

Water Quality Status and Trends in the Clark Fork-Pend Oreille Watershed

Bruce Anderson¹, John Babcock¹, and Gary Ingman²

¹Land & Water Consulting, Inc., P.O. Box 8254, Missoula, MT 59807

²Land & Water Consulting, Inc., P.O. Box 239, Helena, MT 59624

Biographical Sketches of Authors

Bruce Anderson is a senior hydrologist/statistician and the president of Land & Water Consulting, Inc. Bruce works in the areas of stream, wetland, and riparian restoration, channel and fishway design, and surface/groundwater modeling projects. Recent work includes arsenic modeling and sediment transport/peak flow analyses associated with a CERCLA dam removal project, FERC relicensing projects including heavy metals studies in the Missouri-Madison rivers, design and construction of stream channels and hydraulic structures for state and federal agencies, bioengineering techniques for stream bank restoration, and development of a stream project technical guidance manual and a stream permitting guide for the State of Montana.

John Babcock is a senior hydrologic technician in Land & Water's Missoula, MT office involved in water quality monitoring, groundwater remediation, stream restoration, fisheries enhancement, hydraulic modeling, and watershed analysis. Since joining Land & Water in 2001, John has operated the water quality monitoring and assessment program in the Clark Fork of the Columbia River Basin that is described in this paper. Prior to 2001, John worked for the Henry's Fork Foundation and established a long-term monitoring project on the Henry's Fork of the Snake River and its tributaries, and as a field technician for a fisheries consulting firm.

Gary Ingman is a senior biologist/watershed scientist and Land & Water's TMDL projects coordinator. Gary joined the staff of Land & Water in 2001 after more than 20 years with Montana state natural resource agencies. Gary's work at Land & Water has included watershed assessments and restoration planning, water quality monitoring network design, and providing technical assistance to citizen's groups, conservation districts, and private landowners. Gary served as a Region 8 states' representative on the National Water Quality Monitoring Council from 1997-2001.

Abstract

This study analyzed water quality status and time trend data for the Clark Fork-Pend Oreille watershed of western Montana, northern Idaho, and northeastern Washington, as influenced by Superfund mine cleanup activities and implementation of a three-state nutrient management plan. The information is derived from a cooperative interstate monitoring program which focuses on algal nutrient and heavy metal concentrations and periphyton standing crops in the Clark Fork River; nutrient loading rates, periphyton standing crops, and Secchi transparency in Pend Oreille Lake; and nutrient concentrations in the Pend Oreille River. The presentation reviews the program monitoring objectives, statistical methodology, water quality data analysis, and monitoring results in relationship to various point and non-point source pollution control measures. The results of the current data analysis are being used by the Tri-State Water Quality Council to document water quality improvements resulting from 10 years of collaborative watershed restoration efforts, and as a feedback mechanism to fine-tune management approaches in the three-state area.