

Nuyakuk Hydroelectric

Hydropower for Bristol Bay



Logical Natural Location

- Glacial moraine defines Wood Tikchik lake system
 - Creates natural dam
 - Lake acts as a natural Sediment deposition site
 - Nuyakuk Falls acts as a natural spillway



Power Production Location and Potential

- Nuyakuk Falls
- 2.5 miles inside WTSP
- Flow monitored by USGS since 1953

Flow monitoring station

Hydro Plant


- Initial modeling diverts <25% flow – 4.5 to >10 MW
- Enough production for regional distribution
- Production potential matches seasonal demand

Power Plant

- The falls occur at an oxbow in the river
- An intake above the falls
- Short (approx. 2500 ft. forebay)
- Short power channel (1500')
- Affected water flow 3000 feet from the top of the falls to the bottom



Legend ■ Switchyard ■ Powerhouse --- Access Road — Transmission Line ■ Tailrace ■ Forebay	NUSHAGAK COOPERATIVE Hydropower Site Investigation
	NUYAKUK RIVER HYDROPOWER CONCEPTUAL SITE PLAN
	0 250 500 1,000 Feet
	McMILLEN JACOBS ASSOCIATES FIG 2

An aerial photograph of a river flowing through a green, hilly landscape. The river is dark blue/black, and the surrounding land is lush green. A yellow line with diamond-shaped markers at each end represents a penstock (pipe-line) that starts at the top of a waterfall and runs down to a power house at the bottom. The waterfall is a turbulent, white-water section of the river. A small blue dot is visible on the right side of the river, indicating the return point for diverted water.

This design includes an intake at the top of the falls with a penstock (pipe-line) running down to the Power House at the bottom of the falls

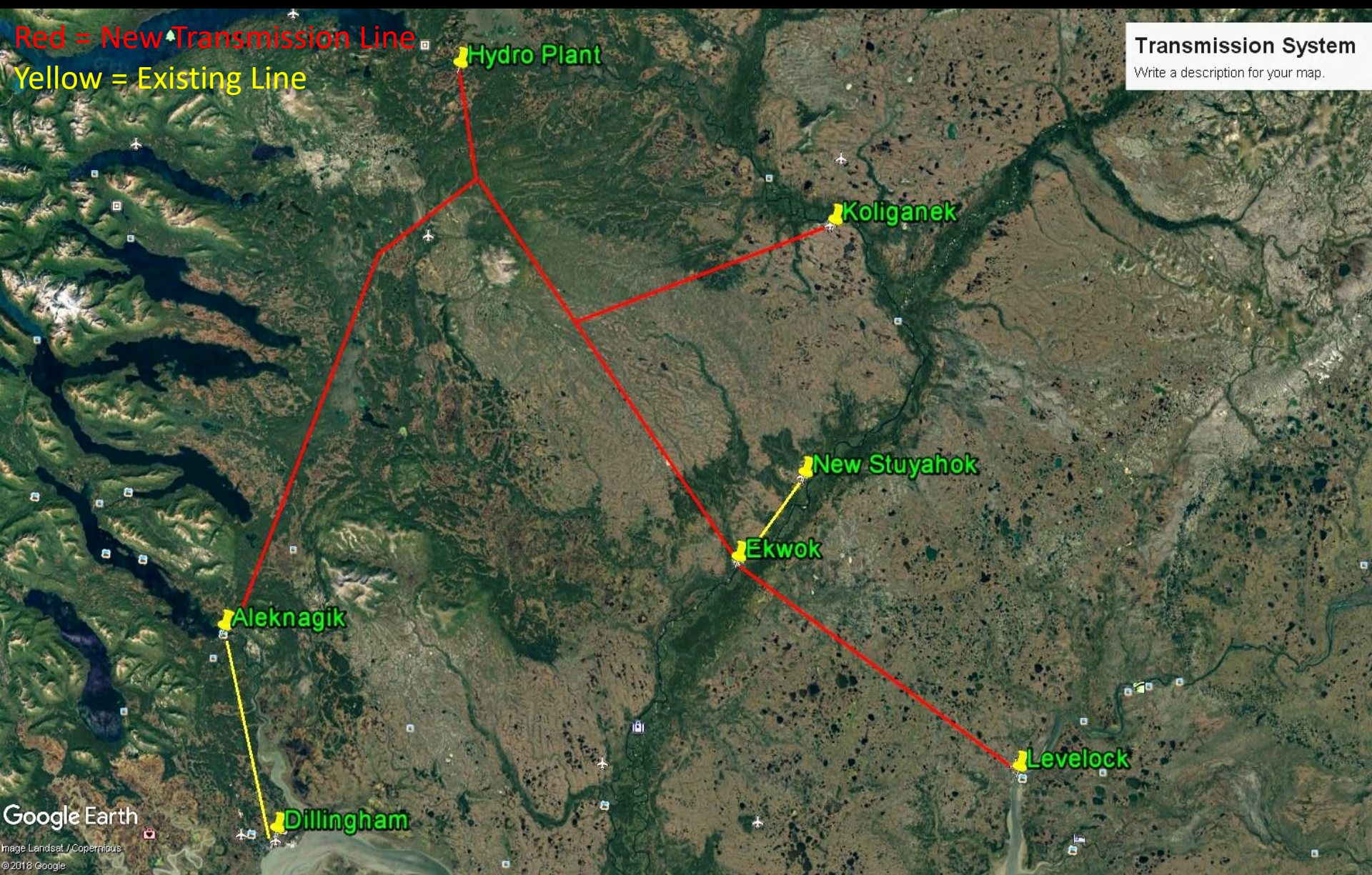
With Less than 25% of the flow diverted 75% remains in the natural course over the falls, maintaining the natural passage for fish

There is no need for a dam.

The diverted water will return to the natural flow after passing through the Power Plant

Red = New Transmission Line
Yellow = Existing Line

Transmission System
Write a description for your map.



Considerations

- Project would displace 1.5M gallons of fuel oil annually at current consumption
- Estimated cost to build \$120M - \$150M
- Estimated cost avoidance (NETC ONLY) over 40 year license period using current costs:
 - Fuel at current cost (\$2.51/gallon) \$150M
 - Scheduled genset maintenance \$9M
 - Regulatory compliance for diesel generation \$12M
 - Total \$171M
- Transmission system would provide a route for Broadband middle mile expansion

WATERSHED AREA
1,544 SQ. MI.

KOLIGANEK

POWERHOUSE
FACILITY

OVERHEAD
TRANSMISSION ROUTE

STUYAHOK

ERIVUK

LEVELOCK

ALEKNAGIK

