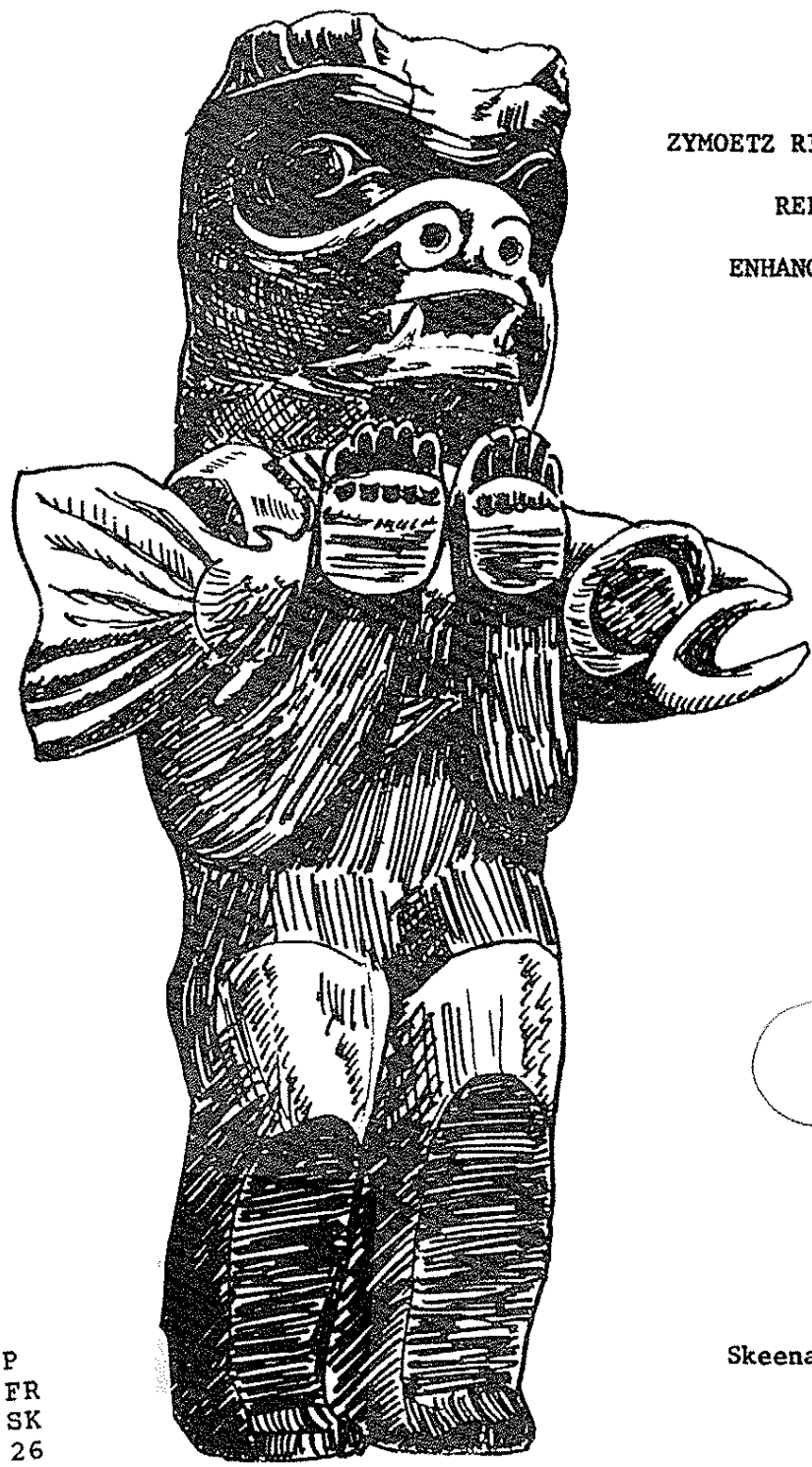


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Skeena Region



British Columbia
Fish & Wildlife
Branch



ZYMOETZ RIVER STEELHEAD TROUT: A PROGRESS
REPORT ON THE ZYMOETZ RIVER
ENHANCEMENT PROGRAM; SPECIFICALLY THE
DIVERSION OF SERB CREEK

BY
W.E. CHUDYK

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Skeena Fisheries Report No. 79-2 (S.E.P.)
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CHUDYK, W. E.
ZYMOETZ RIVER STEELHEAD
TROUT: A PROGRESS REPORT
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British Columbia Fish and Wildlife Branch,
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INTRODUCTION

Steelhead trout (Salmo gairdneri Richardson) are angled from the Zymoetz River, (locally known as the "Copper") near the City of Terrace on the west coast of British Columbia (Figure 1). The "Copper" was labeled as an "Everyman's River" by Pinsent and Chudyk (M.S. 1973) "a pleasant place for an average steelheader without undue regulation, to enjoy recreationally". Recent studies (Imbleau M.S. 1974; Chudyk M.S. 1978) have shown that despite increased regulation, both steelhead stocks and the "Everyman" concept are fading. Contributing to the decline of Zymoetz steelhead are the commercial fishery, the Indian fishery, the sport fishery and local habitat degradation. Fortunately, the Salmonid Enhancement Program (S.E.P), a Federal-Provincial cost sharing scheme dedicated to revitalizing steelhead and other salmonid stocks provincially, has made funds available to the B.C. Fish and Wildlife Branch (Skeena Region) to improve adult steelhead returns to the Zymoetz River. Skeena Region, with help from the Habitat Improvement Section of the Fish and Wildlife Branch, conducted the following pre-enhancement studies:

1. Humphries and Morley (M.S. 1978) described the steelhead fishery and habitat types within our present study area between Aldrich and McDonell Lakes, and in particular the Zymoetz River outflow from McDonell Lake (Figure 2). In addition the 1978 report reviewed the earlier work of Varney and Truelson (M.S. 1975), and biophysical data produced by the Resource Analysis Branch. Humphries and Morley outlined enhancement possibilities within the study area.

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2. Chudyk (M.S. 1979) reported on a creel survey conducted during the 1978 Zymoetz steelhead fishery.

3. Ptolemy (M.S. 1979) intensively and critically inventoried and assessed biological conditions within the important steelhead spawning area located immediately below McDonell Lake and upstream of Serb Creek (Figure 3), with particular reference to the desirability of diverting Serb Creek.

Originating high in the icefields of the Bulkley Ranges, Serb Creek drains a narrow precipitous valley joining the Zymoetz River 500 m below McDonell Lake. Serb Creek at this juncture is extremely volatile - water flows commonly fluctuate between 1/3 of the minimum McDonell Lake water outflow to three or four times the maximum water flow from McDonell Lake. During the period of heavy runoff, which almost coincides with steelhead spawning, Serb Creek backs up, flows over low silt laden bottomlands surrounding the Serb-Zymoetz confluence and encroaches on known steelhead spawning sites below McDonell Lake (Figure 3). Being that Serb water is glacial (colder) silt laden and nutrient poor hence not conducive to steelhead egg survival or juvenile growth Serb Creek diversion was considered a necessary pre-enhancement option. This report outlines the steps leading up to and techniques used to divert Serb Creek.

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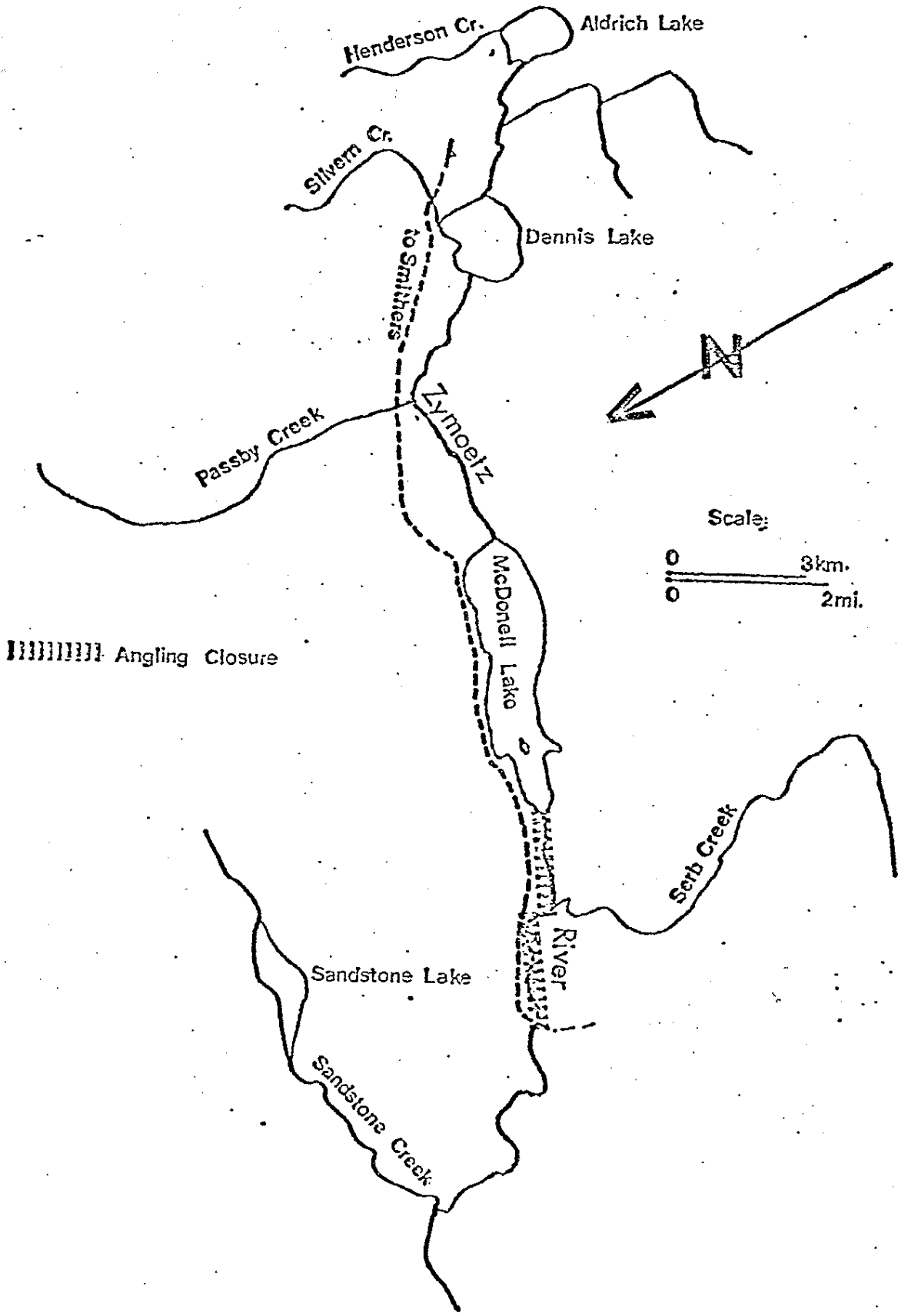


Figure 2. Upper Zymoetz and headwater lakes.

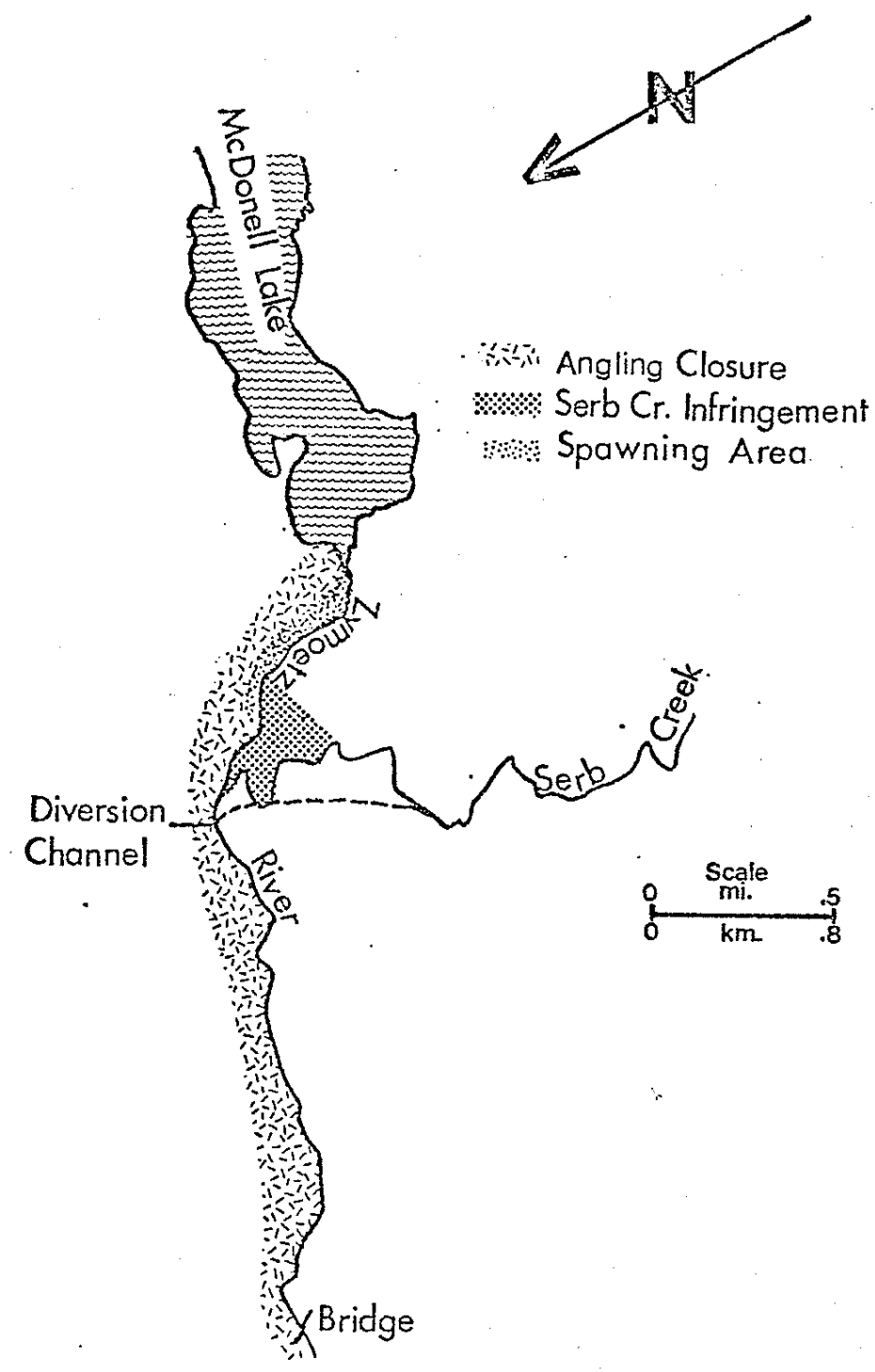


Figure 3. The Upper Zymoetz showing the Serb Creek diversion.

METHODS

The 1979 aspect of the upper Zymoetz enhancement - the Serb Creek diversion - began in early June and continued until the end of August. In June a survey team composed of Fish and Wildlife Branch personnel and a Water Rights Branch person ran a survey line down the proposed channel and established a base camp below the future Serb-Zymoetz confluence. The crew investigated several potential diversion routes, before selecting the most stable path. Early in July a D-8 caterpillar tractor repaired the Copper River road (Photograph A) to allow supply and crew truck access to the diversion site (Photograph B) then logged and shaped the proposed channel (Photograph C, D, E). Logs were aligned with stumps upstream to deflect current hence reduce streambank erosion, then buried using a Lieberg 965 hoe (Photograph F) with a three yard bucket. The hoe scooped out a channel 12 meters wide by 3 meters deep, and created an additional 3 to 4 meter berm with access road, on either side of the diversion. With the knowledge that Serb runoff may at times exceed channel water capacity the West or lower bank was designed to breakout first - the East or upstream bank remaining to protect "the" spawning area upstream of the confluence.

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RESULTS

The Zymoetz-Serb confluence has been relocated 80 m downstream from its former juncture (Figure 3.). The following is a list outlining machinery rental fees and the number of machine hours worked:

- 1) Lieberg 965 - 3 yrd. excavator (hoe)
187 hours at \$80.00 per hour or \$14,960.00.

- 2) D-8 Caterpillar tractor
232.5 hours at \$69.00 per hour or \$11,695.50.

- 3) D-8 caterpillar tractor
87 hours at \$55.00 per hour or \$ 5,279.15.
(lowbed and swamper charges included in price total).

In addition to the \$31,934.65 spent on machinery rental, roughly \$7,000.00, not including salaries, went to supply survey and supervisory crews from June through July. Miscellaneous expenditures and helicopter rentals brought the total cost figure for diverting Serb Creek to roughly \$40,000.00.

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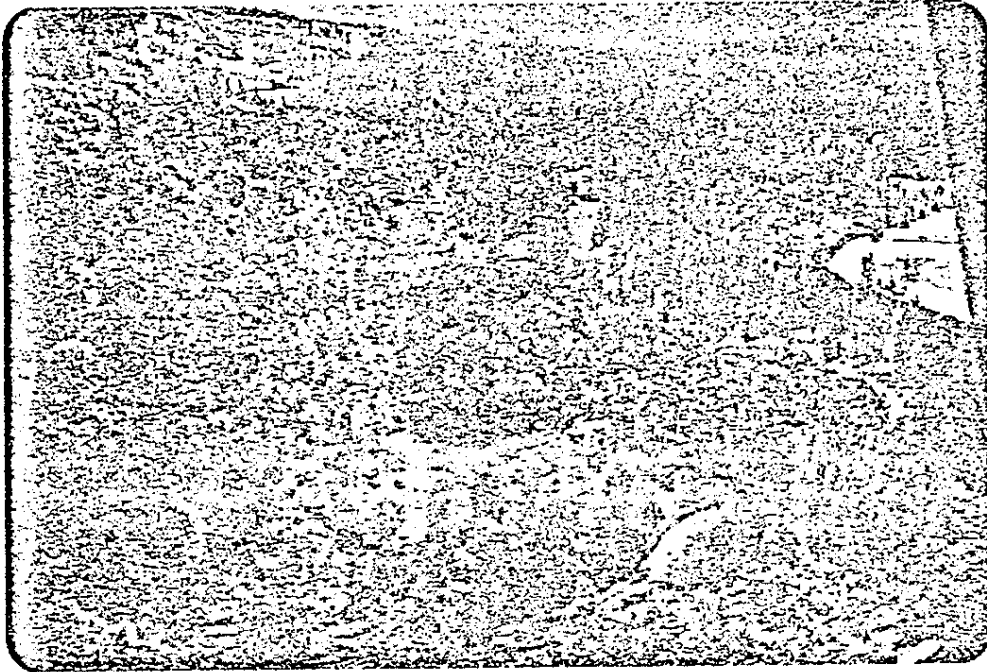
FUTURE WORK

1. Weak areas along the new Serb Creek diversion will be fortified and lined with rip-rap in 1980. The possibility of accelerating the growth of streamside cover or planting grass will be investigated.

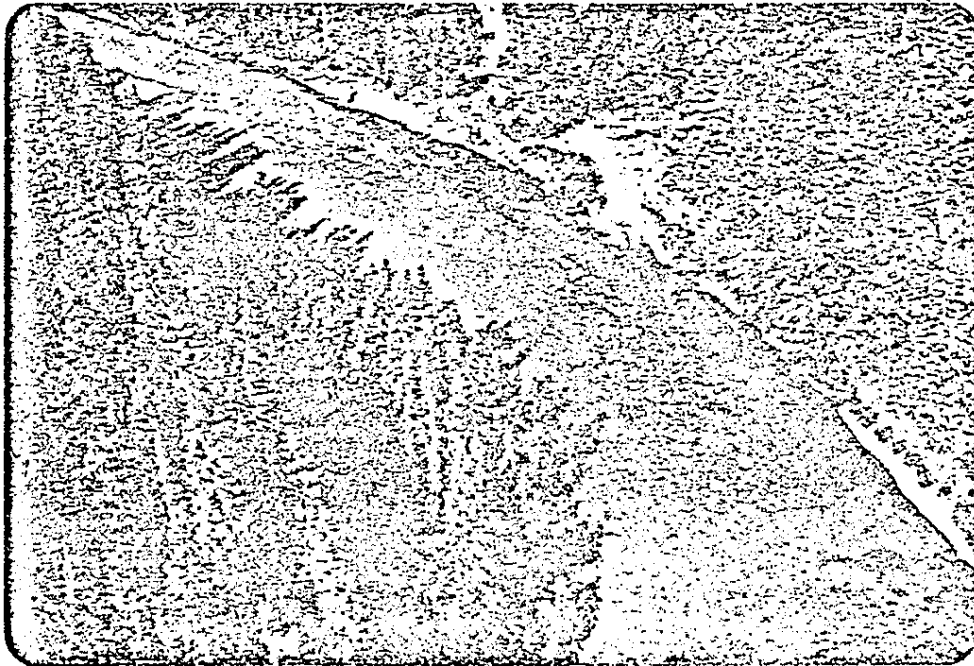
2. Zymoetz River adult steelhead from the outflow of McDonell Lake will be used as brood stock to produce 50 - 80 mm fry ("Super Fry") to colonize pre-inventoried improved rearing areas between Dennis, Aldrich and McDonell Lakes in 1981, 1982 and 1983.

3. Existing spawning gravels at the outflow of McDonell Lake will be mechanically disturbed and improved (gravel recruitment) to increase natural egg to fry survival as outlined in Ptolemy (M.S. 1979). Machinery and gravel will be rafted down from the Copper River Ranch at the East end of McDonell Lake. The 80 m of Zymoetz River above the new Serb-Zymoetz confluence will not be modified or renovated as either spawning or rearing area until Serb Creek is shown to be stable in its new channel.

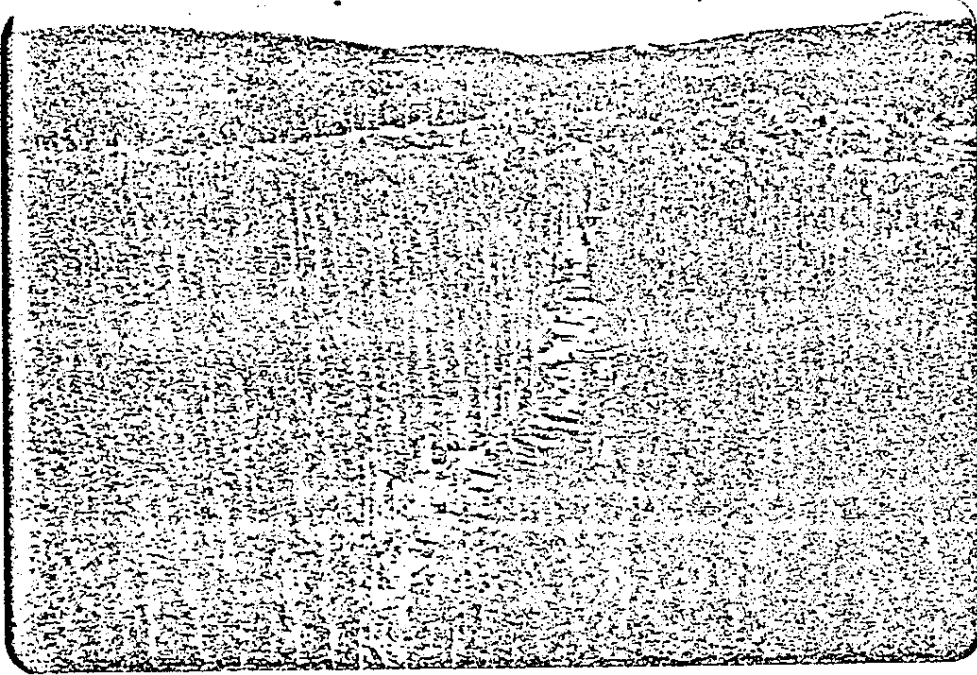
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Photograph A. Road improved from the Copper River to the Serb-Zymoetz River confluence.



Photograph B. Machinery crossing site on the Zymoetz River.



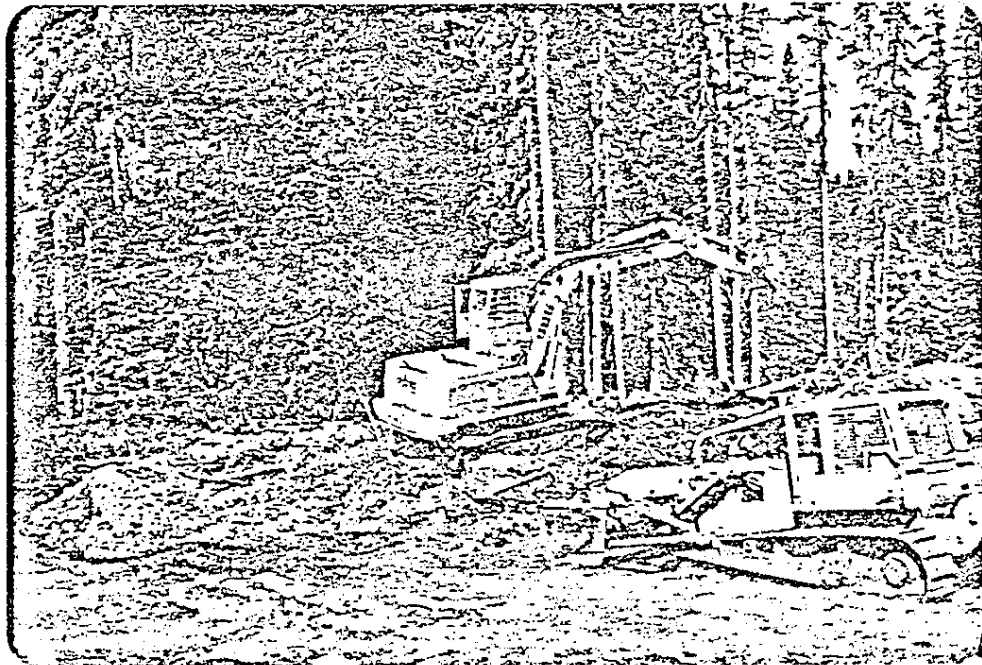
Photograph C. Cat logging of Serb Diversion Channel.



Photograph D. Scooping out the Serb diversion Channel and burying debris.



Photograph E. Aerial view of the Serb diversion.



Photograph F. D-8 Caterpillar tractor and Lieberg 965 hoe used to excavate the Serb channel.