

112-02-102
 KOOTENAI NATIONAL FOREST
 SOIL DISTURBANCE DATA FORM

DATE 6/17/97 CUTTING METHOD CC W reserves / Fire Salvage
 OBSERVER Kuennen Sullivan Yang, Billows, Wadger SKIDDING METHOD Summer Tractor
 DISTRICT D-1 HAZARD TREATMENT Wadger
 SALE Bunker Hill Fire Salvage SILVICULTURAL TREATMENT Broadcast w jack pt pines Spring 97
 Unit No. 10 112-02-102 OPERATION PERIOD Summer '96
 Acres 44
 Habitat Type SHF/Clun

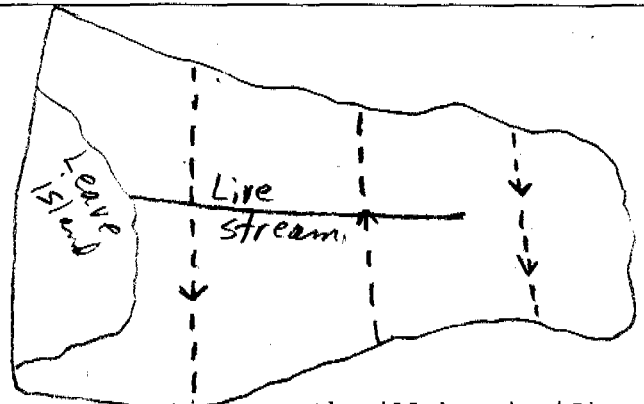
COMPACTION (Heavy) Trans. 1	<input checked="" type="checkbox"/>	15
Trans. 2	<input checked="" type="checkbox"/>	19
Trans. 3	<input checked="" type="checkbox"/>	33
COMPACTION (Light) Trans. 1	<input checked="" type="checkbox"/>	55
Trans. 2	<input checked="" type="checkbox"/>	151
Trans. 3	<input checked="" type="checkbox"/>	148
UNDISTURBED Trans. 1	<input checked="" type="checkbox"/>	150
Trans. 2	<input checked="" type="checkbox"/>	239
Trans. 3	<input checked="" type="checkbox"/>	220
DISPLACED	<input checked="" type="checkbox"/>	

EXCAVATED SKID TRAIL

SMZ

COMMENTS Trans 3 - broadcast pines SMZ
waterbars generally every 30-50' + lots of water that ran thru
spring shed trail on south end of unit. lots of water ran + eroded upper part of trail.
Need to put more waterbars in shed trail on south side of unit.

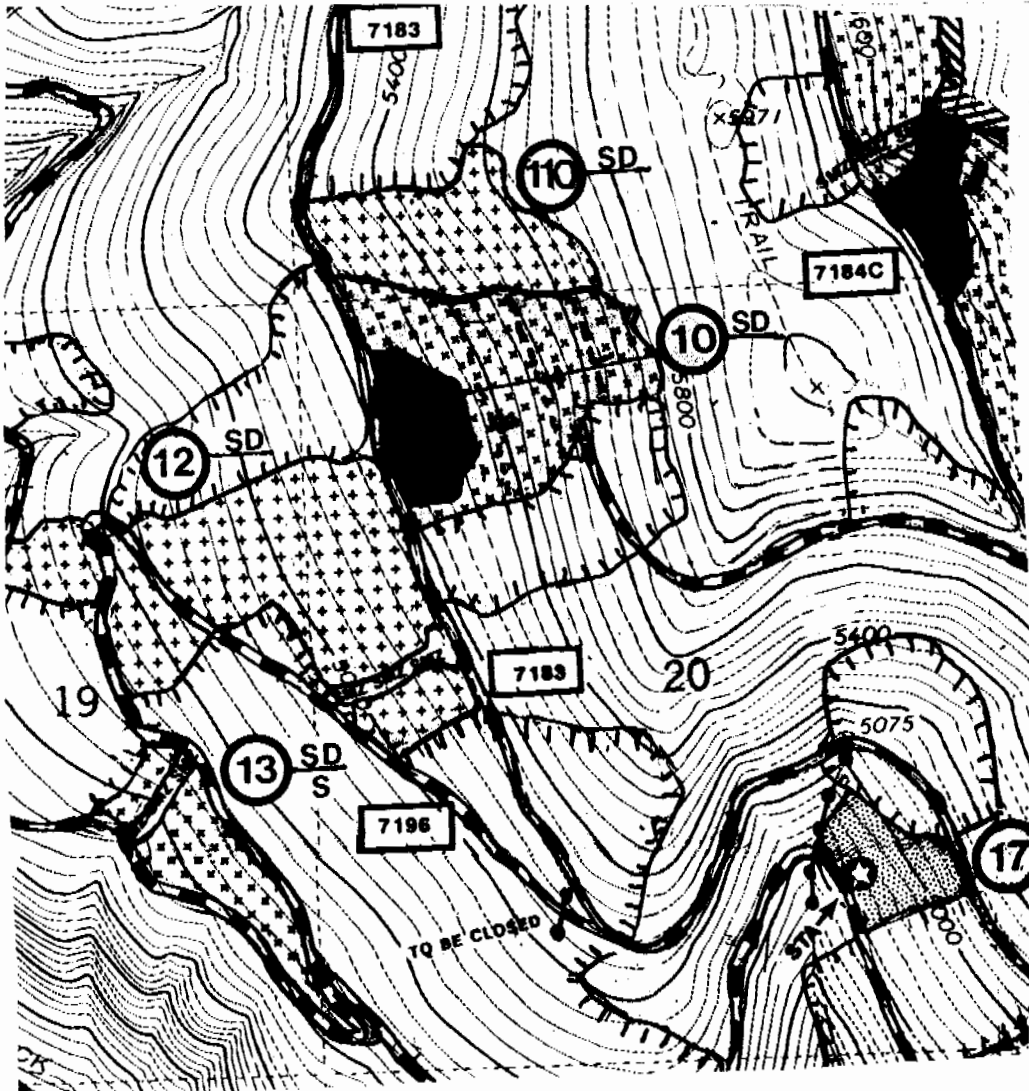
SHAPE OF UNIT AND PATTERN OF TRANSECT



COMPACTION (Heavy) - any place where future vegetative growth will be significantly impacted, i.e., skid trails (both heavily and lightly used depending on amount of compaction related to soil moisture), landings, and other impacted areas.
COMPACTION (Light) - any other area not included in heavy COMPACTION or UNDISTURBED.
UNDISTURBED - no signs of any machinery or skidding activity.
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SMZ - include within transect if within harvest unit.

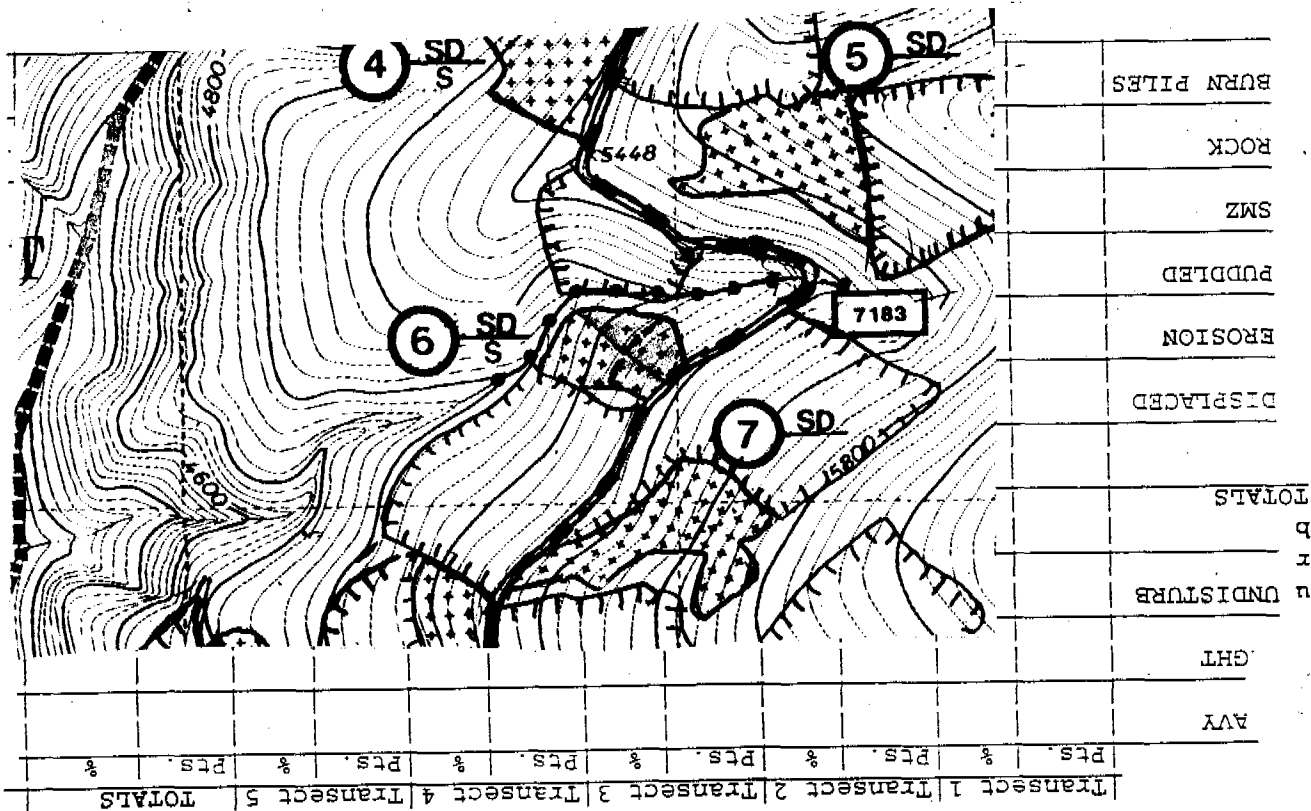
TRANSECT SUMMARY FORM

	Transect 1		Transect 2		Transect 3		Transect 4		Transect 5		TOTALS		
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	
D i s t u r b	HEAVY	15	7	19	5	33	8					67	6.5
	LIGHT	55	25	151	37	148	29					354	34.5
	UNDISTURB	150	68	239	58	220	55					609	59
	TOTALS	220	100	409	100	401	100					1030	100
DISPLACED													
		10	5	19	5	20	5					49	5
EROSION													
		3		5		7						15	1
PUDDLED													
		0		0		0						0	0
SMZ													
						23						23	2
ROCK													
				4								4	0
BURN PILES													



TRANSECT SUMMARY FORM

	Transect 1		Transect 2		Transect 3		Transect 4		Transect 5		TOTALS	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%
D i s t u r b e n c e s L I G H T	4	2									4	2
u n d i s t u r b e n c e s L I G H T	40	16									40	16
u n d i s t u r b e n c e s	200	82									200	82
TOTALS	244	100									244	100
DISPLACED	3	1									3	1
EROSION											0	
PUDDLED											0	
SMZ												
ROCK												
BURN PILES												



10907167
KOOTENAI NATIONAL FOREST
SOIL DISTURBANCE DATA FORM

DATE July 22 1997 CUTTING METHOD Clipper
OBSERVER Kenneth Sullivan SKIDDING METHOD Tractor/Forwarder
DISTRICT Rexford HAZARD TREATMENT BB?
SALE Webb Fire Salvage SILVICULTURAL TREATMENT Group Shelterwood / ^{SD} _{residual}
Unit No. 2 Acres 11.2 OPERATION PERIOD Winter 96-97

One transect on lower end of mid-section of unit - started west to east
COMPACTION (Heavy) ||||

COMPACTION (Light) ||||| 173
||||| 232

UNDISTURBED ||||| 199
||||| 291 40 *leaf litter*

DISPLACED ||

EXCAVATED SKID TRAIL

SMZ

COMMENTS

overland/channeled flow: |||| 32 4
||

one with erosion
A lot of surface flow during spring melt in W part of unit.
Sand exposed soil along go-back trail on eastern edge of unit
Erosion of wheel tracks on trail between two leafed patches

SHAPE OF UNIT AND PATTERN OF TRANSECT

see back

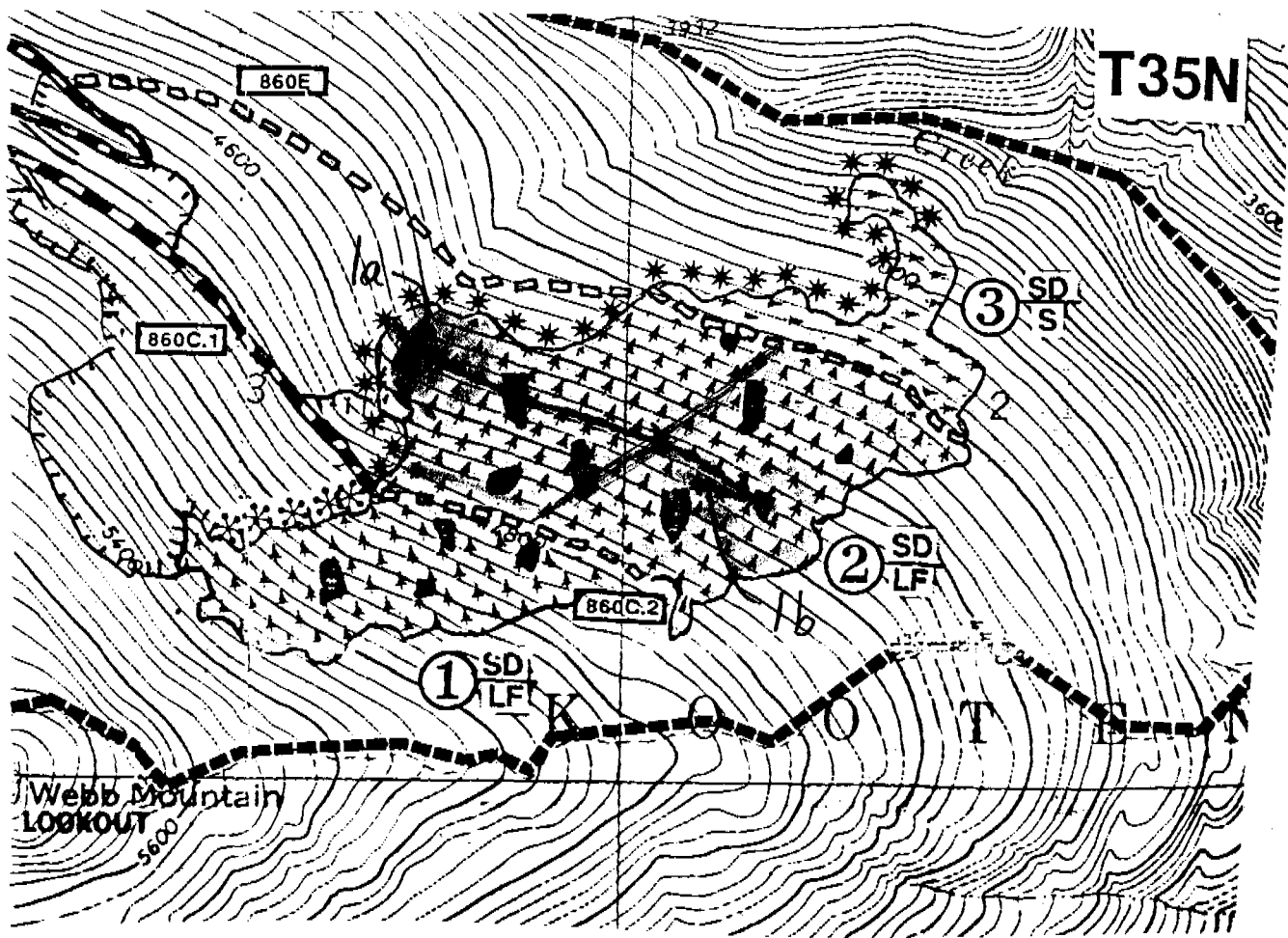
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SMZ - include within transect if within harvest unit.

TRANSECT SUMMARY FORM

forwarder

Tractor

	Transect 1a		Transect 1b		Transect 3		Transect 4		Transect 5		TOTALS	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%
D HEAVY	5	1	5	1							10	1
s LIGHT	172	46	232	46							404	46
u UNDISTURB	199	53	271	53							470	53
r b TOTALS	376	100	508	100							884	100
DISPLACED	6	2	3	1							9	1
EROSION	4	1	2	0							6	1
PUDDLED											0	0
Overland flow	28	7	1	0							29	3
ROCK												
BURN PILES												



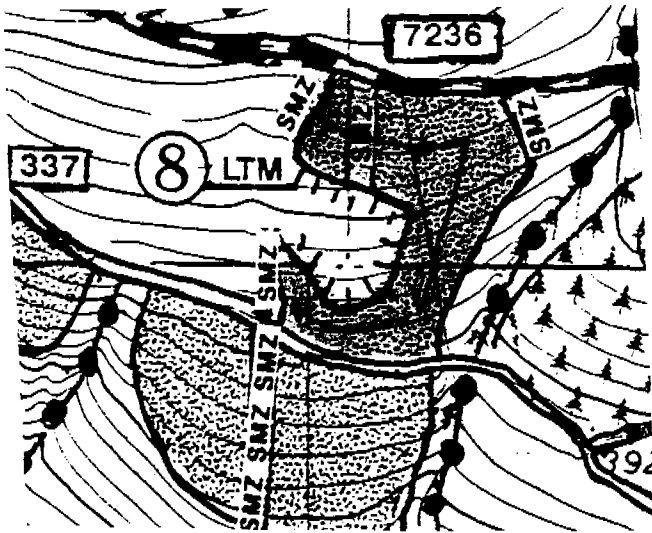
Current

Previous

TRANSECT SUMMARY FORM

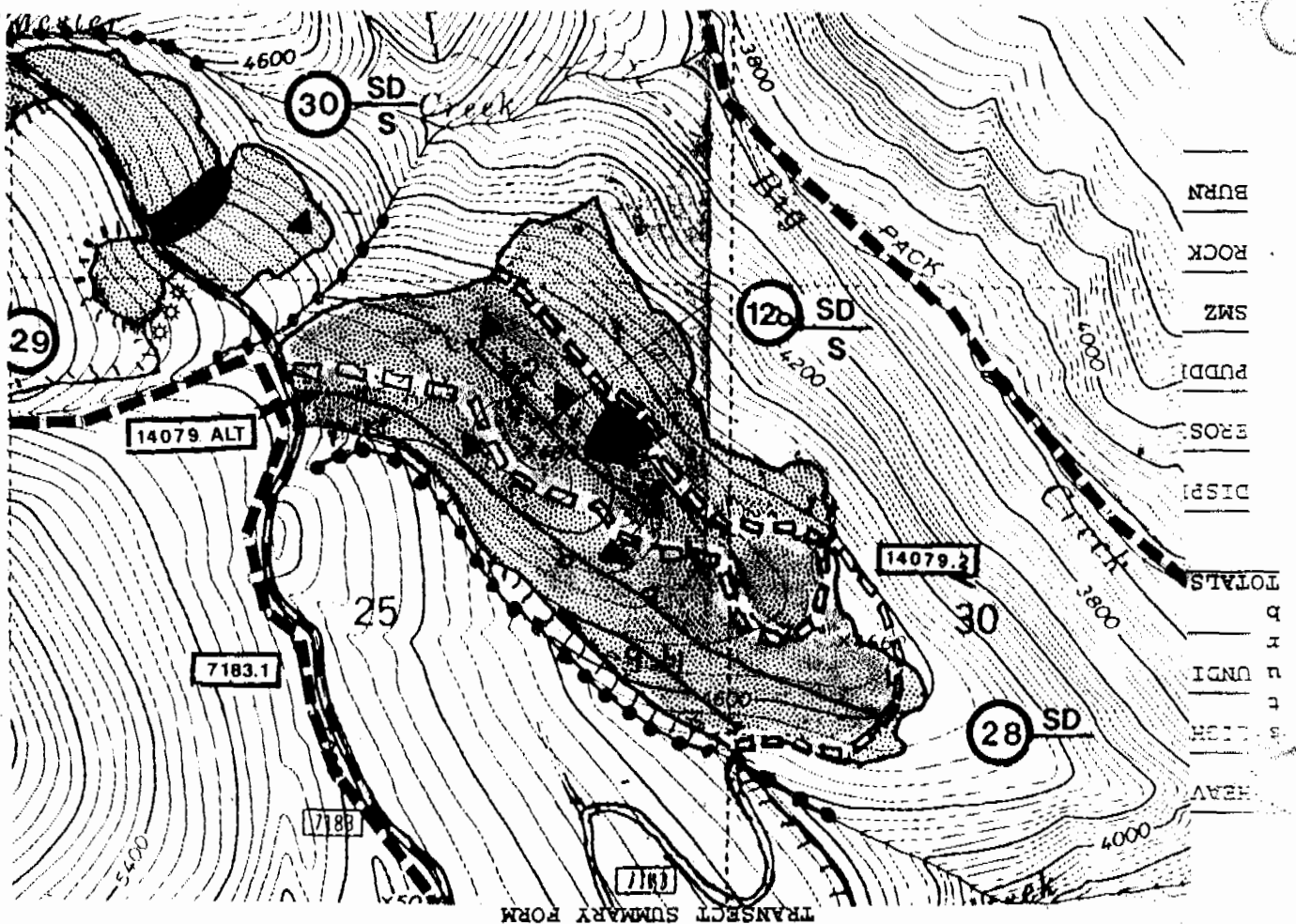
	Transect 1		Transect 2		Transect 3		Transect 1		Transect 2		Transect 3		
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	
D HEAVY	0	0	0	0	0	0	41	19	40	22	54	20	10
s LIGHT	76	35	77	43	132	50	133	60	110	61	167 ⁶⁹⁵	63	52
u UNDISTURB	144	65	104	51	132	50	46	21	30	17	43 ⁴⁹⁹	17	38
TOTALS	220	100	181	100	264	100	220	100	181	100	264	100	
DISPLACED			665				40	18	36	20	43	17	9
EROSION							5	2	4	2	7	3	1
PUDDLED													
SMZ													
ROCK													
BURN PILES													

135



TRANSECT SUMMARY FORM

	Transect 1		Transect 2		Transect 3		Transect 4		Transect 5		TOTALS	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%
D i s t u r b	HEAVY	20	2									
	LIGHT	285	24									
	UNDISTURB	885	74									
	TOTALS	1190	100									
DISPLACED	5	.5										
EROSION		0										
PUDDLED		0										
SMZ												
ROCK												
BURN PILES												



08/05/1997

Rexford (D-1) - North Fork West Fire Salvage

Unit 28B 11204220

KOOTENAI NATIONAL FOREST
SOIL DISTURBANCE DATA FORM

DATE 8.5.97

CUTTING METHOD clipper

OBSERVER Kuennen

SKIDDING METHOD forwarder

DISTRICT Rexford

HAZARD TREATMENT _____

SALE North Fork West Fire Salvage ^{Emergency}
Unit No. 28b

SILVICULTURAL TREATMENT SD

H.T. WRC/Chen

OPERATION PERIOD Summer '97

COMPACTION (Heavy) ^{20-35% summer operation tractor SE corner} 13 ^{summer operation - tractor 5-40% northwest} 17

COMPACTION (Light) 100 190

UNDISTURBED 130 210

DISPLACED 7

EXCAVATED SKID TRAIL _____

SMZ _____

COMMENTS Temp. / debris stid shift soil was excess for the steeper part on southern edge. Need to recontour at wet spot.

SHAPE OF UNIT AND PATTERN OF TRANSECT

See 28a

COMPACTION (Heavy) - any place where future vegetative growth will be significantly impacted, i.e., skid trails (both heavily and lightly used depending on amount of compaction related to soil moisture), landings, and other impacted areas.

COMPACTION (Light) - any other area not included in heavy COMPACTION or UNDISTURBED.

UNDISTURBED - no signs of any machinery or skidding activity.

DISPLACED - any place soil has been mounded by machinery, also include in heavy or light compaction.

SMZ - include within transect if within harvest unit.

SE NW
corner corner
TRANSECT SUMMARY FORM

	Transect 1		Transect 2		Transect 3		Transect 4		Transect 5		TOTALS	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%
D-HEAVY	13	5	17	4							30	4.5
S-LIGHT	100	41	190	46							290	44
UNDISTURB	130	54	210	50							340	51.5
TOTALS	243	100	417	100							660	100
DISPLACED	7	3	0	0							7	1
EROSION											0	
PUDDLED											0	
SMZ												
ROCK												
BURN PILES												

	Transect 1		Transect 2		Transect 3		Transect 4		Transect 5		TOTALS	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%
HEAVY												
S-LIGHT												
UNDISTURB												
TOTALS												
DISPLACED												
EROSION												
PUDDLED												
SMZ												
ROCK												
BURN PILES												

DATE 8.15.1997

CUTTING METHOD Clipped

OBSERVER Kuennen

SKIDDING METHOD RTS

DISTRICT Fortine 345-02-054

HAZARD TREATMENT BB - cool Spring '97

SALE Mid Advent

SILVICULTURAL TREATMENT LTM - WL + DF seed trees

Unit No. 3 Acres: 35
 H.T. SAF/Libo → SAF/Xete

OPERATION PERIOD Spring '96

COMPACTION (Heavy) 5

COMPACTION (Light) 180
190 46

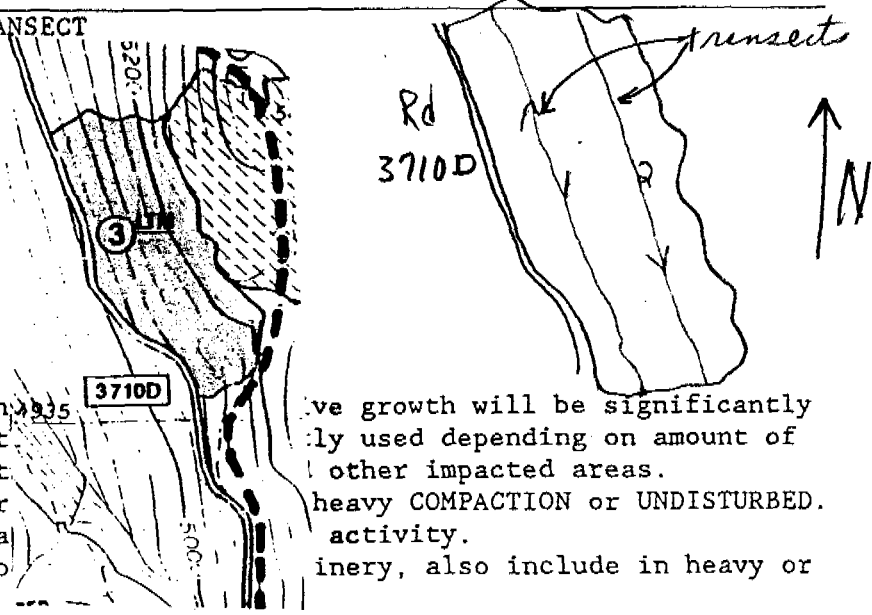
UNDISTURBED 405

DISPLACED

EXCAVATED SKID TRAIL

Rock Bedrock - Piegan One rock bluff 20' high. 8/33
Again rock rib in unit - more in upper part of unit than lower
 COMMENTS Soil: Ash absent in 1/2 of the unit. Generally present on gentler slopes +
more uniform slopes. Lots of rock and till (angular to sub angular)
Burn - generally cool. More duff left than in Unit 1, also more unburned.
Enough of 3" KWD present
Excavated fireline w/ throwback.

SHAPE OF UNIT AND PATTERN OF TRANSECT

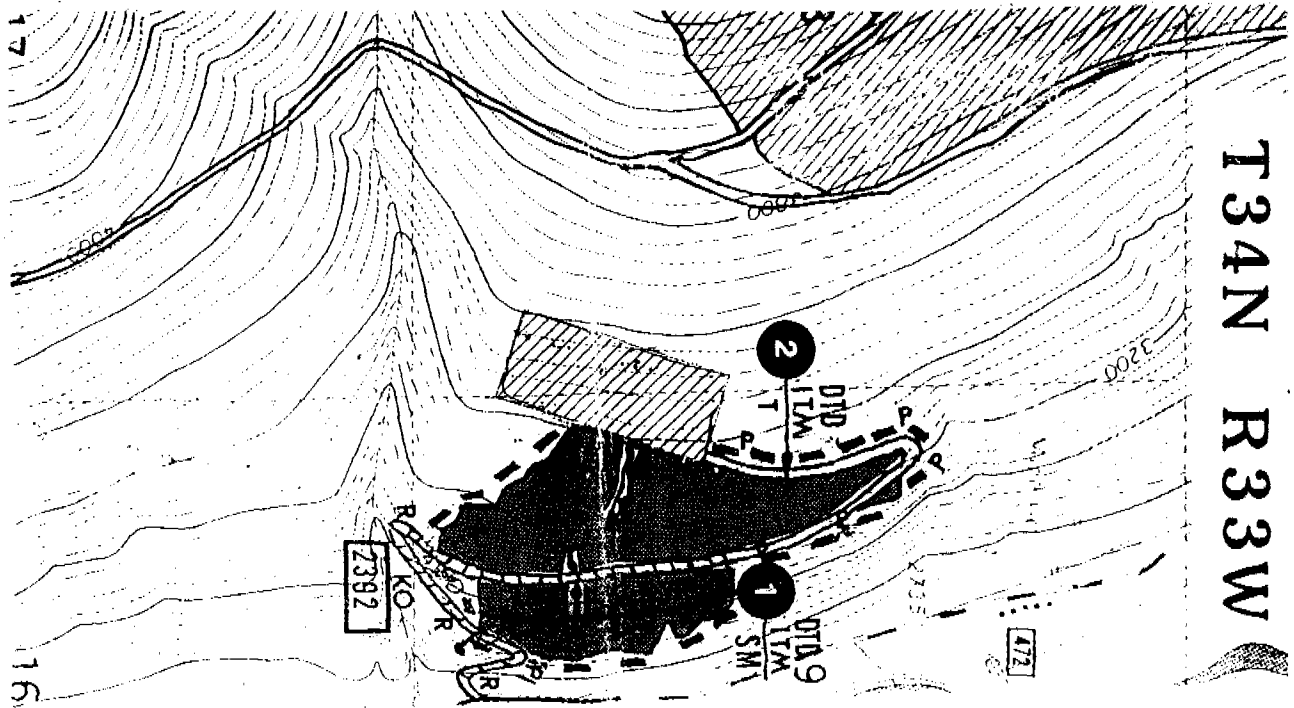


COMPACTION (Heavy) - any place where
 impacted, i.e., skid trails (both
 compaction related to soil moist.
 COMPACTION (Light) - any other area
 UNDISTURBED - no signs of any major
 DISPLACED - any place soil has been
 light compaction.
 SMZ - include within transect if within harvest unit.

Vegetation growth will be significantly
 affected depending on amount of
 other impacted areas.
 heavy COMPACTION or UNDISTURBED
 activity.
 Transects, also include in heavy or
 light activity.

TRANSECT SUMMARY FORM

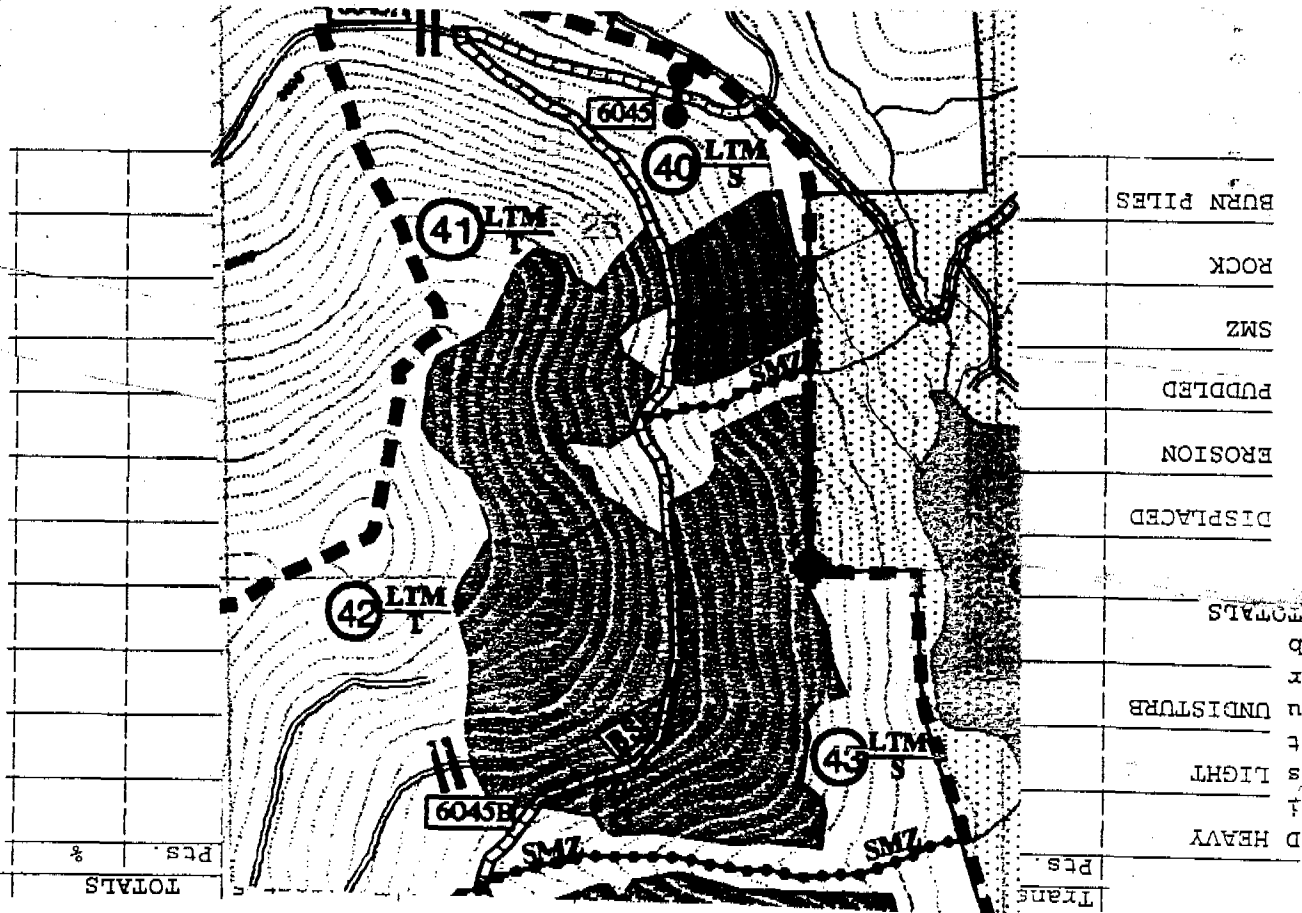
	Transect 1		Transect 2		Transect 3		Transect 4		Transect 5		TOTALS	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%
D i s t u r b b TOTALS	9	3									9	3
LIGHT	59	19									59	19
UNDISTURB	254	78									254	78
TOTALS	326	100									326	100
DISPLACED	14	4									14	4
EROSION											0	0
PUDDLED											0	0
SMZ	40	12									40	12
ROCK	14	4									14	4
BURN PILES												



TRANSECT SUMMARY FORM

lower Upper

	Transect 1		Transect 2		Transect 3		Transect 4		Transect 5		TOTALS	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%
HEAVY	14	4	20	7							34	6
LIGHT	73	23	86	29							153	26
UNDISTURB	230	73	175	64							405	68
TOTALS	317	100	275	100							592	100
DISPLACED	17	5	19	7							36	6
EROSION											0	0
PUDDLED											0	0
SMZ												
ROCK												
BURN PILES												

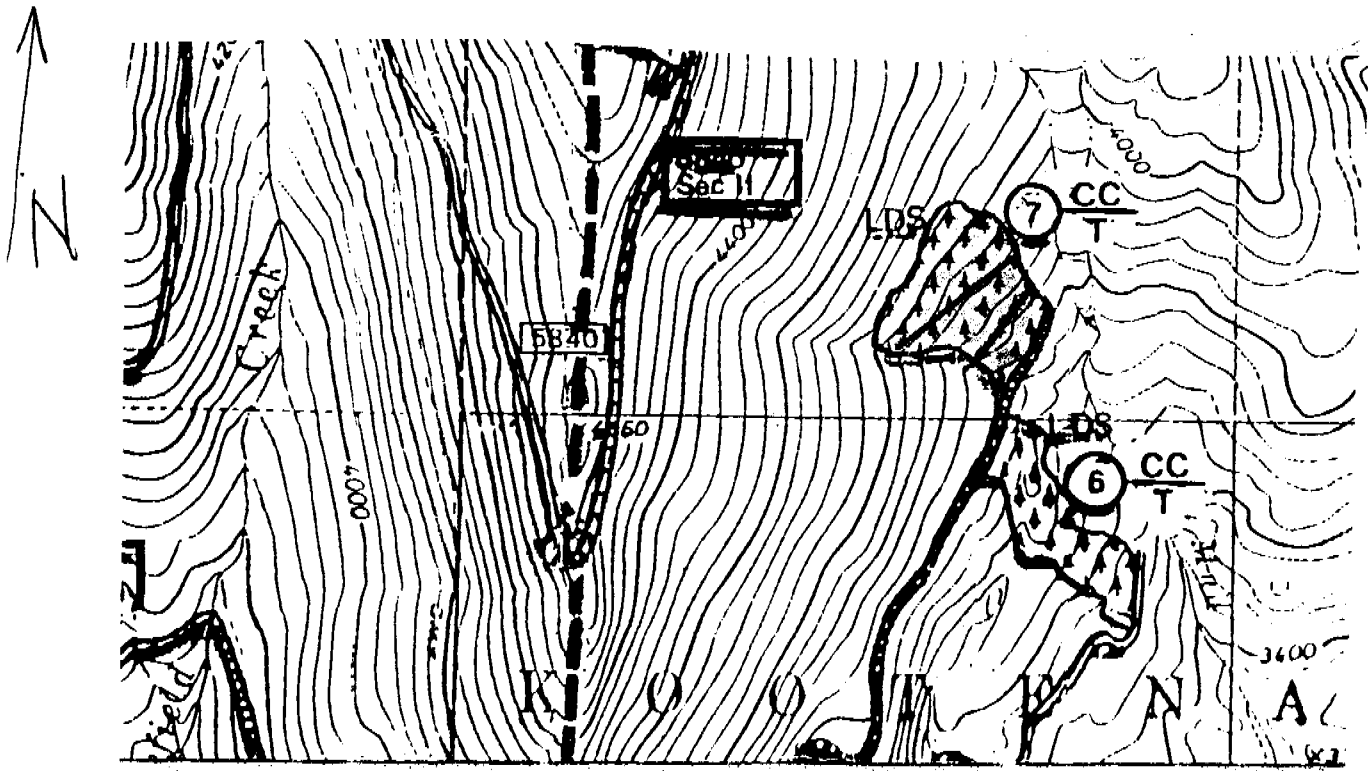


TRANSECT SUMMARY FORM

TRANSECT SUMMARY FORM

lower Upper

	Transect 1		Transect 2		Transect 3		Transect 4		Transect 5		TOTALS	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%
D HEAVY	16	9	18	6							34	8
s LIGHT	110	63	175	69							285	66
u UNDISTURB	50	28	65	25							115	26
b TOTALS	176	100	258	100							434	100
DISPLACED	8	5	3	1							11	3
EROSION											0	0
PUDDLED											0	0
SMZ												
ROCK	16	9	0	0							16	4
BURN PILES												



45404129
KOOTENAI NATIONAL FOREST
SOIL DISTURBANCE MONITORING FORM

DATE Sept. 26, 1997 CUTTING METHOD Chipper
OPERATOR Kuennen SKIDDING METHOD Cable-skyline
STRICT Three Rivers If tractor: dispersed dedicated
SALE/S.A. Pulpit Fire Salvage HAZARD TREATMENT ST seed
Unit # 6 Acres 58 SILVICULTURAL TREATMENT CC
H.T. SAF/Vag/w/some SAF/Xep OPERATION PERIOD July Aug - 97
Slope 50-70 & SAF/Mefe 454-04-129
COMPACTION (Heavy) 3

COMPACTION (Light) 256

UNDISTURBED 640

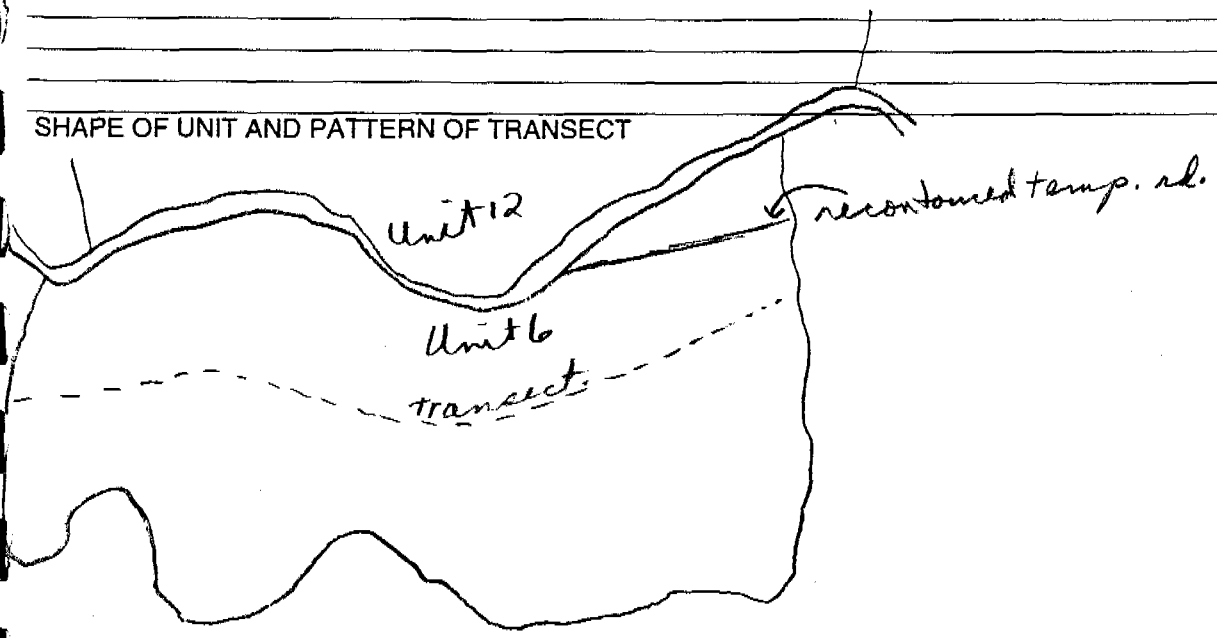
DISPLACED 20

EXCAVATED SKID TRAIL _____

SMZ/ROCK _____

COMMENTS Skidding corridors not nearly as pronounced as in Unit 14.
None of these will need waterbars.
Drive-through dips need to be at an angle
cut slope not roughened

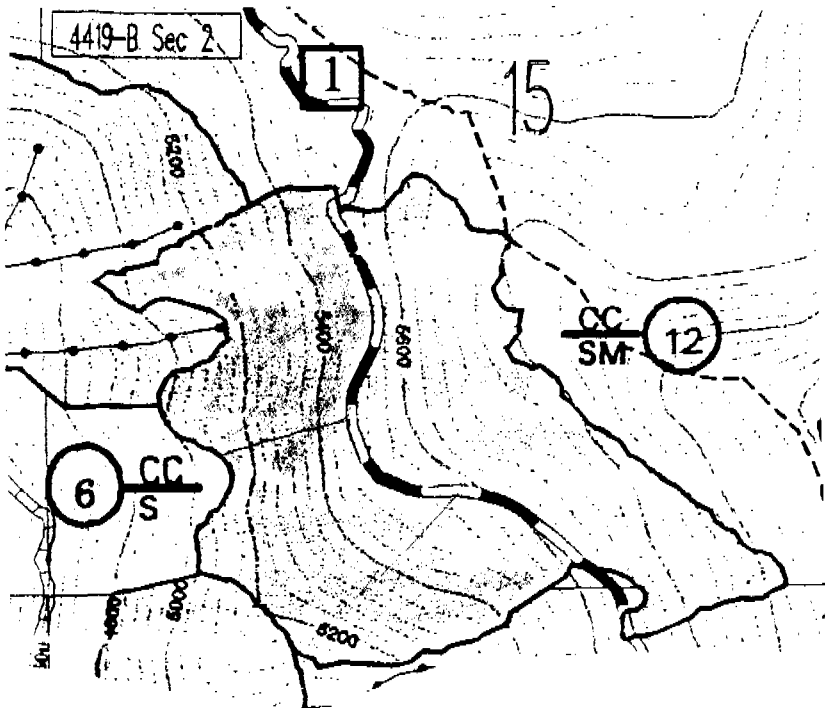
SHAPE OF UNIT AND PATTERN OF TRANSECT



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TRANSECT SUMMARY FORM

	Transect 1		Transect 2		Transect 3		Transect 4		Transect 5		TOTALS	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%
Disturbance	HEAVY	3	.3								3	.3
	LIGHT	256	28								256	28
	UNDISTURB	640	72								640	72
	TOTALS	899	100									899
DISPLACED		20	2								20	2
EROSION												0
PUDDLED												0
SMZ												
ROCK												
BURN PILES												



DATE Sept 26, 1997 CUTTING METHOD Clipper
OBSERVER Rudnien SKIDDING METHOD Tractor
DISTRICT Three Rivers If tractor: dispersed dedicated
SALE/S.A. Pulpit Fire Salvage HAZARD TREATMENT _____
Unit # 12 Acres 48 SILVICULTURAL TREATMENT CC
H.T. SAE/ete w/ SAE/Mete OPERATION PERIOD winter Nov. 96
Slope 10-35
COMPACTION (Heavy) 10 454-04-128

COMPACTION (Light) 245

UNDISTURBED 552

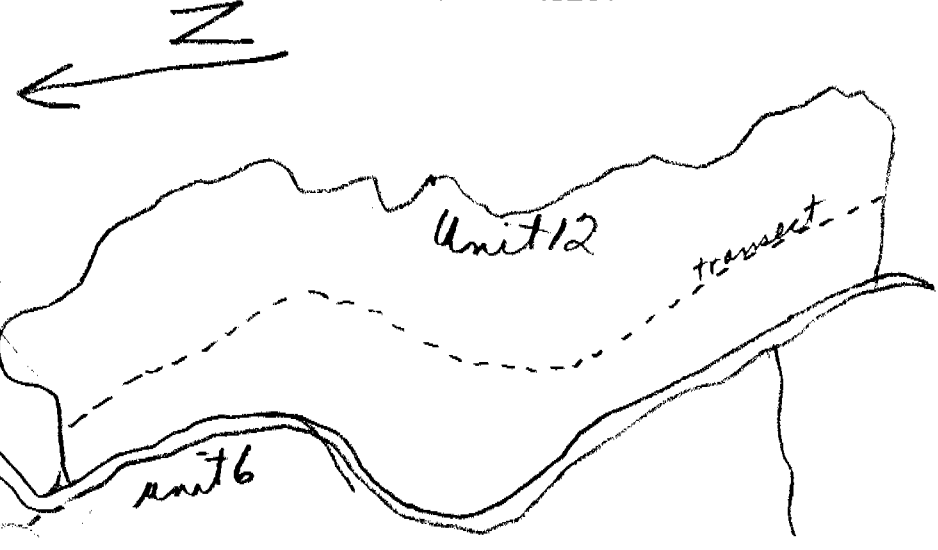
DISPLACED 35

EXCAVATED SKID TRAIL 7

SMZ/ROCK _____

COMMENTS Soil has dark color. Some gopher evidence. Lots of fireweed & arnica. Also have Xete, elf sedge, Hawthorn (native). Some elderberry & willow resprouting. Occasional grouse whortleberry. Duff varies between absent and some present. Big old logs on ground. Generally did not burn. Excavated trail above rd. should be pulled back.

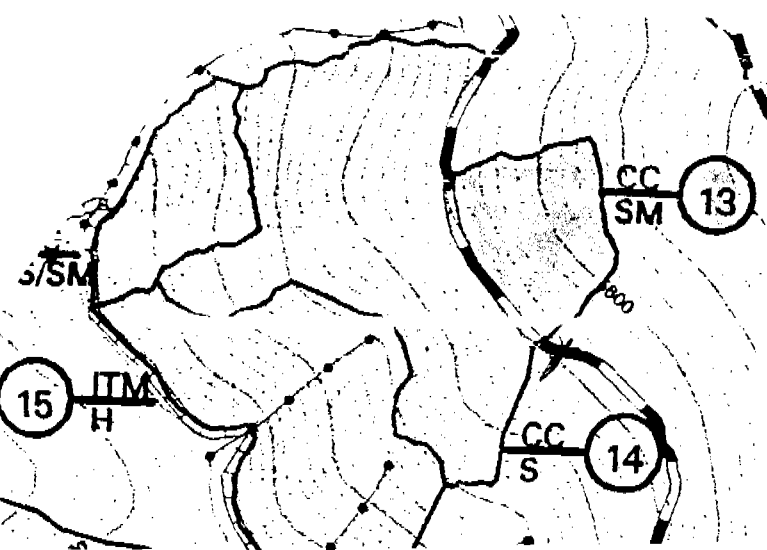
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	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%
D i s t u r b	HEAVY	8	3								8	3
	LIGHT	66	25								66	25
	UNDISTURB	194	72								194	72
	TOTALS	268	100								268	100
	DISPLACED	10	4								10	4
	 	5	2								5	2
	Excavated trail											
	PUDDLED											0
	SMZ											
	ROCK											
	BURN PILES											



45404231
KOOTENAI NATIONAL FOREST
SOIL DISTURBANCE MONITORING FORM

DATE Sept. 26, 1997 CUTTING METHOD Hand
OBSERVER Kuennen SKIDDING METHOD Cable
DISTRICT Three Rivers If tractor: dispersed dedicated
SALE/S.A. Pulpit Fire Salvage HAZARD TREATMENT _____
Unit # 14 Acres 46 Shore SILVICULTURAL TREATMENT CC
H.T. SAF/Mete/Vag SAF/Mete OPERATION PERIOD Aug - Oct. '97
Slope 50-70
COMPACTION (Heavy) 10 454-04-231

COMPACTION (Light) 45

UNDISTURBED 539

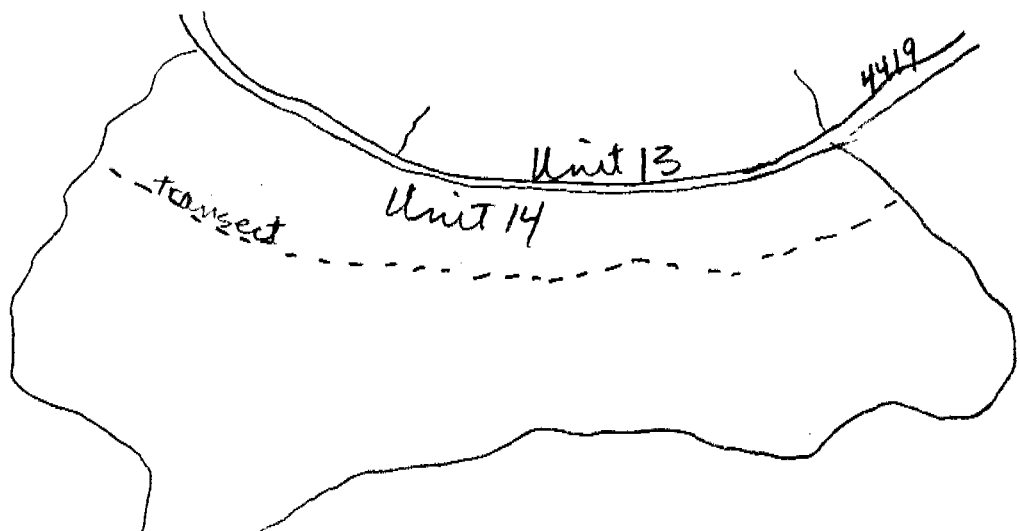
DISPLACED 50

EXCAVATED SKID TRAIL _____

SMZ/ROCK _____

COMMENTS Gophers will be a problem. Deep glacial till in most of unit. Soil has dark surface (lots of dregs/forbs underfoot), which will add to region problems. Leave all skid trail debris. Seven skidding corridors on west end of unit, not waterbarred, two on east end. Most of waterbars in other corridors okay. Some will be ineffective. A log should have been anchored across corridor every 4-5 waterbars. Ground form shows lots of old surface failures. Dune and thing road did not go any further. There will be plenty of sloughing the way out, especially between units 6 and 14. As the aspect rolls more around to the northwest Mefe becomes the dominant understorey. Stand was 180-220 years old.
- Each corridor 8-12" deep, 3-4" excavation & 5-8" of berm.

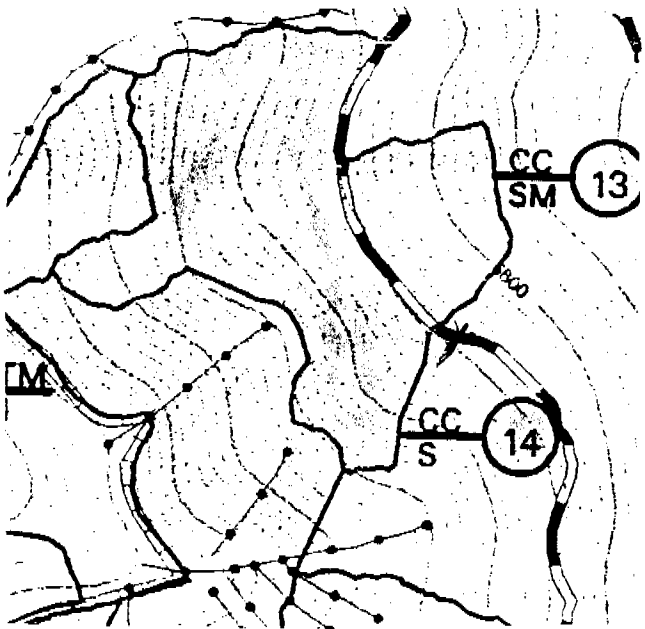
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TRANSECT SUMMARY FORM

	Transect 1		Transect 2		Transect 3		Transect 4		Transect 5		TOTALS	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%
Disturbance	HEAVY	10	2								10	2
	LIGHT	45	7								45	7
	UNDISTURB	539	91								539	91
	TOTALS	594	100								594	100
	DISPLACED	50	8								50	8
	EROSION											0
	PUDDLED											0
	SMZ											
	ROCK											
	BURN PILES											



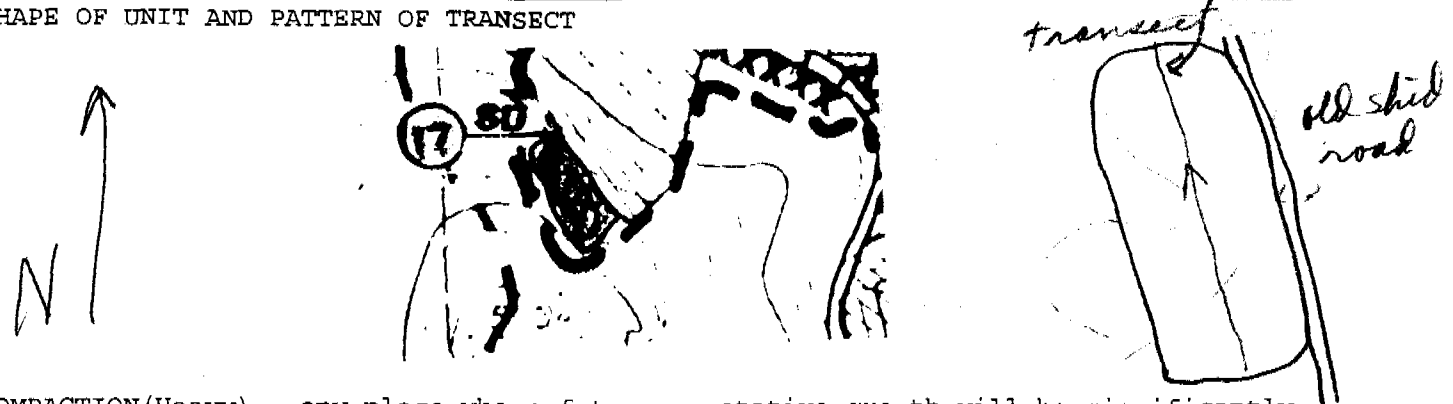
Transect was run at slope break where most of displacement has occurred. Percent is not representative of total unit. Less than 1/2 of 8%.

DATE 8.19.97 CUTTING METHOD hand
 OBSERVER L. Kuennen SKIDDING METHOD high Trac
 DISTRICT Libby HAZARD TREATMENT _____
 SALE Peace Alexander Salvage SILVICULTURAL TREATMENT SD-removed dead LPP
 Unit No. 17 Farmer Acres _____
 Habitat Type SAF/Libby - SAF/Vog! OPERATION PERIOD Summer '97
601-03-068 551-03-068 Slope: 10-30%
 COMPACTION (Heavy) Trans. 1: _____ 2
 Trans. 2 _____
 Trans. 3 _____
 COMPACTION (Light) Trans. 1 63
 Trans. 2 _____
 Trans. 3 _____ 63
 UNDISTURBED Trans. 1 63
 Trans. 2 _____
 Trans. 3 _____
 DISPLACED _____ 20
 EXCAVATED SKID TRAIL _____
 SMZ _____

COMMENTS *The big question becomes what to do w/ the skid trail. Should it be treated as part of Unit 17 or possibly include some of Unit 16 as just treat it as part of the transportation system. I'm not sure that the volume removed was worth the skid trail!! Even though the water bars are very large, some of them are inadequate since the outflow is diverting back onto the trail. The end of the bar was not carried far enough out. This becomes more true on the lower end of skid trail.*

Soil: Ash over till/presidial. Mostly angular rock in matrix.

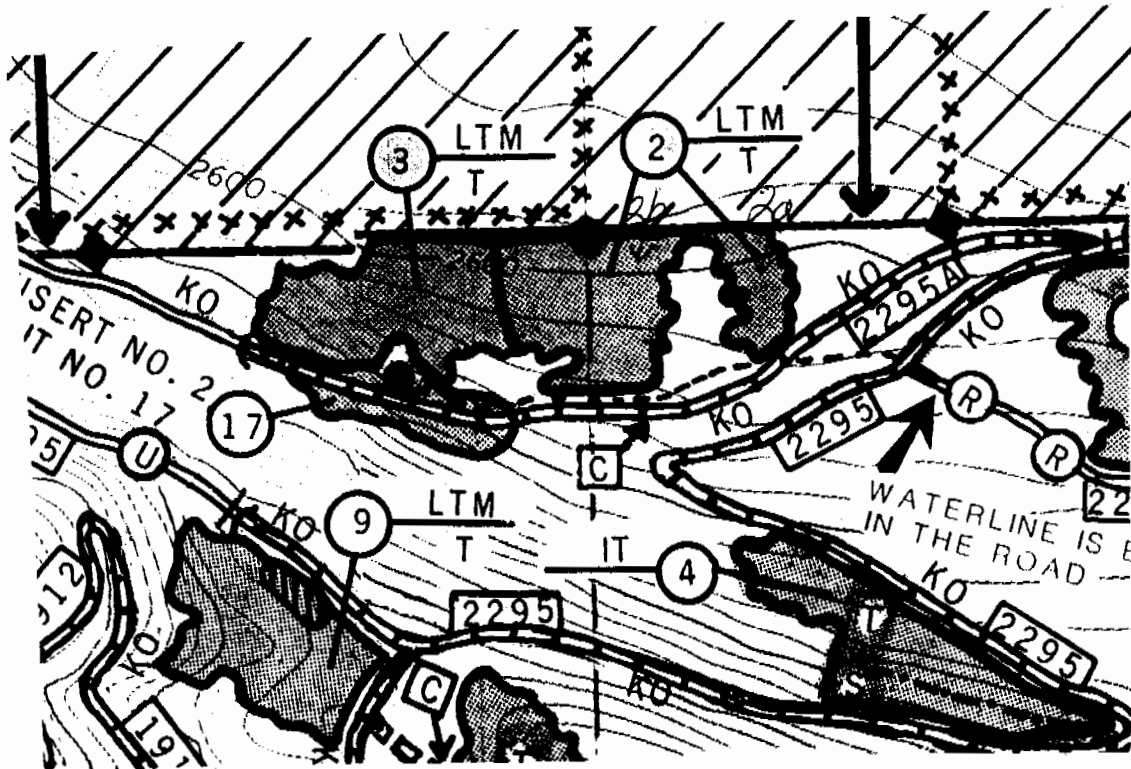
SHAPE OF UNIT AND PATTERN OF TRANSECT



COMPACTION (Heavy) - any place where future vegetative growth will be significantly impacted, i.e., skid trails (both heavily and lightly used depending on amount of compaction related to soil moisture), landings, and other impacted areas.
COMPACTION (Light) - any other area not included in heavy COMPACTION or UNDISTURBED.
UNDISTURBED - no signs of any machinery or skidding activity.
DISPLACED - any place soil has been mounded by machinery, also include in heavy or light compaction.
SMZ - include within transect if within harvest unit.

TRANSECT SUMMARY FORM

	Transect 1		Transect 2		Transect 3		Transect 4		Transect 5		TOTALS	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%
D i s t u r b e d HEAVY	0		2	3							2	1
LIGHT	15	23	23	30							38	28
UNDISTURB	50	77	50	67							100	71
TOTALS	65	100	75	100							140	100
DISPLACED												0
EROSION												0
PUDDLED												0
SMZ												
ROCK												
BURN PILES												



TRANSECT SUMMARY FORM

	Transect 1		Transect 2		Transect 3		Transect 4		Transect 5		TOTALS	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%
D I S T U R B E D H E A V Y	4	2	6	3							10	2
L I G H T	86	41	120	58							200	50
U N D I S T U R B	110	57	80	39							190	48
T O T A L S	194	100	206	100							400	100
D I S P L A C E D												
E R O S I O N												
P U D D L E D												
S M Z												
R O C K												
B U R N P I L E S												

	Transect 1		Transect 2		Transect 3		Transect 4		Transect 5		TOTALS	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%
H E A V Y												
L I G H T												
U N D I S T U R B												
T O T A L S												
D I S P L A C E D												
E R O S I O N												
P U D D L E D												
S M Z												
R O C K												
B U R N P I L E S												

08/05/1997

Rexford - North Fork West Fire Salvage

Unit 26

11204221

11204221

KOOTENAI NATIONAL FOREST
SOIL DISTURBANCE DATA FORM

DATE 8-5-97

CUTTING METHOD clipper

OBSERVER Kuennen/Sullivan

SKIDDING METHOD RTS

DISTRICT Rexford

HAZARD ABATEMENT Jackpot burn '98

SALE NFWest Fire Salvage
Unit No. 26 43A

SILVICULTURAL SW seed/reserve

H.T-531 Ele-4800 A₅NW

OPERATION PERIOD Dec '96/Jan '97

COMPACTION(Heavy) _____

Walk-Through

COMPACTION (Light) _____

UNDISTURBED _____

DISPLACED _____

EXCAVATED SKID TRAIL _____

SMZ/ROCK _____

COMMENTS winter operation - looks very good

Shape of Unit and Pattern of Transect

11203074
KOOTENAI NATIONAL FOREST
SOIL DISTURBANCE DATA FORM

DATE 8-5-97 CUTTING METHOD hand/clipper

OBSERVER Kuennen/Sullivan SKIDDING METHOD cable

DISTRICT Rexford HAZARD ABATEMENT jackpot burn '98

SALE Bunker Hill Fire Salvage SILVICULTURAL SW seed/reserve
Unit No. 8 43A

HT-620, Ele-5100, As-W OPERATION PERIOD Dec '96/Jan '97

COMPACTION(Heavy) _____

COMPACTION (Light) Walk-through

UNDISTURBED _____

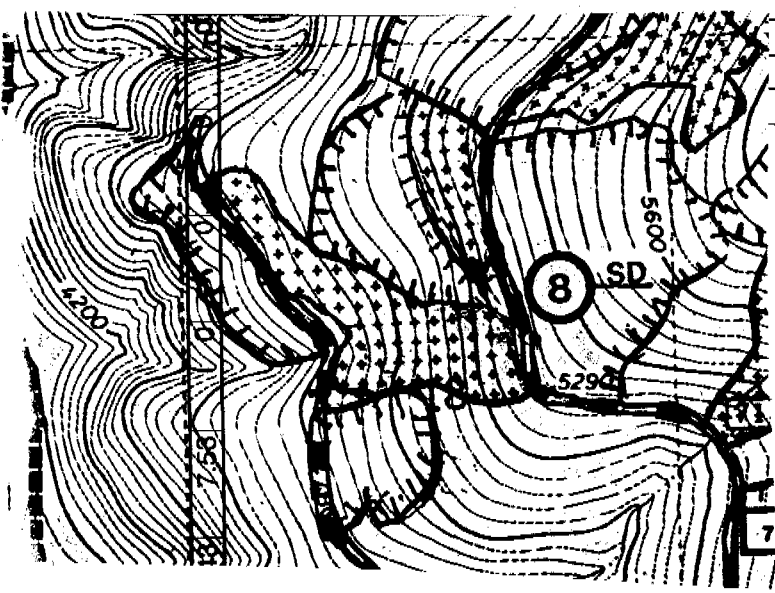
DISPLACED _____

EXCAVATED SKID TRAIL _____

SMZ/ROCK _____

COMMENTS winter operations

Shape of Unit and Pattern of Transect



02/12/1997

Three Rivers - Zimm Hill Fire Salvage

Unit 43

42402192

42402192

KOOTENAI NATIONAL FOREST
SOIL DISTURBANCE DATA FORM

DATE 2/12/97

CUTTING METHOD clipper/hand

OBSERVER Kuennen/Moeller

SKIDDING METHOD RTS/cable

DISTRICT Three Rivers

HAZARD ABATEMENT burn grapple piles '98

SALE Zimm Hill Fire Salvage
Unit No. 43 71A

SILVICULTURAL ST seed cut

H.T.-571

OPERATION PERIOD Jan '97

Ele: 3700

Aspect: E

COMPACTION(Heavy) _____

Walk-through

COMPACTION (Light) _____

UNDISTURBED _____

DISPLACED _____

EXCAVATED SKID TRAIL _____

SMZ/ROCK _____

COMMENTS Winter Operation. Lots of snow - snow roads. Very minimal soil impacts. Operation looked very good. Good SMZ left

Shape of Unit and Pattern of Transect

United States
Department of
Agriculture

Forest
Service

Kootenai NF

506 US Highway 2 West
Libby, MT 59923

Reply To: 2430
2550

Date: June 4, 1997

Subject: West Yaak Proposal

To: District Ranger, D4
Attn: Leslie Ferguson

Walk throughs!

All had some past activity

Leslie Ferguson, Hilaire Bojonell, and Louis Kuennen made on-site visits to Units 53A, 53B, 19, & 24 on May 30, 1997 and Units 5, 8, 10, & 11 on June 12, 1997, of the West Yaak proposal. One of the concerns is related to the impact of past activities. ~~All of the units contain varying degrees of past activity - skid trails. We put information together for the West Yaak EA one of the~~ resources to be discussed is the soil, specifically soil compaction. The method used in dealing with impact to the soil in previously logged tractor units is to apply a percentage factor for the skidding and the hazard abatement. Usually these activities were done with tracked vehicles. The percentage of ground impacted was at least 15. Fifteen percent is the Kootenai National Forest's limit for significant soil impact. Naturally very little amelioration occurs. This means that future operations will increase the soil impacts beyond the accepted limits.

An on-the-ground review was done to determine just exactly what the total past activity impact was. Units 53A and 53B are adjacent to each other. The past activity in both consisted of constructing excavated skid trails and removing scattered trees. It appears that no operations occurred off the trails. It is estimated that less than 5 percent of the area was previously impacted, mainly because only scattered trees were removed. This means that the current proposal could add ten percent of significant soil impact and stay within the Forest guidelines.

For the above ~~two~~ units the habitat type is Douglas-fir/dwarf huckleberry. The landtype is 355. Landtype 355 is described as moderately deep soil with a higher rock content than the "normal" glacial till on the Forest. The soil within the two units contains 50 to 75 percent rock. Some of the rock (the source is both metasedimentary and igneous) is subrounded and subangular and some is angular. The angular rock is located at or near the surface. Activity impact to the soil will be less than normal in these two units because of the large amount of rock. The high rock content creates a droughtier soil and may have a limiting effect on the size and productivity of shrubs.

The amount of excavated trails in Unit 19 is greater than in Units 53A and 53B, so the significant soil impact is greater. Current activity will need to remain on the existing trails. Unit 24, unlike the other units, generally has a uniform slope which is less than 30 percent. This unit has several old skid trails that were used to salvage in the past. The volcanic ash surface is fairly deep (12 - 18 inches) and contains few rock. This soil is very compactible. Also, the site is such that it will remain wetter than the accepted 18 percent soil moisture used for machinery activity. It is agreed that cabling is the proper method of log removal from this unit.

Unit 8 is very similar to Unit 24--deep volcanic ash, uniform slope, but better drained. This unit has existing trails. Unit 5 (includes what was referred to as Unit 4 of the Pete Creek Proposal memo of June 21, 1991) has deep volcanic ash and broken slopes. Several streams also flow through the unit--some are a

result of piped flows from Rd. 5919C. The north end of the unit contains populations of sensitive Botrychium species. This unit has devil's club scattered throughout.

A natural opening divides Unit 11 and extends from the upper road almost to the lower road. I can't completely explain the opening, but it has been there a long time as indicated by the depth of the dark surface soil. The lower end of Unit 11 is very wet, especially west of the opening, as indicated by an almost continuous covering of devil's club. Also very few western white pine were seen in the area. A population of sensitive Botrychium is present just below the upper road east of the opening. Unit 10 contains many more stems of western white pine and generally is drier than Unit 11.

A lot of surface flow is coming from the all the roads within the area of the proposal. As a result fines are being washed from the gravel lift, sometimes going directly to a stream. As a resource the surface of the roads need to be protected from erosion.

RECOMMENDATIONS:

1. Units 53A and 53B can be logged during the summer.
2. Any temporary road coming off the Yaak Highway (Units 53A and 53B access) should be recontoured. The power lines that parallel the Highway are not that high above the ground and may provide a hazard to tall equipment.
3. Unit 19 can be summer logged but the previous trails should be used.
4. Unit 24 should be cable logged or winter logged. Jackpot piling with an excavator can be done within the same season of log removal. This doesn't mean the entire unit.
5. Unit 5 should be cabled, with the north end of the unit dropped to recognize the Botrychium population.
6. Unit 8--log in the drier part of the summer and stay on the existing trails.
7. Unit 11--drop the area west of the natural opening and exclude the Botrychium area.
8. Include Unit 10 and winter log it.
9. Drive-through dips should be placed in the access roads for the West Yaak proposal.

If there any questions, please call.

/s/ Louis J. Kuennen

LOUIS KUENNEN
SOIL SCIENTIST

58, 10, 11

5	207	209-02-125	40902131, 40902135
8	287	209-02-132	40902132
10	23	01-104	40901164, 40901165
11	11	11-01-163	40901163
20		11-01-164	40901164
53A	Land		40902112
53B	Fl		40902113
	127		

06/12/1997
Three Rivers - West Yaak (Blistered Beetle)
Unit 5, 8, 10, 11
40902125 40902132
40901164 40901163

KOOTENAI NATIONAL FOREST
SOIL DISTURBANCE DATA FORM

DATE 6/12/1997 CUTTING METHOD clipper
OBSERVER Quennen/Bozonell/Erguson SKIDDING METHOD RTS
DISTRICT Three Rivers HAZARD ABATEMENT burn grapple pile 2002
SALE Blistered Beetle SILVICULTURAL ST cut (mortality cut)
Unit No. 5, 8, 10, 11 OPERATION PERIOD summer 2000

COMPACTION (Heavy) Walk Throughs

COMPACTION (Light) _____

UNDISTURBED _____

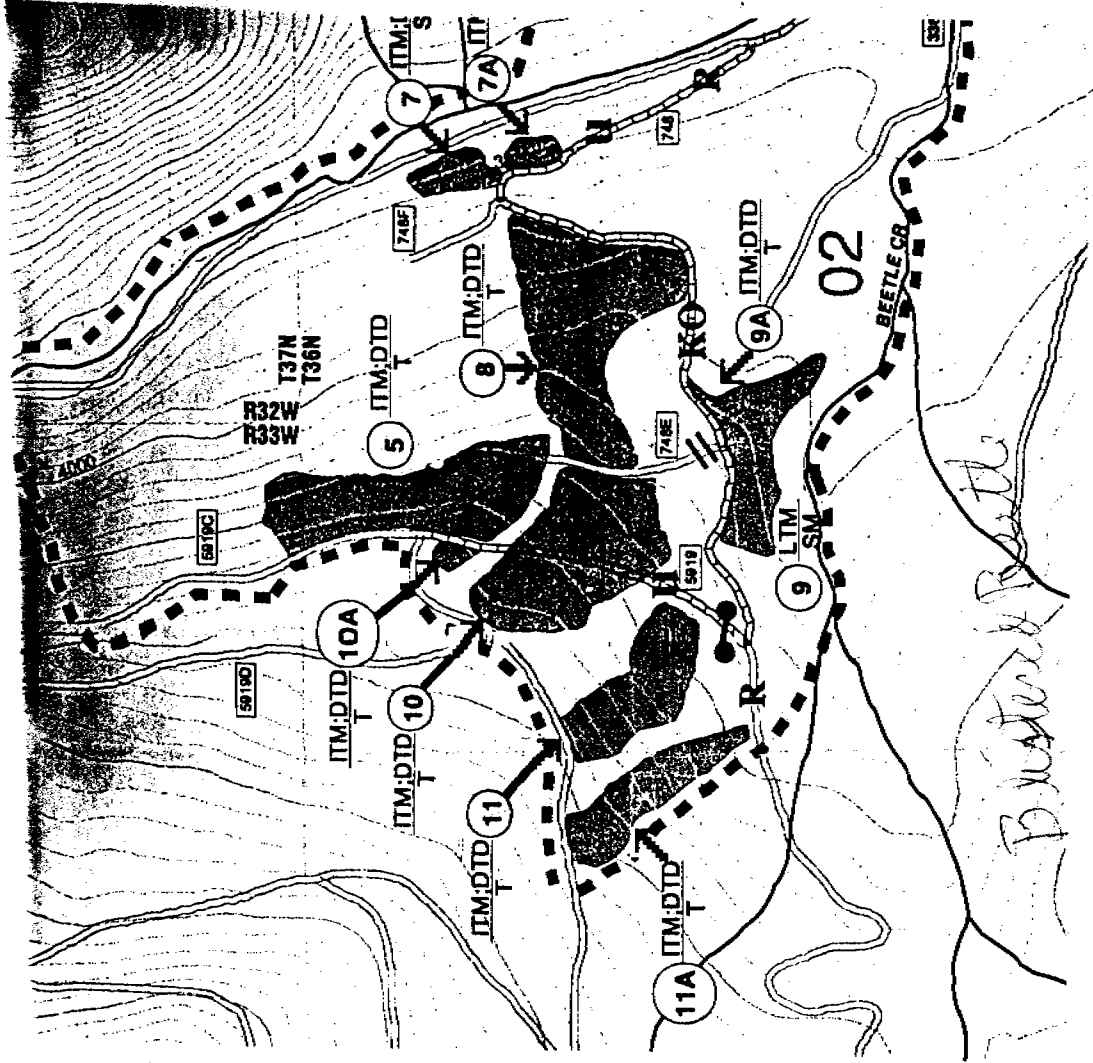
DISPLACED _____

EXCAVATED SKID TRAIL _____

SMZ/ROCK _____

COMMENTS Past excavated skid trails present
5 - H.T. - 570, El. - 4000, As - E, slope - 15-30% mortality cut
cable unit + drop Botrychium area
8 - H.T. - 571, El. - 4000, As - E, slope - 10-25%; mortality cut
Use existing trails
10 - H.T. - 590, El. - 4200, As - E, slope - 15-30%; mortality cut, grapple piled
winter log
11 - H.T. - 571, El. - 4300, As - SE, slope - 10-25%; mortality cut, grapple piled
Drop wet area west of natural opening
Estimate past detrimental at < 5%.

Shape of Unit and Pattern of Transect
5 - 40902125, 40902131 : 20A
8 - 40902132 : 28A
10 - 40901164, 40901165 : 23A
11 - 40901163 : 11A



24 ÷ 40705129-19A, 40705101-6A

05/30/1997
Three Rivers - West Yaak (North Pole Salvage)
Unit 24
40705101/40705129

KOOTENAI NATIONAL FOREST
SOIL DISTURBANCE DATA FORM

DATE 5/30/1997

CUTTING METHOD clipper

OBSERVER Kuennen/Bojnell/Ferguson

SKIDDING METHOD RTS

DISTRICT Three Rivers

HAZARD ABATEMENT Burn landing 2002

SALE North Pole
Unit No. 24 25A

SILVICULTURAL mortality cut

U.T. - 570, Elk - 3900, As - 5

OPERATION PERIOD Summer 2000

COMPACTION (Heavy)

Walk-through

COMPACTION (Light)

UNDISTURBED

DISPLACED

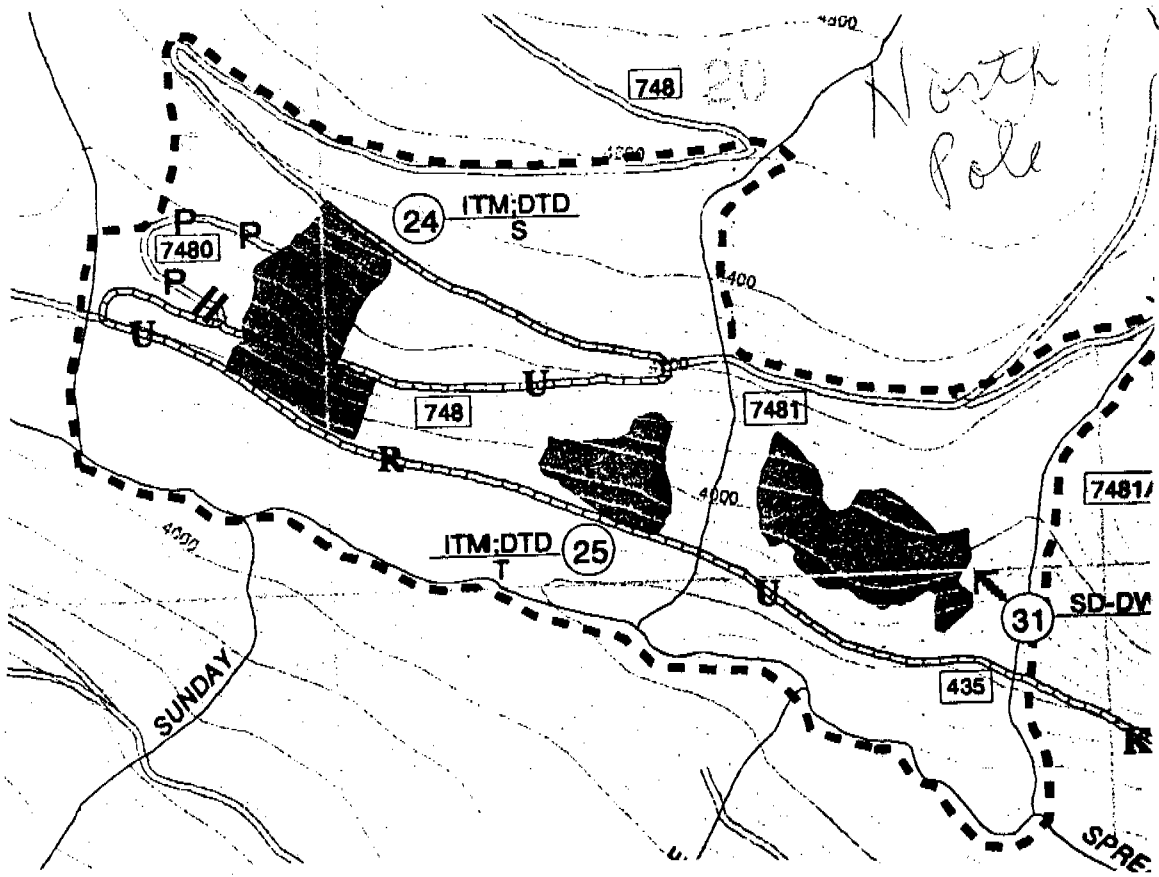
EXCAVATED SKID TRAIL

SMZ/ROCK

COMMENTS Post excavated skid trails present - very scattered. Trails were created to remove scattered, large trees. Due to scattered nature of the trees removed no activity seems to have occurred off the excavated trails. Less than 5% of area affected.

Mortality cut.

Shape of Unit and Pattern of Transect



05/30/1997
Three Rivers - West Yaak (Flaming Whitetail SSAS)
Unit 53
41005107

41005107 - 20A
KOOTENAI NATIONAL FOREST
SOIL DISTURBANCE MONITORING FORM

DATE 5/30/1997 CUTTING METHOD clipper
OBSERVER Mannan/Bojonell/Ferguson SKIDDING METHOD Tractor
DISTRICT Three Rivers tractor: dispersed dedicated
SALE/S.A. Flaming Whitetail 5517 HAZARD TREATMENT understory burn 2000
Unit # 53 Acres 20 SILVICULTURAL TRMT _____
H.T. 250 OPERATION PERIOD Summer 1999
Slope 25-40% Aspect S
Location lower slope Elevation 3200
COMPACTION (Heavy) _____

PAST ACTIVITY
COMPACTION (Light) _____

UNDISTURBED _____

DISPLACED _____

EXCAVATED SKID TRAIL _____

SMZ/ROCK _____

COMMENTS (Include soil, geology, organic debris-large & small, erosion, road drainage, other pertinent info)

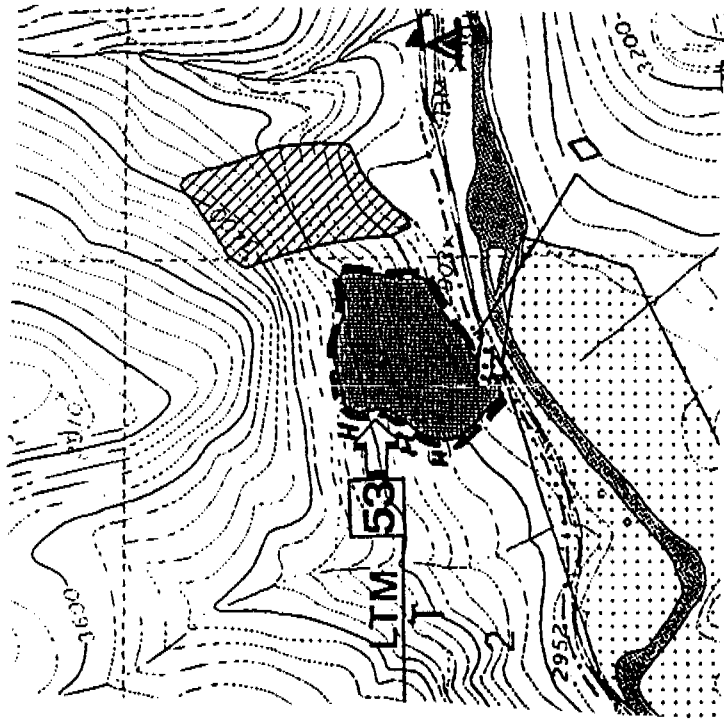
Excavated trails present from past scattered tree removal. Definitely less than 5% past detrimental disturbance.

SHAPE OF UNIT AND PATTERN OF TRANSECT _____

COMPACTION (Heavy) - Any place where future vegetative growth will be significantly impacted, i.e., skid trails (both heavily and lightly used depending on amount of compaction related to soil moisture), landings, and other impacted areas.
COMPACTION (Light) - Any other area not included in heavy COMPACTION or UNDISTURBED.
UNDISTURBED - No signs of any machinery or skidding activity.
DISPLACED - Any place soil has been mounded by machinery, also include in heavy or light compaction.
SMZ/ROCK/BURN PILE - Include within transect if within harvest unit

TRANSECT SUMMARY FORM

	Transect 1		Transect 2		Transect 3		Transect 4		Transect 5		TOTAL	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	
D												
i												
s												
t												
u												
r												
b												
	HEAVY											
	LIGHT											
	UNDISTURB											
	PAST ACTIVITY											
	TOTALS											
	DISPLACED											
	EROSION											
	PUDDLED											
	SMZ											
	ROCK											
	BURN PILES											



53A-41004133-

05/30/1997
Three Rivers - West Yaak
Unit 19 & 53A
40901182/40402115

KOOTENAI NATIONAL FOREST
SOIL DISTURBANCE DATA FORM

DATE 5/30/1997 CUTTING METHOD _____

OBSERVER Kuennen/Bozonell/Ferguson SKIDDING METHOD _____

DISTRICT Three Rivers HAZARD ABATEMENT _____

SALE West Yaak proposal SILVICULTURAL _____

Unit No. 19 & 53A OPERATION PERIOD _____

COMPACTION (Heavy) Walk-throughs

COMPACTION (Light) _____

UNDISTURBED _____

DISPLACED _____

EXCAVATED SKID TRAIL _____

SMZ/ROCK _____

COMMENTS Part excavated trails present - very scattered
19-20A, H.T.-570, Ele-4100, As-E

53A-22A, H.T.-570, Ele-3900, As-S/SW

Shape of Unit and Pattern of Transect
entered into SOILMON as
one line of data - couldn't
find Unit 19 in Sale History - TSMRES-
to get associated stand # -
See comments. 3/14/03 nk

13-45303170-39

01/28/1997
Three Rivers - Studebaker Fire Salvage
Unit 13
45303170

KOOTENAI NATIONAL FOREST
SOIL DISTURBANCE MONITORING FORM

DATE Jan. 28, 1997 CUTTING METHOD Hand
 OBSERVER Kuennen SKIDDING METHOD skysline
 DISTRICT Three Rivers If tractor: dispersed dedicated
 SALE/S.A. Studebaker F.S. HAZARD TREATMENT Jackpot burn 1998
 Unit # 3 Acres 39 SILVICULTURAL TRMT CC Seedtree
 H.T. 624 OPERATION PERIOD winter 1998
 Slope 40 Ele: 5200
 Location mid-upper Aspect: SE-S
 COMPACTION (Heavy) Walk-through

COMPACTION (Light) _____

UNDISTURBED _____

DISPLACED _____

EXCAVATED SKID TRAIL _____

SMZ/ROCK _____

COMMENTS
Skysline operation w/ mid slope pole. Yarding to corridor
+ then yarding to top. Operation looks good. Lots of snow. Ground frozen
in corridor.

SHAPE OF UNIT AND PATTERN OF TRANSECT

COMPACTION (Heavy) - Any place where future vegetative growth will be significantly impacted, i.e., skid trails (both heavily and lightly used depending on amount of compaction related to soil moisture), landings, and other impacted areas.
COMPACTION (Light) - Any other area not included in heavy COMPACTION or UNDISTURBED.
UNDISTURBED - No signs of any machinery or skidding activity.
DISPLACED - Any place soil has been mounded by machinery, also include in heavy or light compaction.
 SMZ - Include within transect if within harvest unit

KOOTENAI NATIONAL FOREST
SOIL DISTURBANCE DATA FORM

DATE 10-21-97

CUTTING METHOD hand

OBSERVER Kuennen

SKIDDING METHOD skyline

DISTRICT Three Rivers

HAZARD ABATEMENT jackpot + landings

SALE Studebaker Fire Salvage
Unit No. 8, 9C, 10, 13, 18

SILVICULTURAL CC - ST, CC w/reserves

OPERATION PERIOD summer '97

COMPACTION(Heavy) _____

COMPACTION (Light) Walk through

UNDISTURBED _____

DISPLACED _____

EXCAVATED SKID TRAIL _____

SMZ/ROCK _____

COMMENTS

All were skyline units. Lots of CWD. Very little surface soil disturbance in skidding corridors, erosion control necessary. Some cut slope slumping occurring in new construction.

8 4000-5200' S-W

9C 5000-5400 W

10 4000-4800 S-SE

18 5200-5600 SE

13 5000-5600 S-E

Shape of Unit and Pattern of Transect/Walk-through

8 - 45303159, 79A, HT-670, As-W, Ele-4400, slope-55%

9C - 45303178, 9A, HT-220, As-W, Ele-5000, slope-51%

10 - 45303145, 40A, HT-570, As-S, Ele-4900, slope-55%

~~13 - 45303170, 39A, HT-624, As-SE, Ele-5200, slope-40% see previous *~~

18 - 45303134, 6A, HT-624, As-SE, Ele-5300, slope-47%

7 = 45404237

7A = 45404238

KOOTENAI NATIONAL FOREST
SOIL DISTURBANCE MONITORING FORM

8 = 45404233

DATE June 16, 1997
SERVER Fraser
DISTRICT Three Rivers
SALE/S.A. Pulpit Fire Salv.
Unit # 7, 7A, 8 Acres 35.2
H.T. WH/Clan
Slope 35-60
Location mid-slope
COMPACTION (Heavy)

CUTTING METHOD Hand
SKIDDING METHOD skidline
If tractor: dispersed dedicated
HAZARD TREATMENT none
SILVICULTURAL TRMT none
OPERATION PERIOD 999 summer
Aspect | NW
Elevation | 4100 - 5500

Walk-through

COMPACTION (Light)

UNDISTURBED

DISPLACED

EXCAVATED SKID TRAIL

SMZ/ROCK

COMMENTS (Include soil, geology, organic debris, other pertinent info)

Pre harvest review -
units 7 + 7A very wet Roads running into area have
extensive clumping of several species of shrubs.
2nd rutting failure on road between units 7

SHAPE OF UNIT AND PATTERN OF TRANSECT

- COMPACTION (Heavy)** - Any place where future vegetative growth will be significantly impacted, i.e., skid trails (both heavily and lightly used depending on amount of compaction related to soil moisture), landings, and other impacted areas.
- COMPACTION (Light)** - Any other area not included in heavy COMPACTION or UNDISTURBED.
- UNDISTURBED** - No signs of any machinery or skidding activity.
- DISPLACED** - Any place soil has been mounded by machinery, also include in heavy or light compaction.
- SMZ** - Include within transect if within harvest unit.

TRANSECT SUMMARY FORM

	Transect 1		Transect 2		Transect 3		Transect 4		Transect 5		TOTALS	
	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%
D i s t u r b b	HEAVY											
	LIGHT											
	UNDISTURB											
	TOTALS											
	DISPLACED											
	EROSION											
	PUDDLED											
	SMZ											
	ROCK											
	BURN PILES											

1=51201009 - 74A
HT-250, Ele-2400, Flat

KOOTENAI NATIONAL FOREST
SOIL DISTURBANCE DATA FORM

2=51201013 - 48A

HT-250, Ele-2400 Flat

51405026 - 47A

DATE 4/28/97

CUTTING METHOD clipper

OBSERVER Kuennen/Crawford

SKIDDING METHOD RTS

DISTRICT Libby

HAZARD ABATEMENT burn landings '99

SALE Bobtail Flats
Unit No. 1 & 2

SILVICULTURAL Sanitation Salvage

OPERATION PERIOD Summer '97

04/28/1997
Three Rivers
- Bobtail Flats
Fire Salvage
Unit 1 & 2
51201009
51201013/
51405026

COMPACTION(Heavy) Walk-Through

COMPACTION (Light) _____

UNDISTURBED _____

DISPLACED _____

EXCAVATED SKID TRAIL _____

SMZ/ROCK _____

COMMENTS

Soils still too wet to operate on. Won't be long drying quickly.

Shape of Unit and Pattern of Transect

05/27/1997
Libby
- Barron Salvage
Unit 5
55303013

55303013 9A
KOOTENAI NATIONAL FOREST
SOIL DISTURBANCE DATA FORM

DATE 5/27/97

CUTTING METHOD clippers

OBSERVER Kuennen/Farmer

SKIDDING METHOD RTS

DISTRICT Libby

HAZARD ABATEMENT grapple pile burn '00

SALE Barron Salvage
Unit No. 5

SILVICULTURAL SW seed/reserve

OPERATION PERIOD Jul/Aug '98

COMPACTION(Heavy) _____

COMPACTION (Light) _____

UNDISTURBED _____

DISPLACED _____

EXCAVATED SKID TRAIL _____

SMZ/ROCK _____

COMMENTS _____

Shape of Unit and Pattern of Transect

