

COMPREHENSIVE LIMNOLOGICAL STUDY WELLS HYDROELECTRIC PROJECT

Douglas County PUD identified the need for a comprehensive limnological investigation (biological, chemical, and physical water quality parameters) for the Wells Project Area. This baseline inventory addressed compliance issues, requirements for Clean Water Act certification, reservoir productivity, and fulfilled the needs of the Wells Project relicensing process. The Wells Hydroelectric Project is located at river mile (RM) 515.8 on the Columbia River in the State of Washington and influences the lower Okanogan and Methow. EES



Consulting designed and implemented a comprehensive water quality study for Wells Reservoir including the lower Okanogan and Methow Rivers. Physical, chemical and biological water quality parameters were sampled monthly for a one year period. Vertical profiles of temperature, dissolved oxygen, pH, and conductivity were measured at nine locations. Phytoplankton, algae and water samples were collected and submitted for laboratory analysis. Data were collected in a manner that supports future application of CE-QUAL-W2 modeling. EES Consulting also completed a comprehensive total dissolved gas study to assess operational measures favorable for compliance with water quality standards.

Results

- Comprehensive assessment of nutrients and primary productivity in reservoir.
- Reviewed historical data for toxins within Project waters and evaluated Project effects on bioassimilation.
- Water quality data analyzed and archived in a manner that supports future application of CE-QUAL-W2 modeling.
- Report was incorporated in the Project Pre Application Document.
- Completed a dynamic study of total dissolved gas production relative to project operations.

Cost Performance

- Completed all studies, including additional studies, within approved budget.

Schedule Performance

- The study required design and initial implementation of study plans in a very short time period. All field work and reporting were completed within the scheduled period. The total dissolved gas study required very close coordination with Project operators to schedule a series of 80 test spills.

Innovative Features

- The total dissolved gas study identified operational strategies that best comply with TDG water quality standards.
- Algae data were statistically compared to flow and water chemistry to assess spatial and temporal growth patterns and factors regulating algae growth.