

ARROWSMITH WATER SERVICE

ARROWSMITH DAM

Project Details:

The Arrowsmith Dam is a 14.5 m high concrete gravity dam, which impounds 9,000,000 m³ of water for release into the Englishman River during the summer months to compensate for domestic water supply withdrawal and to supplement natural low flows to enhance fisheries values.

This project is the first phase of the Arrowsmith Bulk Water Supply, which will benefit and is jointly owned and operated by the City of Parksville, the Town of Qualicum Beach, and the Regional District of Nanaimo.



Aerial View of Arrowsmith Lake, dam, and outlet channel Elevation 800 m



Completed dam, showing spillway, generator building and outlet/spillway channel.

Flow release is through a 900 mm diameter HDPE gravity outlet pipe and a 600 mm diameter HDPE siphon outlet pipe, located in a concrete encased rock trench 20 m below the dam crest. Hydraulically actuated stainless steel butterfly valves isolate the outlet piping from the reservoir at the upstream face of the dam. These are closed during the winter and spring to fill the reservoir. Electrically controlled E-Disk and V-Ball Valves control the flow of water in both outlet pipes during the summer and early fall. Flow is measured by ultrasonic flow meters.

Power supply at the remote site is by diesel generator. Remote operation is via radio-operated SCADA system. Flow can be remotely monitored and controlled in accordance with the reservoir operating rule, which is tied to maintaining a minimum flow in the Englishman River downstream of the water intake.

ARROWSMITH WATER SERVICE

ARROWSMITH DAM



Outlet piping in rock trench, with dam construction in background.



Discharge of 600 mm diameter siphon outlet into natural stream channel.

The pre-design of the entire bulk water supply system has been completed and includes a new intake, treatment plant, pump stations, supply and transmission mains over 30 km in length, control reservoir, and metered connections to the service areas. These facilities will be phased in over a period of 10 to 15 years.

Koers & Associates managed the Bulk Water Pre-design and the Arrowsmith Dam projects, and carried out various design tasks, as part of a joint venture with Reid Crowther & Partners Ltd., with Agra-Monenco and Gartner Lee as sub-consultants.