



Fish Habitat Management System for Yukon Placer Mining

Water Quality Objectives Monitoring Report (2010)

Prepared by

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Water Quality Working Group**

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The Adaptive Management Framework for Yukon placer mining is complemented by traditional knowledge and water quality objectives monitoring, aquatic health monitoring and economic health monitoring programs. The water quality objectives monitoring program is governed by the Water Quality Objectives Monitoring Protocol. The Protocol describes the locations, timing, frequency and methods employed during sampling, as well as the methods used to analyze sampling data. Precipitation data was collected from a variety of sources to assist in the interpretation of results.

The water quality objectives (“WQO”) monitoring program relies upon both continuous sampling and grab sampling. Continuous sampling is performed by automated instruments that pump water from the creek or river at a preset volume and at precise times each day. Grab samples are taken by personnel at a selected location, depth and time. Normally the quantity of water taken is sufficient for all the physical and chemical analyses that will be done on the sample. Grab sampling is also performed during sampling “blitzes”, when single grab samples are collected from as many sites as possible within a short timeframe in order to get a snapshot of the water quality in a watershed over a 24 hour period.

It should be noted that water use licenses issued after April 11, 2008 conform to the sediment discharge standards and site management practices required under the new habitat management system. Additionally, in 2009 all licensed placer miners were oriented to the applicable design target and action level, and were required to comply with a sediment discharge standard of no greater than 2.5 ml/L, or the standard stipulated in their existing water use licence, whichever is more stringent. In 2010 the phase-in period for stricter sediment discharge standards ended, and operators were required to comply with the standard described in Schedule 2 of the watershed-based authorization that applies to their site.

In 2010, water quality objectives were monitored in the following watersheds: Yukon River North, Yukon River South, Klondike River, Indian River, Sixty Mile River, Stewart River, and White River.

On those occasions when the WQO were not met and the Total Suspended Solids levels were greater than the objectives, a direct correlation between environmental conditions and the volume of solids in the water was observed.

In most cases, rain fall, either as localised events or basin wide occurrences, increased the amount of surface run off and subsequent soil erosion from the land, increasing the input of sediment into the receiving waters. These increases occurred simultaneously at the time of the rain event or immediately in a period of one or two days after the rain event, as surface water continued draining from the land and ground water infiltrated the water course.

The ability of the receiving water to dilute these inputs of sediment is negated by the re-suspension of stream bed material and by the further erosion of the streams banks that occurs along with the increased flows that are generated by the aftermath of these rain events.

All of these factors - precipitation leading to increased sediment input and increased flows from these rain events re-suspending and further eroding material - led to an increase in suspended solids concentrations in 2010 when compared with the results from 2009 and a very slight decrease in overall water quality.

A more detailed description of the monitoring results for all watersheds is contained in this report.