

Partners in Training



Figure 3. Instructor Caroline Melville explaining fish habitat assessments on the Keogh River in Port Hardy.

(Figure 3). The curriculum is highly adaptable to local needs and resources.

This course has now been offered four times through New Forest Opportunities Limited, including two deliveries to First Nations bands. The training package is also rapidly gaining interest among other groups and organizations. International Forest Products in Campbell River recently provided the course to a crew of their workers. Several community organizations and Fisheries Renewal BC groups have also expressed strong interest. Custom training packages incorporating portions of the course are being developed on request.

Employment and project opportunities are arising from this course. Our pilot delivery (Port Hardy, July 1998) was to a group of New Forest Opportunities

Limited workers with no specific project lined up for future WRP employment. Four of the participants were hired onto a WRP project directly from the course and that crew has since been recruited to help with a project in the Queen Charlotte Islands. Subsequent deliveries have been to groups with projects already approved. One particularly adept crew in the Fraser Canyon has been in demand for other projects in the area. Following the course, one organization has been actively seeking funding for further WRP projects. Several community groups are requesting this training as part of restoration project proposals.

Each delivery produces positive responses from both the participants and the organization responsible for offering the course. Workers often start the course wary of an “environmental class”. By the end of the week they have a understanding of the whole watershed, how their actions on the slope affect the stream below, and how they can add to the restoration of these systems in which they work and recreate. Most importantly, they gain enthusiasm for restoration work. It is our hope that a variety of organizations continue to seek out this type of holistic training for their field crews.

For a course description or information on contracted (private) course delivery, contact:

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For information about public deliveries, contact:

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Technical Tip

Compressed Air Technique in Restoration at Rebman Creek

Ron Randall

The goals of the Rebman Creek Restoration project were to provide overwintering spawning and rearing

habitat for the resident trout species of Rebman Creek and to provide employment for local unemployed forestry and mining workers in Wells and Quesnel. Creation of summer rearing habitat was also an objective, because the small pools in the creek had dried up the previous summer. Rebman Creek is located in the Willow Watershed, approximately 50 km northeast of the city of Quesnel.

The proponents for this project were Weldwood of Canada, Forest Renewal BC, Ministry of Environment, Lands and Parks, LGL Ltd., Northwest Hydraulic Consultants Ltd., and Randall and Associates.

Seven riffle structures and pools were constructed at

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the upstream end of Reach 4 on Rebman Creek. The sizes of the structures ranged from 4 m to 8 m long, with an average width of 4 m. Pool depths of 1 m to 1.5 m were consistent throughout. Two repair sites were also completed. On one of these sites, large rocks were added to the creek to break up the flow for 6 m. The other site involved repairing the stream channel, by armouring, to make a more gradual corner. The bank was armoured for 10 m upstream and 14 m downstream of the corner.

This project used a new technique for excavating the materials from the stream bed that were subsequently used to build the riffles. Using a hand wand with compressed air, the wand was pushed into the stream bed to create air pressure (90/120 psi) to loosen the fine material around the boulders (Figures 1 and 2). The flow of the stream then washed away the fine substrate, allowing the boulder to be excavated and used in constructing the riffle structure. At the same time, removal of the boulders assisted in creating the pool. This method was used upstream and downstream of each riffle, and resulting pools had depths of 1 to 1.5 m (Figure 3).

The benefits of the compressed air technique are:

- larger amounts and sizes of instream material can be moved, than hand crews alone can move;
- high quality instream work can be done with less environmental damage than occurs when an excavator is brought to the site;
- employs five times as many people as an excavator;
- it gives more control over riffle construction than is possible using an excavator; and
- it maximizes use of in situ materials.



Figure 1. The hand wand with compressed air was pushed into the stream, creating air pressure to loosen the fine material around the boulders.



Figure 2. After the fine material had been loosened, it allowed the boulder to be excavated and used in constructing the riffle structure.



Figure 3. The pools and riffles created along Rebman Creek were to provide overwintering, spawning and rearing habitat for resident trout species.

In addition, cost savings may be realized. The cost figures below illustrate the costs for creation of the 83 m of channel. Note that these costs reflect the first time this method has been tried, and includes the cost of wetsuits and equipment that will not have to be purchased for the next job in this area.

Cost Summary for the Project Works:

Labour:	\$9234.00
Expenses:	\$3337.20
Total:	\$12661.20

The process can increase turbidity because it resuspends some sediments therefore it is important to work within the appropriate fisheries window. During low flows, resuspended sediments can be trapped.

At some of the constructed structures, removal and moving of boulders was accomplished with a hand sling and chainsaw winch. In these cases, the small size of the boulders did not warrant the use of the compressed air technique, but it could prove useful in streams with larger boulders. The hand sling was constructed by using a 5 cm x 2 m nylon lifting strap

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Figure 4. The boulders were placed on the rubber and the straps of the hand sling were pulled.

with a piece of rubber belting bolted to the straps. A boulder could be placed on the rubber and two workers could pull the straps, while one worker helped lift on the back by grabbing the strap behind the boulder (Figure 4). This method was used to move 90 percent of the large material. The smaller material was all moved by hand.

It is apparent that these methods are most effective when there is water flowing in the stream. The presence of water is also helpful in checking the flow behaviour over the constructed riffle and checking that the height of the riffle is correct.

For further information, contact:

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Update

Conferences

64th North American Wildlife and Natural Resources Conference. March 26 - 30, 1999. Hyatt Regency San Francisco Airport. Burlingame, California. Contact Richard McCabe: Tel (202) 371-1808.

AFS Annual Meeting. Aug 29 - Sep 2, 1999. Adams Mark Hotel, Charlotte, N.C. Contact Betsy Fritz: Tel (301) 897-8616, ext.212; e-mail: bfritz@fisheries.org

Canadian Water Resources Association, *Confronting Uncertainty: Managing Change in Water Resources and the Environment.* October 27 -29, 1999. Vancouver, B.C. This conference will offer sessions on watershed management, fish stocks and habitat, forestry hydrology, groundwater, regulatory issues, recreation, water supply and quality, among other topics. For information, contact Dr. Yassine Djebbar: Tel: (604) 451-6053, Fax: (604) 463-6714 e-mail: Ydjebbar@gvrd.bc.ca

Workshops

Interior Forest Site Rehabilitation Workshop, April 7 - 8, 1999. Kamloops, BC. The Best Western Towne Lodge Conference Centre. The theme is: "*Building on Experience, Searching for Innovation, Striving for Excellence.*" The emphasis this year will be on the integration of the many factors needed for successful restoration. On the evening of April 6, there will be participant registration, a reception and commercial displays. April 7 & 8 will feature informative and comprehensive presentations under six topic areas. Registration also includes access to the commercial displays, luncheons and a participant binder. Last year, the Interior Forest Site Rehabilitation Workshop filled up quickly and we expect the same for the 1999 session. For further information, contact Tom Rankin at the Forestry Continuing Studies Network, Unit 240, 230 - 1210 Summit Drive, Kamloops, B.C. V2C 6M1. Tel: (250) 573-3092

Fax: (250) 573-2882 e-mail: trankin@cariboo.bc.ca

"Watershed Stewardship" May 14 - 16 1999. Little Campbell River Hatchery Site, Surrey, B.C. Community workshop '99 hosted by the Nicomekl Enhancement Society and Semiahmoo Fish and Game Club. For further information contact Drew Waska. Tel: 604-888-4998 Register before April 1.

Publications

WATERSHED RESTORATION PUBLICATION SERIES

Staff of the Ministry of Environment, Lands and Parks and the Ministry of Forests act as editors for publications in the British Columbia Watershed Restoration Program (WRP) Publications Series, under the auspices of the Forest Renewal Plan. A guide for authors has been designed to assist and standardize publications for WRP. Ministry of Environment, Lands and Parks, Ministry of Forests, and Department of Fisheries and