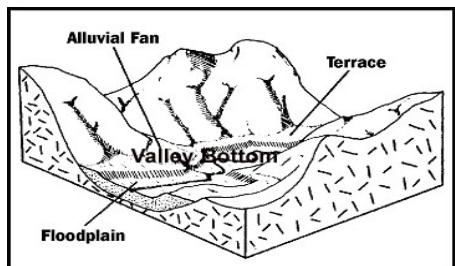
topographic expression with south-facing slopes being steeper and more highly dissected. Slopes are dissected by a relatively high density of confined, moderate to high gradient streams in a sub-parallel to weak dendritic pattern.

## L Glacial Moraines



These landforms, La2 and Lb8 occur on low to moderate relief, undulating or hummocky surfaces underlain by very deep glacial deposits. Glacial deposition was the most common land forming process and the landform commonly is underlain with ice-marginal and pro-glacial deposits such as eskers and outwash. Glacial till deposits are typically much greater than 20 feet deep but some rocky knobs or erratics may protrude on the surface. Slope gradients range from 0-20%. Local relief (ridge top to valley bottom) rarely exceeds 1,000 feet. Glacial moraine landforms occur mostly in wide upland valleys but occasionally occur as a mantle along ridges and mountain passes. Slopes are dissected by well defined, low to moderate gradient streams in a weak dendritic to deranged drainage pattern. Streams are usually deeply incised. Seeps, springs and ponding in depressions are common. Included within the landform are glacial-flood or lacustrine deposits. Pothole lakes are common. These glacial moraine landforms typically occur away from the proximity of the glacial trough landforms and are not confined in a glacial trough.

## O Valley Bottoms/Outwash



This landform, Ou2, occurs on nearly level terraces and floodplains in broad valley bottoms. Glacial/fluvial outwash deposition was the primary land forming process. Slopes gradients range from 0 to 20% and are generally less than 10% and are dissected by high energy, low gradient, perennial streams. Stream channels most commonly meander but may be braided in some reaches. Substrate is usually comprised of stratified sand to cobble size material

but very large boulders are not uncommon. Ponds, marshes and overflow channels may occur. Valley bottoms are subject to frequent flooding. Subsurface and in-stream flow may be in continuity. Included within this landform are alluvial fans and colluvial deposits located along the valley sides.

Volcanic ash typically forms a veneer on top of the glacial till deposits or weathered bedrock. In places, some mixing of the ash deposits has occurred due to differential erosion and colluvial processes. The depth of ash deposits has been strongly influenced by differential erosion processes and by the amount of ground cover existing during the time of ash fallout. Natural erosion processes can be very active on south-facing aspects. The volcanic ash deposits strongly influences inherent soil fertility.

Figures E-1, E-2 and E-3 displays harvest units by Soil Map unit and log yarding system, for each alternative.

**Figure E-1: Alternatives B and E Treatments by Soil Map Unit**

Soil Map Unit #	Soil Map Unit Name	Total Acres Treated*	
		Ground based	Skyline
<b>Soil Group 1</b> <i>Valley Bottoms, seasonally wet soils</i>			
<b>386</b> , 105, 150, 243, 315	Vitrandic Eutrocryepts- Cryaquolls, 0-5%	<b>32</b> (B008, GA03, GA08, MK02, MK04)	<b>4</b> (LI25, LI35)
<b>Soil Group 2</b> <i>Glacial Moraines, ash soils</i>			
<b>237</b> , 119, 175, 222, 240, 243, 244, 246, 249, 250, 263, 274, 311, 312, 334, 335, 336, 392, 394	Myerscreek-Manley Complex 15-35% slopes	<b>609</b> (B008, B009, BR19, BR31, CA01, CA03, CE01, CE03, CE08, CE11, GA01, GA02, GA03, GA04, GA06, GA07, GA08, HA03, HA04, HA05, JU04, JU18, LI50, MK01, MK02, MK07, MK08, PE02, PE03, PE04, RA06, RA07, RA09, RA11)	<b>152</b> (BR30, CE04, LI10, LI18, LI19, PE05, RA10)
<b>Soil Group 3</b> <i>Glacial Moraines, mixed ash soils</i>			
<b>286</b> , 123, 132, 155, 156, 212, 229, 232, 242, 254, 280, 288, 328, 341, 397	Pebcreek 15-35% slopes	<b>731</b> (BL02, B002, B003, B004, B006, BR05, BR10, BR12, BR19, BR22, BR26, BR27, CA03, CE01, CE02, CE03, CE08, GA02, GA03, GA05, GA06, GA07, GA09, HA01, HA02, HA05, HA08, MK03, MK04, MK06, RA02, RA04, RA05,	<b>154</b> (B019, BR03, BR09, BR11, BR14, BR15, CE04, LI10, LI17, JU11, JU20, RA01, RA10)

<b>Soil Map Unit #</b>	<b>Soil Map Unit Name</b>	<b>Total Acres Treated*</b> <b>(Harvest Units)</b>	
		<b>Ground based</b>	<b>Skyline</b>
		RA06, RA09, RA11)	
Soil Group 4 <i>Dissected Glaciated Mountain Slopes ash soils</i> 35-65%			
<b>396, 127, 241, 242, 245, 247, 267, 395, 404</b>	Wapal, 35-65% slopes	<b>343</b> (BL02, B007, B008, B009, B010, BR02, GA08, GA09, HA03, HA04, JU04, JU08, MK04, MK06, MK07, PE01, PE02, PE04, RA06, RA09, RA13, RA14, RA15)	<b>117</b> (BR07, BR09, LI08, JU07, JU11, LI08, PE05)
Soil Group 5 <i>Dissected Glaciated Mountain Slopes, mixed ash soils</i> 35-65%			
<b>289, 118, 124, 154, 203, 213, 214, 230, 290, 343, 350, 351, 354, 374, 398, 399</b>	Pebcreek-Brevco Complex, 35-65% slopes	<b>439</b> (B004, B006, BR02, BR04, BR16, BR19, BR22, BR27, BR31, CA03, CE02, CE03, CE11, GA08, GA09, HA02, JU18, LI01, LI39, LI46, LI54, MK01, MK02, MK03, MK07, RA06, RA09, RA11, RA15, RA17)	<b>164</b> (B019, BR03, BR11, BR29, CE04, LI09, LI17, LI18, LI19, LI25, LI32, LI34, RA01, RA10)

**Figure E-2: Alternative C Proposed Action Treatments by Soil Map Unit**

Soil Map Unit #	Soil Map Unit Name	Total Acres Treated*	
		Ground based	Skyline
<b>Soil Group 1</b> <i>Valley Bottoms, seasonally wet soils</i>			
386, 105, 150, 243, 315	Vitrandic Eutrocryepts- Cryaquolls, 0-5%	33 (B008, GA03, GA07, GA08, MK02, MK04)	
<b>Soil Group 2</b> <i>Glacial Moraines, ash soils</i>			
237, 119, 175, 222, 240, 243, 244, 246, 249, 250, 263, 274, 311, 312, 334, 335, 336, 392, 394	Myerscreek-Manley Complex 15-35% slopes	514 (B008, B009, BR19, BR31, CA01, CA02, CE03, CE08, CE11, GA01, GA02, GA03, GA04, GA06, GA07, GA08, JU04, JU18, MK01, MK02, MK07, MK08, RA06, RA07, RA09, RA11, RA17)	75 (BR30, CE04, RA10)
<b>Soil Group 3</b> <i>Glacial Moraines, mixed ash soils</i>			
286, 123, 132, 155, 156, 212, 229, 232, 242, 254, 280, 288, 328, 341, 397	Pebcreek 15-35% slopes	654 (B002, B003, B004, B006, BR12, BR19, BR22, BR26, BR27, CA03, CE01, CE02, CE03, CE08, GA02, GA03, GA05, GA06, GA07, GA09, MK03, MK04, MK06, RA02, RA04, RA05, RA06, RA09, RA11, RA14, RA16)	133 (B019, BR14, BR15, CE04, LI10, LI17, JU11, JU20, RA01, RA10)
<b>Soil Group 4</b> <i>Dissected Glaciated Mountain Slopes ash soils</i>			

Soil Map Unit #	Soil Map Unit Name	Total Acres Treated* (Harvest Units)	
		Ground based	Skyline
<b>35-65%</b>			
<b>396, 127, 241, 242, 245, 247, 267, 395, 404</b>	Wapal, 35-65% slopes	<b>284</b> (BL02, B007, B008, B009, B010, GA08, GA09, JU04, MK04, MK06, MK07, RA06, RA09, RA13, RA14, RA15)	<b>59</b> (JU07, JU11)
<b>Soil Group 5</b> <i>Dissected Glaciated Mountain Slopes, mixed ash soils</i>			
<b>35-65%</b>			
<b>289, 118, 124, 154, 203, 213, 214, 230, 290, 343, 350, 351, 354, 374, 398, 399</b>	Pebcreek-Brevco Complex, 35-65% slopes	<b>408</b> (B004, B006, BR16, BR19, BR22, BR26, BR27, BR28, BR31, CA03, CE02, CE03, CE11, GA08, GA09, LI39, LI46, LI54, MK01, MK03, MK07, RA06, RA09, RA11, RA15, RA17)	<b>84</b> (B019, BR29, CE04, RA01, RA10)

**Figure E-3: Alternative D Proposed Action Treatments by Soil Map Unit**

Soil Map Unit #	Soil Map Unit Name	Total Acres Treated* (Harvest Units)		
		Ground based	Skyline	Helicopter
<b>Soil Group 1</b> <i>Valley Bottoms, seasonally wet soils</i>				
<b>386, 105, 150, 243, 315</b>	Vitrandic Eutrocryepts-Cryaquolls, 0-5%	<b>34</b> (B008, GA03, GA07, GA08, MK02, MK04)	<b>4</b> (LI25, LI35)	
<b>Soil Group 2</b> <i>Glacial Moraines, ash soils</i>				
<b>237, 119,</b>	Myerscreek-Manley	<b>609</b>	<b>173</b>	<b>88</b>

Soil Map Unit #	Soil Map Unit Name	Total Acres Treated* (Harvest Units)		
		Ground based	Skyline	Helicopter
175, 222, 240, 243, 244, 246, 249, 250, 263, 274, 311, 312, 334, 335, 336, 392, 394	Complex 15-35% slopes	(B008, B009, BR19, BR31, CA01, CA03, CE01, CE03, CE08, CE11, GA01, GA02, GA03, GA04, GA06, GA07, GA08, HA03, HA04, HA05, JU04, JU18, LI50, MK01, MK02, MK07, MK08, PE02, PE03, PE04, RA06, RA07, RA09, RA11)	(BR30, CE04, LI10, LI18, LI19, PE05, RA08, RA10)	(LI02, LI07, LI16, LI21, LI22, LI48, LI51, LI52, LI53, LI61, PE06)
<b>Soil Group 3</b> <i>Glacial Moraines, mixed ash soils</i>				
<b>286</b> , 123, 132, 155, 156, 212, 229, 232, 242, 254, 280, 288, 328, 341, 397	Pebcreek 15-35% slopes	<b>731</b> (BL02, B002, B003, B004, B006, BR05, BR10, BR12, BR19, BR22, BR26, BR27, CA03, CE01, CE02, CE03, CE08, GA02, GA03, GA05, GA06, GA07, GA09, HA01, HA02, HA05, HA08, MK03, MK04, MK06, RA02, RA04, RA05, RA06, RA09, RA11)	<b>165</b> (B005, B019, BR03, BR09, BR11, BR14, BR15, CE04, LI10, LI17, JU11, JU20, RA01, RA10)	<b>55</b> (BR01, BR06, BR13, BR24, JU10)
<b>Soil Group 4</b> <i>Dissected Glaciated Mountain Slopes ash soils</i> 35-65%				
<b>396</b> , 127, 241, 242, 245, 247, 267, 395,	Wapal, 35-65% slopes	<b>343</b> (BL02, B007, B008, B009, B010, BR02, GA08,	<b>166</b> (B011, BR07, BR09,	<b>197</b> (BR01, BR06, BR08,

Soil Map Unit #	Soil Map Unit Name	Total Acres Treated* (Harvest Units)		
		Ground based	Skyline	Helicopter
404		GA09, HA03, HA04, JU04, JU08, MK04, MK06, MK07, PE01, PE02, PE04, RA06, RA09, RA13, RA14, RA15)	LI08, JU07, JU11, LI08, PE05, RA18)	BR24, JU03, JU09, LI02, LI03, LI04, LI07)
<b>Soil Group 5</b> <i>Dissected Glaciated Mountain Slopes, mixed ash soils</i> 35-65%				
<b>289, 118, 124, 154, 203, 213, 214, 230, 290, 343, 350, 351, 354, 374, 398, 399</b>	Pebcreek-Brevco Complex, 35-65% slopes	<b>439</b> (B004, B006, BR02, BR04, BR16, BR19, BR22, BR27, BR31, CA03, CE02, CE03, CE11, GA08, GA09, HA02, JU18, LI01, LI39, LI46, LI54, MK01, MK02, MK03, MK07, RA06, RA09, RA11, RA15, RA17)	<b>208</b> (B005, B019, BR03, BR11, BR21, BR29, CE04, LI09, LI17, LI18, LI19, LI25, LI32, LI34, LI35, RA01, RA08, RA10, RA10, RA18)	<b>192</b> (LI02, LI03, LI04, LI20, LI21, LI22, LI23, LI24, LI36, LI37, LI48, LI49, LI53, LI61)

Harvest activities within the project area date back to 1962 and as recent as 2006. Prior to the Tripod Fire, recovery in these units has been in the form of pine grass some bunchgrasses, as well as snowberry and other low-lying shrubs. The rooting activity from these deep-rooted grasses and other vegetation has very likely reduced the level of compaction from past harvest activities (Waldron et al., 1982). Vegetation recovery occurs through time. Figure E-4, Past Sale Activity, displays the previous sales that overlap harvest units.

**Figure E-4: Past Sale Activity (overlapping harvest units)**

Past Sale Name	Past Sale Unit	Logging System	Year Planned	Year Cut	Overlap with Tripod Salvage Unit		
					Unit	Logging System	Acres
Baldy Salvage	3	T	1982	1982	GA09	T	7
Bear	2	T	1993	1999	RA08	S	1
Bear	2	T	1993	1999	RA10	T	1
Bear	12	T	1993	1998	RA15	T	14
Bold	1	H	1976	1976	B005	T	24
Bold	2	H	1976	1976	B007	T	3
Bold	2	H	1976	1976	B010	T	9
Bold	2	H	1976	1976	B011	S	2
Boulder Blowdown	1	T	1992	1993	B002	T	17
Boulder Blowdown	1	T	1992	1993	B003	T	10
Bromas	5	T	1988	1988	BR12	T	1
Bunny	1	T	1971	1973	B007	T	4
Bunny	1	T	1971	1973	B009	T	31
Bunny	1	T	1971	1973	B010	T	65
Bunny	1	T	1971	1973	B011	S	38
Butte Bug Salvage	1	T	1990	1992	BR01	H	1
Butte Bug Salvage	1	T	1990	1992	BR02	T	1
Butte	15	T	1988	1988	B006	T	11
Butte	16	T	1988	1988	B006	T	4
Butte	17	T	1988	1988	B004	T	9
Butte	18	T	1988	1988	B002	T	2
Cabin	98	T	1978	1978	CA01	T	3
Cabin	98	T	1978	1978	CA02	T	4
Cabin	98	T	1978	1978	CA03	T	12
Cedar Creek2	1	T	1962	1962	CE08	T	1
Coma	7	T	1987	1989	JU20	S	1
Coma	11	T	1987	1989	JU07	S	1
Coma	16	S	1987	1989	JU03	H	5
Conger II	1	T	2003	2006	CE02	T	21
Conger II	2	T	2003	2006	CE03	T	18
Conger II	3	T	2003	2006	CE03	T	1
Conger II	5	T	2003	2006	CE03	T	9
Conger II	6	T	2003	2006	CE02	T	1
Daniel II	98	T	1988	1990	CE11	T	1
Danny	26B	T	1997	2003	CE11	T	1
Deer	1	T	1969	1971	B004	T	39
Deer	1	T	1969	1971	B005	S	11
Deer	1	T	1969	1971	B006	T	28

Past Sale Name	Past Sale Unit	Logging System	Year Planned	Year Cut	Overlap with Tripod Salvage Unit		
					Unit	Logging System	Acres
Dunn	3	T	1969	1969	PE01	T	4
Dunn	3	T	1969	1969	PE02	T	3
Dunn	3	T	1969	1969	PE03	T	1
Dunn	3	T	1969	1969	PE04	T	15
Gotac	1	T	1980	1980	CE02	T	18
Gotac	2	T	1980	1980	CE03	T	34
Gotac	3	T	1980	1980	CE03	T	6
Hardt	10	T	1989	1989	HA01	T	28
Jem	3A	T	1978	1981	JU07	S	3
Jem	3C	T	1978	1981	JU04	T	5
Jem	6A	S	1978	1985	BR08	H	6
Jem	6B	S	1978	1985	BR09	S	1
Jem	7	T	1978	1985	BR31	T	6
Jem	8	T	1978	1985	BR12	T	1
Kitten	8	T	1979	1979	LI37	H	1
Kitten	8	T	1979	1979	LI39	T	16
McCay	2	T	1976	1976	MK08	T	1
Mid Salvage	2	T	1993	1994	B007	T	6
Mid Salvage	2	T	1993	1994	B008	T	44
NF-20	1W	WY-T	1971	1973	JU03	H	17
NF-20	1W	WY-T	1971	1973	JU04	T	2
NG	1	T	1986	1986	MK08	T	1
NG	10	T	1986	1986	MK04	T	1
NG	11	T	1986	1986	MK03	T	1
North Fork	14A	T	1984	1984	PE01	T	10
North Fork	14A	T	1984	1984	PE02	T	7
North Fork	15	T	1984	1984	PE01	T	2
North Fork	18	T	1984	1984	PE05	T	20
Pearrygin	2	T	1976	1977	RA02	T	3
Pearrygin	2	T	1976	1977	RA04	T	37
Pearrygin	2	T	1976	1977	RA05	T	34
Pearrygin	2	T	1976	1977	RA06	T	142
Pearrygin	2	T	1976	1977	RA07	T	32
Pearrygin	2	T	1976	1977	RA08	S	21
Pearrygin	2	T	1976	1977	RA09	T	62
Pearrygin	2	T	1976	1977	RA10	T	61
Pearrygin	2	T	1976	1977	RA11	T	36
Pearrygin	2	T	1976	1977	RA13	T	20
Pearrygin	2	T	1976	1977	RA14	T	31
Pearrygin	2	T	1976	1977	RA15	T	57
Pearrygin		T	1976	1977	RA16	T	12

Past Sale Name	Past Sale Unit	Logging System	Year Planned	Year Cut	Overlap with Tripod Salvage Unit		
					Unit	Logging System	Acres
Pearrygin	2	T	1976	1977	RA17	T	18
Pearrygin	2	T	1976	1977	RA18	S	19
Radar	2	T	1987	1987	GA05	T	41
Radar	2	T	1987	1987	GA06	T	12
Radar	2	T	1987	1987	GA07	T	67
Radar	2	T	1987	1987	GA08	T	74
Radar	3	T	1987	1987	GA02	T	51
Radar	7	T	1987	1987	GA02	T	1
Radar	7	T	1987	1987	GA03	T	41
Radar	7	T	1987	1987	GA04	T	8
RTM Salvage	2	T	1994	1994	GA05	T	4
Sky	4	T-JA	1968	1968	JU10	H	5
Sky	4	T-JA	1968	1968	JU20	S	5
Soaker	2	T	1998	2001	BR22	T	14
Soaker	3	S	1998	2002	BR30	S	1
Soaker	4	T-CTL	1998	1999	BR26	T	16
Soaker	4	T-CTL	1998	1999	BR28	T	2
Soaker	5	ORS	1998	1999	BR27	T	9
Soaker	6	T	1998	2002	BR21	S	8
Soaker	8	T	1998	2002	BR19	T	11
Solar II	12	H	1999	1999	BR13	H	28
Solar II	12	H	1999	1999	BR15	S	14
Solar II	48	H	1999	1999	BR08	H	23
Solar	66	T	1998	1999	JU18	T	8
Stone	5	T	1979	1983	RA02	T	123
Strip	3	T	1984	1984	GA01	T	51
Tripod	12	T	1987	1987	RA11	T	1
Volstead	3	T	1967	1967	BL02	T	1

### Existing Detrimental Soil Conditions (DSC)

Figures E-5, E-6 and E-7 display Estimated Existing Detrimental Soil, for each alternative provide a detailed listing of soil conditions by harvest unit. Units for Tripod Salvage project were assessed for the extent and degree of previously impacted soil using field observation starting in the fall of 2006, the soil survey (USDA-NRCS, 2004) with field verification by the Forest Soil Scientist, prior history of activity (including harvest entries), and prior knowledge of the sites from previous assessment by both district and Forest staff. Additional observations were obtained from other field going specialists such as Botanists. Estimates for detrimental soil were obtained by field visiting some units that had proposed ground based operations. Field reviews also took place during Burned Area Emergency Restoration (BAER) analysis, (Greene, 2006). This process looked at the burn severity of the soils and documented remaining vegetation and effective ground cover.

Units were grouped into three ranges (Low 0-5; Moderate 10; High 15-20) of existing detrimental soil condition as a percentage of area based on those field assessments and previous monitoring.

**Figure E-5: Alternatives B and E Estimated Existing Detrimental Soil (harvest units)**

Harvest Unit	Acres	Logging System	Estimated Detrimental Soil rating and %	Estimated Existing Detrimental soil acres
BL02	9	T	L, 5	.5
B002	21	T	M, 10	2
B003	11	T	M, 15	2
B004	40	T	M, 10	4
B006	40	T	H, 15	6
B007	13	T	H, 15	2
B008	57	T	H, 15	9
B009	31	T	M, 10	3
B010	74	T	M, 10	7
B019	46	S	L, 3	1
BR02	10	T	L, 5	.5
BR03	7	S	L, 5	.5
BR04	18	T	L, 3	.5
BR05	9	T	L, 3	.5
BR07	14	S	L, 3	.5
BR09	44	S	L, 3	1
BR10	6	T	L, 3	.5
BR11	9	S	L, 3	.5
BR12	11	T	M, 10	2
BR14	9	S	L, 3	.5
BR15	14	S	L, 5	.5
BR16	16	T	L, 3	.5
BR19	11	T	H, 20	2
BR22	16	T	H, 20	3
BR26	16	T	H, 20	3
BR27	9	T	H, 20	2
BR28	2	T	H, 20	.5
BR29	11	S	L, 5	.5
BR30	12	S	L, 5	.5
BR31	19	T	M, 10	1

<b>Harvest Unit</b>	<b>Acres</b>	<b>Logging System</b>	<b>Estimated Detrimental Soil rating and %</b>	<b>Estimated Existing Detrimental soil acres</b>
CA01	3	T	M, 10	.5
CA02	4	T	M, 10	.5
CA03	12	T	M, 10	1
CE01	34	T	L, 3	1
CE02	41	T	H, 20	8
CE03	87	T	H, 20	17
CE04	42	S	L, 3	2
CE08	8	T	L, 5	.5
CE11	27	T	H, 20	5
GA01	51	T	M, 10	5
GA02	52	T	M, 10	5
GA03	45	T	M, 10	5
GA04	8	T	M, 10	1
GA05	44	T	M, 15	6
GA06	12	T	M, 10	1
GA07	67	T	M, 10	6
GA08	74	T	M, 10	7
GA09	55	T	M, 10	5
HA01	30	T	M, 10	3
HA02	20	T	M, 10	2
HA03	10	T	M, 10	1
HA04	19	T	M, 10	2
HA05	44	T	M, 10	3
HA08	14	T	M, 10	1
JU04	8	T	M, 10	1
JU07	46	S	L, 5	2
JU08	6	T	L, 5	.5
JU11	25	S	L, 3	1
JU18	8	T	H, 20	2
JU20	17	S	M, 10	2
LI01	4	T	L, 3	0
LI08	8	S	L, 3	.5
LI09	11	S	L, 3	.5

<b>Harvest Unit</b>	<b>Acres</b>	<b>Logging System</b>	<b>Estimated Detrimental Soil rating and %</b>	<b>Estimated Existing Detrimental soil acres</b>
LI10	33	S	L, 3	1
LI17	6	S	L, 3	.5
LI18	7	S	L, 3	.5
LI19	30	S	L, 3	1
LI25	21	S	L, 3	.5
LI32	10	S	L, 3	.5
LI34	16	S	L, 3	.5
LI35	2	S	L, 3	0
LI39	17	T	L, 10	2
LI46	22	T	L, 3	.5
LI50	5	T	L, 3	.5
LI54	16	T	L, 3	.5
MK01	15	T	L, 5	1
MK02	18	T	L, 5	1
MK03	10	T	L, 5	.5
MK04	22	T	L, 5	1
MK06	10	T	L, 5	.5
MK07	22	T	L, 5	1
MK08	27	T	L, 5	1
PE01	14	T	M, 15	2
PE02	10	T	M, 15	2
PE03	14	T	L, 5	1
PE04	28	T	L, 5	1
PE05	24	S	M, 10	2
RA01	67	S	M, 10	6
RA02	132	T	M, 10	15
RA04	37	T	M, 10	4
RA05	34	T	M, 10	3
RA06	181	T	M, 10	18
RA07	32	T	M, 10	3
RA08	22	S	M, 15	3
RA09	62	T	M, 15	12
RA10	62	S	M, 15	9

<b>Harvest Unit</b>	<b>Acres</b>	<b>Logging System</b>	<b>Estimated Detrimental Soil rating and %</b>	<b>Estimated Existing Detrimental soil acres</b>
RA11	46	T	M, 10	5
RA13	20	T	M, 15	2
RA14	31	T	M, 15	3
RA15	78	T	M, 15	12
RA16	12	T	M, 15	2
RA17	18	T	M, 15	3
<b>Totals</b>	<b>3,748</b>			<b>239.5</b>

**Figure E-6: Alternative C Estimated Existing Detrimental Soil (harvest units)**

<b>Harvest Unit</b>	<b>Acres</b>	<b>Logging System</b>	<b>Estimated Detrimental Soil rating and %</b>	<b>Estimated Existing Detrimental soil acres</b>
BL02	9	T	L, 5	.5
B002	21	T	M, 10	2
B003	11	T	M, 15	2
B004	40	T	M, 10	4
B006	40	T	H, 15	6
B007	13	T	H, 15	2
B008	57	T	H, 15	9
B009	31	T	M, 10	3
B010	74	T	M, 10	7
B019	46	S	L, 3	1
BR12	11	T	M, 10	2
BR14	9	S	L, 3	.5
BR15	14	S	L, 5	.5
BR16	16	T	L, 3	.5
BR19	11	T	H, 20	2
BR22	16	T	H, 20	3
BR26	16	T	H, 20	3
BR27	9	T	H, 20	2
BR28	2	T	H, 20	.5
BR29	11	S	L, 5	.5

<b>Harvest Unit</b>	<b>Acres</b>	<b>Logging System</b>	<b>Estimated Detrimental Soil rating and %</b>	<b>Estimated Existing Detrimental soil acres</b>
BR30	12	S	L, 5	.5
BR31	19	T	M, 10	1
CA01	3	T	M, 10	.5
CA02	4	T	M, 10	.5
CA03	12	T	M, 10	1
CE01	34	T	L, 3	1
CE02	41	T	H, 20	8
CE03	87	T	H, 20	17
CE04	42	S	L, 3	2
CE08	8	T	L, 5	.5
CE11	27	T	H, 20	5
GA01	51	T	M, 10	5
GA02	52	T	M, 10	5
GA03	45	T	M, 10	5
GA04	8	T	M, 10	1
GA05	44	T	M, 15	6
GA06	12	T	M, 10	1
GA07	67	T	M, 10	6
GA08	74	T	M, 10	7
GA09	55	T	M, 10	5
JU04	8	T	M, 10	1
JU07	46	S	L, 5	4
JU11	25	S	L, 3	1
JU18	8	T	H, 20	2
JU20	17	S	M, 10	2
LI39	17	T	L, 10	2
LI46	22	T	L, 3	.5
LI54	16	T	L, 3	.5
MK01	15	T	L, 5	1
MK02	18	T	L, 5	1
MK03	10	T	L, 5	.5
MK04	22	T	L, 5	1
MK06	10	T	L, 5	.5

Harvest Unit	Acres	Logging System	Estimated Detrimental Soil rating and %	Estimated Existing Detrimental soil acres
MK07	22	T	L, 5	1
MK08	27	T	L, 5	1
RA01	67	S	M, 10	6
RA02	132	T	M, 10	15
RA04	37	T	M, 10	4
RA05	34	T	M, 10	3
RA06	181	T	M, 10	18
RA07	32	T	M, 10	3
RA09	62	T	M, 15	12
RA10	62	S	M, 15	9
RA11	46	T	M, 10	5
RA13	20	T	M, 15	2
RA14	31	T	M, 15	3
RA15	78	T	M, 15	12
RA16	12	T	M, 15	2
RA17	18	T	M, 15	3
<b>Totals</b>	<b>2,247</b>			<b>218</b>

**Figure E-7: Alternative D Estimated Existing Detrimental Soil (harvest units)**

Harvest Unit	Acres	Logging System	Estimated Detrimental Soil rating and %	Estimated Existing Detrimental soil acres
BL02	9	T	L, 5	.5
B002	21	T	M, 10	2
B003	11	T	M, 15	2
B004	40	T	M, 10	4
B005	35	S	M, 10	4
B006	40	T	H, 15	6
B007	13	T	H, 15	2
B008	57	T	H, 15	9
B009	31	T	M, 10	3
B010	74	T	M, 10	7
B011	39	S	L, 5	2

<b>Harvest Unit</b>	<b>Acres</b>	<b>Logging System</b>	<b>Estimated Detrimental Soil rating and %</b>	<b>Estimated Existing Detrimental soil acres</b>
B019	46	S	L, 3	1
BR01	21	H	L, 5	1
BR02	10	T	L, 5	.5
BR03	7	S	L, 5	.5
BR04	18	T	L, 3	.5
BR05	9	T	L, 3	.5
BR06	15	H	L, 3	.5
BR07	14	S	L, 3	.5
BR08	30	H	M, 10	3
BR09	44	S	L, 3	1
BR10	6	T	L, 3	.5
BR11	9	S	L, 3	.5
BR12	11	T	M, 10	2
BR13	28	H	L, 5	1
BR14	9	S	L, 3	.5
BR15	14	S	L, 5	.5
BR16	16	T	L, 3	.5
BR19	11	T	H, 20	2
BR21	9	S	L, 5	.5
BR22	16	T	H, 20	3
BR24	13	H	L, 3	.5
BR26	16	T	H, 20	3
BR27	9	T	H, 20	2
BR28	2	T	H, 20	.5
BR29	11	S	L, 5	.5
BR30	12	S	L, 5	.5
BR31	19	T	M, 10	1
CA01	3	T	M, 10	.5
CA02	4	T	M, 10	.5
CA03	12	T	M, 10	1
CE01	34	T	L, 3	1
CE02	41	T	H, 20	8
CE03	87	T	H, 20	17

<b>Harvest Unit</b>	<b>Acres</b>	<b>Logging System</b>	<b>Estimated Detrimental Soil rating and %</b>	<b>Estimated Existing Detrimental soil acres</b>
CE04	42	S	L, 3	2
CE08	8	T	L, 5	.5
CE11	27	T	H, 20	5
GA01	51	T	M, 10	5
GA02	52	T	M, 10	5
GA03	45	T	M, 10	5
GA04	8	T	M, 10	1
GA05	44	T	M, 15	6
GA06	12	T	M, 10	1
GA07	67	T	M, 10	6
GA08	74	T	M, 10	7
GA09	55	T	M, 10	5
HA01	30	T	M, 10	3
HA02	20	T	M, 10	2
HA03	10	T	M, 10	1
HA04	19	T	M, 10	2
HA05	44	T	M, 10	3
HA08	14	T	M, 10	1
JU03	21	H	M, 10	2
JU04	8	T	M, 10	1
JU07	46	S	L, 5	4
JU08	6	T	L, 5	.5
JU09	78	H	L, 3	4
JU10	10	H	L, 3	.5
JU11	25	S	L, 3	1
JU18	8	T	H, 20	2
JU20	17	S	M, 10	2
LI01	4	T	L, 3	0
LI02	53	H	L, 3	.5
LI03	18	H	L, 3	.5
LI04	9	H	L, 3	.5
LI07	8	H	L, 3	.5
LI08	8	S	L, 3	.5

<b>Harvest Unit</b>	<b>Acres</b>	<b>Logging System</b>	<b>Estimated Detrimental Soil rating and %</b>	<b>Estimated Existing Detrimental soil acres</b>
LI09	11	S	L, 3	.5
LI10	33	S	L, 3	1
LI16	23	H	L, 3	.5
LI17	6	S	L, 3	.5
LI18	7	S	L, 3	.5
LI19	30	S	L, 3	1
LI20	1	H	L, 3	.5
LI21	24	H	L, 3	.5
LI22	30	H	L, 3	.5
LI23	18	H	L, 3	.5
LI24	10	H	L, 3	.5
LI25	21	S	L, 3	.5
LI32	10	S	L, 3	.5
LI34	16	S	L, 3	.5
LI35	2	S	L, 3	0
LI36	5	H	L, 3	0
LI37	5	H	L, 10	3
LI39	17	T	L, 10	2
LI46	22	T	L, 3	.5
LI47	13	H	L, 3	.5
LI48	25	H	L, 3	.5
LI49	8	H	L, 3	.5
LI50	5	T	L, 3	.5
LI51	6	H	L, 3	.5
LI52	5	H	L, 3	.5
LI53	5	H	L, 3	.5
LI54	16	T	L, 3	.5
LI61	11	H	L, 3	.5
MK01	15	T	L, 5	1
MK02	18	T	L, 5	1
MK03	10	T	L, 5	.5
MK04	22	T	L, 5	1
MK06	10	T	L, 5	.5

Harvest Unit	Acres	Logging System	Estimated Detrimental Soil rating and %	Estimated Existing Detrimental soil acres
MK07	22	T	L, 5	1
MK08	27	T	L, 5	1
PE01	14	T	M, 15	2
PE02	10	T	M, 15	2
PE03	14	T	L, 5	1
PE04	28	T	L, 5	1
PE05	24	S	M, 10	2
PE06	18	H	L, 3	1
RA01	67	S	M, 10	6
RA02	132	T	M, 10	15
RA04	37	T	M, 10	4
RA05	34	T	M, 10	3
RA06	181	T	M, 10	18
RA07	32	T	M, 10	3
RA08	22	S	M, 15	3
RA09	62	T	M, 15	12
RA10	62	S	M, 15	9
RA11	46	T	M, 10	5
RA13	20	T	M, 15	2
RA14	31	T	M, 15	3
RA15	78	T	M, 15	12
RA16	12	T	M, 15	2
RA17	18	T	M, 15	3
RA18	19	S	M, 15	3
<b>Totals</b>	<b>3,404</b>			<b>239.5</b>

The tables below, Figures E-8, E-9 and E-10, display Estimated Additional Potential Detrimental Soil and Estimated Active Soil Restoration display the estimated additional potential detrimental soil disturbance incurred during operations. Estimates are given for summer operations only as winter operations would be considerably less and require considerably less active restoration. The active restoration along with passive restoration (seeding, natural vegetation recovery, tree planting) would meet R6 Soil and Quality Standards meeting the 15% detrimental soil threshold.

No active restoration is required for skyline operations as slash would be left in corridors.

Also, no active restoration acres are listed for skyline and helicopter operations in the units as both fall well within the 15% detrimental soil threshold. All landings will be restored as discussed in Chapter 2.

**Figure E-8: Alternatives B and E Estimated Additional Potential Detrimental Soil and Estimated Active Soil Restoration (harvest units)**

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)
BL02	9	T	1	0
B002	21	T	2	1
B003	11	T	1	1
B004	40	T	2	1
B006	40	T	3	3
B007	13	T	1	1
B008	57	T	6	6
B009	31	T	2	1
B010	74	T	3	2
B019	46	S	1	0
BR02	10	T	1	.5
BR03	7	S	.5	0
BR04	18	T	2	1
BR05	9	T	1	.5
BR07	14	S	1	0
BR09	44	S	1	0
BR10	6	T	.5	.5
BR11	9	S	.5	0
BR12	11	T	1	1
BR14	9	S	.5	0
BR15	14	S	1	0
BR16	16	T	2	.5
BR19	11	T	1	1
BR22	16	T	2	2
BR26	16	T	2	2
BR27	9	T	1	1
BR28	2	T	.5	.5
BR29	11	S	1	0

<b>Harvest Unit</b>	<b>Acres</b>	<b>Logging System</b>	<b>Estimated Additional Potential Detrimental Soil Acres (summer logging only)</b>	<b>Estimated Active Restoration soil acres (summer logging only)</b>
BR30	12	S	1	0
BR31	19	T	.5	.5
CA01	3	T	.5	.5
CA02	4	T	.5	.5
CA03	12	T	1	.5
CE01	34	T	3	1
CE02	41	T	4	4
CE03	87	T	8	4
CE04	42	S	1	0
CE08	8	T	1	.5
CE11	27	T	2	2
GA01	51	T	5	3
GA02	52	T	5	3
GA03	45	T	4	2
GA04	8	T	1	.5
GA05	44	T	4	2
GA06	12	T	1	1
GA07	67	T	6	4
GA08	74	T	7	4
GA09	55	T	5	3
HA01	30	T	3	2
HA02	20	T	2	1
HA03	10	T	1	.5
HA04	19	T	2	1
HA05	44	T	4	2
HA08	14	T	1	.5
JU04	8	T	1	.5
JU07	46	S	1	0
JU08	6	T	.5	.5
JU11	25	S	1	0
JU18	8	T	1	.5
JU20	17	S	1	0

<b>Harvest Unit</b>	<b>Acres</b>	<b>Logging System</b>	<b>Estimated Additional Potential Detrimental Soil Acres (summer logging only)</b>	<b>Estimated Active Restoration soil acres (summer logging only)</b>
LI01	4	T	.5	0
LI08	8	S	.5	0
LI09	11	S	1	0
LI10	33	S	1	0
LI17	6	S	.5	0
LI18	7	S	.5	0
LI19	30	S	1	0
LI25	21	S	1	0
LI32	10	S	1	0
LI34	16	S	1	0
LI35	2	S	0	0
LI39	17	T	1	.5
LI46	22	T	2	.5
LI50	5	T	.5	.5
LI54	16	T	1	.5
MK01	15	T	1	.5
MK02	18	T	2	1
MK03	10	T	1	.5
MK04	22	T	2	1
MK06	10	T	1	.5
MK07	22	T	2	1
MK08	27	T	2	1
PE01	14	T	1	.5
PE02	10	T	1	.5
PE03	14	T	1	.5
PE04	28	T	2	1
PE05	24	S	1	0
RA01	67	S	2	0
RA02	132	T	13	10
RA04	37	T	4	2
RA05	34	T	3	2
RA06	181	T	18	12

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)
RA07	32	T	3	1
RA09	62	T	6	4
RA10	62	S	2	0
RA11	46	T	5	3
RA13	20	T	2	1
RA14	31	T	3	2
RA15	78	T	8	6
RA16	12	T	1	.5
RA17	18	T	2	1
<b>Totals</b>	<b>2,748</b>		<b>222.5</b>	<b>129.5</b>

**Figure E-9: Alternative C Estimated Additional Potential Detrimental Soil and Estimated Active Soil Restoration (harvest units)**

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)
BL02	9	T	1	0
B002	21	T	2	1
B003	11	T	1	1
B004	40	T	2	1
B006	40	T	3	3
B007	13	T	1	1
B008	57	T	6	4
B009	31	T	2	1
B010	74	T	3	2
B019	46	S	1	0
BR12	11	T	1	1
BR14	9	S	.5	0
BR15	14	S	1	0
BR16	16	T	2	.5
BR19	11	T	1	1

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)
BR22	16	T	2	1
BR26	16	T	2	1
BR27	9	T	1	.5
BR28	2	T	.5	.5
BR29	11	S	1	0
BR30	12	S	1	0
BR31	19	T	1	.5
CA01	3	T	.5	.5
CA02	4	T	.5	.5
CA03	12	T	1	.5
CE01	34	T	3	1
CE02	41	T	4	2
CE03	87	T	8	6
CE04	42	S	1	0
CE08	8	T	1	.5
CE11	27	T	2	2
GA01	51	T	5	3
GA02	52	T	5	3
GA03	45	T	4	2
GA04	8	T	1	.5
GA05	44	T	4	2
GA06	12	T	1	1
GA07	67	T	6	4
GA08	74	T	7	4
GA09	55	T	5	3
JU04	8	T	1	.5
JU07	46	S	1	0
JU11	25	S	1	0
JU18	8	T	1	.5
JU20	17	S	1	0
LI39	17	T	1	.5
LI46	22	T	2	.5

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)
LI54	16	T	1	.5
MK01	15	T	1	.5
MK02	18	T	2	1
MK03	10	T	1	.5
MK04	22	T	2	1
MK06	10	T	1	.5
MK07	22	T	2	1
MK08	27	T	2	1
RA01	67	S	2	0
RA02	132	T	13	10
RA04	37	T	4	2
RA05	34	T	3	2
RA06	181	T	18	12
RA07	32	T	3	1
RA09	62	T	6	4
RA10	62	S	2	.5
RA11	46	T	5	3
RA13	20	T	2	1
RA14	31	T	3	2
RA15	78	T	8	6
RA16	12	T	1	.5
RA17	18	T	2	1
<b>Totals</b>	<b>2,247</b>		<b>177</b>	<b>116.5</b>

**Figure E-10: Alternative D Estimated Additional Potential Detrimental Soil and Estimated Active Soil Restoration (harvest units)**

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)
BL02	9	T	1	0
B002	21	T	2	1
B003	11	T	1	1
B004	40	T	2	1
B005	35	S	1	0
B006	40	T	3	3
B007	13	T	1	1
B008	57	T	6	6
B009	31	T	2	1
B010	74	T	3	2
B011	39	S	1	0
B019	46	S	1	0
BR01	21	H	0	0
BR02	10	T	1	.5
BR03	7	S	.5	0
BR04	18	T	2	1
BR05	9	T	1	.5
BR06	15	H	0	0
BR07	14	S	1	0
BR08	30	H	0	0
BR09	44	S	1	0
BR10	6	T	.5	.5
BR11	9	S	.5	0
BR12	11	T	1	1
BR13	28	H	0	0
BR14	9	S	.5	0
BR15	14	S	1	0
BR16	16	T	2	.5
BR19	11	T	1	1
BR21	9	S	.5	0
BR22	16	T	2	2

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)
BR24	13	H	0	0
BR26	16	T	2	2
BR27	9	T	1	1
BR28	2	T	.5	.5
BR29	11	S	1	0
BR30	12	S	1	0
BR31	19	T	.5	.5
CA01	3	T	.5	.5
CA02	4	T	.5	.5
CA03	12	T	1	.5
CE01	34	T	3	1
CE02	41	T	4	4
CE03	87	T	8	8
CE04	42	S	1	0
CE08	8	T	1	.5
CE11	27	T	2	2
GA01	51	T	5	3
GA02	52	T	5	3
GA03	45	T	4	2
GA04	8	T	1	.5
GA05	44	T	4	2
GA06	12	T	1	1
GA07	67	T	6	4
GA08	74	T	7	4
GA09	55	T	5	3
HA01	30	T	3	2
HA02	20	T	2	1
HA03	10	T	1	.5
HA04	19	T	2	1
HA05	44	T	4	2
HA08	14	T	1	.5
JU03	21	H	0	0

<b>Harvest Unit</b>	<b>Acres</b>	<b>Logging System</b>	<b>Estimated Additional Potential Detrimental Soil Acres (summer logging only)</b>	<b>Estimated Active Restoration soil acres (summer logging only)</b>
JU04	8	T	1	.5
JU07	46	S	1	0
JU08	6	T	.5	.5
JU09	78	H	0	0
JU10	10	H	0	0
JU11	25	S	1	0
JU18	8	T	1	.5
JU20	17	S	1	0
LI01	4	T	.5	0
LI02	53	H	0	0
LI03	18	H	0	0
LI04	9	H	0	0
LI07	8	H	0	0
LI08	8	S	.5	0
LI09	11	S	1	0
LI10	33	S	1	0
LI16	23	H	0	0
LI17	6	S	.5	0
LI18	7	S	.5	0
LI19	30	S	1	0
LI20	1	H	0	0
LI21	24	H	0	0
LI22	30	H	0	0
LI23	18	H	0	0
LI24	10	H	0	0
LI25	21	S	1	0
LI32	10	S	1	0
LI34	16	S	1	0
LI35	2	S	0	0
LI36	5	H	0	0
LI37	5	H	0	0
LI39	17	T	1	.5

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)
LI46	22	T	2	.5
LI47	13	H	0	0
LI48	25	H	0	0
LI49	8	H	0	0
LI50	5	T	.5	.5
LI51	6	H	0	0
LI52	5	H	0	0
LI53	5	H	0	0
LI54	16	T	1	.5
LI61	11	H	0	0
MK01	15	T	1	.5
MK02	18	T	2	1
MK03	10	T	1	.5
MK04	22	T	2	1
MK06	10	T	1	.5
MK07	22	T	2	1
MK08	27	T	2	1
PE01	14	T	1	.5
PE02	10	T	1	.5
PE03	14	T	1	.5
PE04	28	T	2	1
PE05	24	S	1	0
PE06	18	H	0	0
RA01	67	S	2	0
RA02	132	T	13	10
RA04	37	T	4	2
RA05	34	T	3	2
RA06	181	T	18	12
RA07	32	T	3	1
RA08	22	S	1	.5
RA09	62	T	6	4
RA10	62	S	2	.5

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)
RA11	46	T	5	3
RA13	20	T	2	1
RA14	31	T	3	2
RA15	78	T	8	6
RA16	12	T	1	.5
RA17	18	T	2	1
RA18	19	S	1	0
<b>Totals</b>	<b>3,404</b>		<b>226</b>	<b>129.5</b>

Figures E-11, E-12 and E-13 display Alternative B, C and D Estimated Additional Potential Detrimental Soil and Estimated Active Soil Restoration and Post Project Detrimental Soil for individual harvest units. According to Regional Soil standards listed above, the cumulative detrimental effects from project implementation and restoration must, at a minimum, not exceed the conditions prior to the planned activity and should move toward a net improvement from disturbance caused by proposed activities in harvest units. Design criteria, mitigations and restoration would insure this standard would be met.

**Figure E-11: Alternatives B and E Estimated Additional Potential Detrimental Soil and Estimated Active Soil Restoration and Post Project Detrimental Soil (harvest units)**

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)	Estimated Post Project Detrimental Soil Acres (summer logging only)
BL02	9	T	1	0	1.5
B002	21	T	2	1	2
B003	11	T	1	1	2
B004	40	T	2	1	4
B006	40	T	3	3	5
B007	13	T	1	1	2
B008	57	T	6	6	7
B009	31	T	2	1	3
B010	74	T	3	2	7
B019	46	S	1	0	2

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)	Estimated Post Project Detrimental Soil Acres (summer logging only)
BR02	10	T	1	.5	1
BR03	7	S	.5	0	1
BR04	18	T	2	1	1.5
BR05	9	T	1	5	1
BR07	14	S	1	0	1
BR09	44	S	1	0	2
BR10	6	T	.5	.5	.5
BR11	9	S	.5	0	1
BR12	11	T	1	1	2
BR14	9	S	.5	0	1
BR15	14	S	1	0	1.5
BR16	16	T	2	.5	2
BR19	11	T	1	1	2
BR22	16	T	2	2	3
BR26	16	T	2	2	3
BR27	9	T	1	1	2
BR28	2	T	.5	.5	.5
BR29	11	S	1	0	1.5
BR30	12	S	1	0	1.5
BR31	19	T	.5	.5	1
CA01	3	T	.5	.5	.5
CA02	4	T	.5	.5	.5
CA03	12	T	1	.5	1.5
CE01	34	T	3	1	3
CE02	41	T	4	4	8
CE03	87	T	8	4	17
CE04	42	S	1	0	3
CE08	8	T	1	.5	1
CE11	27	T	2	2	5
GA01	51	T	5	3	7
GA02	52	T	5	3	7
GA03	45	T	4	2	7

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)	Estimated Post Project Detrimental Soil Acres (summer logging only)
GA04	8	T	1	.5	1.5
GA05	44	T	4	2	8
GA06	12	T	1	1	1
GA07	67	T	6	4	8
GA08	74	T	7	4	10
GA09	55	T	5	3	7
HA01	30	T	3	2	4
HA02	20	T	2	1	3
HA03	10	T	1	.5	1.5
HA04	19	T	2	1	3
HA05	44	T	4	2	5
HA08	14	T	1	.5	1.5
JU04	8	T	1	.5	1.5
JU07	46	S	1	0	.5
JU08	6	T	.5	.5	2.5
JU11	25	S	1	0	2
JU18	8	T	1	.5	2.5
JU20	17	S	1	0	3
LI01	4	T	.5	0	1
LI08	8	S	.5	0	1
LI09	11	S	1	0	1.5
LI10	33	S	1	0	2
LI17	6	S	.5	0	1
LI18	7	S	.5	0	1
LI19	30	S	1	0	2
LI25	21	S	1	0	1.5
LI32	10	S	1	0	1.5
LI34	16	S	1	0	1.5
LI35	2	S	0	0	.5
LI39	17	T	1	.5	2.5
LI46	22	T	2	.5	2
LI50	5	T	.5	.5	.5

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)	Estimated Post Project Detrimental Soil Acres (summer logging only)
LI54	16	T	1	.5	1
MK01	15	T	1	.5	1.5
MK02	18	T	2	1	2
MK03	10	T	1	.5	1
MK04	22	T	2	1	2
MK06	10	T	1	.5	1
MK07	22	T	2	1	2
MK08	27	T	2	1	2
PE01	14	T	1	.5	2.5
PE02	10	T	1	.5	2.5
PE03	14	T	1	.5	1.5
PE04	28	T	2	1	2
PE05	24	S	1	0	3
RA01	67	S	2	0	8
RA02	132	T	13	10	18
RA04	37	T	4	2	6
RA05	34	T	3	2	4
RA06	181	T	18	12	24
RA07	32	T	3	1	5
RA09	62	T	6	4	14
RA10	62	S	2	0	11
RA11	46	T	5	3	7
RA13	20	T	2	1	3
RA14	31	T	3	2	4
RA15	78	T	8	6	14
RA16	12	T	1	.5	2.5
RA17	18	T	2	1	4
<b>Totals</b>	<b>2,748</b>		<b>222.5</b>	<b>129.5</b>	<b>308.5</b>

**Figure E-12: Alternative C Estimated Additional Potential Detrimental Soil and Estimated Active Soil Restoration and Post Project Detrimental Soil (harvest units)**

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)	Estimated Post Project Detrimental Soil Acres (summer logging only)
BL02	9	T	1	0	1.5
B002	21	T	2	1	3
B003	11	T	1	1	2
B004	40	T	2	1	5
B006	40	T	3	3	6
B007	13	T	1	1	2
B008	57	T	6	4	9
B009	31	T	2	1	4
B010	74	T	3	2	8
B019	46	S	1	0	2
BR12	11	T	1	1	2
BR14	9	S	.5	0	1
BR15	14	S	1	0	1
BR16	16	T	2	.5	2
BR19	11	T	1	1	2
BR22	16	T	2	1	3
BR26	16	T	2	1	3
BR27	9	T	1	.5	2
BR28	2	T	.5	.5	.5
BR29	11	S	1	0	1.5
BR30	12	S	1	0	1.5
BR31	19	T	1	.5	1
CA01	3	T	.5	.5	.5
CA02	4	T	.5	.5	.5
CA03	12	T	1	.5	1.5
CE01	34	T	3	1	3
CE02	41	T	4	2	8
CE03	87	T	8	6	15
CE04	42	S	1	0	3
CE08	8	T	1	.5	1

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)	Estimated Post Project Detrimental Soil Acres (summer logging only)
CE11	27	T	2	2	5
GA01	51	T	5	3	7
GA02	52	T	5	3	7
GA03	45	T	4	2	7
GA04	8	T	1	.5	1.5
GA05	44	T	4	2	8
GA06	12	T	1	1	1
GA07	67	T	6	4	6
GA08	74	T	7	4	7
GA09	55	T	5	3	5
JU04	8	T	1	.5	1.5
JU07	46	S	1	0	3
JU11	25	S	1	0	2
JU18	8	T	1	.5	2.5
JU20	17	S	1	0	3
LI39	17	T	1	.5	2.5
LI46	22	T	2	.5	2
LI54	16	T	1	.5	1
MK01	15	T	1	.5	1.5
MK02	18	T	2	1	2
MK03	10	T	1	.5	1
MK04	22	T	2	1	2
MK06	10	T	1	.5	1
MK07	22	T	2	1	2
MK08	27	T	2	1	2
RA01	67	S	2	0	8
RA02	132	T	13	10	18
RA04	37	T	4	2	6
RA05	34	T	3	2	4
RA06	181	T	18	12	24
RA07	32	T	3	1	5
RA09	62	T	6	4	14

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)	Estimated Post Project Detrimental Soil Acres (summer logging only)
RA10	62	S	2	.5	11
RA11	46	T	5	3	7
RA13	20	T	2	1	3
RA14	31	T	3	2	4
RA15	78	T	8	6	14
RA16	12	T	1	.5	2.5
RA17	18	T	2	1	4
<b>Totals</b>	<b>2,247</b>		<b>177</b>	<b>116.5</b>	<b>303.5</b>

**Figure E-13: Alternative D Estimated Additional Potential Detrimental Soil and Estimated Active Soil Restoration Post Project Detrimental Soil (harvest units)**

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)	Estimated Post Project Detrimental Soil Acres (summer logging only)
BL02	9	T	1	0	1.5
B002	21	T	2	1	3
B003	11	T	1	1	2
B004	40	T	2	1	5
B005	35	S	1	0	5
B006	40	T	3	3	6
B007	13	T	1	1	2
B008	57	T	6	6	9
B009	31	T	2	1	4
B010	74	T	3	2	8
B011	39	S	1	0	3
B019	46	S	1	0	2
BR01	21	H	0	0	1
BR02	10	T	1	.5	1
BR03	7	S	.5	0	1
BR04	18	T	2	1	1.5

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)	Estimated Post Project Detrimental Soil Acres (summer logging only)
BR05	9	T	1	.5	1
BR06	15	H	0	0	.5
BR07	14	S	1	0	1.5
BR08	30	H	0	0	1
BR09	44	S	1	0	2
BR10	6	T	.5	.5	.5
BR11	9	S	.5	0	2.5
BR12	11	T	1	1	2
BR13	28	H	0	0	.5
BR14	9	S	.5	0	1
BR15	14	S	1	0	1.5
BR16	16	T	2	.5	2
BR19	11	T	1	1	2
BR21	9	S	.5	0	3.5
BR22	16	T	2	2	3
BR24	13	H	0	0	3
BR26	16	T	2	2	3
BR27	9	T	1	1	2
BR28	2	T	.5	.5	.5
BR29	11	S	1	0	1.5
BR30	12	S	1	0	2
BR31	19	T	.5	.5	1
CA01	3	T	.5	.5	.5
CA02	4	T	.5	.5	.5
CA03	12	T	1	.5	1.5
CE01	34	T	3	1	3
CE02	41	T	4	4	8
CE03	87	T	8	8	3
CE04	42	S	1	0	1
CE08	8	T	1	.5	5
CE11	27	T	2	2	5
GA01	51	T	5	3	7

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)	Estimated Post Project Detrimental Soil Acres (summer logging only)
GA02	52	T	5	3	7
GA03	45	T	4	2	7
GA04	8	T	1	.5	1.5
GA05	44	T	4	2	8
GA06	12	T	1	1	1
GA07	67	T	6	4	8
GA08	74	T	7	4	10
GA09	55	T	5	3	7
HA01	30	T	3	2	4
HA02	20	T	2	1	3
HA03	10	T	1	.5	1.5
HA04	19	T	2	1	3
HA05	44	T	4	2	5
HA08	14	T	1	.5	1.5
JU03	21	H	0	0	1
JU04	8	T	1	.5	1.5
JU07	46	S	1	0	3
JU08	6	T	.5	.5	.5
JU09	78	H	0	0	.5
JU10	10	H	0	0	1
JU11	25	S	1	0	2
JU18	8	T	1	.5	2.5
JU20	17	S	1	0	.5
LI01	4	T	.5	0	1
LI02	53	H	0	0	.5
LI03	18	H	0	0	.5
LI04	9	H	0	0	.5
LI07	8	H	0	0	.5
LI08	8	S	.5	0	1
LI09	11	S	1	0	2
LI10	33	S	1	0	1.5
LI16	23	H	0	0	.5

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)	Estimated Post Project Detrimental Soil Acres (summer logging only)
LI17	6	S	.5	0	1
LI18	7	S	.5	0	1
LI19	30	S	1	0	2
LI20	1	H	0	0	.5
LI21	24	H	0	0	.5
LI22	30	H	0	0	.5
LI23	18	H	0	0	.5
LI24	10	H	0	0	.5
LI25	21	S	1	0	1.5
LI32	10	S	1	0	1.5
LI34	16	S	1	0	1.5
LI35	2	S	0	0	.5
LI36	5	H	0	0	3
LI37	5	H	0	0	2
LI39	17	T	1	.5	2.5
LI46	22	T	2	.5	2
LI47	13	H	0	0	.5
LI48	25	H	0	0	.5
LI49	8	H	0	0	.5
LI50	5	T	.5	.5	.5
LI51	6	H	0	0	.5
LI52	5	H	0	0	.5
LI53	5	H	0	0	.5
LI54	16	T	1	.5	1
LI61	11	H	0	0	1
MK01	15	T	1	.5	1.5
MK02	18	T	2	1	2
MK03	10	T	1	.5	1
MK04	22	T	2	1	2
MK06	10	T	1	.5	1
MK07	22	T	2	1	2
MK08	27	T	2	1	2

Harvest Unit	Acres	Logging System	Estimated Additional Potential Detrimental Soil Acres (summer logging only)	Estimated Active Restoration soil acres (summer logging only)	Estimated Post Project Detrimental Soil Acres (summer logging only)
PE01	14	T	1	.5	2.5
PE02	10	T	1	.5	2.5
PE03	14	T	1	.5	1.5
PE04	28	T	2	1	2
PE05	24	S	1	0	3
PE06	18	H	0	0	6
RA01	67	S	2	0	17
RA02	132	T	13	10	18
RA04	37	T	4	2	6
RA05	34	T	3	2	4
RA06	181	T	18	12	24
RA07	32	T	3	1	5
RA08	22	S	1	.5	13
RA09	62	T	6	4	14
RA10	62	S	2	.5	7
RA11	46	T	5	3	7
RA13	20	T	2	1	2
RA14	31	T	3	2	4
RA15	78	T	8	6	14
RA16	12	T	1	.5	2.5
RA17	18	T	2	1	4
RA18	19	S	1	0	4
<b>Totals</b>	<b>3,404</b>		<b>225.5</b>	<b>129.5</b>	<b>429.5</b>