Fontaine Creek Restoration

Objective:
Project objectives were to restore natural thalweg function, stabilize stream banks and increase stream cover through restoration of LWD to selected reaches of Fontaine, Font, and Horan Creek's. Methods included LWD, rootwad and boulder cluster placement.

FRBC Region:
Cariboo – Chilcotin

Author:
G3 Consulting

Proponent:
West Fraser Mills Ltd., Quesnel

Watershed:
Fontaine, Font and Horan Creeks within the upper Cottonwood River watershed.

Location:
Project sites were located on the mainstem of Fontaine Creek and tributary streams of the Fontaine Creek subbasin, in the upper regions of the Cottonwood River watershed. Fontaine Creek subsequently flowed into Reddish Creek, then into the Swift River, which flowed into the Cottonwood River. The project area was located approximately 27 km south of Hwy 26, approximately 40 km east of Quesnel. Site access was gained from the 1300 Road between Quesnel and Wells. Five sites were restored on the three subject streams.

Introduction:
Anadromous fish do not migrate into the project area. Resident rainbow trout were the target species for the works. The Fontaine Creek drainage has been extensively logged in the past with sections of each study site being adjacent to a logging road or harvested area. The subject streams were first to third order with 1.5-5.5 m bankfull width and 1-3.5% gradient at restoration sites.

Prescription:
In 1998, G3 conducted a Level 2 FAHP at the five sites specified by MELP and WFM as requiring fish habitat restoration. LWD abundance and distribution was limited at sites, limiting primary pool distribution and size and fish habitat cover. Bank instability was noted at three sites, and 150 m of channelization had occurred at another site.

Rehabilitation Work:
Placement was done using manual labour and minimal excavator and ATV support at select sites. LW

LWD structures were keyed into both stream banks at an approximate angle of 30^{o} perpendicular to stream flow. LWD revetments were anchored with boulders secured with epoxy and cables to the structure.

Site A Fontaine Creek: This was an area of bank failure associated with an abandoned bridge crossing of Fontaine Creek. An LWD revetment was installed to stabilize approximately $55m^2$ of stream bank.

Site B Font Creek: This site was located immediately upstream of its confluence with Fontaine Creek. Six LWD structures were installed with hand tools, generating approximately $12m^2$ of pool habitat.

Site C Horan Creek: This site was located in a cutblock that had been logged directly to the stream banks. Bankfull width was approximately 2.5 m. LWD was present in limited abundance and distribution. Further LWD was unlikely given lack of riparian vegetation. Nineteen structures and two LWD revetments were installed, restoring approximately $29m^2$ of pool habitat and stabilizing a further $40m^2m$ of stream bank.

Site D Horan Creek: Site D was located approximately 400m downstream of site C. This section had more conifer trees remaining in the riparian area than site C. Bankfull width was approximately 3.0 m. Seven pieces of LWD were installed in the stream channel using hand tools, restoring approximately $15.5m^2$ of pool habitat.

Site E Fontaine Creek: Approximately 150m of Site E had been channelized during past mining. Bankfull width was 5.5 m with dense deciduous tree and shrub stream cover. No LWD was present in the section. Four LWD scour logs were placed to create approximately 30.5m^2 of pool habitat. A rootwad and 18 boulder clusters were placed to provide additional habitat cover in pools and riffles. A Samsung tracked excavator was used for LWD and boulder cluster placement.

Past Rehabilitation Work:
Weirs, riffles, and a bridge improved fish access at culverts on 5 Cottonwood River tributaries during 1998.

Cost Summary:
Total Restoration Costs are available from West Fraser Mills Ltd., Quesnel Division.

Outputs:
The total length of restored habitat was 1, 110 meters. Within this area 36 LWD, 19 boulder clusters and 3 LWD revetments were installed. Approximately 87 m^2 pool habitat was created, and 55m of streambank were stabilized.

Production Estimates:
Unknown

Proposed work:
Additional stream works and maintenance.

Further Information:
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Figure 1: Fontaine Creek Site E: Upstream view of channelized stream section prior to restoration.

Figure 2: Fontaine Creek Site E: Upstream view of LWD scour log and boulder clusters placed to restore pool habitat.