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Water and Sediment Quality in the Yukon River Basin, Alaska, During Water Year 2004

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U.S. Department of the Interior
U.S. Geological Survey

Cover photograph: U.S. Geological Survey scientist collecting a water-quality sample from under the ice of the Yukon River near the Dalton Highway Bridge in central Alaska

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Edited By Paul F. Schuster

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Dirk Kempthorne, Secretary

U.S. Geological Survey
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Conversion Factors

Multiply	by	To obtain
	Length	
nanometer (nm)	3.937×10^{-8}	inch
micrometer (μm)	3.937×10^{-5}	inch
millimeter (mm)	3.937×10^{-2}	inch
centimeter (cm)	3.937×10^{-1}	inch
meter (m)	3.281	foot (ft)
	Area	
square kilometer (km^2)	3.861×10^{-1}	square mile
	Flow	
cubic meter per second (m^3/s)	35.31	cubic foot per second (ft^3/s)
	Volume	
microliter (μL)	3.382×10^{-5}	once, fluid
milliliter (mL)	3.382×10^{-2}	once, fluid
liter (L)	2.642×10^{-1}	gallon
	Mass	
microgram (μg)	3.527×10^{-8}	ounce, avoirdupois
milligram (mg)	3.527×10^{-5}	ounce, avoirdupois

Degree Celsius (^oC) may be converted to degree Fahrenheit (^oF) by using the following equation:

$$F=1.8\ (^oC) + 32$$

Vertical coordinate information is referenced to the North American Vertical Datum of 1988 (NAVD 88)

Water year is the 12-month period October 1 through September 30 and is designated by the calendar year in which it ends.

Horizontal coordinate information is referenced to the North American Datum of 1983 (NAD 83)

Overview

This report contains water-quality and sediment-quality data from samples collected in the Yukon River Basin from March through September during the 2004 water year (WY). Samples were collected throughout the year at five stations in the basin (three on the main stem Yukon River, one each on the Tanana and Porcupine Rivers). A broad range of physical, chemical, and biological analyses are presented.

Acknowledgments

The USGS Nation Stream Quality Accounting Network (NASQAN) and the National Research Program would like to thank the USGS Alaska Science Center, Water Discipline, in Anchorage and the Field office in Fairbanks. Without their field expertise and continuous logistical support this work would not have been possible.

CHAPTER 1 - Introduction

by Paul F. Schuster

The U.S. Geological Survey (USGS) National Stream Quality Accounting Network (NASQAN) has completed a 5-year (2001-2005) study of the water quality of the Yukon River Basin (330,000 square miles) from the Yukon River headwaters in Canada to the Bering Sea (Nelson and others, 2001). Climatic warming of the Yukon River Basin is resulting in lengthening of the growing season, melting of permafrost, and deepening of the soil active layer (Osterkamp, 2003; Miller and others, 2003; BESIS, 1997). These and related processes are anticipated to result in changes in water and sediment chemistry and discharge in upcoming decades. As a first step in understanding these changes, measurements of water discharge and water and sediment chemistry are being made on the upper, middle, and lower Yukon River and on the Tanana and Porcupine Rivers (Schuster, 2003, 2005a, 2005b).

A thorough description of the basin is given in Brabets and others (2000). Additional information about the study can be found at *http://ak.water.usgs.gov/yukon/*. Schuster (2003) describes the objectives and approach of the study and provides a brief description of the basin (fig. 1), and summarizes sediment and water-quality data for Water Year (WY) 2001. Sediment and water-quality data for WY 2002 and 2003 are given in Schuster (2005a, 2005b), respectively. A broad range of constituents were measured in fixed-station samples during the 5-year study, including dissolved major ions, dissolved and total recoverable nutrients, dissolved and sediment-associated trace elements, biological indicators (such as dissolved oxygen) and the stable isotopic composition of nitrogen, carbon, and sulfur of particulate organic matter, and various forms of organic carbon. Because of its extensive wetlands, the Yukon River exhibits high organic carbon

concentrations in contrast to other large rivers. Both the chemical composition and concentration of organic carbon are expected to change with melting permafrost. In addition to this work, intensive sampling campaigns of the entire reach of the Yukon River from headwaters above Whitehorse, Yukon Territory, to Pilot Station, Alaska, during high flow in early June and low flow in late August were completed during the years 2002-2004. In 2005, intensive sampling campaigns were conducted at the fixed stations and several other key locations in the basin for the duration of the spring snowmelt peak (approximately mid May to mid June). The intensive sampling will address process-based questions about the water quality of the basin.

The purpose of this report is to compile and report the water and sediment quantity and quality data collected during WY 2004. The sample-collection methods and the laboratory analytical methods are described in Schuster (2003). Because many of the results are research-oriented, they are not contained in the USGS National Water Information System (NWIS) database, but are available to the public upon request (pschuste@usgs.gov). This report, the fourth in a series of annual reports for the 5-year study, is being released both in paper and electronic format to meet both archival and data dissemination objectives.

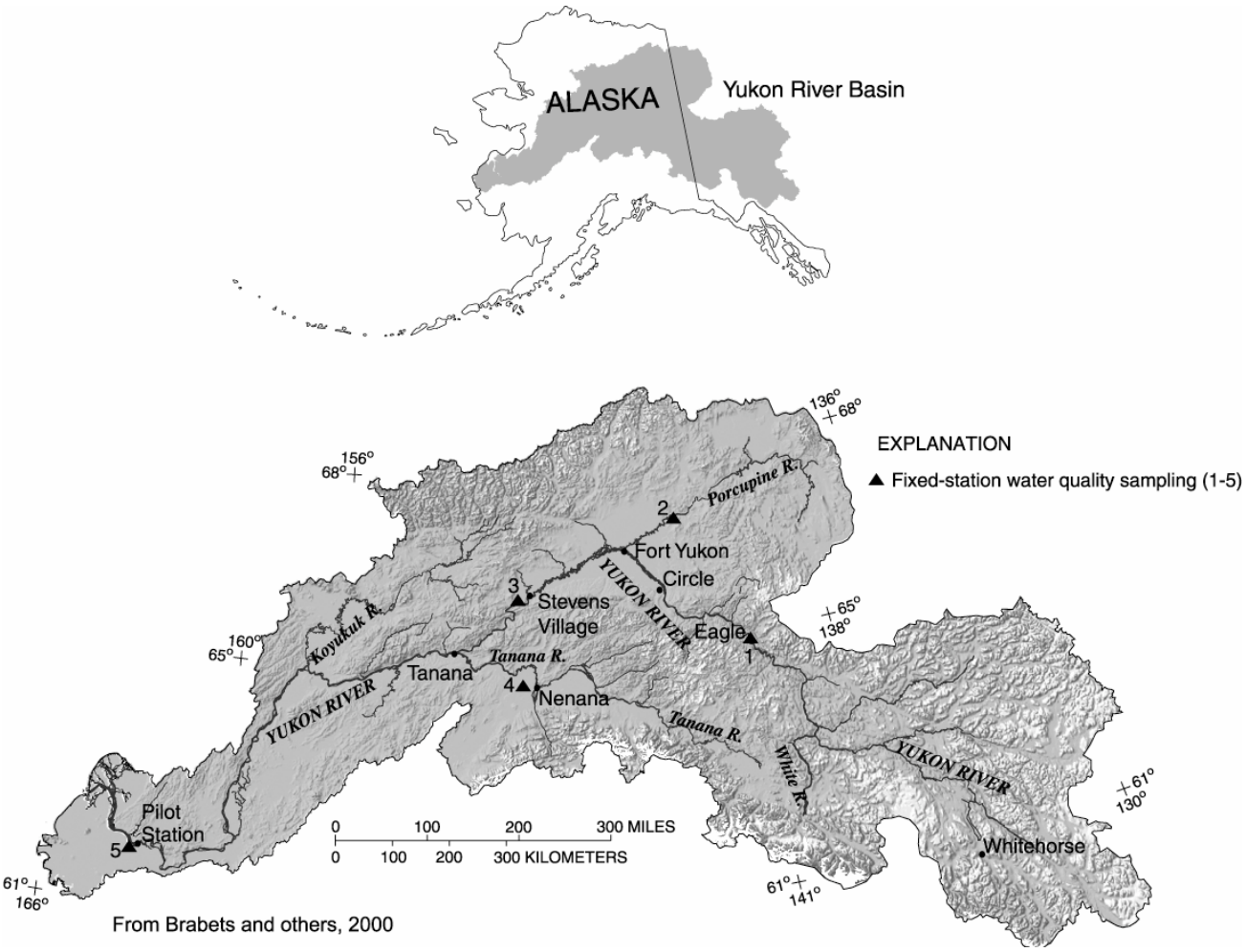

Figure 1. Map showing location of fixed-station water-quality sampling sites in the Yukon River Basin. Identification numbers are listed in Table 1.

CHAPTER 2 – Fixed-Station Samples

by Timothy P. Brabets

The following section provides a summary of the Yukon River Basin site characteristics (table 1). References for the description of sample collection and processing of samples for various water-quality constituents are given in Schuster (2003). Sample analysis results for field measurements, major ions, nutrients, organic and inorganic carbon, trace elements, suspended sediment concentrations, and trace elements in suspended sediments during WY 2004 are given in tables 2-6. The data provided in this section also are available from the USGS NWIS database (*http://waterdata.usgs.gov/nwis/*).

Table 1. Summary of site characteristics at five fixed stations in the Yukon River Basin

[Station ID, U.S. Geological Survey station identification number, streamflow and water-quality measurements collected at the same station; ID on Figure 1, refer to figure 1 for station ID locations; sq.mi., square miles; NAD 83, North American Datum of 1983; NAVD 88, North American Vertical Datum of 1988]

Station ID	ID on Figure 1	Station Name	Latitude (NAD 83)	Longitude (NAD 83)	Drainage Area (sq. mi.)	Datum (feet above NAVD 88)
15356000	1	Yukon River at Eagle, Alaska	64°47'21"	141°12'00"	113,500	850
15389000	2	Porcupine River near Fort Yukon, Alaska	66°59'25"	143°08'26"	29,500	520
15453500	3	Yukon River near Stevens Village, Alaska	65°52'30"	149°43'13"	196,300	240
15515500	4	Tanana River at Nenana, Alaska	64°33'53"	149°05'39"	25,600	338.5
15565447	5	Yukon River at Pilot Station, Alaska	61°56'01"	162°52'59"	321,000	20

Table 2. USGS National Water Quality Laboratory analyses- Yukon River at Eagle, Alaska

[All measurements in milligrams per liter and micrograms per liter are dissolved. Station ID, station identification number, refer to Table 1 for description and Figure 1 for location; ft^3/s , cubic feet per second; °C, degrees Celsius; mg/L, milligram per liter; NTU, Nephelometric turbidity unit; Hg; mercury, <; less then detection limit; --, missing value; mm, millimeter; lab, laboratory; fld, field; µS/cm, microsiemen per centimeter at 25 degrees Celsius; cm, centimeter; UV, Ultraviolet; nm, nanometer; Flt, filtered; NO_2, nitrite; NO_3, nitrate; wat flt susp., water filtered suspended; µg/L, microgram per liter; Dis fet lab, dissolved fixed end-point titration in laboratory; Dis tot IT, dissolved total incremental titration; Dis IT field, dissolved incremental titration in the field; %, percent; E, estimated; M, presence verified but not quantified; diam., diameter; Susp., Suspended]

Station ID	Date/Time	Discharge (ft^3/s)	Solids, Residue at 180°C, dissolved (mg/L)	Turbidity Lab Hach (NTU)	Barometric Pressure (mm of Hg)	Oxygen, dissolved (mg/L)	pH, Field (Standard Units)	pH, Lab (Standard Units)
15356000	4/13/04 12:30	19,400	154	--	758	11.1	7.7	8.0
15356000	5/26/04 13:00	220,000	112	160	--	--	7.0	7.8
15356000	6/17/04 10:30	205,000	118	99	--	9.9	7.9	7.9
15356000	6/30/04 16:20	187,000	131	920	743	9.2	8.2	8.0
15356000	7/20/04 15:00	125,000	132	1,000	737	9.8	8.0	7.8
15356000	8/19/04 15:10	116,000	109	840	737	--	8.0	7.8
15356000	9/6/04 11:00	84,500	137	63	--	--	7.8	7.9

Station ID	Date/Time	Specific Conductance, Lab (µS/cm)	Specific Conductance, Fld (µS/cm)	Air Temp (°C)	Water Temp. (°C)	UV Absorbance 254 nm, Flt (units/cm)	UV Absorbance 280 nm, Flt (units/cm)	Calcium (mg/L)	Magnesium (mg/L)
15356000	4/13/04 12:30	251	240	--	0.0	0.031	0.021	35.4	9.84
15356000	5/26/04 13:00	168	--	--	10.0	0.449	0.355	24.1	6.42
15356000	6/17/04 10:30	192	206	--	15.0	0.128	0.095	28.5	7.92
15356000	6/30/04 16:20	196	188	27.2	17.9	0.049	0.036	28.1	7.20
15356000	7/20/04 15:00	213	208	--	16.2	0.034	0.024	30.9	7.71
15356000	8/19/04 15:10	218	210	--	15.9	0.034	0.025	29.9	7.57
15356000	9/6/04 11:00	227	225	6.8	9.3	0.056	0.040	31.5	8.20

Table 2. USGS National Water Quality Laboratory Analyses- Yukon River at Eagle, Alaska—Continued

Station ID	Date/Time	Potassium (mg/L)	Sodium (mg/L)	Alkalinity, Dis fet lab, as CaCO3 (mg/L)	Alkalinity, Dis tot IT, Field (mg/L)	Bicarbonate, Dis IT Field (mg/L)	Carbonate, Dis IT, Field (mg/L)
15356000	4/13/04 12:30	1.08	3.05	101	95	116	0
15356000	5/26/04 13:00	0.95	1.75	61	56	73	0
15356000	6/17/04 10:30	0.99	2.11	72	67	81	0
15356000	6/30/04 16:20	1.71	2.67	75	73	89	0
15356000	7/20/04 15:00	1.84	3.13	80	78	95	0
15356000	8/19/04 15:10	1.74	2.94	80	71	85	0
15356000	9/6/04 11:00	1.52	3.20	83	74	91	0

Station ID	Date/Time	Chloride (mg/L)	Fluoride (mg/L)	Silica (mg/L)	Sulfate (mg/L)	Nitrogen, Ammonia, dissolved (mg/L)	Nitrogen, Ammonia + Organic, dissolved (mg/L)	Nitrogen, Ammonia + Organic, Total (mg/L)
15356000	4/13/04 12:30	0.75	<0.2	6.88	31.3	<0.010	E0.06	E0.06
15356000	5/26/04 13:00	0.60	<0.2	5.13	22.2	E0.005	0.28	0.74
15356000	6/17/04 10:30	0.45	<0.2	6.30	29.9	<0.010	E0.07	0.27
15356000	6/30/04 16:20	0.78	<0.2	5.60	30.9	<0.010	E0.05	0.58
15356000	7/20/04 15:00	1.06	<0.2	5.78	30.7	<0.010	<0.10	0.45
15356000	8/19/04 15:10	1.09	<0.2	5.33	37.6	<0.010	E0.07	0.36
15356000	9/6/04 11:00	0.92	0.2	5.87	34.9	E0.008	E0.10	0.20

Station ID	Date/Time	Nitrogen, NO_2+ NO_3, dissolved (mg/L)	Nitrogen, Nitrite dissolved (mg/L)	Nitrogen, particulate wat flt susp. (mg/L)	Phosphorus, dissolved (mg/L)	Ortho-phosphorus (mg/L)	Phosphorus, Total (mg/L)	Carbon Inorg. + Organic Partic. Total (mg/L)
15356000	4/13/04 12:30	0.088	<0.002	<0.02	<0.004	<0.006	0.004	<0.1
15356000	5/26/04 13:00	0.031	0.002	0.42	0.008	<0.006	0.64	8.4
15356000	6/17/04 10:30	0.034	<0.002	0.15	<0.04	<0.006	0.32	4.1
15356000	6/30/04 16:20	0.031	<0.002	E0.43	E0.002	<0.006	1.53	E32.6
15356000	7/20/04 15:00	0.027	E0.001	0.28	<0.004	E0.003	1.17	22.7
15356000	8/19/04 15:10	0.022	E0.001	0.17	<0.004	<0.006	E0.81	11.9
15356000	9/6/04 11:00	0.028	E0.001	0.13	<0.004	<0.006	0.26	6.6

Table 2. USGS National Water Quality Laboratory Analyses- Yukon River at Eagle, Alaska—Continued

Station ID	Date/Time	Carbon Inorganic, Partic. Total (mg/L)	Carbon, Organic dissolved (mg/L)	Carbon, Organic Particulate Total (mg/L)	Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)
15356000	4/13/04 12:30	<0.1	1.5	<0.1	2	E0.11	0.4	51
15356000	5/26/04 13:00	3.1	8.6	5.3	39	E0.18	0.5	36
15356000	6/17/04 10:30	1.2	4.7	2.9	26	E0.19	0.6	44
15356000	6/30/04 16:20	E23.0	2.1	E9.6	27	0.28	0.6	37
15356000	7/20/04 15:00	17.9	1.7	4.8	22	0.28	0.6	41
15356000	8/19/04 15:10	7.0	0.9	4.9	21	0.25	0.5	40
15356000	9/6/04 11:00	3.4	2.1	3.2	15	E0.17	0.6	40

Station ID	Date/Time	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Manganese (µg/L)
15356000	4/13/04 12:30	<0.06	8	E0.02	<0.8	0.094	0.8	E3	<0.08	2.3	1.5
15356000	5/26/04 13:00	<0.06	8	0.05	<0.8	0.134	3.8	93	E0.07	2.0	7.0
15356000	6/17/04 10:30	<0.06	E8	E0.02	1.0	0.106	1.7	18	<0.08	2.3	1.9
15356000	6/30/04 16:20	<0.06	12	<0.04	<0.8	0.137	1.3	E3	E0.06	3.2	0.6
15356000	7/20/04 15:00	<0.06	16	<0.04	<0.8	0.129	1.0	<6	<0.08	3.2	0.7
15356000	8/19/04 15:10	<0.06	14	<0.04	<0.8	0.108	1.1	<6	<0.08	3.1	0.7
15356000	9/6/04 11:00	<0.06	24	<0.04	<0.8	0.100	1.4	E4	<0.08	3.2	2.7

Station ID	Date/Time	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Strontium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)	Uranium, natural (µg/L)	Sediment, Susp. (Sieve diam. % < 0.062mm)	Sediment, Susp. (mg/L)
15356000	4/13/04 12:30	1.3	1.13	0.6	<0.2	164	0.4	1.6	1.12	74	2
15356000	5/26/04 13:00	0.8	2.88	<0.4	<0.2	97.1	0.5	1.6	0.65	61	593
15356000	6/17/04 10:30	1.0	1.52	0.5	<0.2	112	0.6	0.7	0.83	53	383
15356000	6/30/04 16:20	1.6	1.07	E0.4	<0.2	117	0.6	E0.5	0.90	88	1,490
15356000	7/20/04 15:00	1.8	1.52	0.5	<0.2	145	0.6	<0.6	0.96	89	1,490
15356000	8/19/04 15:10	1.7	0.91	0.5	<0.2	141	0.6	E0.5	0.87	90	1,260
15356000	9/6/04 11:00	1.6	1.27	0.6	<0.2	147	0.4	1.2	1.04	72	314

Table 3. USGS National Water Quality Laboratory Analyses- Porcupine River near Fort Yukon, Alaska

[Station ID, station identification number, refer to Table 1 for description and Figure 1 for location; ft^3/s, cubic feet per second; °C, degrees Celsius; mg/L, milligram per liter; NTU, Nephelometric turbidity unit; Hg; mercury, <; less then detection limit; --, missing value; mm, millimeter; lab, laboratory; fld, field; µS/cm, microsiemen per centimeter at 25 degrees Celsius; cm, centimeter; UV, Ultraviolet; NM, nanometer; Flt, filtered; NO_2, nitrite; NO_3, nitrate; wat flt susp., water filtered suspended; µg/L, microgram per liter; Dis fet lab, dissolved fixed end-point titration in laboratory; Dis tot IT, dissolved total incremental titration; Dis IT field, dissolved incremental titration in the field; %, percent; E, estimated; M, presence verified but not quantified; diam., diameter; Susp., Suspended]

Station ID	Date/Time	Discharge (ft^3/s)	Solids, Residue at 180°C, dissolved (mg/L)	Turbidity Lab Hach (NTU)	Barometric Pressure (mm of Hg)	Oxygen, dissolved (mg/L)	pH, Field (Standard Units)	pH, Lab (Standard Units)
15389000	4/9/04 14:00	1,020	233	<2.0	764	5.7	7.4	E7.7
15389000	6/2/04 16:20	65,000	91	140	743	10.7	7.6	7.6
15389000	6/7/04 15:20	53,500	92	76	752	9.4	7.7	E7.1
15389000	6/11/04 13:50	37,600	114	50	744	8.6	7.7	7.1
15389000	7/29/04 14:20	7,000	181	18	742	--	8.2	8.1
15389000	8/9/04 16:10	21,700	159	24	756	9.5	7.7	7.7
15389000	9/9/04 13:00	5,510	194	<2.0	755	11.2	8.1	8.0

Station ID	Date/Time	Specific Conductance, Lab (µS /cm)	Specific Conductance, Fld (µS /cm)	Air Temp (°C)	Water Temp (°C)	UV Absorbance 254 NM, Flt (units/cm)	UV Absorbance 280 NM, Flt (units/cm)	Calcium (mg/L)	Magnesium (mg/L)
15389000	4/9/04 14:00	383	404	14.0	0.0	0.040	0.028	61.9	13.5
15389000	6/2/04 16:20	109	102	--	10.0	0.551	0.414	17.1	2.69
15389000	6/7/04 15:20	126	131	--	12.7	0.363	0.270	19.3	3.34
15389000	6/11/04 13:50	142	137	--	13.0	0.366	0.271	21.4	3.95
15389000	7/29/04 14:20	301	289	--	17.4	0.079	0.056	50.8	8.38
15389000	8/9/04 16:10	227	223	--	15.1	0.209	0.154	30.1	7.77
15389000	9/9/04 13:00	284	287	--	5.6	0.126	0.089	41.2	8.77

Table 3. USGS National Water Quality Laboratory Analyses- Porcupine River near Fort Yukon, Alaska—Continued

Station ID	Date/Time	Chloride (mg/L)	Fluoride (mg/L)	Silica (mg/L)	Sulfate (mg/L)	Nitrogen, Ammonia, dissolved (mg/L)	Nitrogen, Ammonia + Organic, dissolved (mg/L)	Nitrogen, Ammonia + Organic Total (mg/L)
15389000	4/9/04 14:00	5.15	<0.2	4.65	30.5	<0.010	E0.05	<0.10
15389000	6/2/04 16:20	0.62	<0.2	2.17	9.5	<0.010	0.40	0.82
15389000	6/7/04 15:20	0.67	<0.2	2.56	13.1	<0.010	0.33	0.62
15389000	6/11/04 13:50	0.83	<0.2	2.82	16.7	<0.010	0.30	0.55
15389000	7/29/04 14:20	2.97	<0.2	2.51	35.6	E0.005	0.12	0.17
15389000	8/9/04 16:10	1.47	<0.2	3.31	49.9	E0.007	0.18	0.29
15389000	9/9/04 13:00	2.19	<0.2	2.68	47.9	<0.010	0.15	0.23

Station ID	Date/Time	Potassium (mg/L)	Sodium (mg/L)	Alkalinity, Dis fet lab, as CaCO3 (mg/L)	Alkalinity, Dis tot IT Field (mg/L)	Bicarbonate, Dis IT Field (mg/L)	Carbonate, Dis IT Field (mg/L)
15389000	4/9/04 14:00	0.59	5.38	176	172	210	0.0
15389000	6/2/04 16:20	0.71	2.11	42	39	48	0.0
15389000	6/7/04 15:20	0.63	1.21	49	45	55	0.0
15389000	6/11/04 13:50	0.61	1.71	51	47	57	0.0
15389000	7/29/04 14:20	0.63	3.75	119	115	140	0.0
15389000	8/9/04 16:10	0.65	3.29	62	60	76	0.0
15389000	9/9/04 13:00	0.53	4.07	100	100	122	0.0

Station ID	Date/Time	Nitrogen, NO_2+ NO_3, dissolved (mg/L)	Nitrogen, Nitrite dissolved (mg/L)	Nitrogen, particulate wat flt susp (mg/L)	Phosphorus, dissolved (mg/L)	Ortho-phosphorus (mg/L)	Phosphorus, Total (mg/L)	Carbon Inorg. + Organic Partic. Total (mg/L)
15389000	4/9/04 14:00	0.217	<0.002	<0.02	E0.003	<0.006	E0.003	<0.1
15389000	6/2/04 16:20	0.025	0.003	0.28	0.017	E0.003	0.198	3.3
15389000	6/7/04 15:20	0.032	E0.001	0.32	0.012	<0.006	0.130	4.2
15389000	6/11/04 13:50	0.037	E0.001	0.19	0.009	<0.006	0.061	2.4
15389000	7/29/04 14:20	0.040	E0.001	0.04	E0.004	<0.006	0.006	0.4
15389000	8/9/04 16:10	0.075	E0.001	--	E0.003	<0.006	0.043	--
15389000	9/9/04 13:00	E0.012	E0.001	<0.02	E0.002	<0.006	E0.003	0.2

Table 3. USGS National Water Quality Laboratory Analyses- Porcupine River near Fort Yukon, Alaska—Continued

Station ID	Date/Time	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Manganese (µg/L)
15389000	4/9/04 14:00	<0.06	8	<0.04	<0.8	0.179	0.7	9	E0.07	7.3	11.1
15389000	6/2/04 16:20	<0.06	E7	<0.04	<0.8	0.180	2.5	310	0.24	1.8	6.6
15389000	6/7/04 15:20	<0.06	<8	<0.04	<0.8	0.127	4.3	148	0.14	2.0	4.2
15389000	6/11/04 13:50	<0.06	E5	<0.04	<0.8	0.126	2.0	171	0.14	2.5	4.5
15389000	7/29/04 14:20	<0.06	8	<0.04	<0.8	0.160	1.4	E4	<0.08	5.6	0.5
15389000	8/9/04 16:10	<0.06	8	<0.04	<0.8	0.165	2.2	72	<0.08	5.3	4.6
15389000	9/9/04 13:00	<0.06	10	<0.04	<0.8	0.205	1.7	25	<0.08	7.5	4.4

Station ID	Date/Time	Carbon Inorganic, Partic. Total (mg/L)	Carbon, Organic dissolved (mg/L)	Carbon, Organic Particulate Total (mg/L)	Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)
15389000	4/9/04 14:00	<0.1	1.7	<0.1	E1	<0.20	0.3	94
15389000	6/2/04 16:20	0.7	16.3	2.6	34	E0.10	0.4	38
15389000	6/7/04 15:20	0.2	10.9	4.0	20	<0.20	0.4	37
15389000	6/11/04 13:50	0.2	13.1	2.2	26	<0.20	0.4	44
15389000	7/29/04 14:20	<0.1	3.1	0.4	12	<0.20	0.3	68
15389000	8/9/04 16:10	<0.1	5.8	1.1	20	<0.20	0.3	55
15389000	9/9/04 13:00	<0.1	4.4	0.2	12	<0.20	0.3	67

Station ID	Date/Time	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Strontium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)	Uranium, natural (µg/L)	Sediment, Susp. (Sieve diam. % < 0.062 mm)	Sediment, Susp. (mg/L)
15389000	4/9/04 14:00	1.2	1.57	0.5	<0.2	161	0.6	1.6	0.83	64	2
15389000	6/2/04 16:20	E0.3	3.21	<0.4	<0.2	44.4	0.5	1.0	0.20	90	218
15389000	6/7/04 15:20	E0.3	2.34	<0.4	<0.2	54.6	0.4	E0.6	0.25	89	150
15389000	6/11/04 13:50	E0.3	2.15	E0.3	<0.2	64.1	0.4	1.1	0.25	93	90
15389000	7/29/04 14:20	0.7	1.80	0.4	<0.2	134	0.3	0.7	0.66	81	2
15389000	8/9/04 16:10	E0.4	2.28	E0.3	<0.2	130	0.6	1.6	0.26	97	39
15389000	9/9/04 13:00	0.5	1.86	<0.4	<0.2	144	0.2	1.5	0.46	90	1

Table 4. USGS National Water Quality Laboratory Analyses- Yukon River near Stevens Village, Alaska

[Station ID, station identification number, refer to Table 1 for description and Figure 1 for location; ft^3/s, cubic feet per second; °C, degrees Celsius; mg/L, milligram per liter; NTU, Nephelometric turbidity unit; Hg; mercury, <; less then detection limit; --, missing value; mm, millimeter; lab, laboratory; fld, field; µS/cm, microsiemen per centimeter at 25 degrees Celsius; cm, centimeter; UV, Ultraviolet; NM, nanometer; Flt, filtered; NO_2, nitrite; NO_3, nitrate; wat flt susp., water filtered suspended; µg/L, microgram per liter; Dis fet lab, dissolved fixed end-point titration in laboratory; Dis tot IT, dissolved total incremental titration; Dis IT field, dissolved incremental titration in the field; %, percent; E, estimated; M, presence verified but not quantified; diam., diameter; Susp., Suspended]

Station ID	Date/Time	Discharge (ft^3/s)	Solids, Residue at 180°C, Dissolved (mg/L)	Turbidity Lab Hach (NTU)	Barometric Pressure (mm of Hg)	Oxygen, dissolved (mg/L)	pH, Field (Standard Units)	pH, Lab (Standard Units)
15453500	4/1/04 19:00	20,600	185	2.6	775	8.2	7.7	7.9
15453500	6/4/04 15:20	424,000	121	220	759	9.5	8.1	8.0
15453500	6/9/04 14:30	394,000	113	150	756	8.7	8.0	7.6
15453500	6/23/04 13:00	265,000	135	120	756	9.2	7.9	8.0
15453500	7/13/04 14:50	189,000	141	500	759	9.4	7.9	E7.6
15453500	8/17/04 16:50	151,000	142	140	761	7.5	7.9	7.9
15453500	9/10/04 15:30	100,500	164	120	759	11.1	8.0	8.1

Station ID	Date/Time	Specific Conductance, Lab (µS/cm)	Specific Conductance Fld (µS/cm)	Air Temp (°C)	Water Temp (°C)	UV Absorbance 254 NM, Flt (units/cm)	UV Absorbance 280 NM, Flt (units/cm)	Calcium (mg/L)	Magnesium (mg/L)
15453500	4/1/04 19:00	278	284	-18.0	0.0	0.036	0.026	45.3	11.0
15453500	6/4/04 15:20	163	165	18.0	13.7	0.367	0.276	25.5	5.22
15453500	6/9/04 14:30	173	167	--	15.3	0.276	0.206	25.1	5.54
15453500	6/23/04 13:00	209	206	24.0	20.0	0.136	0.099	30.2	7.19
15453500	7/13/04 14:50	215	229	--	17.6	0.057	0.041	30.2	7.57
15453500	8/17/04 16:50	235	230	22.5	17.5	0.065	0.047	32.2	8.04
15453500	9/10/04 15:30	242	244	--	8.1	0.060	0.043	34.8	8.45

Table 4. USGS National Water Quality Laboratory Analyses- Yukon River near Stevens Village, Alaska—Continued

Station ID	Date/Time	Potassium (mg/L)	Sodium (mg/L)	Alkalinity Wat. Dis fet lab CaCO3 (mg/L)	Alkalinity, Dis tot IT Field (mg/L)	Bicarbonate, Dis IT Field (mg/L)	Carbonate, Dis IT Field (mg/L)
15453500	4/1/04 19:00	1.16	3.39	116	108	132	0.0
15453500	6/4/04 15:20	0.98	1.59	64	61	74	0.0
15453500	6/9/04 14:30	0.92	1.62	65	61	74	0.0
15453500	6/23/04 13:00	1.03	2.08	77	72	88	0.0
15453500	7/13/04 14:50	1.68	2.72	83	69	84	0.0
15453500	8/17/04 16:50	1.51	2.97	84	82	100	0.0
15453500	9/10/04 15:30	1.36	3.21	91	95	116	0.0

Station ID	Date/Time	Chloride (mg/L)	Fluoride (mg/L)	Silica (mg/L)	Sulfate (mg/L)	Nitrogen, Ammonia, dissolved (mg/L)	Nitrogen, Ammonia + Organic, dissolved (mg/L)	Nitrogen, Ammonia + Organic Total (mg/L)
15453500	4/1/04 19:00	1.33	<0.2	7.36	35.1	<0.010	E0.06	E0.09
15453500	6/4/04 15:20	0.58	<0.2	4.41	19.0	<0.010	0.30	0.84
15453500	6/9/04 14:30	0.55	<0.2	4.73	20.7	<0.010	0.24	0.73
15453500	6/23/04 13:00	0.66	<0.2	5.94	29.1	<0.010	0.10	0.41
15453500	7/13/04 14:50	0.94	<0.2	5.68	32.8	E0.005	E0.07	0.43
15453500	8/17/04 16:50	0.68	<0.2	5.49	37.7	E0.005	E0.08	0.26
15453500	9/10/04 15:30	0.91	<0.2	5.67	37.9	0.010	E0.09	0.23

Table 4. USGS National Water Quality Laboratory Analyses- Yukon River near Stevens Village, Alaska—Continued

Station ID	Date/Time	Nitrogen, NO_2+ NO_3, dissolved (mg/L)	Nitrogen, Nitrite dissolved (mg/L)	Nitrogen, particulate wat flt susp (mg/L)	Phosphorus, dissolved (mg/L)	Ortho-phosphorus (mg/L)	Phosphorus, Total (mg/L)	Carbon Inorg. + Organic Partic. Total (mg/L)
15453500	4/1/04 19:00	0.084	<0.002	<0.02	E0.003	<0.006	0.007	0.1
15453500	6/4/04 15:20	0.033	0.002	0.51	0.008	<0.006	0.65	9.2
15453500	6/9/04 14:30	0.033	E0.001	0.29	0.005	<0.006	0.47	5.2
15453500	6/23/04 13:00	0.036	<0.002	0.15	0.004	<0.006	0.33	2.9
15453500	7/13/04 14:50	0.032	E0.001	0.28	<0.004	<0.006	0.50	13.9
15453500	8/17/04 16:50	0.037	<0.002	0.13	E0.003	<0.006	0.40	7.8
15453500	9/10/04 15:30	0.038	E0.001	0.07	<0.004	<0.006	0.20	2.1

Station ID	Date/Time	Carbon Inorganic, Partic. Total (mg/L)	Carbon, Organic dissolved (mg/L)	Carbon, Organic Particulate Total (mg/L)	Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)
15453500	4/1/04 19:00	<0.1	1.8	0.1	2	E0.13	0.4	68
15453500	6/4/04 15:20	2.2	10.4	7.0	29	E0.16	0.6	39
15453500	6/9/04 14:30	1.0	9.1	4.3	26	E0.18	0.6	42
15453500	6/23/04 13:00	<0.1	4.6	2.8	21	0.20	0.7	51
15453500	7/13/04 14:50	7.7	2.4	6.3	24	0.27	0.7	49
15453500	8/17/04 16:50	6.1	1.2	1.7	25	0.24	0.6	47
15453500	9/10/04 15:30	0.7	2.2	1.4	13	E0.17	0.6	47

Station ID	Date/Time	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Manganese (µg/L)
15453500	4/1/04 19:00	<0.06	15	<0.04	<0.8	0.123	0.8	16	<0.08	3.3	20.4
15453500	6/4/04 15:20	<0.06	E4	E0.02	<0.8	0.154	3.6	107	0.10	2.1	4.2
15453500	6/9/04 14:30	<0.06	E5	<0.04	<0.8	0.112	2.8	60	0.08	2.0	3.8
15453500	6/23/04 13:00	<0.06	E6	<0.04	<0.8	0.131	2.0	16	<0.08	2.6	3.5
15453500	7/13/04 14:50	<0.06	10	<0.04	<0.8	0.111	1.4	<6	<0.08	3.0	3.2
15453500	8/17/04 16:50	<0.06	14	<0.04	<0.8	0.093	1.5	7	<0.08	3.8	1.8
15453500	9/10/04 15:30	<0.06	15	<0.04	<0.8	0.150	2.7	E6	<0.08	5.2	8.0

Table 4. USGS National Water Quality Laboratory Analyses- Yukon River near Stevens Village, Alaska—Continued

Station ID	Date/Time	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Strontium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)	Uranium, natural (µg/L)	Sediment, Susp. (Sieve diam. % <0.062 mm)	Sediment, Susp. (mg/L)
15453500	4/1/04 19:00	1.5	1.06	0.6	<0.2	178	0.4	0.8	1.15	87	4
15453500	6/4/04 15:20	0.7	2.53	E0.3	<0.2	85.8	0.7	1.0	0.62	80	612
15453500	6/9/04 14:30	0.7	1.86	0.4	<0.2	94.7	0.5	E0.5	0.62	74	415
15453500	6/23/04 13:00	1.0	1.54	0.6	<0.2	109	0.7	E0.5	0.82	72	351
15453500	7/13/04 14:50	1.5	1.07	0.7	<0.2	138	0.7	<0.6	0.97	89	664
15453500	8/17/04 16:50	1.5	1.07	0.5	<0.2	144	0.9	0.7	0.93	88	460
15453500	9/10/04 15:30	1.5	1.11	0.6	<0.2	157	0.6	1.1	0.91	74	236

Table 5. USGS National Water Quality Laboratory Analyses- Tanana River at Nenana, Alaska

[Station ID, station identification number, refer to Table 1 for description and Figure 1 for location; ft^3/s, cubic feet per second; °C, degrees Celsius; mg/L, milligram per liter; NTU, Nephelometric turbidity unit; Hg; mercury, <; less then detection limit; --, missing value; mm, millimeter; lab, laboratory; fld, field; µS/cm, microsiemen per centimeter at 25 degrees Celsius; cm, centimeter; UV, Ultraviolet; NM, nanometer; Flt, filtered; NO_2, nitrite; NO_3, nitrate; wat flt susp., water filtered suspended; µg/L, microgram per liter; Dis fet lab, dissolved fixed end-point titration in laboratory; Dis tot IT, dissolved total incremental titration; Dis IT field, dissolved incremental titration in the field; %, percent; E, estimated; M, presence verified but not quantified; diam., diameter; Susp., Suspended]

Station ID	Date/Time	Discharge (ft^3/s)	Solids, Residue at 180°C, Dissolved (mg/L)	Turbidity Lab Hach (NTU)	Barometric Pressure (mm of Hg)	Oxygen, dissolved (mg/L)	pH, Field (Standard Units)	pH, Lab (Standard Units)
15515500	3/30/04 17:50	6,560	204	4.4	756	10.1	7.9	E7.1
15515500	5/28/04 12:00	52,500	125	340	745	10.2	7.8	7.7
15515500	6/10/04 13:10	50,900	124	450	751	9.4	7.9	7.5
15515500	6/25/04 16:35	58,800	136	1,300	758	9.0	7.9	--
15515500	7/23/04 16:10	66,200	123	1,200	754	9.8	7.9	E7.2
15515500	8/26/04 15:30	55,400	134	1,100	753	8.4	7.8	7.7
15515500	9/22/04 16:00	18,800	190	68	--	11.8	7.8	8.0

Station ID	Date/Time	Specific Conductance, Lab (µS/cm)	Specific Conductance, Fld (µS/cm)	Air Temp. (°C)	Water Temp. (°C)	UV Absorbance 254 NM, Flt (units/cm)	UV Absorbance 280 NM, Flt (units/cm)	Calcium (mg/L)	Magnesium (mg/L)
15515500	3/30/04 17:50	312	313	-6.5	0.0	0.024	0.018	48.5	10.1
15515500	5/28/04 12:00	211	198	--	12.8	0.191	0.143	29.1	6.70
15515500	6/10/04 13:10	236	238	--	14.6	0.075	0.055	31.9	7.38
15515500	6/25/04 16:35	--	214	28.5	20.2	0.031	0.022	31.1	8.26
15515500	7/23/04 16:10	223	209	--	14.9	0.016	0.012	32.1	6.33
15515500	8/26/04 15:30	242	236	12.0	10.7	0.015	0.011	22.5	5.35
15515500	9/22/04 16:00	289	284	--	4.3	0.039	0.028	42.9	9.47

Table 5. USGS National Water Quality Laboratory Analyses- Tanana River at Nenana, Alaska—Continued

Station ID	Date/Time	Potassium (mg/L)	Sodium (mg/L)	Alkalinity, Dis fet lab, as CaCO3 (mg/L)	Alkalinity, Dis tot IT Field (mg/L)	Bicarbonate, Dis IT Field (mg/L)	Carbonate, Dis IT Field (mg/L)
15515500	3/30/04 17:50	2.36	4.70	130	124	151	0.0
15515500	5/28/04 12:00	1.90	3.33	71	74	96	0.0
15515500	6/10/04 13:10	2.03	3.79	80	76	92	0.0
15515500	6/25/04 16:35	2.80	3.67	--	83	101	0.0
15515500	7/23/04 16:10	2.18	3.28	72	67	82	0.0
15515500	8/26/04 15:30	1.44	2.77	74	72	87	0.0
15515500	9/22/04 16:00	1.90	5.05	111	113	137	0.0

Station ID	Date/Time	Chloride (mg/L)	Fluoride (mg/L)	Silica (mg/L)	Sulfate (mg/L)	Nitrogen, Ammonia dissolved (mg/L)	Nitrogen, Ammonia + Organic, dissolved (mg/L)	Nitrogen, Ammonia + Organic Total (mg/L)
15515500	3/30/04 17:50	1.35	<0.2	15.8	35.3	0.049	0.11	0.11
15515500	5/28/04 12:00	1.93	<0.2	7.51	32.5	<0.010	0.17	0.61
15515500	6/10/04 13:10	2.18	<0.2	7.80	36.6	<0.010	E0.08	0.49
15515500	6/25/04 16:35	1.60	<0.17	6.46	37.4	<0.010	<0.10	0.89
15515500	7/23/04 16:10	1.48	<0.2	6.33	37.2	<0.010	<0.10	0.66
15515500	8/26/04 15:30	1.28	<0.2	4.56	42.5	E0.007	<0.10	0.56
15515500	9/22/04 16:00	1.60	<0.2	11.7	41.7	0.028	E0.07	0.21

Table 5. USGS National Water Quality Laboratory Analyses- Tanana River at Nenana, Alaska—Continued

Station ID	Date/Time	Nitrogen, NO_2+ NO_3, dissolved (mg/L)	Nitrogen, Nitrite dissolved (mg/L)	Nitrogen, particulate wat flt susp (mg/L)	Phosphorus, dissolved (mg/L)	Ortho-phosphorus (mg/L)	Phosphorus, Total (mg/L)	Carbon Inorg. + Organic Partic. Total (mg/L)
15515500	3/30/04 17:50	0.182	0.002	<0.02	E0.003	<0.006	0.023	0.3
15515500	5/28/04 12:00	0.099	0.002	0.35	0.006	E0.004	0.77	5.9
15515500	6/10/04 13:10	0.090	0.002	0.31	E0.003	<0.006	1.31	6.3
15515500	6/25/04 16:35	0.067	E0.001	E0.48	<0.004	<0.006	1.19	E9.9
15515500	7/23/04 16:10	0.062	<0.002	0.33	E0.003	<0.006	0.39	5.8
15515500	8/26/04 15:30	0.064	0.002	0.11	<0.004	<0.006	0.53	1.3
15515500	9/22/04 16:00	0.123	E0.001	0.10	E0.004	<0.006	0.22	1.9

Station ID	Date/Time	Carbon Inorganic, Partic. Total (mg/L)	Carbon, Organic dissolved (mg/L)	Carbon, Organic Particulate Total (mg/L)	Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)
15515500	3/30/04 17:50	<0.1	1.4	0.3	M	E0.13	0.6	51
15515500	5/28/04 12:00	0.9	5.9	5.0	21	0.28	1.0	31
15515500	6/10/04 13:10	2.0	2.7	4.4	20	0.31	1.0	36
15515500	6/25/04 16:35	E3.3	1.2	E6.6	27	M	1.1	36
15515500	7/23/04 16:10	1.2	0.7	4.6	19	0.36	0.8	30
15515500	8/26/04 15:30	0.2	0.8	1.1	15	0.25	0.5	21
15515500	9/22/04 16:00	0.2	1.6	1.7	7	0.20	1.0	40

Table 5. USGS National Water Quality Laboratory Analyses- Tanana River at Nenana, Alaska—Continued

Station ID	Date/Time	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Manganese (µg/L)
15515500	3/30/04 17:50	<0.06	27	<0.04	<0.8	0.272	1.0	11	<0.08	3.4	105
15515500	5/28/04 12:00	<0.06	23	E0.02	<0.8	0.158	4.8	44	<0.08	3.9	9.8
15515500	6/10/04 13:10	<0.06	22	<0.04	<0.8	0.125	1.8	10	<0.08	4.8	6.3
15515500	6/25/04 16:35	<0.06	30	<0.04	<0.8	M	M	<6.4	M	M	M
15515500	7/23/04 16:10	<0.06	19	<0.04	<0.8	0.130	0.8	<6.0	<0.08	4.5	2.4
15515500	8/26/04 15:30	<0.06	16	E0.02	<0.8	0.170	1.7	<6.0	E0.06	3.2	10.9
15515500	9/22/04 16:00	<0.06	29	E0.02	<0.8	0.233	1.1	21	<0.08	4.2	53.4

Station ID	Date/Time	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Strontium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)	Uranium, natural (µg/L)	Sediment, Susp. (Sieve diam. % <0.062 mm)	Sediment, Susp. (mg/L)
15515500	3/30/04 17:50	1.3	1.49	0.9	<0.2	202	1.9	2.4	0.89	74	16
15515500	5/28/04 12:00	0.9	1.69	E0.4	<0.2	123	0.7	0.8	0.75	53	1,300
15515500	6/10/04 13:10	1.0	0.96	0.5	<0.2	146	0.5	E0.3	0.93	55	1,270
15515500	6/25/04 16:35	2.0	M	M	<0.2	140	0.6	--	1.0	82	2,990
15515500	7/23/04 16:10	1.2	1.41	0.5	<0.2	127	0.6	<0.6	0.71	78	2,630
15515500	8/26/04 15:30	0.9	1.48	0.5	<0.2	85.8	0.4	3.5	0.61	75	2,610
15515500	9/22/04 16:00	1.3	1.19	0.6	<0.2	181	1.0	0.7	0.83	59	399

Table 6. USGS National Water Quality Laboratory Analyses- Yukon River at Pilot Station, Alaska

[Station ID, station identification number, refer to Table 1 for description and Figure 1 for location; ft^3/s, cubic feet per second; °C, degree Celsius; mg/L, milligram per liter; NTU, Nephelometric turbidity unit; Hg; mercury, <; less then detection limit; --, missing value; mm, millimeter; lab, laboratory; fld, field; µS/cm, microsiemen per centimeter at 25 degrees Celsius; cm, centimeter; C, Celsius; UV, Ultraviolet; NM, nanometer; Flt, filtered; NO_2, nitrite; NO_3, nitrate; wat flt susp., water filtered suspended; µg/L, microgram per liter; Dis fet lab, dissolved fixed end-point titration in laboratory; Dis tot IT, dissolved total incremental titration; Dis IT field, dissolved incremental titration in the field; %, percent; E, estimated; M, presence verified but not quantified; diam., diameter; Susp., Suspended]

Station ID	Date/Time	Discharge (ft^3/s)	Solids, Residue at 180°C, Dissolved (mg/L)	Turbidity Lab Hach (NTU)	Barometric Pressure (mm of Hg)	Oxygen, dissolved (mg/L)	pH, Field (Standard Units)	pH, Lab (Standard Units)
15565447	4/7/04 10:20	46,300	197	5.9	745	2.5	7.0	E7.4
15565447	5/26/04 16:20	521,000	115	150	--	--	7.8	E6.9
15565447	6/15/04 15:20	639,000	118	140	767	7.3	7.5	7.8
15565447	6/29/04 16:40	512,000	120	170	764	8.6	7.9	7.7
15565447	7/20/04 10:30	330,000	E145	450	761	8.5	7.7	8.0
15565447	8/18/04 11:10	330,000	155	350	--	--	7.8	7.6
15565447	9/22/04 13:00	218,000	E153	190	748	10.8	8.0	8.0

Station ID	Date/Time	Specific Conductance, Lab (µS/cm)	Specific Conductance, Fld (µS/cm)	Air Temp (°C)	Water Temp (°C)	UV Absorbance 254 NM, Flt (units/cm)	UV Absorbance 280 NM, Flt (units/cm)	Calcium (mg/L)	Magnesium (mg/L)
15565447	4/7/04 10:20	305	323	3.5	0.0	0.059	0.043	48.7	11.5
15565447	5/26/04 16:20	143	147	13.5	9.0	0.548	0.413	22.8	4.43
15565447	6/15/04 15:20	165	163	--	16.5	0.320	0.238	26.9	4.89
15565447	6/29/04 16:40	192	197	--	19.0	0.222	0.164	28.0	5.69
15565447	7/20/04 10:30	209	220	24.5	19.5	0.094	0.068	32.8	7.34
15565447	8/18/04 11:10	228	238	25.0	18.0	0.086	0.062	34.5	7.69
15565447	9/22/04 13:00	258	264	5.5	7.5	0.090	0.066	38.2	9.72

Table 6. USGS National Water Quality Laboratory Analyses- Yukon River at Pilot Station, Alaska—Continued

Station ID	Date/Time	Chloride (mg/L)	Fluoride (mg/L)	Silica (mg/L)	Sulfate (mg/L)	Nitrogen, Ammonia, dissolved (mg/L)	Nitrogen, Ammonia + Organic, dissolved (mg/L)	Nitrogen, Ammonia + Organic Total (mg/L)
15565447	4/7/04 10:20	1.32	<0.2	12.8	27.5	0.100	0.20	0.22
15565447	5/26/04 16:20	0.80	<0.2	4.96	13.4	<0.010	0.42	0.69
15565447	6/15/04 15:20	0.75	<0.2	5.19	17.9	E0.005	0.27	0.71
15565447	6/29/04 16:40	0.81	<0.2	6.36	23.7	<0.010	0.17	0.79
15565447	7/20/04 10:30	1.12	<0.2	6.84	29.9	E0.006	E0.10	E0.41
15565447	8/18/04 11:10	1.28	<0.2	6.26	36.0	<0.010	E0.08	0.41
15565447	9/22/04 13:00	1.13	<0.2	7.48	36.7	E0.014	E0.12	E0.32

Station ID	Date/Time	Potassium (mg/L)	Sodium (mg/L)	Alkalinity, Dis fet lab, as CaCO3 (mg/L)	Alkalinity, Dis tot IT Field (mg/L)	Bicarbonate, Dis IT Field (mg/L)	Carbonate, Dis IT Field (mg/L)
15565447	4/7/04 10:20	1.52	3.95	143	134	163	0.0
15565447	5/26/04 16:20	0.96	1.83	58	52	63	0.0
15565447	6/15/04 15:20	1.08	1.77	68	63	77	0.0
15565447	6/29/04 16:40	1.15	2.25	73	68	83	0.0
15565447	7/20/04 10:30	1.90	3.07	83	76	95	0.0
15565447	8/18/04 11:10	1.76	3.13	86	77	94	0.0
15565447	9/22/04 13:00	1.68	3.82	98	94	114	0.0

Station ID	Date/Time	Nitrogen, NO_2+ NO_3, dissolved (mg/L)	Nitrogen, Nitrite dissolved (mg/L)	Nitrogen, particulate wat flt susp (mg/L)	Phosphorus, dissolved (mg/L)	Ortho-phosphorus (mg/L)	Phosphorus, Total (mg/L)	Carbon Inorg. + Organic Partic. Total (mg/L)
15565447	4/7/04 10:20	0.188	0.002	0.05	E0.002	<0.006	0.024	0.6
15565447	5/26/04 16:20	0.084	0.002	0.34	0.014	<0.006	0.34	5.5
15565447	6/15/04 15:20	0.054	E0.001	0.26	0.010	<0.006	0.50	4.4
15565447	6/29/04 16:40	0.069	E0.001	0.30	0.007	E0.003	0.31	4.8
15565447	7/20/04 10:30	0.082	E0.001	E0.30	E0.005	E0.003	E0.43	E8.8
15565447	8/18/04 11:10	0.082	E0.001	0.25	0.004	<0.006	0.24	9.0
15565447	9/22/04 13:00	0.108	E0.001	E0.22	E0.005	E0.003	E0.18	E4.8

Table 6. USGS National Water Quality Laboratory Analyses- Yukon River at Pilot Station, Alaska—Continued

Station ID	Date/Time	Carbon Inorganic, Partic. Total (mg/L)	Carbon, Organic dissolved (mg/L)	Carbon, Organic Particulate Total (mg/L)	Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)
15565447	4/7/04 10:20	<0.1	2.2	0.6	M	<0.20	0.4	80
15565447	5/26/04 16:20	0.3	13.9	5.2	27	E0.17	0.8	37
15565447	6/15/04 15:20	0.3	9.1	4.1	15	0.26	1.0	41
15565447	6/29/04 16:40	0.3	6.2	4.5	14	0.25	0.9	42
15565447	7/20/04 10:30	E4.4	E3.1	E4.3	17	0.34	0.9	49
15565447	8/18/04 11:10	5.4	2.6	3.7	15	0.30	0.9	51
15565447	9/22/04 13:00	E0.7	E2.7	E4.1	7	0.27	0.8	54

Station ID	Date/Time	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Lithium (µg/L)	Manganese (µg/L)
15565447	4/7/04 10:20	<0.06	10	E0.04	<0.8	0.317	1.2	91	<0.08	3.1	143
15565447	5/26/04 16:20	<0.06	E5	<0.04	<0.8	0.156	5.4	306	0.20	1.8	16.4
15565447	6/15/04 15:20	<0.06	E6	<0.04	<0.8	0.143	3.6	123	0.11	1.9	14.3
15565447	6/29/04 16:40	<0.06	E8	<0.04	<0.8	0.129	2.9	141	0.09	2.2	5.4
15565447	7/20/04 10:30	<0.06	13	<0.04	<0.8	0.119	1.8	14	<0.08	3.4	0.5
15565447	8/18/04 11:10	<0.06	14	<0.04	<0.8	0.108	1.9	25	<0.08	3.3	1.9
15565447	9/22/04 13:00	<0.06	18	<0.04	<0.8	0.140	1.3	64	<0.08	3.7	15.3

Station ID	Date/Time	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Strontium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)	Uranium, natural (µg/L)	Sediment, Susp. (Sieve diam. % < 0.062 mm)	Sediment, Susp. (mg/L)
15565447	4/7/04 10:20	0.8	2.70	E0.3	<0.2	200	0.6	3.0	0.85	97	5
15565447	5/26/04 16:20	0.5	2.31	E0.2	<0.2	88.6	0.7	2.3	0.52	75	339
15565447	6/15/04 15:20	0.7	1.57	E0.3	<0.2	93.6	0.8	E0.5	0.51	68	514
15565447	6/29/04 16:40	0.9	1.45	E0.4	<0.2	95.0	0.7	2.0	0.64	84	299
15565447	7/20/04 10:30	1.5	1.04	0.7	<0.2	132	0.8	<0.6	0.94	--	--
15565447	8/18/04 11:10	1.4	0.86	E0.4	<0.2	139	0.9	E0.4	0.89	96	499
15565447	9/22/04 13:00	1.3	0.94	0.4	<0.2	161	0.8	<0.6	0.99	--	--

CHAPTER 3 - Dissolved Organic Carbon (DOC) Characterization

by George R. Aiken

A description of sample collection and processing of samples for DOC, ultraviolet (UV) absorbance spectroscopy, specific UV absorbance (SUVA), and DOC fractionation analyses is given in Schuster (2003). These analyses were performed at the USGS National Research Program Laboratories in Boulder, Colorado. Sample analysis results for WY 2004 are given in table 7.

Table 7. Dissolved organic carbon concentrations and fractionation analyses from fixed-station sampling sites in the Yukon River Basin

[Station ID, station identification number, refer to table 1 for description and figure 1 for location; DOC, dissolved organic carbon; mg C/L, milligrams carbon per liter; UV (abs @ 254 nm), Ultraviolet absorbance at the 254 nanometer wavelength; SUVA, Specific UV absorbance; L/mg C*m), liters per milligram carbon multiplied by a one-meter path length; %, percent; --, missing value; all samples filtered with 0.45- µm glass-fiber filters prior to analyses]

Station ID	Date	DOC (mg C/L)	UV (abs @ 254nm)	SUVA [L/(mg C*m)]	Hydrophobic Acid SUVA [L/(mg C*m)]	Hydrophobic Acid (%)
15356000	4/13/2004	1.7	0.031	1.8	4.0	62
15356000	5/26/2004	9.8	0.350	3.6	4.0	56
15356000	6/30/2004	2.1	0.047	2.3	3.1	39
15356000	7/20/2004	1.7	0.029	1.7	2.7	43
15356000	8/19/2004	1.8	0.035	2.0	3.0	43
15389000	4/9/2004	1.9	0.043	2.2	3.1	42
15389000	6/2/2004	15.9	0.544	3.4	4.1	52
15389000	6/7/2004	10.7	0.357	3.3	3.9	54
15389000	6/11/2004	10.9	0.364	3.3	3.9	53
15389000	7/29/2004	3.7	0.086	2.3	3.1	43
1538900	8/9/2004	6.3	0.206	3.3	3.8	55
15389000	9/9/2004	4.9	0.127	2.6	3.2	46
15453500	4/1/2004	1.8	0.037	2.1	2.6	45
15453500	6/4/2004	10.6	0.366	3.5	4.0	55
15453500	6/9/2004	8.3	0.274	3.3	4.1	51
15453500	6/23/2004	4.4	0.136	3.1	3.7	50
15453500	7/13/2004	2.3	0.058	2.5	3.2	41
15453500	8/17/2004	2.6	0.067	2.6	3.3	42
15453500	9/9/2004	2.5	0.062	2.4	3.3	44
15515500	3/30/2004	1.5	0.024	1.6	2.5	37
15515500	5/28/2004	5.7	0.189	3.3	4.0	53
15515500	6/10/2004	2.7	0.072	2.7	3.5	46
15515500	6/25/2004	1.2	0.028	2.4	3.2	37
15515500	7/23/2004	1.0	0.018	1.8	2.8	32
15515500	8/26/2004	1.0	0.018	1.8	3.7	30
15515500	9/22/2004	1.9	0.040	2.2	5.2	48
15565447	4/7/2004	2.5	0.056	2.3	2.8	45
15565447	5/26/2004	15.0	0.545	3.6	4.0	58
15565447	6/15/2004	9.4	0.319	3.4	4.3	47
15565447	6/29/2004	6.3	0.217	3.5	4.0	51
15565447	7/20/2004	3.3	0.088	2.7	3.8	43
15565447	8/18/2004	3.1	0.086	2.8	3.5	46
15565447	9/22/2004	3.1	0.084	2.7	2.3	52

Table 7. Dissolved organic carbon concentrations and fractionation analyses from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Hydrophilic organic matterSUVA [L/(mg C*m)]	Hydrophilic organic matter (%)	Transphylic Acids SUVA [L/(mg C*m)]	Transphylic Acids (%)
15356000	4/13/2004	--	--	--	--
15356000	5/26/2004	2.2	16	2.8	14
15356000	6/30/2004	1.1	28	1.9	21
15356000	7/20/2004	--	--	--	--
15356000	8/19/2004	--	--	--	--
15389000	4/9/2004	1.1	28	2.1	18
15389000	6/2/2004	1.7	21	2.8	16
15389000	6/7/2004	1.8	16	2.6	14
15389000	6/11/2004	1.9	18	2.9	16
15389000	7/29/2004	1.4	19	2.3	19
15389000	8/9/2004	1.7	19	2.8	15
15389000	9/9/2004	1.6	19	2.1	18
15453500	4/1/2004	--	--	--	--
15453500	6/4/2004	1.8	18	2.8	14
15453500	6/9/2004	2.9	16	2.7	17
15453500	6/23/2004	1.9	17	2.7	19
15453500	7/13/2004	1.6	28	2.5	22
15453500	8/17/2004	1.4	27	2.2	16
15453500	9/9/2004	1.5	21	2.1	18
15515500	3/30/2004	--	--	--	--
15515500	5/28/2004	2.1	16	2.6	16
15515500	6/10/2004	1.3	23	2.7	20
15515500	6/25/2004	1.4	31	2.2	22
15515500	7/23/2004	1.1	28	2.0	22
15515500	8/26/2004	--	--	--	--
15515500	9/22/2004	--	--	--	--
15565447	4/7/2004	1.9	24	1.9	20
15565447	5/26/2004	1.8	16	2.7	16
15565447	6/15/2004	2.1	14	3.0	17
15565447	6/29/2004	2.4	16	2.8	17
15565447	7/20/2004	1.5	18	2.5	21
15565447	8/18/2004	--	21	2.5	15
15565447	9/22/2004	3.0	19	2.3	18

CHAPTER 4 - Dissolved Major Cations and Trace Elements

by Howard E. Taylor, David A. Roth, and Ronald C. Antweiler

References for the description of sample collection and processing of samples for various water-quality constituents are given in Chapter 2 of Schuster (2003). A description of sample analysis for major cations and trace elements at the USGS National Research Program Laboratories in Boulder, Colorado, is given in Chapter 4 of Schuster (2003). Sample analysis results for WY 2004 are given in table 8.

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin

[See Schuster (2003) for qualification of the accuracy of these data; Station ID, station identification number, refer to table 1 for description and figure 1 for location; Rep, field replicate; µg/L, microgram per liter; mg/L, milligram per liter; A, average of triplicate analysis; SD, standard deviation of triplicate analysis; <, less than; ±, plus or minus]

Station ID	Date	Aluminum µg/L		Arsenic µg/L		Boron µg/L		Barium µg/L		Beryllium µg/L		Bismuth µg/L		Calcium mg/L	
		A	SD	A	SD	A	SD	A	SDD	A	SD	A	SD	A	SD
15356000	04/13/04	1.7 ±	0.1	0.32 ±	0.01	7.7 ±	0.7	48 ±	1	< 0.03 ±	0.01	< 0.015 ±	0.001	33 ±	2
15356000	06/17/04	62 ±	1	0.54 ±	0.01	10 ±	1	41 ±	0	< 0.03 ±	0.01	0.003 ±	0.001	27 ±	0
15356000	06/30/04	26 ±	2	0.60 ±	0.01	10 ±	1	40 ±	0	< 0.03 ±	0.01	0.002 ±	0.000	25 ±	0
15356000	07/20/04	23 ±	0	0.56 ±	0.02	15 ±	1	40 ±	1	< 0.03 ±	0.01	< 0.001 ±	0.001	29 ±	1
15356000	08/19/04	23 ±	1	0.57 ±	0.04	14 ±	1	39 ±	0	< 0.01 ±	0.00	0.004 ±	0.005	28 ±	0
15356000	09/06/04	65 ±	5	0.51 ±	0.01	14 ±	1	40 ±	2	< 0.03 ±	0.01	0.002 ±	0.001	29 ±	1
15389000	04/09/04	1.4 ±	0.1	0.20 ±	0.02	8.5 ±	0.7	89 ±	0	< 0.03 ±	0.01	0.003 ±	0.002	58 ±	0
15389000	06/02/04	33 ±	2	0.41 ±	0.01	4.9 ±	0.4	38 ±	2	< 0.03 ±	0.01	0.010 ±	0.001	17 ±	1
15389000	06/07/04	20 ±	1	0.38 ±	0.02	4.5 ±	0.1	37 ±	1	< 0.03 ±	0.01	0.015 ±	0.011	19 ±	1
15389000	06/11/04	24 ±	1	0.38 ±	0.01	6.2 ±	1.0	42 ±	1	< 0.03 ±	0.01	0.008 ±	0.002	21 ±	0
15389000	07/29/04	14 ±	1	0.35 ±	0.00	8.6 ±	0.9	70 ±	1	< 0.03 ±	0.02	< 0.001 ±	0.001	44 ±	1
15389000	08/09/04	23 ±	1	0.28 ±	0.01	8.7 ±	0.3	52 ±	0	< 0.03 ±	0.01	0.001 ±	0.001	29 ±	1
15389000	09/09/04	12 ±	0	0.26 ±	0.01	10 ±	1	65 ±	5	0.02 ±	0.01	0.003 ±	0.001	41 ±	1
15453500	04/01/04	1.5 ±	0.0	0.32 ±	0.02	7.8 ±	0.6	63 ±	1	< 0.03 ±	0.02	< 0.001 ±	0.001	40 ±	2
15453500	06/04/04	32 ±	0	0.58 ±	0.01	4.5 ±	0.5	39 ±	1	< 0.03 ±	0.01	0.010 ±	0.001	22 ±	0
15453500	06/09/04	26 ±	0	0.56 ±	0.01	4.8 ±	0.5	41 ±	1	< 0.03 ±	0.01	0.005 ±	0.001	24 ±	2
15453500	06/23/04	23 ±	1	0.62 ±	0.00	6.5 ±	0.6	47 ±	1	< 0.03 ±	0.02	0.003 ±	0.001	27 ±	1
15453500	07/13/04	23 ±	1	0.68 ±	0.01	12 ±	1	49 ±	1	< 0.03 ±	0.01	< 0.001 ±	0.001	31 ±	2
15453500	08/17/04	23 ±	1	0.61 ±	0.00	13 ±	2	47 ±	1	< 0.03 ±	0.01	< 0.001 ±	0.000	33 ±	0
15453500	09/10/04	13 ±	1	0.54 ±	0.02	16 ±	0	47 ±	0	< 0.01 ±	0.00	< 0.003 ±	0.002	35 ±	0

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Aluminum µg/L			Arsenic µg/L			Boron µg/L			Barium µg/L			Beryllium µg/L			Bismuth µg/L			Calcium mg/L		
		A		SD	A		SD	A		SD	A		SD	A		SD	A		SD	A		SD
15515500	03/30/04	0.91	±	0.11	0.50	±	0.01	21	±	0	47	±	0	< 0.03	±	0.01	0.002	±	0.002	47	±	0
15515500	05/28/04	24	±	2	1.0	±	0.0	21	±	2	32	±	1	< 0.03	±	0.01	0.005	±	0.003	29	±	1
15515500	06/10/04	19	±	0	0.96	±	0.04	24	±	0	35	±	1	< 0.03	±	0.01	0.005	±	0.001	33	±	1
15515500	06/25/04	28	±	2	1.0	±	0.0	23	±	0	37	±	1	< 0.03	±	0.01	0.002	±	0.001	30	±	1
15515500	07/23/04	20	±	0	0.80	±	0.03	17	±	0	31	±	1	< 0.03	±	0.02	< 0.001	±	0.001	28	±	2
15515500	08/26/04	16	±	1	0.74	±	0.01	20	±	1	27	±	0	< 0.01	±	0.00	< 0.003	±	0.003	31	±	1
15515500	09/22/04	7.4	±	0.5	0.87	±	0.01	25	±	2	36	±	1	< 0.01	±	0.00	0.011	±	0.006	41	±	0
15565447	04/07/04	1.4	±	0.8	0.40	±	0.02	10	±	0	78	±	2	< 0.03	±	0.01	0.002	±	0.002	48	±	1
15565447	04/16/04	1.6	±	0.1	0.39	±	0.02	15	±	1	74	±	2	< 0.03	±	0.01	< 0.001	±	0.002	43	±	1
15565447	04/23/04	1.7	±	0.1	0.40	±	0.02	15	±	1	71	±	2	< 0.03	±	0.01	< 0.001	±	0.000	43	±	2
15565447	04/23/04	2.1	±	0.2	0.37	±	0.01	10	±	1	65	±	0	< 0.03	±	0.01	< 0.001	±	0.000	36	±	1
15565447	04/23/04	2.4	±	0.2	0.36	±	0.01	10	±	1	68	±	0	< 0.03	±	0.01	< 0.001	±	0.001	38	±	1
15565447	05/26/04	24	±	0	0.82	±	0.02	6.5	±	0.9	35	±	0	< 0.03	±	0.01	0.008	±	0.003	23	±	1
15565447	06/15/04	16	±	1	0.87	±	0.01	7.4	±	0.6	41	±	1	< 0.03	±	0.01	0.004	±	0.002	27	±	1
15565447	07/20/04	15	±	1	0.89	±	0.02	13	±	0	50	±	1	< 0.03	±	0.01	< 0.001	±	0.001	29	±	0
15565447	08/18/04	15	±	1	0.86	±	0.02	16	±	1	51	±	1	< 0.03	±	0.02	0.003	±	0.000	32	±	2
15565447	09/22/04	8.6	±	1.0	0.80	±	0.02	17	±	1	51	±	1	< 0.01	±	0.01	0.007	±	0.004	34	±	1

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Cadmium µg/L			Cerium µg/L			Cobalt µg/L			Chromium µg/L			Cesium µg/L			Copper µg/L		
		A		SD	A		SD	A		SD	A		SD	A		SD	A		SD
15356000	04/13/04	0.014	±	0.004	0.0043	±	0.0006	0.017	±	0.007	< 0.3	±	0.2	< 0.02	±	0.00	0.65	±	0.04
15356000	06/17/04	0.021	±	0.003	0.084	±	0.001	0.14	±	0.01	< 0.3	±	0.1	< 0.02	±	0.00	1.6	±	0.0
15356000	06/30/04	< 0.004	±	0.002	0.0057	±	0.0003	0.018	±	0.008	< 0.3	±	0.1	< 0.02	±	0.00	1.0	±	0.1
15356000	07/20/04	< 0.004	±	0.002	0.0051	±	0.0004	0.020	±	0.014	< 0.3	±	0.1	< 0.02	±	0.00	0.91	±	0.03
15356000	08/19/04	0.004	±	0.002	0.0044	±	0.0006	0.025	±	0.014	< 0.2	±	0.1	< 0.02	±	0.00	0.92	±	0.04
15356000	09/06/04	0.021	±	0.002	0.062	±	0.001	0.49	±	0.00	< 0.3	±	0.0	< 0.02	±	0.00	0.85	±	0.04
15389000	04/09/04	0.010	±	0.003	0.0022	±	0.0004	0.051	±	0.004	< 0.3	±	0.2	< 0.02	±	0.00	0.49	±	0.04
15389000	06/02/04	0.013	±	0.002	0.21	±	0.01	0.13	±	0.01	< 0.3	±	0.1	< 0.02	±	0.00	2.6	±	0.0
15389000	06/07/04	0.009	±	0.004	0.11	±	0.00	0.070	±	0.005	< 0.3	±	0.0	< 0.02	±	0.00	4.5	±	0.0
15389000	06/11/04	0.009	±	0.003	0.10	±	0.00	0.067	±	0.002	< 0.3	±	0.1	< 0.02	±	0.00	1.9	±	0.1
15389000	07/29/04	0.008	±	0.003	0.0044	±	0.0003	0.048	±	0.008	< 0.3	±	0.2	< 0.02	±	0.00	1.4	±	0.0
15389000	08/09/04	0.008	±	0.000	0.043	±	0.000	0.060	±	0.014	< 0.3	±	0.1	< 0.02	±	0.00	3.2	±	0.0
15389000	09/09/04	0.022	±	0.000	0.0099	±	0.0006	0.055	±	0.006	0.2	±	0.1	< 0.02	±	0.00	1.1	±	0.1
15453500	04/01/04	0.009	±	0.003	0.0045	±	0.0002	0.025	±	0.016	< 0.3	±	0.1	< 0.02	±	0.00	0.60	±	0.03
15453500	06/04/04	0.017	±	0.004	0.14	±	0.00	0.066	±	0.010	< 0.3	±	0.1	< 0.02	±	0.00	3.7	±	0.0
15453500	06/09/04	0.014	±	0.002	0.080	±	0.000	0.052	±	0.008	< 0.3	±	0.1	< 0.02	±	0.00	2.9	±	0.0
15453500	06/23/04	0.010	±	0.002	0.098	±	0.000	0.036	±	0.006	< 0.3	±	0.1	< 0.02	±	0.00	1.8	±	0.0
15453500	07/13/04	0.007	±	0.002	0.0063	±	0.0004	0.020	±	0.005	< 0.3	±	0.1	< 0.02	±	0.00	1.4	±	0.1
15453500	08/17/04	0.004	±	0.000	0.0076	±	0.0002	0.016	±	0.008	< 0.3	±	0.1	< 0.02	±	0.00	1.4	±	0.1
15453500	09/10/04	0.009	±	0.002	0.0071	±	0.0004	0.032	±	0.003	< 0.2	±	0.0	< 0.02	±	0.00	2.1	±	0.1

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Cadmium µg/L			Cerium µg/L			Cobalt µg/L			Chromium µg/L			Cesium µg/L			Copper µg/L		
		A		SD	A		SD	A		SD	A		SD	A		SD	A		SD
15515500	03/30/04	0.016	±	0.003	0.0037	±	0.0007	0.12	±	0.02	< 0.3	±	0.1	< 0.02	±	0.00	0.72	±	0.03
15515500	05/28/04	0.020	±	0.006	0.062	±	0.003	0.076	±	0.010	< 0.3	±	0.1	< 0.02	±	0.01	5.2	±	0.3
15515500	06/10/04	0.011	±	0.003	0.019	±	0.000	0.040	±	0.008	< 0.3	±	0.1	< 0.02	±	0.00	1.5	±	0.0
15515500	06/25/04	0.010	±	0.002	0.0088	±	0.0002	0.024	±	0.008	< 0.3	±	0.1	< 0.02	±	0.00	0.89	±	0.05
15515500	07/23/04	0.010	±	0.001	0.0068	±	0.0003	0.043	±	0.012	< 0.3	±	0.1	< 0.02	±	0.00	0.64	±	0.05
15515500	08/26/04	0.013	±	0.001	0.0056	±	0.0003	0.078	±	0.014	< 0.2	±	0.1	< 0.02	±	0.00	1.7	±	0.0
15515500	09/22/04	0.024	±	0.001	0.011	±	0.000	0.14	±	0.01	0.3	±	0.1	< 0.02	±	0.00	1.1	±	0.0
15565447	04/07/04	0.030	±	0.004	0.0088	±	0.0006	0.17	±	0.01	< 0.3	±	0.1	< 0.02	±	0.00	1.0	±	0.0
15565447	04/16/04	0.032	±	0.000	0.011	±	0.001	0.11	±	0.02	< 0.3	±	0.1	< 0.02	±	0.00	1.2	±	0.1
15565447	04/23/04	0.022	±	0.003	0.013	±	0.000	0.11	±	0.01	< 0.3	±	0.1	< 0.02	±	0.00	1.3	±	0.1
15565447	04/23/04	0.020	±	0.004	0.019	±	0.001	0.14	±	0.02	< 0.3	±	0.1	< 0.02	±	0.00	1.2	±	0.0
15565447	04/23/04	0.021	±	0.002	0.019	±	0.000	0.14	±	0.01	< 0.3	±	0.1	< 0.02	±	0.00	1.2	±	0.0
15565447	05/26/04	0.021	±	0.003	0.30	±	0.01	0.093	±	0.009	< 0.3	±	0.1	< 0.02	±	0.00	5.4	±	0.0
15565447	06/15/04	0.009	±	0.002	0.12	±	0.00	0.075	±	0.016	< 0.3	±	0.1	< 0.02	±	0.00	3.7	±	0.2
15565447	07/20/04	0.005	±	0.001	0.011	±	0.001	0.013	±	0.004	< 0.3	±	0.1	< 0.02	±	0.00	1.7	±	0.1
15565447	08/18/04	0.007	±	0.001	0.011	±	0.001	0.022	±	0.015	< 0.3	±	0.1	< 0.02	±	0.00	1.6	±	0.1
15565447	09/22/04	0.008	±	0.003	0.027	±	0.001	0.057	±	0.012	< 0.2	±	0.1	< 0.02	±	0.00	1.3	±	0.0

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Dysprosium µg/L			Erbium µg/L			Europium µg/L			Iron µg/L			Gallium µg/L			Gadolinium µg/L		
		A		SD	A		SD	A		SD	A		SD	A		SD	A		SD
15356000	04/13/04	0.002	±	0.001	0.001	±	0.001	0.0027	±	0.0009	9	±	3	0.004	±	0.001	0.002	±	0.000
15356000	06/17/04	0.011	±	0.001	0.007	±	0.000	0.0049	±	0.0015	98	±	4	0.024	±	0.001	0.013	±	0.000
15356000	06/30/04	< 0.001	±	0.000	< 0.001	±	0.001	0.0012	±	0.0017	4	±	1	0.042	±	0.001	< 0.001	±	0.000
15356000	07/20/04	< 0.001	±	0.001	< 0.001	±	0.001	0.0021	±	0.0021	5	±	3	0.043	±	0.001	< 0.001	±	0.001
15356000	08/19/04	0.0018	±	0.0008	< 0.001	±	0.000	< 0.0007	±	0.0025	5	±	6	0.041	±	0.001	0.0016	±	0.0009
15356000	09/06/04	0.006	±	0.001	0.004	±	0.001	0.0027	±	0.0006	94	±	5	0.030	±	0.002	0.008	±	0.001
15389000	04/09/04	0.002	±	0.001	< 0.001	±	0.001	0.0076	±	0.0004	15	±	2	0.003	±	0.001	0.002	±	0.001
15389000	06/02/04	0.056	±	0.000	0.028	±	0.001	0.016	±	0.002	470	±	11	0.010	±	0.001	0.068	±	0.005
15389000	06/07/04	0.031	±	0.001	0.018	±	0.001	0.0088	±	0.0013	217	±	11	0.009	±	0.001	0.037	±	0.002
15389000	06/11/04	0.031	±	0.001	0.019	±	0.000	0.0092	±	0.0015	264	±	2	0.008	±	0.001	0.037	±	0.000
15389000	07/29/04	0.002	±	0.001	< 0.001	±	0.001	0.0020	±	0.0044	11	±	2	0.008	±	0.001	0.002	±	0.000
15389000	08/09/04	0.015	±	0.001	0.008	±	0.000	0.0053	±	0.0038	109	±	8	0.006	±	0.002	0.018	±	0.001
15389000	09/09/04	0.0057	±	0.0004	0.004	±	0.001	< 0.0007	±	0.0034	25	±	2	0.004	±	0.001	0.0049	±	0.0013
15453500	04/01/04	< 0.001	±	0.000	< 0.001	±	0.001	0.0041	±	0.0041	25	±	5	0.004	±	0.001	0.002	±	0.001
15453500	06/04/04	0.029	±	0.001	0.018	±	0.000	0.0092	±	0.0010	149	±	13	0.016	±	0.001	0.033	±	0.001
15453500	06/09/04	0.019	±	0.001	0.013	±	0.001	0.0067	±	0.0011	89	±	6	0.016	±	0.001	0.020	±	0.001
15453500	06/23/04	0.006	±	0.001	0.004	±	0.001	0.0044	±	0.0019	26	±	1	0.020	±	0.002	0.009	±	0.001
15453500	07/13/04	0.002	±	0.000	< 0.001	±	0.001	0.0013	±	0.0011	4	±	2	0.036	±	0.000	0.001	±	0.001
15453500	08/17/04	< 0.001	±	0.000	0.002	±	0.001	0.0006	±	0.0009	8	±	6	0.034	±	0.000	0.002	±	0.001
15453500	09/10/04	0.0022	±	0.0008	0.002	±	0.001	< 0.0007	±	0.0024	11	±	3	0.017	±	0.001	0.0018	±	0.0003

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Dysprosium µg/L			Erbium µg/L			Europium µg/L			Iron µg/L			Gallium µg/L			Gadolinium µg/L		
		A		SD	A		SD	A		SD	A		SD	A		SD	A		SD
15515500	03/30/04	0.001	±	0.001	0.002	±	0.000	0.0010	±	0.0018	13	±	1	0.005	±	0.000	0.002	±	0.001
15515500	05/28/04	0.015	±	0.000	0.010	±	0.001	0.0030	±	0.0010	72	±	9	0.021	±	0.001	0.013	±	0.001
15515500	06/10/04	0.004	±	0.001	0.003	±	0.001	0.0015	±	0.0009	28	±	2	0.028	±	0.003	0.004	±	0.001
15515500	06/25/04	< 0.001		0.000	< 0.001		0.001	0.0010		0.0020	13		1	0.050		0.001	< 0.001		0.001
15515500	07/23/04	< 0.001	±	0.001	< 0.001	±	0.001	0.0013	±	0.0015	5	±	2	0.044	±	0.002	< 0.001	±	0.001
15515500	08/26/04	0.0013	±	0.0004	< 0.001	±	0.000	< 0.0007	±	0.0016	4	±	0	0.034	±	0.002	0.0014	±	0.0008
15515500	09/22/04	0.0034	±	0.0009	0.002	±	0.001	< 0.0007	±	0.0016	29	±	3	0.013	±	0.000	0.0022	±	0.0001
15565447	04/07/04	0.002	±	0.000	0.002	±	0.001	0.0055	±	0.0013	104	±	7	0.004	±	0.001	0.002	±	0.000
15565447	04/16/04	0.003	±	0.001	0.003	±	0.001	0.0013	±	0.0027	77	±	3	0.005	±	0.001	0.003	±	0.001
15565447	04/23/04	0.003	±	0.001	0.002	±	0.001	0.0029	±	0.0035	89	±	15	0.004	±	0.001	0.004	±	0.000
15565447	04/23/04	0.004	±	0.001	0.003	±	0.001	0.0053	±	0.0003	112	±	8	0.003	±	0.001	0.004	±	0.000
15565447	04/23/04	0.004	±	0.001	0.003	±	0.001	0.0038	±	0.0020	114	±	13	0.005	±	0.001	0.004	±	0.001
15565447	05/26/04	0.053	±	0.000	0.036	±	0.002	0.014	±	0.002	464	±	38	0.015	±	0.001	0.061	±	0.003
15565447	06/15/04	0.020	±	0.000	0.015	±	0.002	0.0056	±	0.0003	191	±	3	0.018	±	0.002	0.027	±	0.001
15565447	07/20/04	0.002	±	0.001	0.003	±	0.001	0.0007	±	0.0006	24	±	0	0.031	±	0.001	0.002	±	0.001
15565447	08/18/04	0.003	±	0.001	0.001	±	0.001	0.0022	±	0.0033	24	±	2	0.030	±	0.002	0.003	±	0.001
15565447	09/22/04	0.0053	±	0.0011	0.003	±	0.001	< 0.0007	±	0.0038	129	±	1	0.017	±	0.002	0.0056	±	0.0008

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Holmium µg/L			Potassium mg/L			Lanthanum µg/L			Lithium µg/L			Lutetium µg/L			Magnesium mg/L		
		A		SD	A		SD	A		SD	A		SD	A		SD	A		SD
15356000	04/13/04	0.0004	±	0.0002	1.0	±	0.0	0.0046	±	0.0005	2.2	±	0.1	< 0.0003	±	0.0001	8.8	±	0.5
15356000	06/17/04	0.0023	±	0.0004	0.97	±	0.04	0.047	±	0.000	2.3	±	0.1	0.0010	±	0.0001	7.7	±	0.1
15356000	06/30/04	0.0003	±	0.0003	1.7	±	0.0	0.0040	±	0.0004	2.9	±	0.3	< 0.0003	±	0.0001	7.0	±	0.0
15356000	07/20/04	< 0.0003	±	0.0003	1.8	±	0.0	0.0036	±	0.0004	3.3	±	0.2	< 0.0003	±	0.0000	7.8	±	0.3
15356000	08/19/04	< 0.0003	±	0.0002	1.8	±	0.0	0.0030	±	0.0001	3.4	±	0.2	0.0003	±	0.0001	7.4	±	0.0
15356000	09/06/04	0.0013	±	0.0003	1.4	±	0.0	0.032	±	0.000	2.8	±	0.3	0.0006	±	0.0000	7.9	±	0.3
15389000	04/09/04	0.0004	±	0.0002	0.58	±	0.02	0.0030	±	0.0002	6.8	±	0.5	< 0.0003	±	0.0002	12	±	0
15389000	06/02/04	0.011	±	0.001	0.81	±	0.05	0.092	±	0.002	1.7	±	0.1	0.0030	±	0.0001	2.9	±	0.1
15389000	06/07/04	0.0061	±	0.0004	0.61	±	0.04	0.054	±	0.001	1.9	±	0.2	0.0019	±	0.0001	3.5	±	0.2
15389000	06/11/04	0.0065	±	0.0002	0.62	±	0.02	0.049	±	0.002	2.6	±	0.1	0.0020	±	0.0001	4.2	±	0.1
15389000	07/29/04	0.0004	±	0.0002	0.68	±	0.03	0.0038	±	0.0002	4.7	±	0.1	< 0.0003	±	0.0003	7.9	±	0.2
15389000	08/09/04	0.0031	±	0.0000	0.63	±	0.02	0.021	±	0.002	5.5	±	0.5	0.0008	±	0.0000	8.1	±	0.2
15389000	09/09/04	0.0011	±	0.0002	0.61	±	0.02	0.0055	±	0.0004	5.8	±	0.5	0.0003	±	0.0000	9.1	±	0.3
15453500	04/01/04	0.0003	±	0.0002	1.1	±	0.0	0.0046	±	0.0000	3.1	±	0.2	< 0.0003	±	0.0001	9.9	±	0.4
15453500	06/04/04	0.0058	±	0.0004	0.98	±	0.04	0.078	±	0.003	2.0	±	0.2	0.0023	±	0.0002	4.8	±	0.0
15453500	06/09/04	0.0038	±	0.0002	0.92	±	0.02	0.048	±	0.003	2.0	±	0.1	0.0013	±	0.0002	5.7	±	0.5
15453500	06/23/04	0.0012	±	0.0002	1.1	±	0.0	0.053	±	0.001	2.6	±	0.1	0.0005	±	0.0001	7.1	±	0.4
15453500	07/13/04	0.0004	±	0.0003	1.7	±	0.0	0.0044	±	0.0001	3.2	±	0.2	< 0.0003	±	0.0003	7.9	±	0.6
15453500	08/17/04	0.0005	±	0.0001	1.6	±	0.0	0.0051	±	0.0006	3.5	±	0.1	< 0.0003	±	0.0002	8.7	±	0.1
15453500	09/10/04	0.0005	±	0.0002	1.4	±	0.0	0.0047	±	0.0004	3.9	±	0.3	< 0.0002	±	0.0001	9.0	±	0.1

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Manganese µg/L			Molybdenum µg/L			Sodium mg/L			Neodymium µg/L			Nickel µg/L			Phosphorus mg/L			Lead µg/L		
		A		SD	A		SD	A		SD	A		SD	A		SD	A		SD	A		SD
15356000	04/13/04	1.4	±	0.1	1.3	±	0.1	2.3	±	0.2	0.0052	±	0.0014	0.78	±	0.25	< 7	±	3	0.022	±	0.003
15356000	06/17/04	3.5	±	0.1	0.99	±	0.05	1.7	±	0.1	0.049	±	0.000	1.4	±	0.3	< 7	±	4	0.080	±	0.005
15356000	06/30/04	0.47	±	0.04	1.5	±	0.0	2.1	±	0.2	0.0040	±	0.0011	0.70	±	0.28	< 7	±	4	< 0.004	±	0.003
15356000	07/20/04	0.63	±	0.01	1.6	±	0.0	2.7	±	0.1	0.0031	±	0.0011	0.71	±	0.33	< 7	±	8	0.011	±	0.002
15356000	08/19/04	0.79	±	0.05	1.9	±	0.0	2.6	±	0.2	0.004	±	0.001	0.73	±	0.32	< 7	±	4	0.010	±	0.009
15356000	09/06/04	3.2	±	0.1	1.5	±	0.0	2.6	±	0.2	0.037	±	0.001	1.2	±	0.2	< 7	±	6	0.031	±	0.003
15389000	04/09/04	11	±	0	0.70	±	0.03	4.4	±	0.0	0.0044	±	0.0007	1.0	±	0.5	< 7	±	7	0.013	±	0.006
15389000	06/02/04	6.7	±	0.0	0.32	±	0.04	0.90	±	0.0	0.17	±	0.01	3.0	±	0.3	8	±	3	0.19	±	0.00
15389000	06/07/04	4.3	±	0.2	0.32	±	0.03	1.1	±	0.0	0.097	±	0.006	2.1	±	0.2	< 7	±	10	0.12	±	0.00
15389000	06/11/04	4.6	±	0.0	0.37	±	0.05	1.5	±	0.0	0.094	±	0.002	2.1	±	0.1	9	±	12	0.12	±	0.00
15389000	07/29/04	0.62	±	0.07	0.72	±	0.07	3.2	±	0.3	0.0060	±	0.0011	0.77	±	0.47	< 7	±	5	0.050	±	0.007
15389000	08/09/04	4.5	±	0.1	0.33	±	0.04	2.8	±	0.2	0.041	±	0.001	1.6	±	0.4	< 7	±	3	0.058	±	0.007
15389000	09/09/04	4.7	±	0.1	0.55	±	0.03	3.7	±	0.2	0.010	±	0.001	1.3	±	0.3	< 7	±	2	0.041	±	0.003
15453500	04/01/04	18	±	0	1.2	±	0.1	2.7	±	0.1	0.0057	±	0.0016	1.3	±	0.1	< 7	±	0	0.010	±	0.000
15453500	06/04/04	4.0	±	0.0	0.71	±	0.04	1.3	±	0.1	0.10	±	0.01	2.2	±	0.2	< 7	±	4	0.098	±	0.003
15453500	06/09/04	3.6	±	0.1	0.73	±	0.01	1.4	±	0.1	0.060	±	0.000	1.9	±	0.3	< 7	±	6	0.057	±	0.003
15453500	06/23/04	3.6	±	0.2	0.98	±	0.03	1.7	±	0.1	0.051	±	0.001	1.1	±	0.3	< 7	±	5	0.020	±	0.002
15453500	07/13/04	3.0	±	0.2	1.4	±	0.0	2.4	±	0.2	0.0045	±	0.0010	0.52	±	0.21	< 7	±	7	0.013	±	0.000
15453500	08/17/04	1.6	±	0.1	1.4	±	0.0	2.9	±	0.0	0.0069	±	0.0016	0.38	±	0.17	< 7	±	4	0.006	±	0.002
15453500	09/10/04	8.7	±	0.1	1.5	±	0.1	3.1	±	0.1	0.005	±	0.001	1.0	±	0.5	< 7	±	12	0.021	±	0.004

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Manganese µg/L			Molybdenum µg/L			Sodium mg/L			Neodymium µg/L			Nickel µg/L			Phosphorus mg/L			Lead µg/L		
		A		SD	A		SD	A		SD	A		SD	A		SD	A		SD	A		SD
15356000	04/13/04	1.4	±	0.1	1.3	±	0.1	2.3	±	0.2	0.0052	±	0.0014	0.78	±	0.25	< 7	±	3	0.022	±	0.003
15356000	06/17/04	3.5	±	0.1	0.99	±	0.05	1.7	±	0.1	0.049	±	0.000	1.4	±	0.3	< 7	±	4	0.080	±	0.005
15356000	06/30/04	0.47	±	0.04	1.5	±	0.0	2.1	±	0.2	0.0040	±	0.0011	0.70	±	0.28	< 7	±	4	< 0.004	±	0.003
15356000	07/20/04	0.63	±	0.01	1.6	±	0.0	2.7	±	0.1	0.0031	±	0.0011	0.71	±	0.33	< 7	±	8	0.011	±	0.002
15356000	08/19/04	0.79	±	0.05	1.9	±	0.0	2.6	±	0.2	0.004	±	0.001	0.73	±	0.32	< 7	±	4	0.010	±	0.009
15356000	09/06/04	3.2	±	0.1	1.5	±	0.0	2.6	±	0.2	0.037	±	0.001	1.2	±	0.2	< 7	±	6	0.031	±	0.003
15389000	04/09/04	11	±	0	0.70	±	0.03	4.4	±	0.0	0.0044	±	0.0007	1.0	±	0.5	< 7	±	7	0.013	±	0.006
15389000	06/02/04	6.7	±	0.0	0.32	±	0.04	0.90	±	0.0	0.17	±	0.01	3.0	±	0.3	8	±	3	0.19	±	0.00
15389000	06/07/04	4.3	±	0.2	0.32	±	0.03	1.1	±	0.0	0.097	±	0.006	2.1	±	0.2	< 7	±	10	0.12	±	0.00
15389000	06/11/04	4.6	±	0.0	0.37	±	0.05	1.5	±	0.0	0.094	±	0.002	2.1	±	0.1	9	±	12	0.12	±	0.00
15389000	07/29/04	0.62	±	0.07	0.72	±	0.07	3.2	±	0.3	0.0060	±	0.0011	0.77	±	0.47	< 7	±	5	0.050	±	0.007
15389000	08/09/04	4.5	±	0.1	0.33	±	0.04	2.8	±	0.2	0.041	±	0.001	1.6	±	0.4	< 7	±	3	0.058	±	0.007
15389000	09/09/04	4.7	±	0.1	0.55	±	0.03	3.7	±	0.2	0.010	±	0.001	1.3	±	0.3	< 7	±	2	0.041	±	0.003
15453500	04/01/04	18	±	0	1.2	±	0.1	2.7	±	0.1	0.0057	±	0.0016	1.3	±	0.1	< 7	±	0	0.010	±	0.000
15453500	06/04/04	4.0	±	0.0	0.71	±	0.04	1.3	±	0.1	0.10	±	0.01	2.2	±	0.2	< 7	±	4	0.098	±	0.003
15453500	06/09/04	3.6	±	0.1	0.73	±	0.01	1.4	±	0.1	0.060	±	0.000	1.9	±	0.3	< 7	±	6	0.057	±	0.003
15453500	06/23/04	3.6	±	0.2	0.98	±	0.03	1.7	±	0.1	0.051	±	0.001	1.1	±	0.3	< 7	±	5	0.020	±	0.002
15453500	07/13/04	3.0	±	0.2	1.4	±	0.0	2.4	±	0.2	0.0045	±	0.0010	0.52	±	0.21	< 7	±	7	0.013	±	0.000
15453500	08/17/04	1.6	±	0.1	1.4	±	0.0	2.9	±	0.0	0.0069	±	0.0016	0.38	±	0.17	< 7	±	4	0.006	±	0.002
15453500	09/10/04	8.7	±	0.1	1.5	±	0.1	3.1	±	0.1	0.005	±	0.001	1.0	±	0.5	< 7	±	12	0.021	±	0.004

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Manganese µg/L			Molybdenum µg/L			Sodium mg/L			Neodymium µg/L			Nickel µg/L			Phosphorus mg/L			Lead µg/L		
		A		SD	A		SD	A		SD	A		SD	A		SD	A		SD	A		SD
15515500	03/30/04	95	±	0	1.3	±	0.2	4.0	±	0.0	0.0034	±	0.0013	0.53	±	0.26	< 7	±	7	0.018	±	0.008
15515500	05/28/04	11	±	0	1.2	±	0.4	3.0	±	0.3	0.044	±	0.000	1.3	±	0.3	< 7	±	4	0.10	±	0.01
15515500	06/10/04	6.0	±	0.2	1.1	±	0.0	3.6	±	0.1	0.014	±	0.001	0.78	±	0.24	< 7	±	6	0.028	±	0.001
15515500	06/25/04	2.2	±	0.1	1.3	±	0.0	3.3	±	0.1	0.0060	±	0.0007	0.60	±	0.30	< 7	±	4	0.026	±	0.002
15515500	07/23/04	2.4	±	0.1	1.2	±	0.1	2.9	±	0.2	0.0047	±	0.0009	0.74	±	0.24	< 7	±	7	0.013	±	0.002
15515500	08/26/04	14	±	0	1.3	±	0.0	3.3	±	0.2	0.004	±	0.001	1.1	±	0.5	< 7	±	1	0.013	±	0.005
15515500	09/22/04	56	±	1	1.4	±	0.1	4.2	±	0.1	0.008	±	0.000	1.2	±	0.3	< 7	±	3	0.025	±	0.004
15565447	04/07/04	152	±	3	0.77	±	0.01	3.4	±	0.0	0.0075	±	0.0007	1.2	±	0.4	< 7	±	4	0.016	±	0.002
15565447	04/16/04	147	±	9	0.71	±	0.08	3.3	±	0.0	0.0093	±	0.0007	0.96	±	0.40	8	±	7	0.029	±	0.012
15565447	04/23/04	150	±	5	0.71	±	0.05	3.3	±	0.1	0.0089	±	0.0007	1.0	±	0.3	7	±	8	0.021	±	0.001
15565447	04/23/04	129	±	1	0.62	±	0.04	2.8	±	0.0	0.012	±	0.003	1.1	±	0.5	9	±	3	0.034	±	0.003
15565447	04/23/04	133	±	8	0.63	±	0.06	2.9	±	0.3	0.012	±	0.000	1.0	±	0.4	8	±	9	0.039	±	0.010
15565447	05/26/04	17	±	0	0.54	±	0.11	1.6	±	0.2	0.21	±	0.00	2.2	±	0.3	13	±	1	0.22	±	0.01
15565447	06/15/04	15	±	0	0.66	±	0.01	1.6	±	0.0	0.080	±	0.001	1.5	±	0.4	8	±	3	0.12	±	0.00
15565447	07/20/04	0.52	±	0.04	1.3	±	0.0	2.4	±	0.0	0.0092	±	0.0018	0.49	±	0.18	< 7	±	5	0.025	±	0.002
15565447	08/18/04	1.9	±	0.1	1.3	±	0.0	2.9	±	0.0	0.0088	±	0.0002	0.47	±	0.42	< 7	±	7	0.016	±	0.003
15565447	09/22/04	16	±	1	1.4	±	0.1	3.0	±	0.1	0.020	±	0.002	0.84	±	0.27	< 7	±	1	0.068	±	0.004

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Praseodymium µg/L			Rubidium µg/L			Rhenium µg/L			Sulfur mg/L			Antimony µg/L			Selenium µg/L			Silica mg/L		
		A		SD	A		SD	A		SD	A		SD	A		SD	A		SD	A		SD
15356000	04/13/04	0.0012	±	0.0001	0.77	±	0.01	0.0019	±	0.0003	12	±	0	0.096	±	0.002	0.42	±	0.10	5.8	±	0.3
15356000	06/17/04	0.012	±	0.000	1.1	±	0.0	0.0028	±	0.0003	12	±	0	0.20	±	0.01	0.45	±	0.12	5.9	±	0.1
15356000	06/30/04	0.0008	±	0.0002	2.4	±	0.0	0.0031	±	0.0001	12	±	0	0.25	±	0.00	0.42	±	0.11	5.0	±	0.1
15356000	07/20/04	0.0007	±	0.0003	2.3	±	0.0	0.0036	±	0.0003	13	±	0	0.27	±	0.01	0.37	±	0.04	5.3	±	0.2
15356000	08/19/04	0.0006	±	0.0002	2.3	±	0.1	0.0037	±	0.0003	13	±	0	0.25	±	0.00	0.33	±	0.10	4.9	±	0.3
15356000	09/06/04	0.0085	±	0.0001	1.5	±	0.0	0.0041	±	0.0006	13	±	1	0.27	±	0.01	0.33	±	0.06	5.5	±	0.2
15389000	04/09/04	0.0006	±	0.0002	0.34	±	0.01	0.0036	±	0.0002	13	±	0	0.056	±	0.001	0.36	±	0.15	4.3	±	0.3
15389000	06/02/04	0.034	±	0.002	0.29	±	0.01	0.0009	±	0.0001	4.0	±	0.2	0.090	±	0.011	0.15	±	0.08	2.1	±	0.1
15389000	06/07/04	0.019	±	0.001	0.26	±	0.00	0.0014	±	0.0003	5.5	±	0.2	0.086	±	0.003	0.17	±	0.09	2.4	±	0.1
15389000	06/11/04	0.019	±	0.001	0.25	±	0.00	0.0021	±	0.0002	7.4	±	0.0	0.098	±	0.004	0.19	±	0.09	2.7	±	0.1
15389000	07/29/04	0.0009	±	0.0001	0.41	±	0.02	0.0033	±	0.0005	14	±	0	0.083	±	0.001	0.18	±	0.06	2.3	±	0.2
15389000	08/09/04	0.0077	±	0.0002	0.30	±	0.01	0.0016	±	0.0006	20	±	0	0.065	±	0.008	0.15	±	0.12	3.1	±	0.1
15389000	09/09/04	0.0018	±	0.0002	0.27	±	0.01	0.0028	±	0.0004	19	±	1	0.070	±	0.005	< 0.1	±	0.0	2.4	±	0.1
15453500	04/01/04	0.0010	±	0.0003	0.85	±	0.01	0.0026	±	0.0003	14	±	0	0.089	±	0.002	0.37	±	0.12	6.7	±	0.3
15453500	06/04/04	0.022	±	0.001	0.76	±	0.02	0.0023	±	0.0003	7.5	±	0.6	0.17	±	0.01	0.31	±	0.09	3.6	±	0.0
15453500	06/09/04	0.013	±	0.000	0.79	±	0.01	0.0027	±	0.0005	8.7	±	0.6	0.17	±	0.01	0.36	±	0.07	4.3	±	0.3
15453500	06/23/04	0.013	±	0.000	1.1	±	0.0	0.0031	±	0.0003	11	±	1	0.18	±	0.01	0.42	±	0.06	5.3	±	0.3
15453500	07/13/04	0.0009	±	0.0001	2.3	±	0.0	0.0041	±	0.0007	13	±	1	0.26	±	0.01	0.40	±	0.10	5.4	±	0.4
15453500	08/17/04	0.0014	±	0.0003	2.1	±	0.0	0.0040	±	0.0001	16	±	0	0.22	±	0.00	0.36	±	0.07	5.4	±	0.0
15453500	09/10/04	0.0011	±	0.0002	1.5	±	0.0	0.0042	±	0.0004	16	±	0	0.19	±	0.00	0.26	±	0.02	5.4	±	0.1

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Praseodymium µg/L			Rubidium µg/L			Rhenium µg/L			Sulfur mg/L			Antimony µg/L			Selenium µg/L			Silica mg/L		
		A		SD	A		SD	A		SD	A		SD	A		SD	A		SD	A		SD
15515500	03/30/04	0.0007	±	0.0001	1.2	±	0.0	0.0038	±	0.0007	15	±	0	0.16	±	0.01	0.60	±	0.10	16	±	0
15515500	05/28/04	0.010	±	0.000	1.9	±	0.0	0.0031	±	0.0005	14	±	1	0.28	±	0.01	0.50	±	0.08	7.4	±	0.3
15515500	06/10/04	0.0031	±	0.0001	2.3	±	0.0	0.0044	±	0.0003	15	±	1	0.32	±	0.01	0.52	±	0.08	7.5	±	0.3
15515500	06/25/04	0.0014	±	0.0002	4.1	±	0.1	0.0041	±	0.0005	15	±	1	0.53	±	0.00	0.51	±	0.10	6.2	±	0.1
15515500	07/23/04	0.0010	±	0.0002	2.8	±	0.0	0.0044	±	0.0002	14	±	0	0.38	±	0.01	0.46	±	0.00	5.5	±	0.3
15515500	08/26/04	0.0009	±	0.0003	2.1	±	0.0	0.0047	±	0.0007	17	±	1	0.31	±	0.00	0.43	±	0.09	5.8	±	0.3
15515500	09/22/04	0.0016	±	0.0001	1.5	±	0.0	0.0038	±	0.0004	16	±	0	0.20	±	0.00	0.44	±	0.02	11	±	0
15565447	04/07/04	0.0015	±	0.0001	1.5	±	0.0	0.0027	±	0.0003	11	±	0	0.087	±	0.004	0.33	±	0.08	13	±	0
15565447	04/16/04	0.0019	±	0.0002	1.5	±	0.0	0.0024	±	0.0003	9.7	±	0.6	0.094	±	0.008	0.38	±	0.08	12	±	1
15565447	04/23/04	0.0019	±	0.0001	1.5	±	0.0	0.0021	±	0.0008	9.8	±	0.5	0.091	±	0.004	0.34	±	0.05	12	±	0
15565447	04/23/04	0.0026	±	0.0004	1.4	±	0.0	0.0019	±	0.0004	8.2	±	0.2	0.099	±	0.007	0.30	±	0.08	10	±	0
15565447	04/23/04	0.0031	±	0.0001	1.4	±	0.0	0.0019	±	0.0003	8.6	±	0.6	0.10	±	0.00	0.27	±	0.06	10	±	1
15565447	05/26/04	0.045	±	0.000	0.91	±	0.01	0.0016	±	0.0006	6.2	±	0.5	0.18	±	0.01	0.21	±	0.12	5.1	±	0.1
15565447	06/15/04	0.018	±	0.000	1.1	±	0.0	0.0019	±	0.0006	8.1	±	0.1	0.25	±	0.00	0.29	±	0.08	5.2	±	0.1
15565447	07/20/04	0.0020	±	0.0002	2.0	±	0.0	0.0036	±	0.0003	12	±	0	0.34	±	0.01	0.38	±	0.08	5.8	±	0.1
15565447	08/18/04	0.0020	±	0.0002	2.1	±	0.0	0.0038	±	0.0003	14	±	1	0.31	±	0.02	0.39	±	0.08	6.4	±	0.2
15565447	09/22/04	0.0040	±	0.0003	1.6	±	0.0	0.0038	±	0.0003	14	±	0	0.24	±	0.01	0.40	±	0.04	6.6	±	0.2

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Samarium µg/L			Strontium µg/L			Terbium µg/L			Tellurium µg/L			Thorium µg/L			Thallium µg/L		
		A		SD	A		SD	A		SD	A		SD	A		SD	A		SD
15356000	04/13/04	< 0.002	±	0.000	155	±	2	< 0.0002	±	0.0001	< 0.01	±	0.00	0.041	±	0.029	0.005	±	0.003
15356000	06/17/04	0.011	±	0.001	122	±	2	0.0021	±	0.0002	< 0.01	±	0.00	0.063	±	0.004	0.004	±	0.001
15356000	06/30/04	< 0.002	±	0.001	132	±	0	< 0.0002	±	0.0001	< 0.01	±	0.00	0.015	±	0.006	0.009	±	0.006
15356000	07/20/04	< 0.002	±	0.001	146	±	1	< 0.0002	±	0.0001	< 0.01	±	0.01	0.004	±	0.002	0.005	±	0.000
15356000	08/19/04	< 0.001	±	0.001	147	±	2	< 0.0003	±	0.0002	< 0.005	±	0.002	0.0093	±	0.0083	0.028	±	0.027
15356000	09/06/04	0.007	±	0.002	147	±	2	0.0012	±	0.0002	< 0.01	±	0.00	0.038	±	0.011	0.006	±	0.002
15389000	04/09/04	0.002	±	0.001	162	±	1	0.0003	±	0.0001	< 0.01	±	0.01	0.009	±	0.005	< 0.004	±	0.000
15389000	06/02/04	0.050	±	0.002	45	±	0	0.0096	±	0.0007	< 0.01	±	0.00	0.15	±	0.01	0.009	±	0.002
15389000	06/07/04	0.029	±	0.001	56	±	1	0.0053	±	0.0002	< 0.01	±	0.01	0.091	±	0.005	0.006	±	0.002
15389000	06/11/04	0.029	±	0.001	64	±	1	0.0062	±	0.0002	< 0.01	±	0.01	0.099	±	0.007	0.009	±	0.005
15389000	07/29/04	0.002	±	0.001	143	±	0	0.0004	±	0.0002	< 0.01	±	0.01	0.006	±	0.003	< 0.004	±	0.001
15389000	08/09/04	0.014	±	0.002	124	±	1	0.0027	±	0.0002	< 0.01	±	0.00	0.023	±	0.004	< 0.004	±	0.001
15389000	09/09/04	0.006	±	0.000	138	±	1	0.0009	±	0.0002	< 0.005	±	0.006	0.011	±	0.006	< 0.005	±	0.001
15453500	04/01/04	< 0.002	±	0.000	168	±	2	< 0.0002	±	0.0002	< 0.01	±	0.00	0.004	±	0.002	0.011	±	0.010
15453500	06/04/04	0.027	±	0.001	91	±	1	0.0051	±	0.0005	< 0.01	±	0.00	0.11	±	0.00	0.008	±	0.003
15453500	06/09/04	0.017	±	0.001	95	±	1	0.0032	±	0.0002	< 0.01	±	0.00	0.061	±	0.001	0.009	±	0.002
15453500	06/23/04	0.008	±	0.000	122	±	3	0.0012	±	0.0001	< 0.01	±	0.01	0.046	±	0.009	0.005	±	0.001
15453500	07/13/04	< 0.002	±	0.001	139	±	2	0.0003	±	0.0002	< 0.01	±	0.01	0.003	±	0.002	0.007	±	0.003
15453500	08/17/04	0.002	±	0.001	144	±	1	0.0004	±	0.0002	< 0.01	±	0.00	0.006	±	0.005	< 0.004	±	0.001
15453500	09/10/04	0.001	±	0.000	156	±	0	0.0003	±	0.0002	< 0.005	±	0.005	0.0053	±	0.0006	< 0.005	±	0.003

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Samarium µg/L			Strontium µg/L			Terbium µg/L			Tellurium µg/L			Thorium µg/L			Thallium µg/L		
		A		SD	A		SD	A		SD	A		SD	A		SD	A		SD
15515500	03/30/04	< 0.002	±	0.002	197	±	2	< 0.0002	±	0.0001	< 0.01	±	0.01	0.004	±	0.001	0.027	±	0.027
15515500	05/28/04	0.012	±	0.002	129	±	1	0.0018	±	0.0001	< 0.01	±	0.01	0.035	±	0.006	0.016	±	0.016
15515500	06/10/04	0.003	±	0.001	143	±	0	0.0007	±	0.0001	< 0.01	±	0.00	0.030	±	0.003	0.013	±	0.001
15515500	06/25/04	0.002	±	0.001	130	±	0	< 0.0002	±	0.0001	< 0.01	±	0.00	0.013	±	0.004	0.009	±	0.001
15515500	07/23/04	< 0.002	±	0.000	130	±	0	< 0.0002	±	0.0001	< 0.01	±	0.01	0.005	±	0.004	0.006	±	0.002
15515500	08/26/04	< 0.001	±	0.001	130	±	1	< 0.0003	±	0.0002	< 0.005	±	0.004	0.0052	±	0.0027	0.013	±	0.011
15515500	09/22/04	0.002	±	0.000	182	±	4	0.0005	±	0.0002	0.006	±	0.004	0.035	±	0.022	0.006	±	0.002
15565447	04/07/04	0.002	±	0.002	198	±	0	0.0004	±	0.0002	< 0.01	±	0.00	0.005	±	0.002	0.006	±	0.002
15565447	04/16/04	0.003	±	0.001	175	±	1	0.0005	±	0.0001	< 0.01	±	0.01	0.006	±	0.002	0.004	±	0.003
15565447	04/23/04	0.003	±	0.001	173	±	2	0.0005	±	0.0001	< 0.01	±	0.00	0.005	±	0.001	< 0.004	±	0.001
15565447	04/23/04	0.003	±	0.001	154	±	1	0.0005	±	0.0002	< 0.01	±	0.00	< 0.002	±	0.001	< 0.004	±	0.004
15565447	04/23/04	0.003	±	0.001	155	±	2	0.0005	±	0.0001	< 0.01	±	0.00	0.004	±	0.002	< 0.004	±	0.002
15565447	05/26/04	0.050	±	0.002	88	±	1	0.0092	±	0.0002	< 0.01	±	0.01	0.083	±	0.005	0.011	±	0.009
15565447	06/15/04	0.020	±	0.000	98	±	2	0.0039	±	0.0000	< 0.01	±	0.00	0.038	±	0.003	< 0.004	±	0.000
15565447	07/20/04	0.003	±	0.001	131	±	2	0.0005	±	0.0001	< 0.01	±	0.00	0.006	±	0.002	0.005	±	0.001
15565447	08/18/04	0.002	±	0.001	142	±	2	0.0005	±	0.0002	< 0.01	±	0.01	0.004	±	0.000	< 0.004	±	0.001
15565447	09/22/04	0.006	±	0.002	155	±	1	0.0009	±	0.0001	< 0.005	±	0.006	0.019	±	0.006	< 0.005	±	0.006

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Thulium µg/L			Uranium µg/L			Vanadium µg/L			Tungsten µg/L			Yttrium µg/L			Ytterbium µg/L			Zinc µg/L		
		A		SD	A		SD	A		SD	A		SD	A		SD	A		SD	A		SD
15356000	04/13/04	< 0.0003	±	0.0001	1.1	±	0.0	0.2	±	0.0	0.009	±	0.002	0.016	±	0.001	0.001	±	0.001	1.3	±	0.0
15356000	06/17/04	0.0010	±	0.0002	0.80	±	0.01	0.5	±	0.1	0.010	±	0.001	0.073	±	0.001	0.006	±	0.000	1.3	±	0.0
15356000	06/30/04	< 0.0003	±	0.0001	0.81	±	0.01	0.5	±	0.0	0.016	±	0.001	0.012	±	0.000	0.001	±	0.001	< 0.08	±	0.01
15356000	07/20/04	< 0.0003	±	0.0002	0.88	±	0.03	0.5	±	0.0	0.016	±	0.001	0.011	±	0.001	< 0.001	±	0.001	0.16	±	0.02
15356000	08/19/04	0.0002	±	0.0001	0.91	±	0.02	0.50	±	0.04	0.014	±	0.001	0.013	±	0.000	0.002	±	0.001	0.17	±	0.03
15356000	09/06/04	0.0006	±	0.0002	0.92	±	0.01	0.5	±	0.0	0.014	±	0.001	0.041	±	0.001	0.004	±	0.001	2.7	±	0.1
15389000	04/09/04	< 0.0003	±	0.0001	0.80	±	0.02	< 0.1	±	0.0	< 0.002	±	0.001	0.021	±	0.001	< 0.001	±	0.000	0.95	±	0.05
15389000	06/02/04	0.0035	±	0.0000	0.19	±	0.00	0.4	±	0.1	< 0.002	±	0.000	0.34	±	0.00	0.023	±	0.001	0.53	±	0.03
15389000	06/07/04	0.0022	±	0.0001	0.24	±	0.01	0.3	±	0.0	0.034	±	0.002	0.19	±	0.01	0.015	±	0.000	0.29	±	0.01
15389000	06/11/04	0.0022	±	0.0002	0.23	±	0.01	0.4	±	0.0	0.003	±	0.000	0.21	±	0.00	0.014	±	0.000	0.44	±	0.04
15389000	07/29/04	< 0.0003	±	0.0000	0.68	±	0.02	0.2	±	0.1	0.003	±	0.001	0.020	±	0.000	0.002	±	0.001	0.62	±	0.01
15389000	08/09/04	0.0010	±	0.0003	0.24	±	0.01	0.2	±	0.0	< 0.002	±	0.001	0.092	±	0.001	0.006	±	0.001	0.62	±	0.05
15389000	09/09/04	0.0006	±	0.0002	0.46	±	0.01	0.10	±	0.01	< 0.002	±	0.001	0.040	±	0.000	0.003	±	0.001	2.2	±	0.1
15453500	04/01/04	< 0.0003	±	0.0000	1.0	±	0.0	0.1	±	0.1	0.004	±	0.002	0.018	±	0.001	< 0.001	±	0.000	0.24	±	0.02
15453500	06/04/04	0.0023	±	0.0000	0.60	±	0.02	0.5	±	0.0	0.008	±	0.001	0.20	±	0.00	0.016	±	0.002	0.51	±	0.03
15453500	06/09/04	0.0016	±	0.0001	0.59	±	0.01	0.5	±	0.0	0.009	±	0.001	0.13	±	0.00	0.010	±	0.000	0.14	±	0.01
15453500	06/23/04	0.0004	±	0.0001	0.75	±	0.01	0.7	±	0.1	0.011	±	0.001	0.040	±	0.001	0.003	±	0.000	< 0.08	±	0.01
15453500	07/13/04	< 0.0003	±	0.0001	0.89	±	0.02	0.6	±	0.0	0.013	±	0.002	0.015	±	0.000	0.001	±	0.000	< 0.08	±	0.02
15453500	08/17/04	< 0.0003	±	0.0002	0.85	±	0.00	0.5	±	0.0	0.013	±	0.003	0.017	±	0.001	0.002	±	0.000	< 0.08	±	0.03
15453500	09/10/04	0.0004	±	0.0002	0.97	±	0.01	0.46	±	0.02	0.018	±	0.004	0.018	±	0.001	0.002	±	0.001	0.43	±	0.02

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Thulium µg/L			Uranium µg/L			Vanadium µg/L			Tungsten µg/L			Yttrium µg/L			Ytterbium µg/L			Zinc µg/L		
		A		SD	A		SD	A		SD	A		SD	A		SD	A		SD	A		SD
15515500	03/30/04	< 0.0003	±	0.0001	0.81	±	0.03	0.3	±	0.0	0.010	±	0.003	0.017	±	0.000	0.002	±	0.000	2.4	±	0.0
15515500	05/28/04	0.0011	±	0.0000	0.74	±	0.02	0.6	±	0.0	0.011	±	0.001	0.092	±	0.001	0.009	±	0.001	0.69	±	0.16
15515500	06/10/04	0.0004	±	0.0002	0.86	±	0.04	0.5	±	0.0	0.016	±	0.003	0.030	±	0.000	0.003	±	0.001	< 0.08	±	0.03
15515500	06/25/04	< 0.0003	±	0.0002	0.98	±	0.02	0.5	±	0.0	0.020	±	0.000	0.012	±	0.001	<	±	0.000	0.62	±	0.04
15515500	07/23/04	< 0.0003	±	0.0001	0.79	±	0.02	0.4	±	0.0	0.014	±	0.001	0.0096	±	0.0001	<	±	0.000	0.22	±	0.02
15515500	08/26/04	0.0002	±	0.0001	0.82	±	0.01	0.37	±	0.02	0.010	±	0.000	0.012	±	0.000	0.001	±	0.000	0.42	±	0.04
15515500	09/22/04	0.0004	±	0.0001	0.83	±	0.03	0.52	±	0.06	0.010	±	0.001	0.030	±	0.001	0.003	±	0.001	1.5	±	0.0
15565447	04/07/04	< 0.0003	±	0.0000	0.82	±	0.02	< 0.1	±	0.0	0.003	±	0.002	0.024	±	0.001	0.003	±	0.001	1.9	±	0.0
15565447	04/16/04	0.0006	±	0.0001	0.70	±	0.01	0.2	±	0.0	0.004	±	0.002	0.026	±	0.000	0.002	±	0.000	4.1	±	0.2
15565447	04/23/04	< 0.0003	±	0.0001	0.69	±	0.02	< 0.1	±	0.1	0.003	±	0.001	0.026	±	0.001	0.002	±	0.000	3.2	±	0.1
15565447	04/23/04	0.0004	±	0.0001	0.58	±	0.01	< 0.1	±	0.0	< 0.002	±	0.001	0.030	±	0.000	0.002	±	0.000	3.3	±	0.0
15565447	04/23/04	0.0005	±	0.0002	0.61	±	0.02	< 0.1	±	0.0	0.004	±	0.001	0.029	±	0.001	0.003	±	0.000	2.9	±	0.0
15565447	05/26/04	0.0050	±	0.0000	0.46	±	0.01	0.6	±	0.1	0.012	±	0.002	0.37	±	0.00	0.032	±	0.001	2.8	±	0.1
15565447	06/15/04	0.0017	±	0.0000	0.49	±	0.01	0.7	±	0.0	0.010	±	0.002	0.16	±	0.00	0.014	±	0.001	0.30	±	0.02
15565447	07/20/04	< 0.0003	±	0.0001	0.84	±	0.03	0.6	±	0.0	0.015	±	0.002	0.022	±	0.001	0.002	±	0.000	< 0.08	±	0.02
15565447	08/18/04	0.0004	±	0.0000	0.92	±	0.00	0.6	±	0.0	0.014	±	0.002	0.023	±	0.000	0.002	±	0.000	< 0.08	±	0.02
15565447	09/22/04	0.0004	±	0.0001	1.0	±	0.0	0.55	±	0.01	0.011	±	0.002	0.036	±	0.001	0.003	±	0.001	0.30	±	0.04

Table 8. Selected dissolved major cations and trace elements from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date	Zirconium µg/L		
		A		SD
15356000	04/13/04	0.18	±	0.13
15356000	06/17/04	0.17	±	0.05
15356000	06/30/04	0.080	±	0.029
15356000	07/20/04	0.034	±	0.002
15356000	08/19/04	0.038	±	0.003
15356000	09/06/04	0.15	±	0.03
15389000	04/09/04	0.091	±	0.025
15389000	06/02/04	0.42	±	0.02
15389000	06/07/04	0.33	±	0.05
15389000	06/11/04	0.32	±	0.02
15389000	07/29/04	0.098	±	0.033
15389000	08/09/04	0.14	±	0.01
15389000	09/09/04	0.11	±	0.02
15453500	04/01/04	0.047	±	0.014
15453500	06/04/04	0.33	±	0.02
15453500	06/09/04	0.30	±	0.03
15453500	06/23/04	0.15	±	0.03
15453500	07/13/04	0.058	±	0.011
15453500	08/17/04	0.070	±	0.029
15453500	09/10/04	0.055	±	0.013
15515500	03/30/04	0.050	±	0.002
15515500	05/28/04	0.13	±	0.02
15515500	06/10/04	0.077	±	0.009
15515500	06/25/04	0.050	±	0.005
15515500	07/23/04	0.033	±	0.001
15515500	08/26/04	0.025	±	0.006
15515500	09/22/04	0.15	±	0.10
15565447	04/07/04	0.069	±	0.015
15565447	04/16/04	0.067	±	0.007
15565447	04/23/04	0.069	±	0.008
15565447	04/23/04	0.070	±	0.011
15565447	04/23/04	0.066	±	0.008
15565447	05/26/04	0.34	±	0.01
15565447	06/15/04	0.25	±	0.01
15565447	07/20/04	0.062	±	0.016
15565447	08/18/04	0.054	±	0.007
15565447	09/22/04	0.093	±	0.018

CHAPTER 5 - Mercury Analyses

by John F. DeWild and Mark L. Olson

A description of sample collection and processing of samples for filtered (dissolved), methyl, particulate, and total mercury (Hg) is given in Schuster (2003). Sample analysis results for WY 2004 are given in table 9.

Table 9. Mercury and methylmercury concentrations from fixed-station sampling sites in the Yukon River Basin

[Station ID, station identification number, refer to table 1 for description and figure 1 for location; Hg, mercury; ng/L, nanogram per liter; FMHg, Filtered methylmercury; FTHg, Filtered total mercury; PMHg, Particulate methylmercury; PTHg, Particulate total mercury; <, less than; *, collected by the Equal Discharge Increment method (EDI) and split from a churn sample]

Station ID	Date/Time	Filtered Methyl-Hg (FMHg) (ng/L)	Filtered Total-Hg (FTHg) (ng/L)	Particulate Methyl-Hg (PMHg) (ng/L)	Particulate Total-Hg (PTHg) (ng/L)
15389000	4/9/04 14:00	<0.04	0.41	<0.008	0.15
15389000	6/7/04 15:20	0.06	2.93	0.043	8.81
15389000	6/7/04 15:20	0.08	2.96	0.043	9.04
15389000	6/11/04 13:50	0.04	3.79	0.033	6.37
15389000	7/29/04 14:20	<0.04	0.79	<0.021	0.28
15389000	9/9/04 13:00	<0.04	0.81	<0.041	0.19
15515500	3/30/04 17:50	0.05	0.27	<0.017	0.71
15515500	5/28/04 12:00	<0.04	2.15	<0.081	43.96
15515500	6/10/04 13:10	<0.04	2.79	<0.071	51.01
15515500	6/25/04 16:35	<0.04	2.90	0.094	29.33
15515500	7/23/04 16:10	<0.04	0.18	<0.259	15.02
15515500	8/26/04 15:30	<0.04	0.34	<0.038	69.66
15515500	9/22/03 16:00	<0.04	0.50	<0.022	10.50
15356000	4/13/04 12:30	<0.04	0.57	<0.020	0.49
15356000	5/26/04 13:00	0.07	4.25	0.109	29.08
15356000	6/17/04 12:00	<0.04	2.41	<0.040	15.99
15356000	6/17/04 12:30	<0.04	1.98	<0.041	25.68
15356000	6/30/04 16:20	<0.04	0.83	<0.100	73.22
15356000	7/20/04 15:00	<0.04	0.90	<0.119	58.89
15356000	8/19/04 15:10	<0.04	0.26	<0.088	55.67
15356000	9/5/04 12:00	<0.04	0.65	<0.038	4.51
15356000	9/6/04 11:00	<0.04	0.69	<0.035	7.29
15356000*	9/6/04 11:00	<0.04	0.65	<0.035	9.16
15565447	4/7/04 10:20	0.04	0.44	<0.017	0.91
15565447	5/26/04 16:20	0.05	3.79	0.041	10.15
15565447	6/15/04 15:20	<0.04	3.58	0.061	18.61
15565447	6/29/04 16:40	0.05	1.62	<0.080	16.20
15565447	7/20/04 10:30	<0.04	1.18	<0.069	34.87
15565447	8/18/04 11:10	<0.04	0.54	<0.051	37.04
15565447	9/22/04 13:00	<0.04	0.62	<0.045	15.78
15453500	4/1/04 19:00	<0.04	0.31	<0.019	0.36
15453500	6/4/04 15:20	0.06	4.17	0.128	40.49
15453500	6/9/04 14:30	<0.04	4.19	0.066	20.31
15453500	6/23/04 13:00	<0.04	3.36	0.060	15.96
15453500	7/13/04 14:50	<0.04	1.25	<0.063	14.85
15453500	8/17/04 16:50	<0.04	1.15	<0.063	19.09
15453500	9/10/04 15:30	<0.04	26.60	<0.066	10.15

CHAPTER 6 - Dissolved Gasses and Dissolved Inorganic Carbon

by Robert G. Striegl and Mark M. Dornblaser

A description of sample collection and processing of samples for the partial pressures of carbon dioxide (P_{CO2}) and methane (P_{CH4}) is given in Schuster (2003). Sample analysis results for WY 2004 are given in table 10.

Table 10. Carbon dioxide, methane, and dissolved inorganic carbon concentrations from fixed-station sampling sites in the Yukon River Basin

[Station ID, station identification number, refer to table 1 for description and figure 1 for location; CO_2, carbon dioxide; µmol/L, micromole per liter; P_{CO2}, partial pressure of CO_2; µatmos, microatmospheres; CH_4, methane; P_{CH4}, partial pressure of CH_4; DIC, dissolved inorganic carbon; NA, not available]

Station ID	Date	CO_2 (µmol/L)	Corrected P_{CO2} (µatmos)	CH_4 (µmol/L)	Corrected P_{CH4} (µatmos)	DIC (µmol/L)
15356000	4/13/2004	117.5	1,462	0.11	2.2	2,436
15356000	6/17/2004	30.3	645	0.09	2.14	1,620
15356000	6/30/2004	26.8	623	0.07	1.6	1,609
15356000	7/20/2004	41.1	906	0.07	1.6	1,854
15356000	8/19/2004	26.6	467	0.15	3.3	1,900
15356000	9/5/2004	53.5	981	0.12	2.8	1,834
15389000	4/9/2004	323.1	4,070	0.16	3.4	4,038
15389000	6/2/2004	87.9	1,605	0.27	6.2	942
15389000	6/7/2004	80.3	1,603	0.13	3.0	1,068
15389000	6/11/2004	38.2	770	0.09	2.2	1,162
15389000	7/29/2004	46.3	1,071	0.09	2.2	2,631
15389000	8/9/2004	57.0	961	0.09	1.9	1,484
15389000	9/9/2004	70.5	1,101	0.15	3.4	2,252
15453500	4/1/2004	180.9	2,301	0.42	9.0	3,088
15453500	6/4/2004	30.5	635	0.12	2.7	1,490
15453500	6/9/2004	24.2	532	0.17	3.9	1,461
15453500	6/23/2004	43.9	1,116	0.25	5.9	1,741
15453500	7/13/2004	36.2	851	0.19	4.3	1,770
15453500	8/17/2004	48.0	1,127	0.26	6.0	1,977
15453500	9/10/2004	65.7	1,133	0.33	7.2	2,203
15515500	3/30/2004	252.2	3,198	2.69	57.0	3,402
15515500	5/28/2004	66.3	1,340	0.46	10.4	1,604
15515500	6/10/2004	51.6	1,103	0.47	10.7	1,883
15515500	6/25/2004	24.3	616	0.27	6.4	1,710
15515500	7/23/2004	51.8	1,116	0.37	8.4	1,640
15515500	8/26/2004	40.1	755	0.47	10.6	1,738
15515500	9/22/2004	111.0	1,666	2.87	62.3	2,605
15565447	4/7/2004	766.1	9,826	3.7	78.5	4,281
15565447	5/26/2004	70.7	1,269	0.18	3.9	1,323
15565447	6/15/2004	72.2	1,657	0.26	5.9	1,546
15565447	6/29/2004	92.6	2,292	0.23	5.4	1,807
15565447	7/20/2004	NA	NA	0.29	6.8	1,886
15565447	8/18/2004	63.1	1,517	0.27	6.2	1,926
15565447	9/22/2004	64.9	1,106	0.34	7.5	2,532

CHAPTER 7 - Sediment Chemistry

by Arthur J. Horowitz

A description of sample collection and processing of samples for suspended sediment chemistry is given in Schuster (2003). Sample analysis results for WY 2004 are given in table 11.

Table 11. Sediment chemistry data from fixed-station sampling sites in the Yukon River Basin

[Station ID, station identification number, refer to table 1 for description and figure 1 for location; mg/L, milligram per liter; µg/g; microgram per gram; %, percent; Sets A & B indicate duplicate samples; <, less than]

Station ID	Date/ Time	Suspended Sediment (mg/L)	Silver (µg/g)	Copper (µg/g)	Lead (µg/g)	Zinc (µg/g)	Cadmium (µg/g)
15356000	5/26/2004 13:00	507	<0.5	32	68	210	0.8
15356000	6/17/2004 10:30	336	<0.5	32	60	160	0.5
15356000	6/30/2004 16:20	1,441	<0.5	42	16	110	0.4
15356000	7/20/2004 15:00	1,509	<0.5	42	17	100	0.4
15356000	8/19/2004 15:10	1,271	<0.5	44	9	100	0.4
15356000	9/6/2004 11:00	279	<0.5	39	12	95	0.2
15389000	6/2/2004 16:30	204	<0.5	28	56	220	0.6
15389000	6/7/2004 15:20	141	<0.5	29	28	210	0.5
15389000	6/11/2004 13:50	85	<0.5	34	30	260	0.5
15453500	6/7/2004 15:20	587	<0.5	37	17	200	0.5
15453500	6/9/2004 14:30	379	<0.5	36	16	200	0.5
15453500	6/23/2004 13:00 (Set A)	329	<0.5	34	37	170	0.6
15453500	6/23/2004 13:10 (Set B)	283	<0.5	37	38	180	0.6
15453500	7/13/2004 14:50	637	<0.5	46	18	130	0.6
15453500	8/17/2004 16:50	440	<0.5	48	16	120	0.5
15453500	9/10/2004 15:30	224	<0.5	36	18	110	0.4
15515500	3/30/2004 17:50	11	<1.0	70	59	180	0.4
15515500	5/28/2004 12:00	1,360	<0.5	38	23	140	0.2
15515500	6/10/2004 13:13	1,367	<0.5	45	20	170	0.2
15515500	6/25/2004 16:35	2,956	<0.5	59	26	130	0.4
15515500	7/23/2004 16:10	2,584	<0.5	56	20	110	0.4
15515500	8/26/2004 15:30	2,413	<0.5	54	15	100	0.3
15515500	9/22/2004 16:00	391	<0.5	42	18	95	0.3
15565447	5/26/2004 16:20	314	<0.5	37	55	170	0.3
15565447	6/15/2004 15:20	472	<0.5	34	32	120	0.5
15565447	6/29/2004 16:40 (Set A)	297	<0.5	51	35	140	0.5
15565447	6/29/2004 16:50 (Set B)	293	<0.5	47	23	160	0.5
15565447	7/20/2004 10:30	529	<0.5	61	29	150	0.6
15565447	8/18/2004 11:10	484	0.8	53	16	130	0.6
15565447	9/22/2004 13:00	208	<0.5	57	24	130	0.5

Table 11. Sediment chemistry data from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date/ Time	Chromium (µg/g)	Cobalt (µg/g)	Nickel (µg/g)	Barium (µg/g)	Vanadium (µg/g)	Lithium (µg/g)	Beryllium (µg/g)	Molybdenum (µg/g)
15356000	5/26/2004 13:00	98	15	54	1,000	140	25	1.5	3
15356000	6/17/2004 10:30	88	14	53	880	130	22	1.4	3
15356000	6/30/2004 16:20	96	18	58	730	120	25	1.4	2
15356000	7/20/2004 15:00	91	17	55	690	120	22	1.4	2
15356000	8/19/2004 15:10	89	18	53	600	130	22	1.3	2
15356000	9/6/2004 11:00	90	16	53	640	120	20	1.2	3
15389000	6/2/2004 16:30	110	15	56	790	180	61	2.0	3
15389000	6/7/2004 15:20	140	15	82	750	170	61	2.0	9
15389000	6/11/2004 13:50	180	17	99	850	210	65	2.2	10
15453500	6/7/2004 15:20	110	17	62	1,000	160	33	1.7	4
15453500	6/9/2004 14:30	120	16	67	1,000	160	32	1.7	5
15453500	6/23/2004 13:00 (Set A)	95	15	54	870	140	26	1.4	3
15453500	6/23/2004 13:10 (Set B)	98	17	58	950	150	29	1.6	3
15453500	7/13/2004 14:50	100	18	66	800	130	28	1.5	3
15453500	8/17/2004 16:50	95	19	63	680	140	27	1.4	3
15453500	9/10/2004 15:30	90	16	56	720	120	24	1.3	3
15515500	3/30/2004 17:50	150	19	60	1,000	160	24	1.8	3
15515500	5/28/2004 12:00	92	16	51	910	130	25	1.5	2
15515500	6/10/2004 13:13	120	19	66	950	140	29	1.7	4
15515500	6/25/2004 16:35	120	19	64	1,200	140	34	1.9	2
15515500	7/23/2004 16:10	97	18	55	1,100	130	26	1.6	2
15515500	8/26/2004 15:30	88	17	51	880	130	24	1.5	2
15515500	9/22/2004 16:00	84	15	46	770	110	20	1.3	2
15565447	5/26/2004 16:20	110	17	59	870	140	30	1.6	3
15565447	6/15/2004 15:20	100	15	58	980	120	30	1.5	2
15565447	6/29/2004 16:40 (Set A)	170	17	100	1,100	140	33	1.7	9
15565447	6/29/2004 16:50 (Set B)	130	18	78	1,200	150	36	1.8	4
15565447	7/20/2004 10:30	120	22	79	1,100	160	37	1.8	3
15565447	8/18/2004 11:10	99	18	62	890	140	34	1.5	2
15565447	9/22/2004 13:00	100	19	63	900	150	31	1.5	2

Table 11. Sediment chemistry data from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date/ Time	Phosphorus (µg/g)	Strontium (µg/g)	Arsenic (µg/g)	Antimony (µg/g)	Selenium (µg/g)	Mercury (µg/g)	Thallium (µg/g)	Uranium (µg/g)
15356000	5/26/2004 13:00	1,000	290	11	2.0	0.7	0.07	<50	<50
15356000	6/17/2004 10:30	850	280	10	1.8	0.5	0.04	<50	<50
15356000	6/30/2004 16:20	1,100	320	12	1.7	0.4	0.03	<50	<50
15356000	7/20/2004 15:00	1,100	330	11	1.6	0.4	0.06	<50	<50
15356000	8/19/2004 15:10	1,000	330	14	1.6	0.4	0.01	<50	<50
15356000	9/6/2004 11:00	890	340	12	1.3	0.4	0.04	<50	<50
15389000	6/2/2004 16:30	930	110	14	1.2	1.5	0.07	<50	<50
15389000	6/7/2004 15:20	930	110	15	1.2	1.0	0.09	<50	<50
15389000	6/11/2004 13:50	1,000	140	14	1.2	1.1	0.10	<50	<50
15453500	6/7/2004 15:20	1,100	280	13	1.7	0.7	0.07	<50	<50
15453500	6/9/2004 14:30	1,100	250	13	1.7	0.8	0.09	<50	<50
15453500	6/23/2004 13:00 (Set A)	920	260	11	1.6	1.0	0.05	<50	<50
15453500	6/23/2004 13:10 (Set B)	1,000	280	11	1.7	1.0	0.06	<50	<50
15453500	7/13/2004 14:50	990	290	13	1.9	0.5	0.13	<50	<50
15453500	8/17/2004 16:50	1,000	310	14	1.7	0.4	0.03	<50	<50
15453500	9/10/2004 15:30	890	310	12	1.4	0.5	0.08	<50	<50
15515500	3/30/2004 17:50	1,500	260	50	2.5	0.9	<0.02	<100	<100
15515500	5/28/2004 12:00	750	220	13	1.7	0.3	0.03	<50	<50
15515500	6/10/2004 13:13	710	220	16	1.9	0.4	0.09	<50	<50
15515500	6/25/2004 16:35	830	220	21	2.5	0.5	0.08	<50	<50
15515500	7/23/2004 16:10	790	240	16	1.7	0.5	0.06	<50	<50
15515500	8/26/2004 15:30	780	270	17	1.5	0.3	0.02	<50	<50
15515500	9/22/2004 16:00	750	250	14	1.2	0.4	<0.01	<50	<50
15565447	5/26/2004 16:20	960	230	13	1.6	0.5	0.10	<50	<50
15565447	6/15/2004 15:20	950	220	12	1.3	0.5	0.10	<50	<50
15565447	6/29/2004 16:40 (Set A)	1,000	240	16	2.0	0.6	0.09	<50	<50
15565447	6/29/2004 16:50 (Set B)	1,100	240	16	1.9	0.6	0.10	<50	<50
15565447	7/20/2004 10:30	1,000	260	18	2.3	0.4	0.07	<50	<50
15565447	8/18/2004 11:10	890	280	21	2.3	0.5	0.05	<50	<50
15565447	9/22/2004 13:00	990	280	19	1.9	0.5	0.19	<50	<50

Table 11. Sediment chemistry data from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID	Date/ Time	Iron (%)	Manganese (µg/g)	Aluminum (%)	Titanium (%)	Total Organic Carbon (%)	Total Carbon (%)	Total Nitrogen (%)
15356000	5/26/2004 13:00	4.0	750	6.6	0.48	1.2	1.5	0.08
15356000	6/17/2004 10:30	3.5	630	5.9	0.40	1.1	2.4	0.11
15356000	6/30/2004 16:20	4.5	810	7.4	0.51	0.4	2.2	0.06
15356000	7/20/2004 15:00	4.4	810	6.9	0.50	0.4	2.3	0.05
15356000	8/19/2004 15:10	4.7	780	6.5	0.48	0.3	2.5	0.04
15356000	9/6/2004 11:00	4.1	750	6.3	0.44	0.6	0.9	0.04
15389000	6/2/2004 16:30	3.9	540	7.0	0.44	3.1	3.5	0.27
15389000	6/7/2004 15:20	4.1	560	7.2	0.45	3.4	3.8	0.27
15389000	6/11/2004 13:50	4.5	610	8.0	0.49	3.6	3.9	0.30
15453500	6/7/2004 15:20	4.5	780	7.3	0.50	1.6	2.7	0.13
15453500	6/9/2004 14:30	4.2	740	7.0	0.48	1.6	2.3	0.13
15453500	6/23/2004 13:00 (Set A)	3.9	700	6.2	0.43	1.5	2.8	0.12
15453500	6/23/2004 13:10 (Set B)	4.3	780	6.8	0.47	1.3	2.5	0.11
15453500	7/13/2004 14:50	4.6	820	6.8	0.45	0.7	2.7	0.09
15453500	8/17/2004 16:50	4.9	850	7.1	0.48	0.6	2.7	0.06
15453500	9/10/2004 15:30	3.9	730	6.1	0.43	0.9	1.7	0.05
15515500	3/30/2004 17:50	7.4	1,100	7.4	0.45	1.9	2.3	0.20
15515500	5/28/2004 12:00	4.3	710	7.7	0.45	0.5	0.7	0.05
15515500	6/10/2004 13:13	4.6	780	8.2	0.44	0.5	0.9	0.07
15515500	6/25/2004 16:35	5.0	910	8.8	0.45	0.4	0.6	0.05
15515500	7/23/2004 16:10	4.4	810	8.0	0.43	0.3	0.5	0.05
15515500	8/26/2004 15:30	4.6	770	8.2	0.45	0.2	0.6	0.01
15515500	9/22/2004 16:00	4.0	700	6.8	0.44	0.5	1.2	0.04
15565447	5/26/2004 16:20	4.5	740	7.2	0.49	1.4	1.8	0.12
15565447	6/15/2004 15:20	3.9	760	6.9	0.43	1.3	1.7	0.12
15565447	6/29/2004 16:40 (Set A)	4.5	920	7.3	0.44	1.4	1.8	0.17
15565447	6/29/2004 16:50 (Set B)	5.0	1,000	8.0	0.48	1.4	1.7	0.15
15565447	7/20/2004 10:30	5.5	1,100	8.5	0.49	0.7	1.7	0.11
15565447	8/18/2004 11:10	4.9	870	7.6	0.46	0.7	2.2	0.06
15565447	9/22/2004 13:00	5.2	960	7.6	0.47	1.0	2.2	0.13

CHAPTER 8 - Sediment Mineralogy

by Dennis D. Eberl

A description of sample collection and processing of samples for quantitative X-ray mineralogical analysis is given in Schuster (2003). Sample analysis results for WY 2004 are given in table 12.

Table 12. Sediment mineralogy data from fixed-station sampling sites in the Yukon River Basin

[Station ID, station identification number, refer to table 1 for description and figure 1 for location; %, percent; *, replicate]

Station ID:	15356000	15356000	15356000	15356000	15356000	15356000
	5/26/04	6/17/04	6/30/04	7/20/04	8/19/04	9/6/04
Mineral	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %
Non-clays:						
Quartz	28.2	27.5	14.3	13.0	14.0	17.9
Ordered Microcline	1.6	1.1	1.0	0.4	1.1	1.7
Intermediate Microcline	3.4	4.0	4.4	4.2	3.9	3.7
Sanidine	0.9	0.8	0.0	0.6	0.0	1.2
Orthoclase	0.0	0.0	0.0	0.0	0.0	0.0
Anorthoclase	16.3	13.7	15.7	13.8	18.0	16.6
Albite	5.9	7.3	6.6	6.4	6.4	7.1
Oligoclase	0.0	1.5	0.3	1.0	0.0	1.0
Andesine	0.0	0.0	0.0	0.0	0.0	0.0
Labradorite	6.6	5.9	6.8	8.9	6.7	6.8
Bytownite	2.2	2.0	2.7	2.2	2.5	3.6
Anorthite	0.1	1.1	0.8	1.8	0.4	0.5
Calcite	4.1	6.2	9.8	10.8	11.2	10.1
Mg-calcite	0.7	0.4	0.7	0.6	0.3	0.3
Dolomite	2.9	2.9	3.5	3.5	3.6	3.5
Amphibole	1.1	0.7	0.8	1.8	1.5	1.0
Pyroxene	0.8	0.3	1.1	1.2	1.5	1.8
Hematite	0.2	0.3	0.4	0.2	0.3	0.5
Maghemite	1.4	1.0	0.9	2.5	0.9	0.2
Apatite	0.4	0.1	0.0	0.6	0.6	0.4
Total non-clays:	76.7	76.9	69.7	73.5	73.0	77.8
Clays:						
Goethite	0.3	0.1	0.1	0.1	0.0	0.0
Disordered Kaolinite	0.1	0.9	1.4	0.5	0.3	0.2
Ferruginous smectite	8.1	6.9	8.0	7.3	10.2	9.1
Illite + Smectite	9.4	6.7	6.9	6.6	6.7	5.6
Chlorite	7.8	7.7	10.8	10.9	11.0	10.1
Muscovite (2M1)	3.5	4.3	4.0	2.4	1.3	2.0
Total clays:	29.2	26.7	31.2	27.8	29.5	27.1
Total:	105.9	103.5	100.9	101.3	102.5	104.9
Full Pattern degree of fit:	0.084	0.080	0.080	0.109	0.087	0.092

Table 12. Sediment mineralogy data from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID:	15389000	15389000
	6/2/04	6/7/04
Mineral	Weight %	Weight %
Non-clays:		
Quartz	37.2	36.7
Ordered Microcline	1.5	1.2
Intermediate Microcline	2.2	2.3
Sanidine	0.3	0.2
Orthoclase	0.0	0.3
Anorthoclase	1.6	2.0
Albite	2.8	3.0
Oligoclase	0.1	0.3
Andesine	0.0	0.0
Labradorite	0.0	0.0
Bytownite	0.0	0.0
Anorthite	0.8	0.0
Calcite	0.0	0.0
Mg-calcite	0.1	0.0
Dolomite	1.6	1.6
Amphibole	0.0	0.3
Pyroxene	0.0	0.0
Hematite	0.0	0.0
Maghemite	0.0	0.0
Apatite	0.6	0.6
Total non-clays:	48.9	48.6
Clays:		
Goethite	0.1	0.0
Disordered Kaolinite	3.7	4.3
Ferruginous smectite	9.7	9.2
Illite + Smectite	17.7	19.1
Chlorite	8.0	8.3
Muscovite (2M1)	10.0	10.3
Total clays:	49.3	51.1
Total:	98.2	99.7
Full Pattern degree of fit:	0.093	0.095

Table 12. Sediment mineralogy data from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID:	15453500	15453500	15453500	15453500*	15453500	15453500
	6/7/04	6/9/04	6/23/04	6/23/04	7/13/04	8/17/04
Mineral	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %
Non-clays:						
Quartz	29.4	32.5	27.2	26.3	14.9	15.1
Ordered Microcline	2.3	2.1	1.8	1.0	1.3	0.6
Intermediate Microcline	2.7	2.8	3.2	4.1	3.9	3.8
Sanidine	1.0	0.3	1.1	0.6	0.2	0.6
Orthoclase	0.0	0.0	0.0	0.0	0.0	0.0
Anorthoclase	14.1	15.7	11.1	11.1	15.0	15.0
Albite	5.4	5.3	6.7	5.8	5.5	7.2
Oligoclase	0.2	0.0	0.9	1.1	0.8	0.0
Andesine	0.0	0.0	0.0	3.9	0.0	0.0
Labradorite	4.3	2.6	5.3	4.6	5.7	5.8
Bytownite	1.2	1.6	2.4	0.4	1.5	2.1
Anorthite	1.8	2.0	0.4	1.1	0.9	0.0
Calcite	3.5	1.4	4.9	5.1	12.1	11.4
Mg-calcite	0.0	0.2	0.5	0.5	0.2	0.0
Dolomite	2.7	2.4	3.0	3.3	3.0	3.3
Amphibole	1.2	0.5	1.5	1.9	1.3	1.6
Pyroxene	0.4	0.7	0.3	0.7	0.5	0.8
Hematite	0.2	0.3	0.2	0.2	0.1	0.3
Maghemite	0.2	0.0	0.0	0.4	0.7	0.4
Apatite	0.2	0.2	0.6	0.7	0.0	0.6
Total non-clays:	70.9	70.4	71.1	72.9	67.5	68.5
Clays:						
Goethite	0.4	0.2	0.3	0.3	0.3	0.0
Disordered Kaolinite	2.6	0.7	0.7	0.2	0.9	1.8
Ferruginous smectite	7.9	10.6	9.2	8.6	10.3	10.6
Illite + Smectite	0.8	6.5	5.7	7.2	6.1	6.2
Chlorite	7.5	8.1	8.4	10.4	13.2	12.7
Muscovite (2M1)	10.8	7.5	5.6	5.1	5.0	4.6
Total clays:	29.9	33.5	29.9	31.7	35.7	35.9
Total:	100.8	103.9	101.0	104.6	103.2	104.4
Full Pattern degree of fit:	0.085	0.092	0.100	0.125	0.087	0.090

Table 12. Sediment mineralogy data from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID:	15515500	15515500	15515500	15515500	15515500	15515500
	5/28/04	6/10/04	6/25/04	7/23/04	8/26/04	9/22/04
Mineral	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %
Non-clays:						
Quartz	34.4	33.9	25.7	26.5	26.6	35.5
Ordered Microcline	0.8	1.4	1.0	0.7	0.9	0.7
Intermediate Microcline	2.8	2.3	2.6	3.3	2.6	2.4
Sanidine	0.0	0.0	0.3	0.3	0.6	0.0
Orthoclase	0.0	0.0	0.0	0.0	0.0	0.0
Anorthoclase	5.9	6.0	8.0	8.3	13.1	13.6
Albite	8.1	7.3	6.2	6.0	5.7	7.7
Oligoclase	1.2	2.3	0.9	1.4	0.0	0.0
Andesine	7.1	3.0	2.3	1.1	0.0	1.3
Labradorite	2.1	3.1	4.3	8.7	7.3	5.0
Bytownite	1.7	0.3	0.8	1.6	3.2	1.8
Anorthite	0.6	0.8	1.2	0.7	0.4	1.8
Calcite	0.3	0.4	0.9	0.6	0.6	0.8
Mg-calcite	0.6	0.3	0.3	0.3	0.4	0.0
Dolomite	0.5	0.3	0.4	0.6	0.2	0.2
Amphibole	1.4	1.1	0.9	1.5	0.4	0.6
Pyroxene	0.4	0.9	0.2	1.0	0.5	0.7
Hematite	0.0	0.0	0.1	0.0	0.1	0.2
Maghemite	0.0	0.4	0.0	0.4	0.1	0.0
Apatite	0.5	0.4	0.1	0.4	0.0	0.2
Total non-clays:	68.5	64.1	56.2	63.5	62.8	72.3
Clays:						
Goethite	0.4	0.4	0.2	0.3	0.2	0.2
Disordered Kaolinite	0.0	0.4	0.5	0.7	1.3	0.3
Ferruginous smectite	4.7	5.4	6.2	7.8	8.4	6.8
Illite + Smectite	0.0	0.0	0.0	0.0	0.0	0.0
Chlorite	11.3	10.8	13.7	9.7	8.7	9.2
Muscovite (2M1)	14.2	17.8	23.5	18.1	15.8	12.0
Total clays:	30.6	34.8	44.1	36.7	34.5	28.4
Total:	99.1	98.9	100.3	100.3	97.3	100.7
Full Pattern degree of fit:	0.117	0.098	0.099	0.108	0.090	0.087

Table 12. Sediment mineralogy data from fixed-station sampling sites in the Yukon River Basin—Continued

Station ID:	15565447	15565447	15565447	15565447*	15565447	15565447
	5/26/04	6/15/04	6/29/04	6/29/04	7/20/04	8/18/04
Mineral	Weight %	Weight %	Weight %	Weight %	Weight %	Weight %
Non-clays:						
Quartz	31.5	32.8	25.2	25.8	14.8	16.0
Ordered Microcline	1.3	0.4	0.2	1.2	1.5	1.2
Intermediate Microcline	2.9	4.0	4.6	3.5	3.4	3.1
Sanidine	0.6	1.1	0.6	0.0	0.0	0.0
Orthoclase	0.0	0.0	0.0	0.0	0.0	0.0
Anorthoclase	12.6	11.7	9.0	11.1	12.2	11.9
Albite	5.8	6.6	7.0	6.6	4.7	5.8
Oligoclase	1.4	1.3	1.2	0.2	0.2	1.7
Andesine	0.0	0.0	1.1	1.8	0.0	1.1
Labradorite	4.6	2.8	4.7	1.7	6.7	5.6
Bytownite	1.4	2.0	0.6	3.0	2.4	0.0
Anorthite	0.4	0.5	0.3	0.0	0.1	0.5
Calcite	0.3	0.6	1.1	0.7	6.4	7.7
Mg-calcite	0.4	0.2	0.0	0.3	0.4	1.0
Dolomite	1.5	1.3	1.5	1.2	2.0	2.4
Amphibole	1.2	1.0	1.2	1.2	1.4	1.5
Pyroxene	0.0	0.7	0.6	0.8	0.7	0.1
Hematite	0.1	0.0	0.2	0.1	0.1	0.1
Maghemite	0.0	0.0	0.0	0.0	0.0	0.7
Apatite	0.2	0.9	0.8	0.6	0.6	0.9
Total non-clays:	66.0	67.9	60.2	60.0	57.8	61.2
Clays:						
Goethite	0.3	0.4	0.3	0.6	0.4	0.5
Disordered Kaolinite	1.6	1.1	0.2	1.1	0.7	0.1
Ferruginous smectite	8.0	7.1	5.6	8.0	8.6	8.3
Illite + Smectite	4.3	6.3	9.4	6.9	6.3	7.1
Chlorite	9.3	10.8	13.5	12.1	14.5	13.6
Muscovite (2M1)	10.9	9.7	11.8	11.0	13.8	12.0
Total clays:	34.4	35.4	40.8	39.6	44.3	41.5
Total:	100.4	103.3	100.9	99.6	102.1	102.7
Full Pattern degree of fit:	0.085	0.115	0.111	0.096	0.086	0.103

CHAPTER 9 - Sediment Concentration and Percent Organic Matter (OM)

by Paul F. Schuster and Michael M. Reddy

A description of sample collection and processing of samples for suspended sediment concentration and percent OM in the sediment is given in Schuster (2003). Sample analysis results for WY 2004 are given in table 13.

Table 13. Suspended sediment concentrations and percent organic matter in sediment from fixed-station sampling sites in the Yukon River Basin

[Station ID, station identification number, refer to table 1 for description and figure 1 for location; mg/L, milligram per liter; OM, Organic Matter; NA, not available; <, less than]

Station ID	Date	Sediment concentration (mg/L)	Percent OM in sediment
15356000	4/13/2004	<1	NA
15356000	5/26/2004	343	7
15356000	6/17/2004	137	8
15356000	6/30/2004	1,054	6
15356000	8/19/2004	709	10
15389000	4/9/2004	<1	NA
15389000	6/2/2004	145	11
15389000	7/29/2004	1	100
15389000	8/9/2004	25	21
15453500	4/1/2004	2	68
15453500	6/4/2004	417	8
15453500	7/13/2004	441	7
15453500	8/17/2004	389	9
15453500	9/10/2004	100	14
15515500	3/30/2004	4	37
15515500	5/28/2004	623	6
15515500	7/23/2004	1,578	4
15515500	8/26/2004	1,386	5
15515500	9/22/2004	125	9
15565447	4/7/2004	3	68
15565447	5/26/2004	251	9
15565447	6/15/2004	300	7
15565447	6/29/2004	197	7
15565447	7/20/2004	383	7
15565447	8/18/2004	398	8
15565447	9/22/2004	178	9

CHAPTER 10 – Total Particulate Carbon (TPC), Particulate Inorganic Carbon (PIC), Particulate Organic Carbon (POC), and Total Particulate Nitrogen (TPN)

by Paul F. Schuster and Michael M. Reddy

A description of sample collection and processing of samples for TPC and TPN, concentrations, also referred to as PC and PN, respectively, is given in Schuster (2003). Duplicate samples are required for the determination of PIC and POC. The first duplicate was analyzed for TPC (Zimmerman and others, 1997). The second duplicate was combusted at 500° C to drive off all the POC. The second duplicate was then analyzed for PIC (Zimmerman and others, 1997). Particulate organic carbon (POC) was determined by the difference of TPC and PIC. Sample analysis results for WY 2004 are given in table 14.

Table 14. Total particulate carbon, particulate inorganic carbon, particulate organic carbon, and total particulate nitrogen concentrations from fixed-station sampling sites in the Yukon River Basin

[Station ID, station identification number, refer to table 1 for description and figure 1 for location; TPC, total particulate carbon; PIC, particulate inorganic carbon; POC, particulate organic carbon; TPN, total particulate nitrogen; mg/L, milligram per liter; NA, not available; concentrations averaged from duplicate samples]

Station ID	Date	TPC (mg/L)	PIC (mg/L)	POC (mg/L)	TPN (mg/L)
15356000	5/26/2004	10.50	2.69	7.81	0.46
15356000	6/17/2004	3.88	1.00	2.88	0.14
15356000	6/30/2004	33.90	23.00	10.90	0.58
15356000	9/6/2004	6.21	2.20	4.01	0.13
15356000	8/19/2004	27.60	18.90	8.70	0.50
15389000	6/2/2004	7.07	0.15	6.92	0.54
15389000	7/29/2004	0.55	0.01	0.54	0.06
15389000	8/9/2004	1.93	0.01	1.92	0.14
15389000	9/9/2004	0.27	0.00	0.27	NA
15453500	6/4/2004	21.30	4.55	16.75	1.00
15453500	7/13/2004	13.80	7.55	6.25	0.33
15453500	8/17/2004	12.70	4.54	8.16	0.33
15453500	9/10/2004	4.60	0.30	4.30	0.16
15515500	3/30/2004	NA	NA	NA	0.02
15515500	5/28/2004	10.90	0.79	10.11	0.54
15515500	7/23/2004	15.40	2.72	12.68	0.74
15515500	8/26/2004	13.40	2.07	11.33	0.69
15515500	9/22/2004	1.95	0.16	1.79	0.11
15565447	5/26/2004	6.71	0.24	6.47	0.45
15565447	6/15/2004	6.23	0.22	6.01	0.37
15565447	6/29/2004	3.74	0.21	3.54	0.22
15565447	7/20/2004	8.26	3.12	5.14	0.30
15565447	8/18/2004	14.00	2.64	11.36	0.45
15565447	9/22/2004	4.75	0.40	4.35	0.20

CHAPTER 11 - Isotopic Analysis of Suspended Particulate Organic Matter (POM)

by Steven R. Silva and Carol Kendall

A description of sample collection and processing of samples for the percent of carbon and nitrogen, carbon:nitrogen ratios, carbon-13, and nitrogen-15 isotopes in suspended POM is given in Schuster (2003). Sample analysis results for WY 2004 are given in table 15.

Table 15. Suspended sediment isotopic data from fixed-station sampling sites in the Yukon River Basin

[Station ID, station identification number, refer to table 1 for description and figure 1 for location; C, carbon; N, nitrogen; SD, standard deviation; Avg, average; %, percent; δ, delta; --, no data; *, replicate]

Station ID	Date	%C	SD %C	%N	SD %N	C:N	$\delta^{13}C$	SD $\delta^{13}C$	$\delta^{15}N$	SD $\delta^{15}N$
15356000	5/26/2004	1.16	--	0.09	--	15.04	-26.24	--	2.11	--
15356000	5/26/2004*	1.01	0.11	0.08	0.01	14.73	-26.06	0.13	2.27	0.11
15356000	6/17/2004	0.97	--	0.10	--	11.32	-25.16	--	4.95	--
15356000	6/30/2004	0.51	--	0.04	--	14.88	-24.36	--	2.19	--
15356000	7/20/2004	0.45	--	0.04	--	13.13	-24.19	--	4.77	--
15565447	6/15/2004	1.43	--	0.10	--	16.68	-26.73	--	3.05	--
15565447	6/26/2004	1.5	--	0.13	--	13.46	-26.57	--	4.10	--
15565447	6/29/2004	1.64	--	0.18	--	10.63	-25.96	--	5.03	--
15565447	6/29/2004*	1.39	0.18	0.13	0.04	12.47	-26.34	0.27	4.66	0.26
15565447	7/20/2004	0.85	--	0.09	--	11.02	-25.58	--	6.15	--
15565447	7/20/2004*	0.86	0.01	0.09	0.00	11.15	-25.80	0.16	6.29	0.10
15453500	6/7/2004	1.75	--	0.13	--	15.71	-26.27	--	2.64	--
15453500	6/9/2004	1.66	--	0.16	--	12.10	-25.30	--	3.95	--
15453500	6/23/2004	1.45	--	0.10	--	16.92	-26.39	--	2.65	--
15453500	6/23/2004*	1.43	0.01	0.10	0.00	16.68	-26.19	0.14	2.48	0.12
15453500	7/13/2004	0.9	--	0.07	--	15.00	-25.60	--	1.90	--
15515500	3/30/2004	4.44	--	0.21	--	24.67	-27.40	--	3.52	--
15515500	5/28/2004	0.47	--	0.04	--	13.71	-25.68	--	0.06	--
15515500	6/10/2004	0.52	--	0.05	--	12.13	-24.44	--	4.34	--
15515500	6/25/2004	0.39	--	0.03	--	15.17	-24.23	--	2.07	--
15515500	7/23/2004	0.38	--	0.04	--	11.08	-24.81	--	2.32	--
15389000	6/2/2004	3.4	--	0.25	--	15.87	-26.84	--	4.18	--
15389000	6/7/2004	3.56	--	0.26	--	15.97	-27.06	--	3.14	--
15389000	6/11/2004	3.7	--	0.28	--	15.42	-26.64	--	3.95	--

CHAPTER 12 - Uranium Isotopes

by Thomas F. Kraemer

A description of sample collection and processing of samples for uranium concentrations and activity ratios (UAR) is given in Schuster (2003). Sample analysis results for WY 2004 are given in table 16.

Table 16. Uranium concentration and $^{234}U/^{238}U$ isotopic activity ratio analyses in water samples from fixed-station sampling sites in the Yukon River Basin

[Station ID, station identification number, refer to table 1 for description and figure 1 for location; µg/L; microgram per liter; U, Uranium; -- not available]

Station ID	Date and time		U (µg/L)	$^{234}U/^{238}U$ activity ratio (±1 sigma uncertainty)
15389000	4/9/04	14:00	0.82	2.310±0.015
15389000	6/2/04	16:20	0.20	1.649±0.008
15389000	6/8/04	- -	0.25	1.714±0.013
15389000	6/11/04	13:50	0.24	1.941±0.019
15389000	7/29/04	14:00	0.63	2.093±0.006
15389000	7/29/04	14:20	0.22	1.935±0.009
15389000	7/29/04	14:20	0.43	2.135±0.008
15515500	3/30/04	17:50	0.82	1.310±0.008
15515500	5/28/04	12:00	0.75	1.149±0.006
15515500	6/10/04	13:10	0.90	1.105±0.007
15515500	6/25/04	16:35	1.16	1.102±0.010
15515500	6/25/04	16:35	1.16	1.102±0.006
15515500	7/23/04	16:10	0.69	1.119±0.007
15515500	8/26/04	15:30	0.73	1.125±0.007
15515500	9/22/04	16:00	0.74	1.300±0.009
15356000	4/3/04	12:30	1.13	1.417±0.007
15356000	4/3/04	12:30	- -	1.405±0.007
15356000	5/26/04	11:00	0.65	1.458±0.006
15356000	6/17/04	10:30	0.89	1.376±0.008
15356000	6/30/04	16:20	0.93	1.410±0.011
15356000	6/30/04	16:20	- -	1.403±0.008
15356000	7/20/04	15:00	0.99	1.380±0.010
15356000	7/20/04	15:00	- -	1.388±0.006
15356000	8/19/04	15:10	0.81	1.375±0.006
15356000	9/6/04	- -	1.06	1.362±0.005
15565447	4/7/04	10:20	0.89	1.423±0.010
15565447	5/26/04	16:20	0.53	1.385±0.006
15565447	6/15/04	15:20	0.56	1.432±0.014
15565447	6/29/04	16:40	0.66	1.387±0.005
15565447	7/20/04	10:30	0.95	1.339±0.014
15565447	8/18/04	11:10	0.99	1.346±0.010
15565447	9/22/04	13:00	1.09	1.365±0.005
15453500	4/1/04	19:00	1.04	1.425±0.006
15453500	6/4/04	16:20	0.64	1.459±0.004
15453500	6/9/04	14:30	0.60	1.443±0.009
15453500	6/23/04	13:00	0.88	1.418±0.006
15453500	6/23/04	13:00	- -	1.395±0.006
15453500	6/23/04	13:10	0.88	1.400±0.009
15453500	7/13/04	14:50	1.03	1.410±0.007
15453500	8/17/04	16:50	0.77	1.414±0.009
15453500	9/10/04	15:30	0.86	1.408±0.005

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