

SOC

SUMMARY OF REHABILITATION WORK

Unit 84-6/M-7-5 Slopes

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Introduction

Rehabilitation Unit 84-6 M-7-5 slopes encompass cutover lands on side bank hillslopes which drain into Redwood Creek just south of the confluence with Bridge Creek (Fig. 1). Relief of the hillslopes is about 1,900 feet ranging from about 160 feet at Redwood Creek to 2,100 feet at the ridge top. North to North Easterly aspects dominate the slopes and drainage is by about fifteen first or second order streams. Cutover lands occupy the middle third of the hillslope about 1,000 and 1,600 foot elevations. Upslope and downslope of the cutover lands slopes are largely covered with old drowth Redwood forest. Three former logging haul roads traverse these slopes: M-7-5, M-7-5-4, and M-7-5-5 (Fig. 2). Unit 84-6 addresses erosion problems associated with landscape modification by past timber harvest activities, mostly skid trail crossings of streams. A total of 62 skid trail crossings were excavated on the rehabilitation unit and nearly all of the 413 acres of cutover lands, excluding the remaining roads, were eliminated from my further rehabilitation work. Another rehabilitation unit, 84-2, removed most of the M-7-5-4 & M-7-5-5 roads and the M-7-5 is targeted for rehabilitation in 1985.

The unit is underlain by the schist of Redwood Creek of the Franciscan Assemblage (Hardin, et al, 1981). Local outcrops of more quartz-rich schist occurs extensively across the unit as knockers. Slopes tend to be gentle 5-30% although locally steepen to 70% or more adjacent to streams and old landslide scarps. Soils tend to be deep, clayey and reddish in color, although some thinning appears to take place further downslope.

Geomorphically the area is interesting because of the presence of large scale landslide features including inactive scarps, loss of stream incisions, and landslide controlled drainage patterns. Slow moving or inactive slump like mass movements appear present across most of the lower half of the hillslope. Also of interest is the presence of well rounded gravel to cobble-sized float found on the cutover lands with a red weathering rhine and of non-Redwood Creek lithologies. No in place terrace deposits were noted during the detailed mapping, but are presumed to exist upslope in the old growth or at the ridge top.

All of the timber harvest activity occurred in the period 1971-1977, although some road construction of the M-7-5 may have occurred slightly earlier. Cable yarded logging below the M-7-5 extended to the former (1968) Park boundary. All of the cable units had some skid trail construction occur on them. Tractor yarded logging between the M-7-5 & M-7-5-4 occurred largely between 1971-1974. Logging between the M-7-5-4 & M-7-5-5 occurred during 1975-1977. Presumably the upslope old growth above the M-7-5-5 would have been the next to be cut, if Park expansion had not occurred. The rectangular southern unit boundary marks the land ownership boundary between Louisiana Pacific and Simpson Timber company to the south.

Erosion features on the unit were relatively minor including numerous hills and small gullies, a few larger gullies, and some eroded stream crossings. However much potential erosion existed as intact crossing fills and potential stream diversions which could have caused gullying and some eroded stream landslides. (Fig. 2) Active road displacement along the M-7-5 was occurring in several places associated with large scale, slow moving landslides. The associated erosion potential of these features are difficult to ascertain. The main reasons for lack of erosion of erosion features on the unit is attributed to the gentle slopes, relatively non-erodible soil types, small

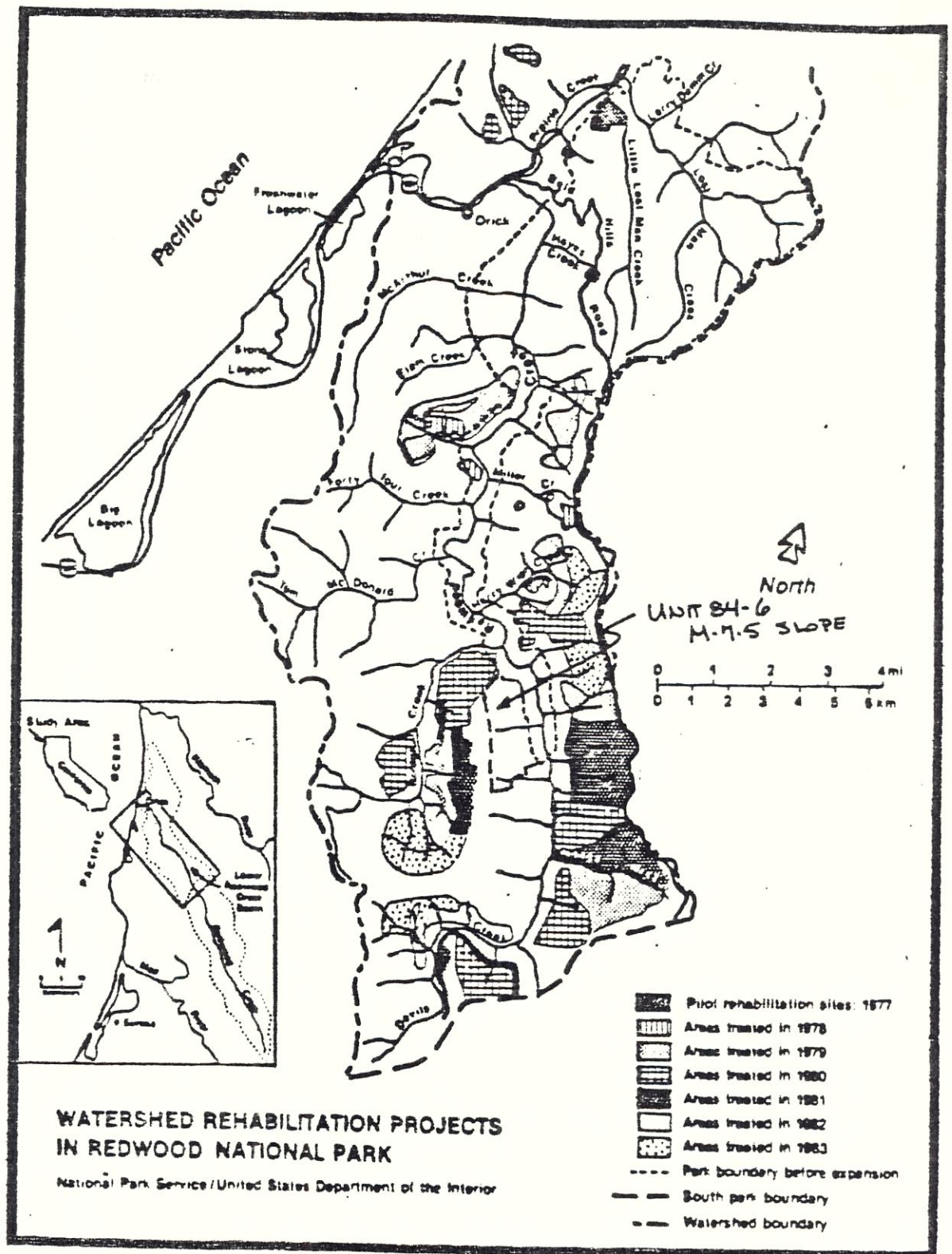


Figure 1. Location of erosion control project sites in Redwood National Park.

drainage size, and lack of major storm events since much of the logging occurred. Most of the erosion features probably occurred associated with January 1975 storm event. How the unit would have reacted to a similar scale storm prior to rehabilitation is difficult to predict.

Rehabilitation Work

Rehabilitation work on Unit 84-6 consisted of excavation of 62 skid trail crossings and construction of water bars on skid trails used for access (Fig. 3). Straw mulch was spread on 25 skid trail crossings worksites and excavated fill. All work was completed by a John Deere 690 B Hydraulic excavator & D-8 crawler tractor with winch. The work was largely done between July and August and proceeded from north to south by working down and up stream channels. Two additional days in late September were used to finish a cluster of 5 skid trail crossings below the M-7-5 road.

The main goal of the rehabilitation work was to eliminate potential stream diversions, to remove fill within stream channels, and to improve drainage patterns where disrupted. Worksites were inventoried for erosion patterns where disrupted. Worksites were inventoried for erosion potentials prior to the work, but only estimated made of volumes of fill to be removed. Finish grades were determined by project supervisors in the field based on physical limitations and conditions at worksite. Many worksites expanded in size as the work progressed. Table 1 summarizes the time and costs for performing the rehabilitation work for all worksites. Table 2 lists the Labor Intensive Work in brushing and spreading straw mulch.

The hydraulic excavator proved well suited for performing the prescriptions, partially because of the experience operator who had done similar work within the park. The excavator had a hydraulic 'thumb' or bucket clamp which proved useful for removing large organic debris from crossing excavations without chokers and winching by the D-8. The one draw back was the slow travelling speed between worksites. The D-8 crawler tractor tended to be limited because of the small size of the crossings and, in many cases, saturated fill conditions. The operator was experienced and enthusiastic, but had to be kept in check from overzealously excavating where not appropriate. A small sized tractor (D-6 or D-7 sized) could have worked as well and reduced the amount of ground disturbance caused.

A certain amount of inefficiency is inherent in this type of hillslope work where physical conditions and the desire to limit disturbance is necessary. Also, the inability to accurately predict excavation volume, depth, and encountered conditions make prescribing and estimating time required to do the work largely a matter of experience of the project supervisors. Time required to gain access to and from worksites by the heavy equipment also must be estimated or predicted as it may represent a significant portion of the work.

TABLE 1. Summary of Worksite Hours & Cost: Unit 84-6

Site	Yds ³	D-8 Access	690-B Access	Access Cost	D-8 Work	Excav. Work	Excav. Cost	Total Cost
84-6		Min.	Min.		Min.	Min.		
1A	125	12	6	22.80		218	378.40	401.20
1B	75	18	11	36.80	76	22	71.10	107.90
1D	100	13	23	46.15	34	28	121.40	167.55
1E	200	23	19	53.45	543	425	1,236.25	1,284.70
2A	100	15	13	35.65	60	45	133.50	169.15
2B	100	--	12	15.60	--	75	97.50	113.10
2C	75	21	19	50.95	49	11	75.55	126.50
3A	50	--	38	49.40	--	81	105.30	154.70
3B	75	5	--	6.25	90	--	112.50	118.75
3C	50	--	--	--	70	--	87.50	87.50
3D	200	--	9	11.70	380	129	642.70	654.40
3E	350	33	9	52.95	550	402	1,210.10	1,263.05
3F	25	10	--	12.50	23	--	28.75	41.25
3G	25	--	--	--	30	--	37.50	37.50
3I	150	10	18	35.90	140	250	500.00	535.90
3J	175	10	--	12.50	262	165	542.00	554.50
3K	350	119	53	217.65	764	1140	2,437.00	2,654.65
3L	50	15	15	38.25	63	82	185.35	223.60
4	250	10	10	25.50	455	530	1,257.75	1,283.25
21 4A	75	14	--	17.50	71	--	88.75	106.25
4B	125	25	--	31.25	175	--	218.75	250.00
4C	75	16	--	20.00	19	50	88.75	108.75
4D	75	10	--	12.50	--	115	149.50	162.00
25 6A	20	19	--	23.75	54	--	67.50	91.25
8A	100	16	--	20.00	159	--	198.75	218.75
8B	100	32	21	67.30	20	112	170.60	237.90
8C	75	17	27	56.35	--	46	59.80	116.15
8D	150	2	32	44.10	210	136	439.30	483.40
30 8E	75	35	3	47.65	--	97	126.10	173.75
8F	150	50	--	62.50	85	304	501.45	563.95
8G	75	5	4	11.45	50	223	352.40	363.85
8H	350	65	3	85.15	290	399	881.20	966.35
8I	250	42	7	61.60	260	333	757.90	819.50
35 9A	175	--	67	87.10	--	410	533.00	620.10
10A	75	8	--	10.00	30	--	37.50	47.50
10B	75	8	--	10.00	60	--	75.00	85.00
10C	100	8	--	10.00	60	--	75.00	85.00
10D	50	8	--	10.00	90	--	112.50	122.50

TABLE 1

[illegible]

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Site	Yds ³	D-8 Access	690-B Access	Access Cost	D-8 Work	Excav. Work	Excav. Cost	Total Cost
84-6		Hrs.	Hrs.		Hrs.	Hrs.		
1J ²	300	*	*	*	6.5	5.0		\$ 877.50
1I	75				2.0	2.0		306.00
1F	150				1.75	3.0		365.25
1H	50				1.25	.75		152.25
1G	75				1.5	2.0		268.50
								<u>\$1,969.50</u>
Misc. ³		2.25	.5	\$207.75				\$ 207.75
Access ⁴		2.0	3.25	253.50				403.50
								<u>\$27,849.75</u>

GRAND TOTALS⁵

Move-In	Miscellaneous	Site Access	Skid Trails	Waterbars	Total
\$649.50	\$282.75	\$2,271.20	\$24,324.60	\$321.70	~~\$27,567.00~~
	Cost/xing		\$386.10/xing		<u>27,849.75</u>

¹D-8 from Twin Parks, operator Jay Franke, cost \$75.00/Hr (1.25 Min.)
 JD 690 hydraulic excavator, owned & operated Larry Lambert, cost \$78/day (1.30 Min.)

²Access time to skid trails not recorded.

³Time not assigned to individual worksites.

⁴Access to unit from 84-4, opening up skid trails and access between worksites.

⁵Costs doesn't include Mapping & prescription work hours of RNP geologists.
 Hours not calculated and extend over two years.

TABLE 2. Labor Intensive Costs

	Type	Per Hrs.	Cost/Hr.	Total Cost
Brushing	RNP	60	\$8.80	\$528.00
	YCC	100	\$3.60	<u>360.00</u>
				\$888.00
Straw	RNP	30	\$8.80	\$ 264.00
	RUI	110	\$5.00	550.00
				<u>814.00</u>
				\$1,694.00
Straw	168 Bales @ \$2.90/EA=			<u>487.20</u>
				~~\$2,181.20~~
				2189.20

84-6 SLOPE CROSSINGS

