

State Department of Geology and Mineral Industries

1069 State Office Building
Portland 1, Oregon

LINN COUNTY

GEOLOGIC REPORT ON THE ROCK AT THE FISH LADDER PROJECT ON WILEY CREEK

At the request of the engineering department of the Oregon Fish Commission, inspection was made of the rock and the excavation at the fish ladder construction site at the falls about one mile south of Foster, Oregon, on Wiley Creek. The inspection was made in the company of Mr. Wayne Garber and Mr. James Van Donalen of the Fish Commission.

The rock is a weakly cemented pebbly tuff breccia which was probably laid down as a pumiceous mud flow. The rock is a bluish-gray color and is composed of volcanic ash interspersed with rounded to angular rock fragments of basalt, pumice, tuff, and an occasional piece of charcoal. The inclusions range in size from ash to small pebbles.

The bedding is massive with large irregular jointing. The beds exposed range in thickness from 4 feet to about 10 feet or more.

Certain parts of these massive units appear to have been badly brecciated by faulting. A vertical fault of small apparent displacement cuts across the lower end of the fishway at about 45° angle. The rock in the vicinity of the fault is badly broken into pieces ranging from a few inches or so to about 2 feet. These fractures have loosened the rock so that pieces can be easily removed, leaving the wall surface extremely irregular.

Although tests have not been run, it is doubtful if the rock would equal 1000# concrete in strength. This rock will also erode faster than concrete or basalt lava.

During the excavation certain areas composed of highly fractured rock have been exposed which will require changes in the design of the structure. The original plans call for the baffles to be notched into the rock face and anchored to the floor slab of reinforced concrete. The top of the baffle would then be cemented to the opposite wall by a concrete beam. The stream side of the fishway will be a concrete wall using the rock excavation as the outside form.

Discussion of procedures

1. Gunitite the entire wall to cement the broken fragments and joints. The gunitite wall will not hold the baffles and could conceivably give difficulty where the rock is highly fractured top to bottom. For best results/^{with}this method the loose rock should first be grouted and the baffles anchored with steel pins cemented into the rock. Also, steel pins bent at the outside ends should be installed, leaving about 2 or 3 inches extending outward from the rock to anchor the gunitite. The areas of broken rock only could be grouted first, followed by gunitite. This would narrow the downstream section of the fishing ^{way} by a small amount and possibly have no effect on flow.

This method would reduce the width of the fishway only a small amount and should be adequate and economical.

2. Continue as planned notching in baffles and tying across top and bottom. This will work where the rock has not been fractured or the jointing is not deeply weathered or excessively widened. Notching causes some overbreak and should be discontinued. If absolutely necessary they could be easily sawed. An estimated half of the upstream part of the west wall could be done this way if needed. It should be pointed out that since this rock is weak and it erodes much faster than solid rock or concrete, it might begin to show signs of wear within 10 or 15 years.

3. This method proposes to utilize one form for the west wall and pour a complete new wall using the rock face as one form. Since this method would require widening the cut by 6 to 8 inches, it would greatly increase the cost as well as enhance the possibility of overbreak and greatly increase the amount of concrete.

I would recommend consideration of the three possibilities in the order listed.

Report by: H. G. Schlicker
August 30, 1963