



## Award of Merit Kokish River Hydroelectric Project



### Consultant

Knight Piésold Ltd.

### Owner

Kwagis Power Limited Partnership

### Client

Peter Kiewit Infrastructure Co.

### Category

Energy & Industry

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The Kokish River Hydroelectric Project is a 45 MW facility recently constructed on Vancouver Island, BC, east of Port McNeill. This facility is a private sector development by Kwagis Power, a limited partnership between Brookfield Renewable Energy Group and the 'Namgis First Nation. The project will deliver clean renewable energy to the BC electrical grid, with an annual energy production capacity of roughly 140 GWh, enough electricity to power close to 13,000 homes.

Peter Kiewit Infrastructure Co. was awarded an EPC Contract for the design and construction of the project with Knight Piésold Ltd. appointed as the Design Engineer for the project.

The terrain, climate, and permitting constraints presented numerous challenges centred on the presence of migratory salmon and steelhead trout throughout the diversion reach of the project. Innovative design solutions were incorporated during construction diversion and operation, as part of a close working relationship among the Owner, EPC Contractor, and Design Team, including:

- Possibly the world's largest capacity Coanda screen capable of regulating water flow depth over the screen to ensure emerging salmon fry downstream passage
- Vertical slotted fish ladder that allows continuous migration around the diversion weir for both resident trout populations and migrating salmon
- Hydraulic model testing of the entire diversion and intake structure
- Buried penstock consisting of low pressure HDPE pipe and high pressure steel pipe, using soil restraint to eliminate expensive concrete anchor blocks
- Four vertical axis, six-jet Pelton type turbine-generator units capable of long duration flow ramping rates
- Tailrace channel fish fence designed to prevent fish migrating upstream from entering the tailrace, and
- Sophisticated in-stream flow measuring and flow ramping protocols.