

At one mile below Dam No. 1, where the creek bed is in solid rock, a concrete weir is built to gauge the flow.

Between the reservoir and the intake several small streams add to the flow of the North Fork of Mission Creek. The intake is located at the junction of the ditch and the North Fork of Mission Creek, about 11 miles below the reservoir. A training wall of crib-work, 180 feet long, filled with rock, is built on the west side of the stream bed; the stream bed straightened and a crib abutment built on the east side and filled with rock. Between these cribs there is a bear trap dam having 4 leaves or traps each 5 feet wide. These leaves are worked by a winch and running tackle. In the training crib, on the west side, is an opening provided with drop logs through which the water can be diverted at low water, with the leaves raised, into a forebay or canal 10 feet wide at the bottom and 500 feet long leading to the headgate of the main ditch. Along the east side of this forebay are 6 spillways of concrete as a provision against the drop logs at the bear trap dam being accidentally left open.

Immediately above the headgate 4th Creek comes in,—a creek that rises very quickly in the spring, discharging about 300 c.f.s. In the spring of 1912 this creek brought down a large quantity of gravel that filled up part of the forebay 3½ feet deep, and to avoid a recurrence of this a flume has been built 10 feet wide and 2½ feet deep on a 5 per cent. grade across the forebay and the channel of the creek paved for 300 feet up above the forebay. At low water this creek can be turned into the forebay.

The headgate is built of two thicknesses of 2-inch fir with a heavy fir frame anchored to and set in the concrete, all well coated with carbolineum and tarred. The gearing is on ball bearings.

From the headgate the ditch runs through a very sandy and gravelly side hill having a natural slope of 2 to 1, requiring a concrete lining for a distance of half a mile. The section of the ditch is given on a plan of the concrete inlet at the headgate.

On account of an adjustment of grade, and to provide a water cushion at the lower end of the concrete lining, the grade is broken and is partly 0.14 per cent., and partly 0.37 per cent.

At the lower end of the concrete lining is a concrete tank into which the water drops and stills before entering the ditch. The grade of the ditch is 0.14 per cent., or about 7½ feet per mile, the ditch being 5 feet wide at the bottom with 1½ to 1 side slopes, and calculated to run slightly less than 3 feet per second, and to carry 60 c.f.s. with a depth of 2½ feet of water. At rock excavations

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