

## **Yukon River South Watershed**

The Yukon River is a major watercourse of north western North America. Over half of the river lies in the U.S. state of Alaska, with most of the other portion lying in and giving its name to Canada's Yukon Territory, and a small part of the river starts near the rivers source in British Columbia. The river is 3,700 km long and empties into the Bering Sea at the Yukon-Kuskokwim Delta. The average flow is 6,430 m<sup>3</sup>/s. The total drainage area is 832,700 km<sup>2</sup> of which 323,800 km<sup>2</sup> is in Canada. By comparison, the total area is more than 25% larger than the province of Alberta.

The Yukon River is divided into two sections, the North Yukon section, downstream from the Yukon Rivers confluence with the White River and the South Yukon, the section of the Yukon River upstream from its confluence with the White River. The average water quality of the North Yukon River is much more turbid and higher in suspended solids concentrations than that of the South Yukon due to the huge contribution of sediment and glacial material entering the Yukon River from the White River drainage. Total suspended solids concentrations in the North Yukon can be 10-25 times higher than those found in the South Yukon. Many large tributary rivers and streams flow into the catchment area of the Yukon River basin.

In 2008, 28 grab samples were taken by inspection staff on behalf of the Water Quality Team at 28 different locations in the Yukon River South basin.

In 2008, the effluent discharge standards for the Yukon River South Basin were those set under the existing *Yukon Placer Authorization*. Beginning in 2009, the effluent standards for all 19 separate watersheds in the Yukon, including the Yukon River South, will be set under the *Fish Habitat Management System*. The *Fish Habitat Management System* replaces the YPA with approximately 19 separate watershed authorizations, each of which are class authorizations under Section 35(2), governing placer mining in specific drainage basins.

## **Site Codes and Global Position of Water Quality Sampling Locations in the Yukon River South Watershed**

<b>SITE CODE</b>	<b>LOCATION</b>	<b>LAT_Y</b>	<b>LONG_X</b>
08-0678	Yukon River d/s Pedlar Creek	62.87356	-138.78517
08-0682	unknown LL Creek	62.88438	-138.95703
08-0683	Upstream unknown LL Creek	62.88437	-138.95552
08-0684	Ballarat d/s on Yukon River	62.89671	-138.99060
YS 01	Yukon River u/s of the White River	63.17276	-139.56602
YS 02	Yukon River d/s Los Angeles Creek, u/s Thistle Creek	63.07411	-139.50436
YS 03	Yukon River d/s Kirkman Creek, u/s Thistle and u/s LA Creek	63.00394	-139.47209
YS 04	Yukon River u/s Kirkman Creek	62.98285	-139.31924
YS 05	Yukon River u/s Sparkling Creek	62.92245	-139.17300
YS 06	Yukon River u/s Coffee Creek, d/s Ballarat Creek	62.91109	-139.03923
YS 07	Yukon River u/s Ballarat, d/s Pedlar Creek	62.88658	-138.85291

YS 08	Yukon River u/s Pedlar Creek, d/s Britannia Creek	62.87306	-138.77945
YS 09	Yukon River u/s Britannia Creek	62.87556	-138.68182
YS 10	Yukon River d/s Selwyn River	62.82779	-138.44238
YS 11	Yukon River u/s Selwyn River	62.80207	-138.25978
YS 12	Yukon River d/s Pelly River	62.81443	-137.48848
YS 13	Yukon River u/s Pelly River	62.75300	-137.30100
YS 14	Yukon River u/s Big Creek	62.61576	-136.99323
YS BAL 01	Ballarat Creek South Below All Mining (BAM)	62.89784	-138.96138
YS BRIT 01	Britannia Creek Below All Mining (BAM)	62.87063	-138.68726
YS CAR 01	Carlisle Creek mouth	63.00539	-139.49359
YS COF 01	Coffee Creek mouth	62.90965	-139.04201
YS KIR 01	Kirkman Creek mouth	62.99714	-139.46533
YS LOS 01	Los Angeles Creek mouth	63.04897	-139.52612
YS PED 01	Pedlar Creek mouth	62.87419	-138.77946
YS SEL 01	Selwyn River Below All Mining (BAM)	62.74988	-138.28221
YS SPA 01	Sparkling Creek mouth	62.92348	-139.17473
YS THI 01	Thistle Ck Below All Mining (BAM)	63.07133	-139.46533
08-0739	Yukon River u/s Excelsior Ck	63.43961	-139.70804

### **Water Quality Objective monitoring, Yukon River South Watershed – Summary**

The overall water quality in the basin, met the minimum objectives set under the *Fish Habitat Management System* throughout the monitoring season. On those occasions when the WQO were not met and the Total Suspended Solids levels were greater than the objectives, there is a direct correlation to environmental conditions influencing the amount of solids concentrations in the water. Many large tributary rivers and streams flow into the catchment area of the Yukon River basin.

In all 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.

Increases in sediment laden ground and surface water entering the system add to the amount of sediment in the water. 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, lead to an increase in suspended solids concentrations and a decrease in water quality.

