

Summary Report

Watershed Restoration Project 07-03:

Manning Creek Out – 0703

A142 – 0703A

North Branch North Fork / B200/B500 Connector – 0703B

Project 0703 was comprised of three separate road segments within the Lost Man Project Area (LMPA). Task Order 8482070025 picked up on the A140 where the project 0603 work had ended in October of 2006. Task Order 8482070025A focused on a short remnant of the A142 which was located just down slope of the A140 portion being completed in this project. Task Order 8482070025B addressed some high risk sediment sources in the northern portion of the project area on the North Branch of the North Fork.



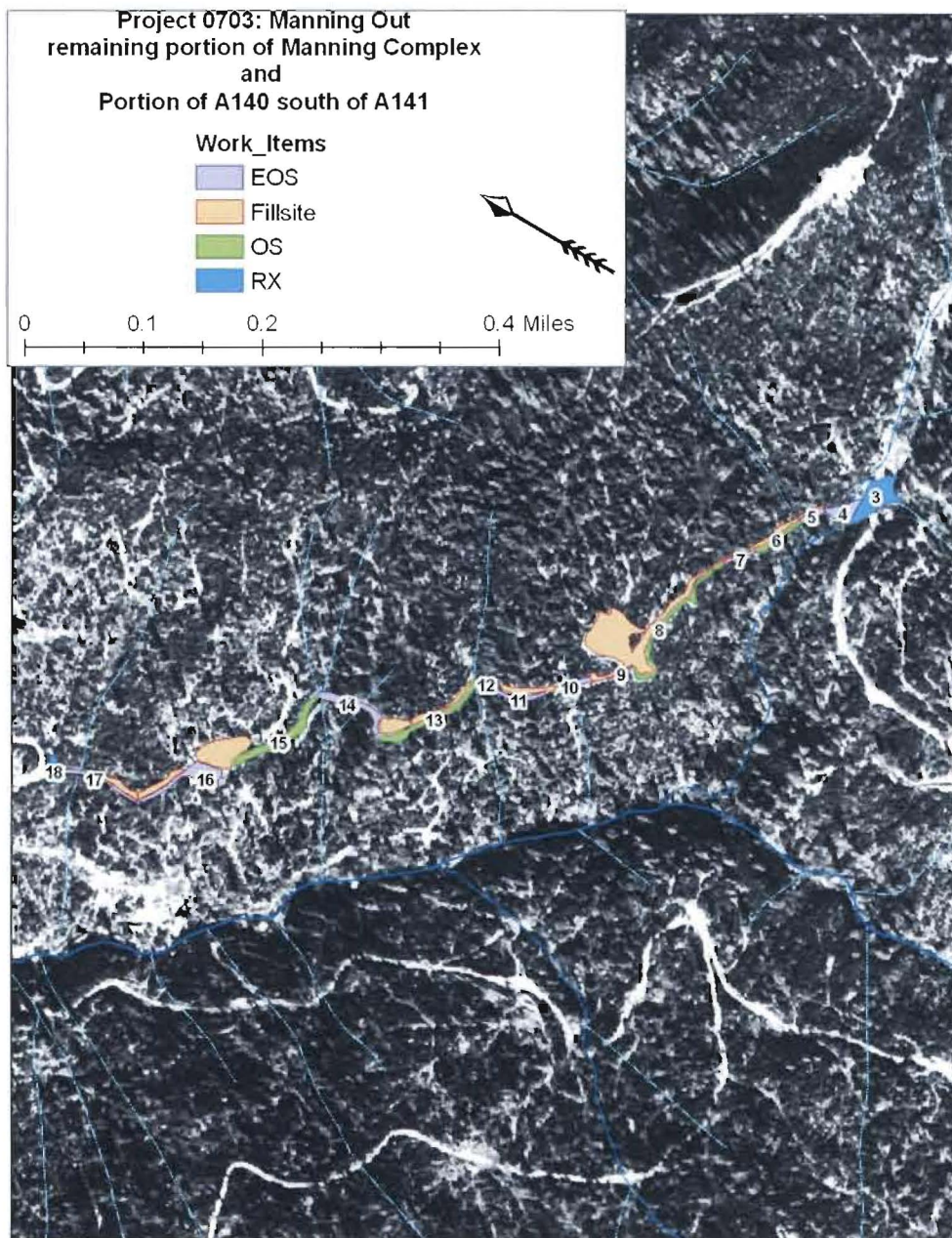
Yellow lines represent the three road segments removed in project 0703

A total of 107,366 cubic yards of road fill were relocated during this project. Table 1 provides a breakdown of total project volumes and costs based on the various treatment prescriptions. Watershed level data is provided in the annual program table in the proceeding 2007 overview section.

TABLE 1 WATERSHED RESTORATION COSTS SUMMARY FOR UNIT 0703: REMOVAL OF A PORTION OF THE A140, NORTH BRANCH NORTH FORK AND A142 ROADS					
TREATMENT	QUANTITY	# of JOBS	TOTAL COSTS	% OF GRAND TOTAL	AVERAGE UNIT COSTS
CONTRACT COSTS - HEAVY EQUIPMENT					
STREAM CROSSINGS	50,369 yds ³	7	\$629,651	65%	\$12.50
EXPORT OUTSLOPING	40,059 yds ³	18	\$206,552	21%	\$5.15
OUTSLOPE	16,938 yds ³	8	\$62,671	6%	\$3.70
MISC. BID ITEMS	----	7	\$75,733	8%	----
<i>TOTAL:</i>	107,366 yds ³	40	\$974,607	100%	\$9.07

Past reports (prior to 2007) have included tables showing production rates for the various work items based on the equipments required for each prescription. Due to budgetary / management goals, park representation on the project sites was reduced in 2007. Documentation of equipment hours on specific work items was limited to the point where accurate accounting of production rates was compromised and therefore not felt to be presentable in the formal reporting tables.

A140: Task Order 8482070025
June 19 to October 15



The A140 portion of the 0703 project focused on the remaining portion of the A140 from Manning Creek (Project 0603) north to the junction with the A141. The main crossing of Manning Creek was a 12,000 cubic yard feature that had to be end hauled to a large rock pit 1,500 feet away from the excavation site. Originally, it appears that the crossing was a log stringer bridge, which subsequently was backfilled for a landing. The stretch of road between the main Manning landing and the A141 contained several steep road

fills and smaller swales. No surface flow was encountered other than Manning Creek. The A140 project lasted 6 weeks, moving a total of 42,142 cubic yards of road fill for an average production rate of 7,023yds/wk.

Prescriptions and Treatments

TABLE 1 WATERSHED RESTORATION COSTS SUMMARY FOR UNIT 0703: REMOVAL OF A PORTION OF THE A140 ROAD - Manning Out					
TREATMENT	QUANTITY	# of JOBS	TOTAL COSTS	% OF GRAND TOTAL	AVERAGE UNIT COSTS
CONTRACT COSTS - HEAVY EQUIPMENT					
STREAM CROSSINGS	13,119 yds ³	3	\$122,449	43.9%	\$9.33
EXPORT OUTSLOPING	14,785 yds ³	9	\$82,785	29.7%	\$5.44
OUTSLOPE	14,238 yds ³	4	\$52,681	18.9%	\$3.70
MISC. BID ITEMS	----	4	\$21,130	7.6%	----
<i>TOTAL:</i>	42,142 yds ³	----	\$279,045	100%	\$6.62



May 2007

Main Manning crossing / landing (Work Item 3)



July 2007

The first phase of work on the A140 began on June 19th. Large 40 ton off highway dump trucks were used to end-haul excavated fill to a large quarry pit approximately 1500 feet north of the dig. The trucks were used to end the excavated fill from work items 3 through 5. Upon the completion of work item 5, the heavy equipment moved to the North Branch North Fork portion of the project on the 12th of July. The phased project was planned in order to maximize efficient use of the trucks. The off-highway trucks are relatively expensive, and often hard to acquire mid season. By concentrating all the hauling work into single time frame, the contractor (and the park) did not have to incur rental payments while equipment sat idle, or alternatively risk losing the returned equipment to another renter.

During the excavation of the upper portion the crossing / landing fill, an old tank was exhumed. The tank was a rectangular box shape, made of riveted steel, not welded. Pair of leather gloves was still setting on the top of the tank. One theory concerning the purpose and placement of the tank is that the tank had been used as a water source. It became buried following an up stream road failure (highly likely due to the large volume of upstream sediment sources). After the upstream deposit at the head of the crossing / landing buried the alleged water supply tank, the site was re-graded to be used as a landing. The tank was left on-site neat the junction of the A140 & A141.

Once the off-highway truck portion of the north branch end haul was completed on September 6th, a portion of the equipment returned to the A140. Work picked up at item 6 with two smaller excavators and a D7 dozer. When enough work had been completed to meet our end of the season production goal, work was suspended again on September 21, to focus on finishing the A142. Upon completion of the A142, the A140 work was re-initiated on October 2.

TABLE 2 AREAS AFFECTED BY RESTORATION UNIT 07-03: REMOVAL OF A PORTION OF THE A140 ROAD, MANNING CREEK OUT						
TOTAL ACRES DISTURBED	RIPARIAN BUFFER ACRES DISTURBED	WILDLIFE HABITAT ACRES DISTURBED				TOTAL ACRES RESTORED ⁵
		START DATE	MAMU DEGRADED ²	MAMU CORVID ³	MAMU NESTING / NOISE .25 MI BUFFER ⁴	
4.5	1.0	6/18/07	0.3	0.5	0	142

¹ These statistics are actual "as built" acreages.

² Marbled Murrelet habitat degraded.

³ Marbled Murrelet habitat subject to potential increased corvid threat.

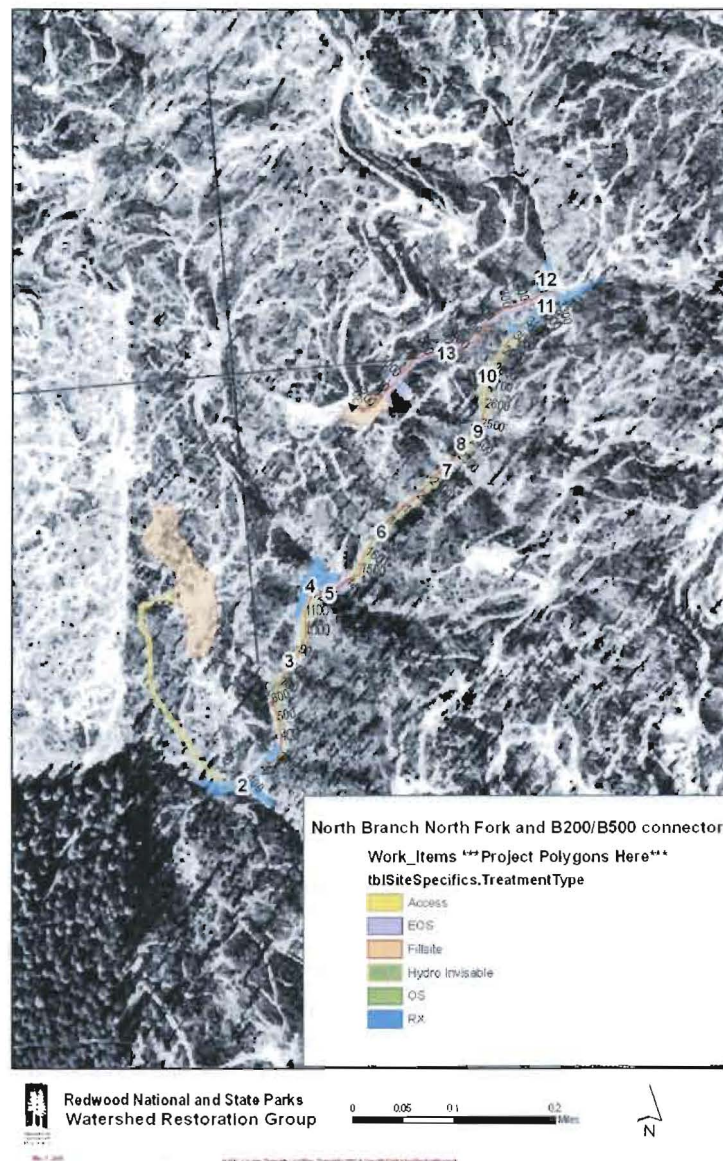
⁴ Marbled Murrelet nesting habitat potentially affected by noise (restoration site within 0.25 mile buffer of habitat)

⁵ Acres restored are defined as the hydrologically connected landscape area that is influenced by the road removal.

TABLE 3 NOAA STATISTICS FOR RESTORATION UNIT 07-03: REMOVAL OF A PORTION OF THE A140, MANNING CREEK OUT				
SITE TYPE	# OF SITES ¹	VOLUME EXCAVATED	VOLUME PREVENTED FROM ERODING	VOLUME PREVENTED FROM DELIVERY
STREAM XING	3	13,119 yds ³	13,119 yds ³	6,768 yds ³
ROAD REACH	4,800 ft.	29,023 yds ³	29,023 yds ³	19,899 yds ³
	TOTAL	42,142 yds ³	42,142 yds ³	26,667 yds ³

¹ For road reaches, the number of sites is the length of road (ft).

North Branch North Fork: Task Order 8482070025B
 July 3 to September 14



The North Branch North Fork (NBNF) portion of the project encompassed 3,200 feet of haul road that had been constructed along the inner gorge of the north branch. The inner gorge road accessed a large (2 acre, 16,000 yd³) landing at the confluence with the Shangri La branch. An additional 1,300 foot portion of the B200 / B500 connector, used to access the north branch, was also removed. This project was anticipated to be one of the more complex set of excavations, and did not fail in providing challenges and opportunities for continued education. The North Branch project lasted 11 weeks, moving a total of 54,563 cubic yards for an average production rate of 4,960 yds/wk.

Prescriptions and Treatments

TABLE 1 WATERSHED RESTORATION COSTS SUMMARY FOR UNIT 0703B: REMOVAL OF THE NORTH BRANCH NORTH FORK AND A PORTION OF THE B200/B500 CONNECTOR					
TREATMENT	QUANTITY	# of JOBS	TOTAL COSTS	% OF GRAND TOTAL	AVERAGE UNIT COSTS
CONTRACT COSTS - HEAVY EQUIPMENT					
STREAM CROSSINGS	37,250 yds ³	4	\$507,202	80.5%	\$13.62
EXPORT OUTSLOPING	12,813 yds ³	4	\$61,502	9.8%	\$4.80
OUTSLOPE*	2,700 yds ³	4	\$9,990	1.6%	\$3.70
MISC. BID ITEMS	----	5	\$51,603	8.2%	----
<i>TOTAL:</i>	52,763 yds ³	----	\$630,297	100%	\$11.95

*Outslopes for this Task Order were prescribed as partial outsloping for hydrologic invisibility due to limited fillspace

Due to the inner gorge setting of the north branch road, adequate fillsites for excavated channel fill were not available. Over 35,000 cubic yards of fill had to be end hauled to a ridge landing at the terminal end of the Upper B500. Almost all of the end hauled material came from three distinct excavation sites; Work Item 2, the large landing at the confluence of North Branch and Shangri La; Work item 4, a moderate landing along the north branch; and Work Items 11 & 12, a double crossing at the intersection of the NBNF road and the B200 / B500 connector. Adding to the logistical challenge of moving all the channel fill to a distant site was the location and condition of the inner gorge road. The road had been constructed immediately above the creek, intercepting numerous springs and seeps. Portions of the road had or were in the process of failing, leaving an average road width of no more than 14 feet. The off-highway trucks are 12 feet wide. The contractor did an amazing job at not allowing any road fill to enter the stream during the rebuild of the North Branch road.

Both the North Branch and Shangri La creeks had surface flow, estimated to be in the 350 to 500 gallons per minute range. A pumping plan had been developed prior to commencing work, and had been working well until part way through the lower landing. Details and ramifications of the required modifications to the original pumping plan are, in part, attached as an appendix or may be found in RNSP/NOAA fisheries records. Due to the ongoing nature and evolution of the incident, for the purposes of this report, the pumping plan and an unforeseen change in site conditions failed to prevent down stream turbidity. The condition was recognized immediately, and corrected as fast as physically possible. Project-wise, the incident required additional funds, equipment and time.

The large landing at the confluence of the North Branch and Shangri La was the target sediment source that drove this project. The North Branch North Fork Road was constructed along the inner gorge with evidence of high risk, chronic erosion producing direct delivery sediment. The road on it's own was a wash between further impact (albeit short term) and long term benefit of sediment reduction. The main landing, however, provided a compelling incentive for removing a large, active sediment source from the north fork, which has already had extensive downstream restoration work in the recent past. The 2 acre landing had been built by filling in the two merging stream channels. No drainage structure(s) was evident. Surface flow occurred only at higher flows in winter and spring. Many holes and cracks were present, with subsidence apparent along portions of the buried channels. Various degrees of gullying were in process from the high flows. The initial assessment volume estimate figured between 10,000 and 20,000 cubic yards. Due to relatively remote setting of the landing, the practicality of physically removing the channel fill was debated for many months (almost years). A field trip to the site with the contractor, inspired possible solutions by end hauling the fill to a distant but feasible location. The contractor proposed using a one-way loop road. The end haul solution brought the production to a reasonable level, making the landing and road removal feasible.

The general plan for excavating the landing called for a three phase approach. The first phase was to finish the 350 foot lower reach, below the confluence and the location where the return road dropped onto the landing. Once the lower reach was completed, stream flow that had been pumped around the excavation would be returned, and the pump placed on the Shangri La branch (phase 2). During the transition from phase one to phase two, excessive amounts of suspended sediment were mobilized by the live flow. Initially, the abnormal turbidity levels were determined to be from a small pocket of Atwell soil, associated with an exposed fault located along the lower reach. Short lived attempts to remedy the turbidity source found less than acceptable results, causing a voluntary shut down until additional hoses and pumps could be acquired to fully divert both streams around the entire excavation site. A total of three 3" pumps with almost 3000' of hose and a 6" pump with 850' of hose were used to accomplish the task. Personnel had to attend the pumps 24 hours a day for re-fueling and throttle adjustments. During this period of re-designing the pumping plan, the contractor exceeded reasonable performance to insure that all possible means were taken to minimize further impacts and complete the work in an efficient fashion. The set back, due to an unforeseen change in site conditions, added a week of time to the projected work load. Additional equipment was brought in to bring the project schedule back to speed.



Panorama (approx. 300°) of lower landing (Work item 2) looking downstream from above the confluence.

TABLE 2 AREAS AFFECTED BY RESTORATION UNIT 07-03b: REMOVAL OF THE NORTH BRANCH NORTH FORK ROAD						
TOTAL ACRES DISTURBED	RIPARIAN BUFFER ACRES DISTURBED	WILDLIFE HABITAT ACRES DISTURBED				TOTAL ACRES RESTORED ⁵
		START DATE	MAMU DEGRADED ²	MAMU CORVID ³	MAMU NESTING / NOISE .25 MI BUFFER ⁴	
10.3	5.5	7/20/07	0.7	3.1	0	21

¹ These statistics are actual "as built" acreages.

² Marbled Murrelet habitat degraded.

³ Marbled Murrelet habitat subject to potential increased corvid threat.

⁴ Marbled Murrelet nesting habitat potentially affected by noise (restoration site within 0.25 mile buffer of habitat)

⁵ Acres restored are defined as the hydrologically connected landscape area that is influenced by the road removal.

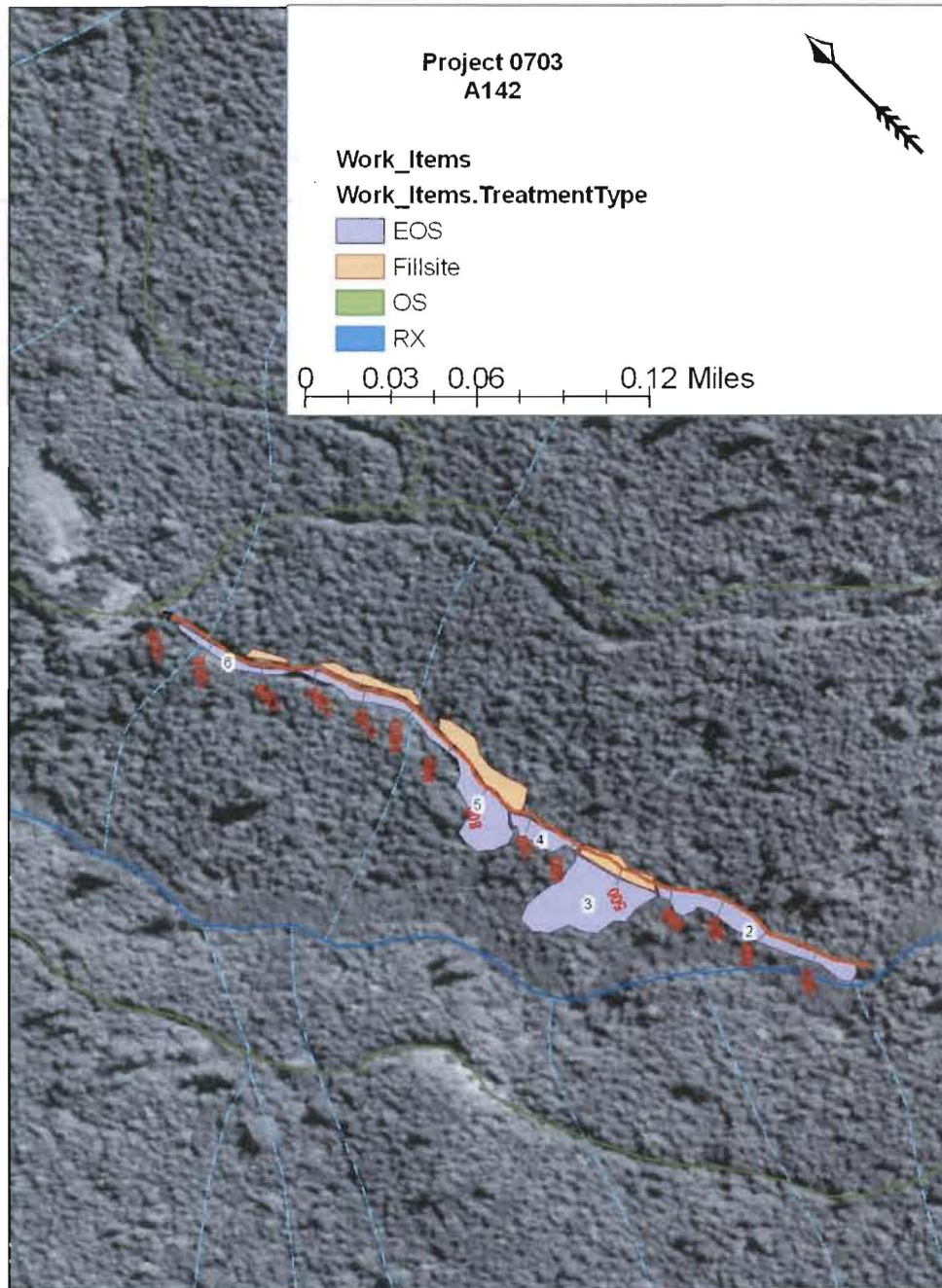
TABLE 3

**NOAA STATISTICS FOR RESTORATION UNIT 07-03b:
REMOVAL OF THE NORTH BRANCH NORTH FORK ROAD**

SITE TYPE	# OF SITES ¹	VOLUME EXCAVATED	VOLUME PREVENTED FROM ERODING	VOLUME PREVENTED FROM DELIVERY
STREAM XING	4	37,250 yds ³	22,012 yds ³	22,012 yds ³
ROAD REACH	4,700 ft.	15,513 yds ³	4,625 yds ³	4,359 yds ³
	TOTAL	52,763 yds ³	26,637 yds ³	26,371 yds ³

¹ For road reaches, the number of sites is the length of road (ft).

A142: Task Order 8482070025A
September 15 to October 2



The A142 portion of the project focused on the remnants of a haul road that dropped into the inner gorge of the south fork from the A140 just north the A141 junction. The A142 had been constructed along the banks of the south fork. Much of the channel side road had either already failed, eroded away by the

shifting creek or was in a benign location. The 1500 feet of road treated in this project was located on a hillside with moderate swales and springs and showing signs of failure. Three locations had previously been diverted and numerous slumps and cracking were still present. A total of 12,461 cubic yards of high risk erodable fill (with an even greater sediment savings) were removed in this small stretch of road in 2 weeks for an average production rate of 6,230 yds/ wk.

Prescriptions and Treatments

TABLE 1 WATERSHED RESTORATION COSTS SUMMARY FOR UNIT 0703a: REMOVAL OF THE A142 rd					
TREATMENT	QUANTITY	# of JOBS	TOTAL COSTS	% OF GRAND TOTAL	AVERAGE UNIT COSTS
CONTRACT COSTS - HEAVY EQUIPMENT					
STREAM CROSSINGS ^(a)	0 yds ³	0	\$0.00	0%	n/a
EXPORT OUTSLOPING	12,461 yds ³	5	\$62,265	95.4%	\$4.99
OUTSLOPE	0 yds ³	0	\$0.00	0%	n/a
MISC. BID ITEMS ^(b)	----	5	\$3,000	4.6%	----
<i>TOTAL:</i>	12,461 yds ³	10	\$65,265	100%	\$5.24

The portion of the A142 that was treated contained several EOS reaches. The reaches only differed in width and steepness, but all had the potential to deliver sediment directly into the south fork. The log jam located where the A142 contacted the creek was left 'as is'. The accumulated in-stream sediment trapped above the jam is estimated to be in the 25,000 cubic yard range. Interdisciplinary trips to crossings lower on the south fork had concluded that the potential to mobilize sediment or work directly in the south fork should be avoided. Following the events on the north fork earlier in the season, a very conservative approach was applied to setting the boundaries for this south fork excavation.

TABLE 2 AREAS AFFECTED BY RESTORATION UNIT 07-03a: REMOVAL OF THE A142 ROAD						
TOTAL ACRES DISTURBED	RIPARIAN BUFFER ACRES DISTURBED	WILDLIFE HABITAT ACRES DISTURBED				TOTAL ACRES RESTORED ⁵
		START DATE	MAMU DEGRADED ²	MAMU CORVID ³	MAMU NESTING / NOISE .25 MI BUFFER ⁴	
3.18	0.23	9/21/07	0	0.1	0	26

¹ These statistics are actual "as built" acreages.

² Marbled Murrelet habitat degraded.

³ Marbled Murrelet habitat subject to potential increased corvid threat.

⁴ Marbled Murrelet nesting habitat potentially affected by noise (restoration site within 0.25 mile buffer of habitat)

⁵ Acres restored are defined as the hydrologically connected landscape area that is influenced by the road removal.

TABLE 3

NOAA STATISTICS FOR RESTORATION UNIT 07-03a: REMOVAL OF THE A142 ROAD				
SITE TYPE	# OF SITES ¹	VOLUME EXCAVATED	VOLUME PREVENTED FROM ERODING	VOLUME PREVENTED FROM DELIVERY
STREAM XING	0	0 yds ³	0 yds ³	0 yds ³
ROAD REACH	1,500 ft.	12,461 yds ³	28,445 yds ³	25,779 yds ³
	TOTAL	12,461 yds ³	28,445 yds ³	25,779 yds ³

¹ For road reaches, the number of sites is the length of road (ft).

