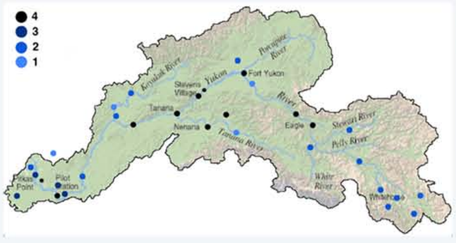
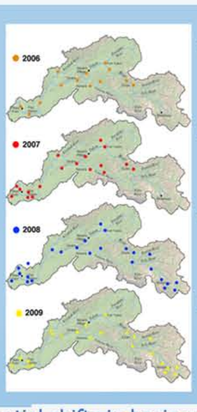
Yukon River Inter-Tribal Watershed Council

Indigenous Observation Network Water Project



Cumulative ION sample sites from 2006-2009.



2006: first field season
90 samplings @ 18 sites sampled
~40 constituents measured

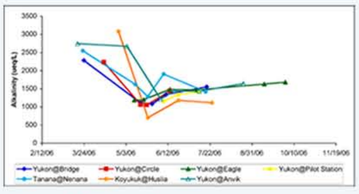
2007: second field season
137 samplings @ 23 sites sampled
Yukon River profile during the Healing Journey (Dawson, YT to Russian Mission, AK)

2008: third field season
186 samplings @ 33 sites sampled
Porcupine River profile during the Healing Journey (Old Crow, YT to Fort Yukon, AK)

2009: fourth field season
176 samplings @ 29 sites sampled
ADEC Synoptic Survey (Fort Yukon to Kaltag, AK)
Yukon River profile during the Healing Journey (Atlin to Whitehorse, YT)

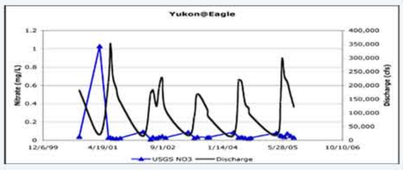
Potential shifts in basic water chemistry means changes in sediment deposition, water temperature, chemistry and quality, which will promote the introduction of exotic species including bacteria, fish parasites, and viruses - all will affect the quality of rearing habitat for fish and other aquatic species.

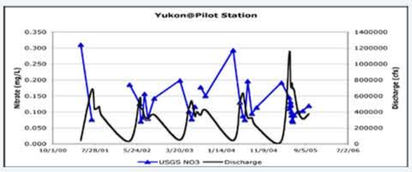
Creating a long-term database allows changes in water chemistry to be documented and subsequently, points of concern can be better identified. Collecting water chemistry data from sites across the Yukon River watershed allow stewards and scientists to gauge the health of the river on a broad temporal and spatial scale.



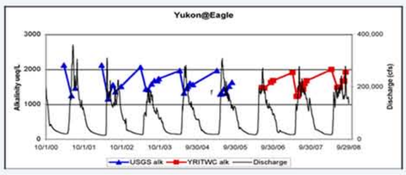
2000-2008 Snapshot of Results

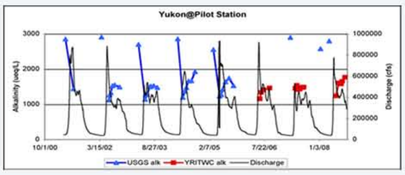
Pilot Station, Eagle, Nenana, and the Bridge are sites with the longest continual record. Results here provide a snapshot of water chemistry over 8 years. Data from all the ION sites can be found at www.yritwc.dsys.ca.



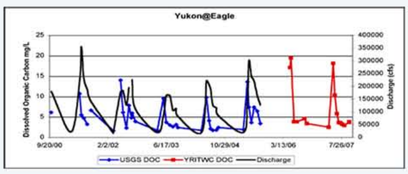


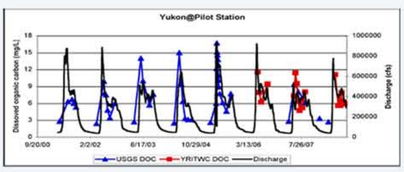
Nitrates (nitrogen-containing compounds) are limiting nutrients that are crucial to the function of aquatic food webs. Nitrate reactions in freshwater can cause oxygen depletion, and thus harm aerobic organisms. Contributors of excess nitrates to aquatic systems include municipal and industrial wastewater and discharge, as well as animal wastes. Nitrate levels below 0.5 mg/L are considered safe for most fish species in North America.



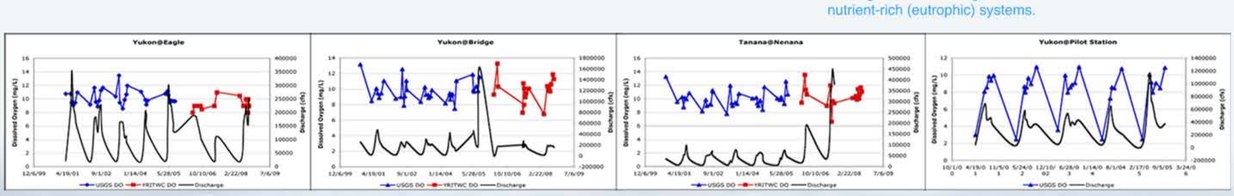


pH and Alkalinity, is the measure of the acidic or basic (alkaline) nature of a solution. pH measurements range from 0-14, with 7.0 considered neutral; most fish tolerate condtions from 5.0-9.0. Ranges and variation in pH from year to year are an important means of assessing the suitibility of aquatic habitats for organisms with different pH tolerances.The pH of water will also determine the toxicity of environmental contaminants and natural elements. Water can become acidic due to an excess of carbon dioxide, iron sulfide (from coal mine drainage) or from acidic precipitation. Alakalinity is the measure of the capacity of water to neutralize acids or hydrogen ions and may work to buffer water against sudden changes in pH. A normal range for Alakalinity is considered between 2000-4000 ueq/L.





Dissolved Organic Carbon (DOC) is the most important component of the carbon cycle in the Yukon watershed. The amount of carbon in solution effects microorganism metabolism, which in turn determines how much carbon dioxide is produced by aquatic organisms and how much is expelled into the atmosphere. Water with a carbon content of 1-20 mg/L is generally considered baseline or "undisturbed." DOC is also extremely important in the dynamics of metal transport, with organisms in more nutrient-poor (oligotrophic) ecosystems tending to accumulate greater metal burdens than those in nutrient-rich (eutrophic) systems.



Eight years of dissolved oxygen samples from four sites continuously monitored by USGS and the YRITWC. Long term continuous data gives a more accurate representation of the condition of river health.