

Riparian Prescriptions for the Lower Cluxewe River Watershed Summary Report



Prepared for:

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1.0 Introduction

The Cluxewe River (Watershed Code 920-851500) is a fourth order stream, which drains an area of approximately 96.3km². The Cluxewe River empties into Broughton Strait 6km west of the town of Port McNeil on Northern Vancouver Island (Figure 1). An analysis of information gathered from government databases, models, and local and traditional knowledge indicates that salmonids within the watershed (specifically: coho, pink, chum, and steelhead) have, and continue, to experience significant decreases in run sizes (Pacificus Consulting, 2005).

In an effort to address the decline of salmonid populations within the Cluxewe River, the Kwakiutl First Nation initiated a Watershed-based Sustainability Planning (WFSP) process. This process was created as an adaptive four-stage process to identify strategies for long-term fish sustainability in the Cluxewe Watershed. The plan identified constraints to fish production, habitat productivity, and specific areas and projects where intervention could improve fish habitat. Project 8: *Riparian prescriptions and project implementation* was deemed a high priority project within this process. Problems with the stability of the lower river have long been recognized (Pacificus Consulting, 2005). Historical industrial development within the watershed was identified as an impact on the functionality of the Cluxewe River's riparian zone.

A Level 1 field reconnaissance was undertaken on February 10, 2006 and a Level 2 assessment and prescription was undertaken on March 7, 2006. Three sites were identified (sites: 7, 9 and 12) for riparian treatment and flagged for future reference (Pacificus Consulting, 2005). Through the review process, Site 9 was disregarded as a suitable site and a new site was located by project biologists (Figure 2).

Project implementation commenced August 27, 2007. A crew consisting of a biologist from Pacificus Biological Services Ltd. and a team of Kwakiutl First Nation members began clearing the first of three sites outlined in the Riparian Assessment and Prescription Designs for the Cluxewe River Watershed. Over a period of ten days, sites 7, 12, and the new site were cleared of deciduous vegetation and planted with Western Red Cedar and Sitka Spruce saplings.

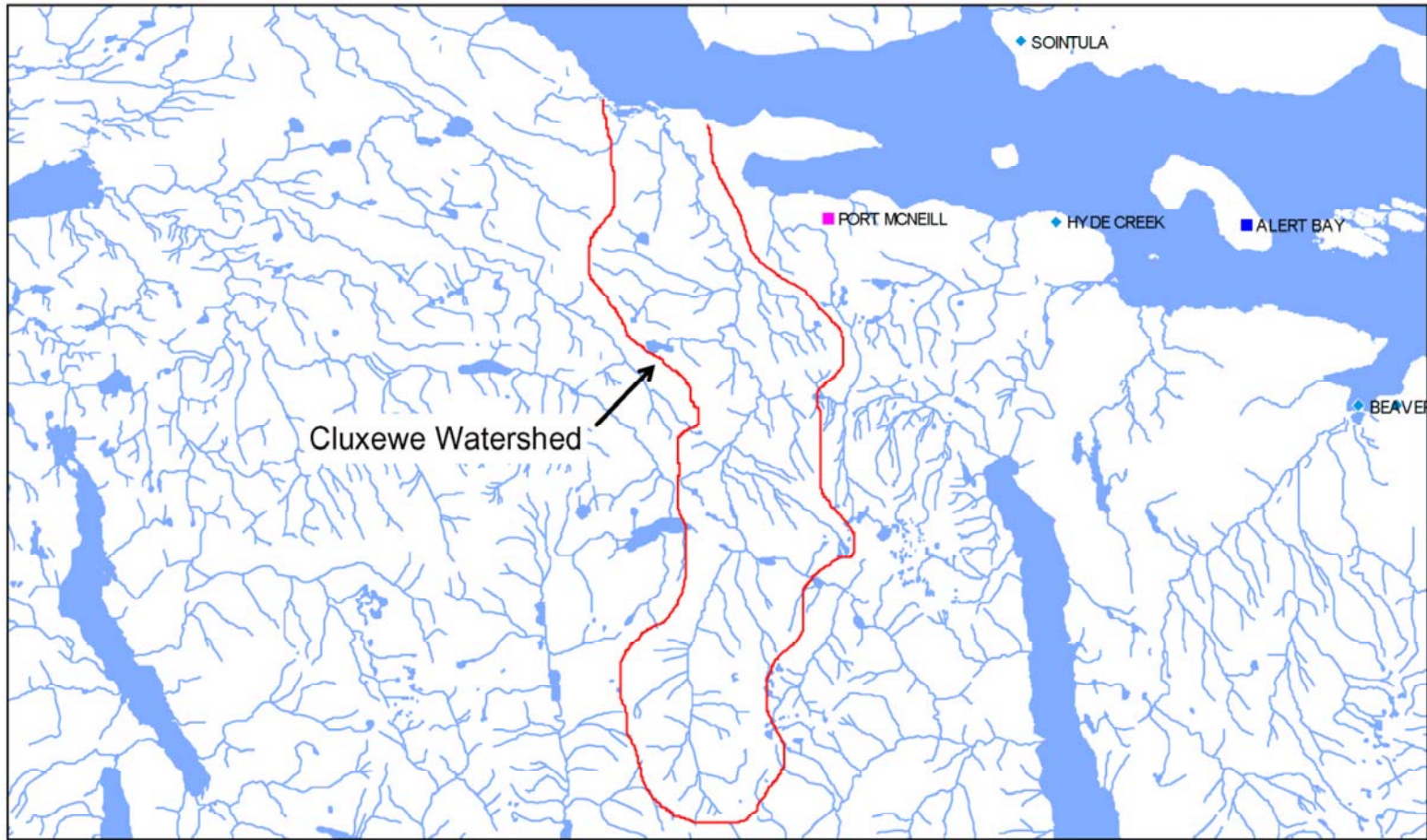


Figure 1. Cluxewe River Watershed Basemap

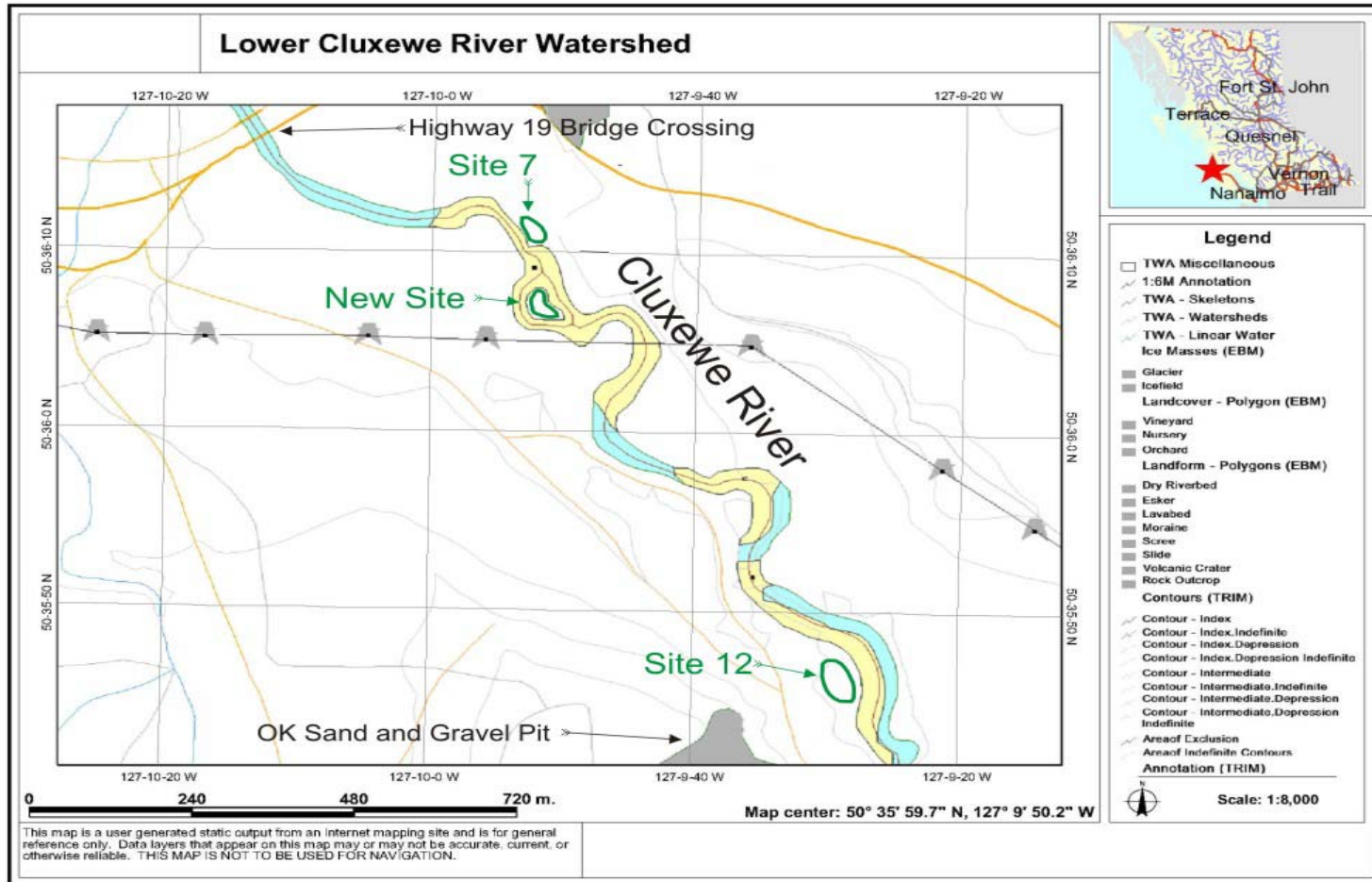


Figure 2. Site Location Overview Map.

This document outlines and describes the riparian rehabilitation and treatments undertaken to restore the functional deficits of riparian areas identified in the Lower Cluxewe Watershed.

2.0 Methods

Crew Members

Biologists: Jennifer Russell, Derek LeBoeuf

Technician: David Pratt

Labourers: Alfie Scow, Thomas Wilson, David McDougal, Corey Hunt, Derek Wilson, Kodie Wilson, and Collin Hunt

Logistics

Access to sites 7, 12, and the new site was via the access road to the OK Sand and Gravel Pit.

Materials and Equipment

The materials used to complete the restoration works as described include:

- Chainsaws
- Brush saws
- Western Red Cedar and Sitka Spruce saplings
- Axes
- Planting bags and shovels

Site Preparation Procedures

All sites were prepared in a similar fashion, by hand, using small hand tools and equipment. Prior to falling, treatment areas were brushed and cleared of salmonberry (*Rubus spectabilis*) and other deciduous vegetation by brush saw and were moved to the perimeter of the polygon. Conifers, sword ferns (*Polystichum munitum*), and huckleberry (*Vaccinium parvifolium*) were left undisturbed.

Once clearing was completed, red alder (*Alnus rubra*) within the identified areas was removed by an experienced faller. Alder was then bucked to encourage decomposition and moved to the perimeter of each site.

Post-falling, microsites for sapling planting were chosen by the supervising biologist as outlined by Koning (1999). Microsites were then grubbed and cleared of salmonberry root. After grubbing, western red cedar and Sitka spruce saplings were planted in the specifically designed microsite areas with 1m spacing.

3.0 Results

Site 7

Site 7 is located approximately 700m upstream from the Highway 19 bridge crossing on the eastern bank (127° 9' 56"W, 50° 36' 10"N). This site was divided into 3 specific treatment zones (7-1, 7-2, and 7-3) (Figure 2).

Treatment zone 7-1 consisted of a cleared area of 804.24m² and five microsite planting areas, 5-8m in diameter. Ninety conifers were planted within the microsities in treatment 7-1.

The cleared area of treatment zone 7-2 was 474.2m² and contained five microsite planting areas. Microsites within treatment zone 7-2 were consistent in size with those in treatment zone 7-1. Seventy trees were planted within the microsite areas (Photo 1).

Treatment zone 7-3 was the smallest of the three treatment zones with a cleared area of 450m². Due to the relatively small area of treatment zone 7-3, it was decided to plant the entire elevated portion of this site (Photo 2). The elevated area of this site was 150m². Sixty trees were planted on the elevated portion of this site.



Photo 1. Thomas Wilson preparing to plant in treatment zone 7-2.



Photo 2. Alfie Scow grubbing in treatment zone 7-3.

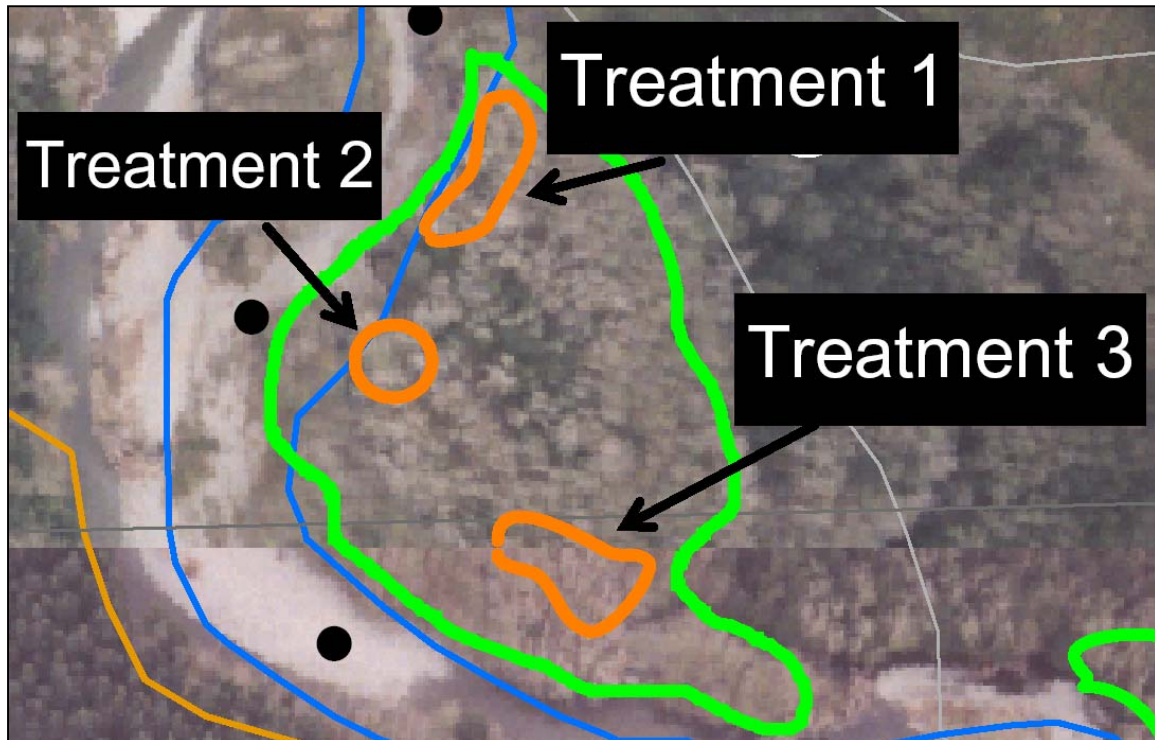


Figure 2: Site 7, treatments zones 1,2,3 (127° 9' 56"W, 50° 36' 10"N).

New Site

The new site is located approximately 1100m upstream from the Highway 19 bridge crossing on the eastern bank (127° 9' 53.1"W, 50° 36' 7.2"N). This site was divided into 2 treatment zones, NS-1 and NS-2 (Figure 3).

New Site treatment zone 1 consisted of a cleared area of 480m² and five microsite planting areas, 5-8m in diameter. One hundred conifers were planted within the microsite areas. The close proximity of NS-1 to a pool containing migrating pink salmon (*Oncorhynchus gorbuscha*) warranted extra precautions when falling (Photo 3). Some alder trees in close proximity to this pool were left in place to avoid disruption of the pink salmon.

NS-2 consisted of a cleared area of 675m² and five microsite planting areas approximately the same size as those contained in NS-1. An additional 100 conifers were planted within the microsite areas.



Photo 3. Thomas Wilson planting in treatment zone NS-1.

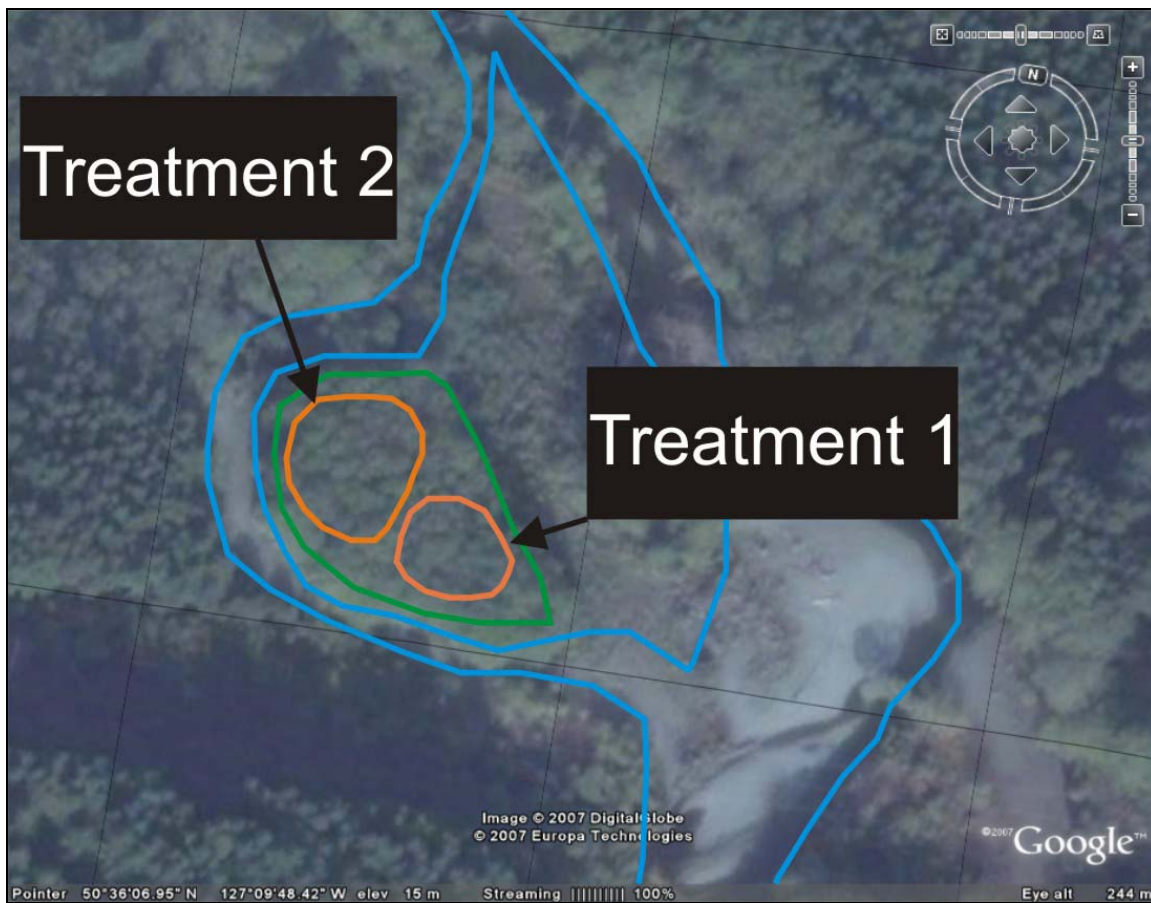


Figure 3: New Site, treatments zones 1,2 (127° 9' 53.1"W, 50° 36' 7.2"N).

Site 12

Site 12 is located approximately 1400m upstream from the Highway 19 bridge crossing on the eastern bank (127° 9' 30"W, 50° 35' 46"N). Site 12 was divided into three treatment zones (12-5, 12-6, and 12-7) (Figure 4).

Treatment zone 12-5 was the largest of the three treatments located within site 12. Treatment 12-5 consisted of a cleared area of 707m². Three microsite planting areas within this treatment zone were cleared. Much of treatment zone 12-5 was highly suitable to conifer planting and contained excellent soil characteristics and suitable elevation. A channel 3m in width bisected treatment zone 12-5 (Photo 4). The entire elevated area located on the western half of 12-5 was prepared for planting and two smaller microsites 5-8m in diameter were also prepared. Within treatment zone 12-5, 210 conifers were planted. The majority were planted on the western half of the site in the largest of the microsites (Photo 5).

Treatment zone 12-6 consisted of a cleared area of 430m². Five microsites, each 5-8m in diameter, were prepared for planting within this site and 90 conifers were planted within each one.

The cleared area of treatment zone 12-7 was 625m². The close proximity of this site to the Cluxewe main stem warranted additional attention when falling; therefore trees were fallen towards the center of the polygon. Due to the poor soil characteristics present within much of this site, two microsites were cleared in close proximity to the riverbank where the most suitable soil was located. This was also done to encourage further bank stability. Eighty conifers were planted within the 2 microsites.



Photo 4. Corey Hunt planting conifers in the 5-8m diameter microsites, treatment zone 12-5.



Photo 5. Conifers planted in the western most microsite, treatment zone 12-5.

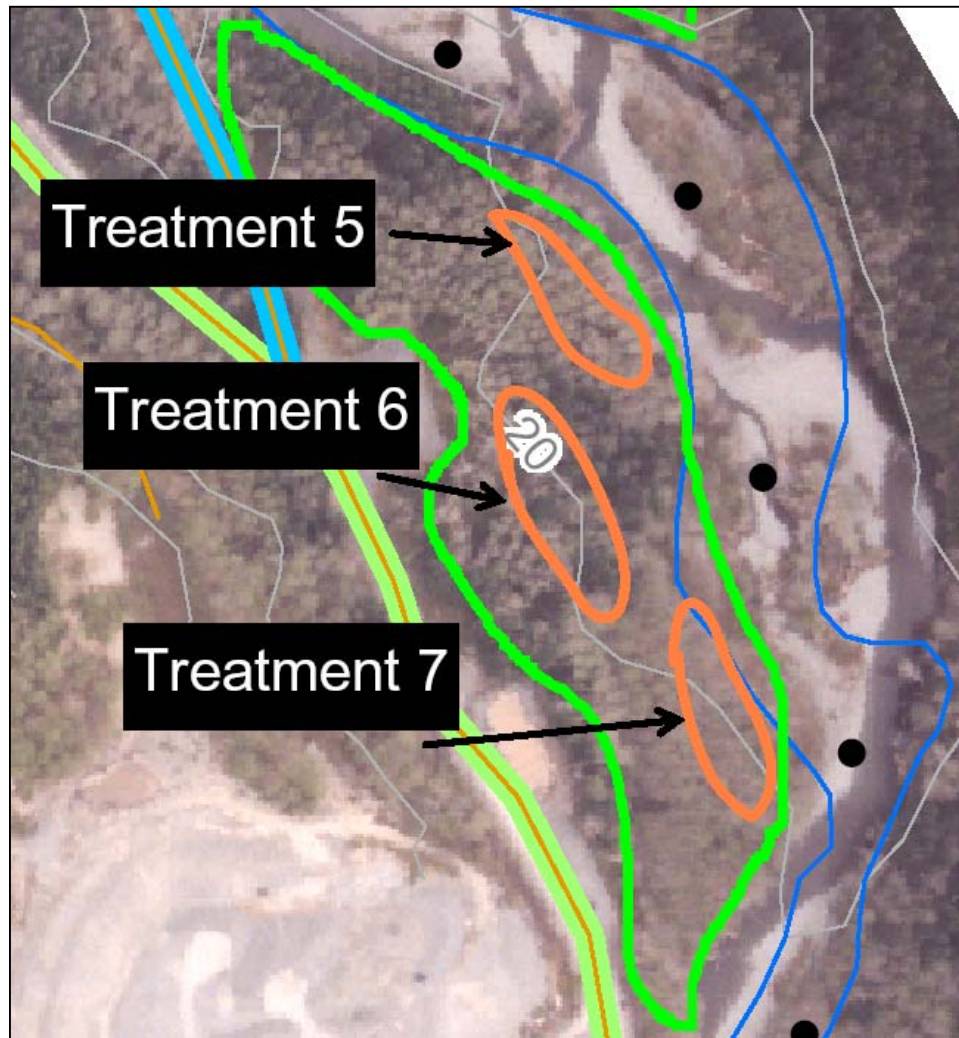


Figure 4. Site 12, treatment zones 5,6, and 7 ($127^{\circ} 9' 30''\text{W}$, $50^{\circ} 35' 46''\text{N}$).

4.0 Conclusion

Kwakiutl First Nation involvement in this project has been constant from the programs inception. The Riparian Prescriptions for the Lower Cluxewe River Watershed have been an important source of employment for Kwakiutl First Nation summer students and regular band employees. Two to three days were spent at each site preparing and planting conifers. A total of 10 days was taken to complete the as-built portion of the project. Future employment for band members will also be available through a multi year brushing regime. On-site training in the use of brushing and planting equipment was provided to band members. Additional training in the use of a hand-held GPS was also provided to interested Kwakiutl members.

This project has been an overwhelming success. Work opportunities, education and training have been provided to Kwakiutl band members. An ongoing multi year brushing regime and continuing support from project partners will ensure that healthy and productive habitat for salmonids continues to develop.

5.0 Literature Cited

Koning C.W., 1999. *Riparian Assessment and Prescription Procedures*. Watershed Restoration Technical Circular No. 6 (79)

Pacificus Biological Consulting Inc., 2005. *Riparian Assessment and Prescription Designs for the Cluxewe River Watershed*. Prepared for the Kwakiutl Band Council.