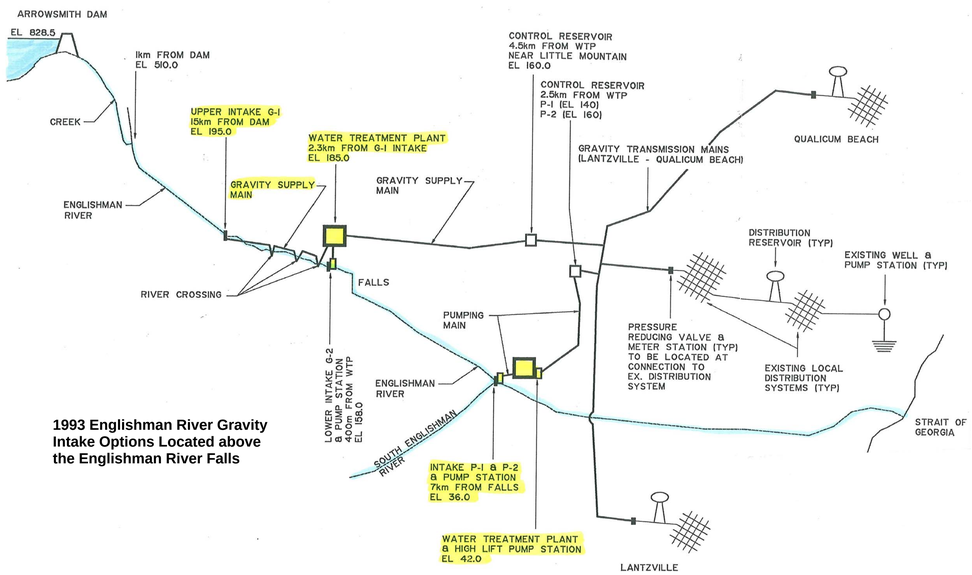
Water Supply History



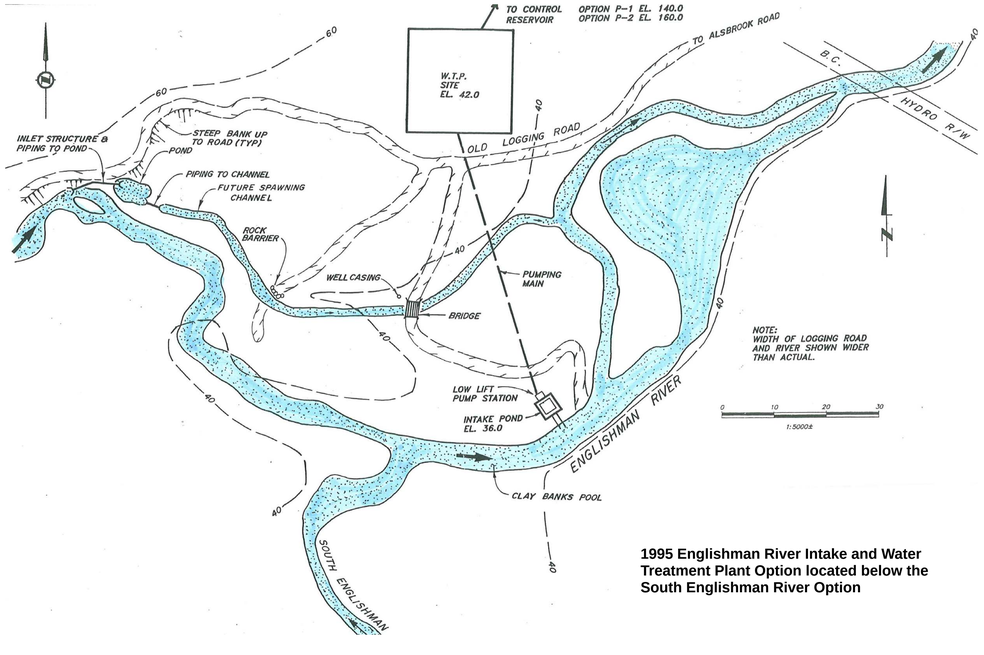
1993 Englishman River Gravity Intake Options Located above the Englishman River Falls

The location of a new water intake site is a major piece of the water supply puzzle. The location is of interest to many in our community and First Nations people have a traditional link to the river. From a health perspective, a location further up the watershed is seen as beneficial while an intake as far down the river as possible can be viewed as the most beneficial approach for fisheries. When engineering and cost considerations are taken into consideration, the choice for the location of an intake becomes complex.

Early plans for an intake on the Englishman River developed several options based on gravity systems above the Englishman River Falls which would deliver water to the community through a reservoir located on Little Mountain. Another intake option located below the confluence of the South Englishman River and Englishman River would require pumping to deliver water to the community.

At the time, options were discussed with fisheries agencies who determined a lower intake would have less impact on fish. The lower intake location would also allow for additional fisheries enhancements such as the construction of the side channel spawning hatchery located on the west side of the Englishman River at the confluence of the South Englishman River.

In March 1997, a conditional water licence was issued authorizing the construction of the Arrowsmith Dam and storage of 9 million cubic meters. Half the volume was to be reserved for fisheries enhancements with the remaining storage for the community's drinking water. This conditional licence required the flow in the river to be maintained at 1.6 cubic meters per second, a rate significantly above the summer flow rates seen in the past and which also required the City of Parksville to continue to use their existing intake until the new intake was built.

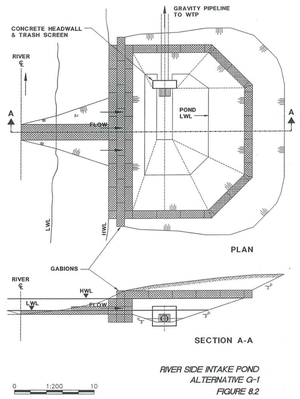


1995 Englishman River Intake and Water Treatment Plant Option located below the South Englishman River Option

INTAKE STRUCTURES

Many different technologies and structures were reviewed to best determine the most suitable for operating, ease of withdrawal and environmental impact. These intake structures were reviewed:

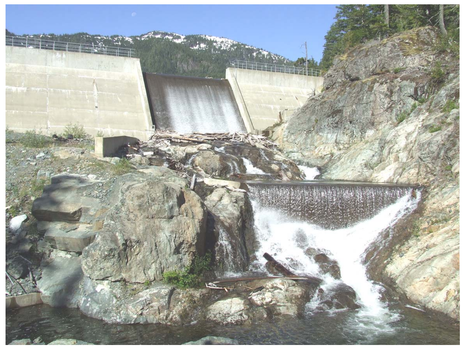
- River side inlet (chosen inlet type)
- Obermeyer weir
- Coanda screens
- Riverbank filtration wells
- Submerged intake
- River bottom infiltration gallery
- River side intake pond
- River side infiltration gallery



Typical River Side-Intake Pond Alternative Concept Option

The purpose of constructing a dam for storage is to harvest the abundant supply of winter water for use in the critical dry summer months. Many source and storage options have been studied over the years including:

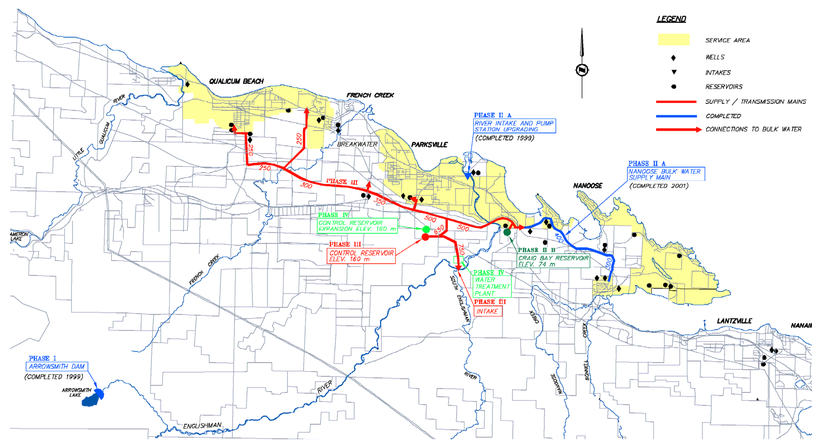
- Hidden Lake
- Mid Englishman River
- Shelton/Healy Lakes
- Arrowsmith Lake
- Fishtail Lake
- Cameron Lake
- Bonell Creek



Arrowsmith Lake was chosen because it could provide the required storage and the geography of the area allowed for the construction of a dam. It is interesting to note Arrowsmith Lake represents about 1.5% of the total Englishman River watershed area. With the dam in place, the lake now provides a much larger proportion of river water flows during the summer.

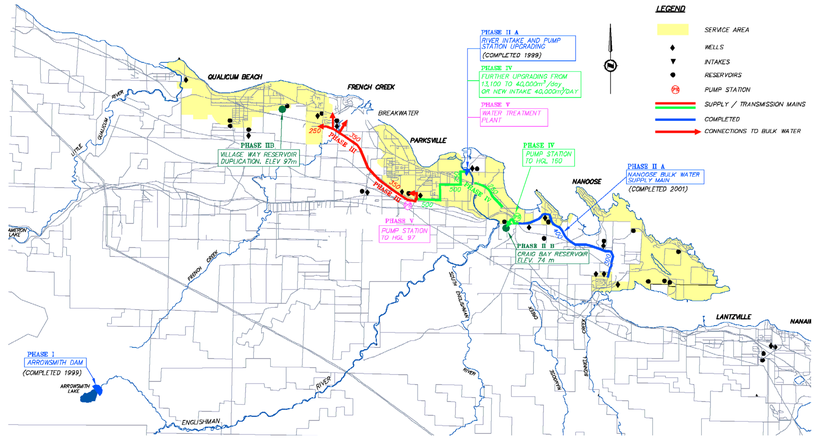
FISHERIES BENEFITS

Today the Arrowsmith Dam and resulting summer flow augmentation has made significant fisheries improvements to the Englishman River and will continue to do so after the fully licensed amount is being used. This will allow for benefits to the river fishery and community water supply to extend well into the future. Regardless of the intake location, the flow requirements laid out in the licence will be met along the entire length of the river with the continued benefit to fish and our community.



Original 1996 Bulk Water Supply Option (Downsized)

This option would allow water to be extracted below the South Englishman River and the Englishman River confluence and be pumped to a control reservoir located in the vicinity of Little Mountain to an elevation of 160m. With this option, the AWS bulk water service area would receive water through a gravity based system controlled from the reservoir on Little Mountain.



2005 - Downstream Intake Bulk Water Supply Option

Between 2000 and 2005, further progression of the AWS capital plan commenced focusing on the future intake location. The capital plan took into account a triple bottom line approach of weighing environmental, financial, risk and social factors and therefore further determined that the best location would be downstream of the originally proposed intake.

Although this option does not provide a gravity feed and control, it was determined that it represented the most attractive option as it presents cost savings over the option of incorporating an upstream intake and also provides substantial fisheries benefits for the Englishman River due to extending the low flow enhancement further downstream from summer releases at the Arrowsmith Dam. This benefit will become more significant as climate change could adversely affect the low flow regime of the river as time progresses. This option received conditional support from the AWS Management Committee in July of 2005 and the report was finalized in March 2008.

In 2009, the AWS retained Associated Engineering through a quality based selection process to further develop the capital plan based on the downstream option. The primary objectives of the study were two-fold.

- The first was to determine the site and development concept for a new water intake, water treatment plant (WTP) on the Englishman River.
- The second and equally important objective was to determine how the surface water and groundwater resources can be best managed.

In January 2012, a change of works application was approved by the province to locate the water intake just above Highway 19 on the right bank in Top Bridge Park owned by the City of Parksville. The proposed intake is a river side inlet structure.