



## RAYMOND RESERVOIR POWER PLANT (18 MW.)

The Raymond Reservoir Hydro Plant is located on the south shore of Raymond Reservoir, approximately 6 km south of the town of Raymond. It is supplied by a diversion canal constructed upstream of Milk River Ridge Reservoir. The plant will operate during the typical irrigation season from April to October.

Water optimization is a paramount consideration in the operation of this facility. Providing all the water required by the agriculture users and maximizing the energy output has been achieved through the use of a total system management philosophy incorporated into the control system utilized by Irrican.

The Raymond Reservoir Hydro Project consists of a 1.5 km supply canal, an intake structure, 770 m of, 4 m diameter steel penstock and a powerhouse.

The Raymond Reservoir Hydro Project will divert and generate energy from water that would normally pass through Milk River Ridge Reservoir, and the North Ridge Outlet over the Raymond Chute into Raymond Reservoir.

The diversion canal is designed to handle a flow of  $56.7 \text{ m}^3/\text{s}$ . The canal diverts the flow from the Waterton St. Mary Headworks Main Canal, approximately 600 m upstream of the Milk River Ridge Inlet Structures.

The 1.5 km supply canal terminates at a large concrete intake structure which provides a transition for the flow from the canal to the penstock. A trash rack and automatic cleaner mounted on the intake structure prevents large debris from entering the turbine.

The powerhouse contains the turbine, generator, electrical controls and the auxiliary equipment. The reinforced concrete powerhouse, the equivalent of a six story high building built almost entirely below ground, is founded on bedrock. Water flows from the penstock through the wicket gates to turn the turbine and discharges through the draft tube to the tailrace channel. The turbine is Vertical Kaplan unit which is capable of efficient operation over a wide range of flows. The synchronous generator is directly coupled to the turbine and produces 18 MW. This power is stepped up to 69 kV by the transformer located at ground level, adjacent to the powerhouse. The major auxiliary equipment includes ventilation ducts, exhaust fans, hydraulic power unit and dewatering sump. The electrical controls located within the powerhouse include the switchgear, motor control centre, control panel, batteries, station service transformers and communications equipment.

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