

Project Trip Report

Project Name: 2015/2016 Alpine Lakes Drinking Water Quality Monitoring	Date of Sampling: 5/3/2016
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LCMF Field Personnel: Roy Baldwin	Project Code: 150017
Sample Locations: Lakes L9312 and L9313	Weather: Overcast

1. Monitoring Event Details

Michael Baker International (Michael Baker) personnel arrived at Alpine on Monday, April 25. The Alpine Lakes Drinking Water Quality monitoring was coordinated to coincide with the 2016 Colville River Delta Spring Breakup Monitoring. On May 2, Mr. Kirsch and Mr. Roe coordinated with UMIAQ (LCMF) to schedule transportation support. At 6:00 AM on May 3, Mr. Kirsch and Mr. Roe attended LCMF's daily health and safety meeting. LCMF accompanied Michael Baker personnel first to Lake L9312 and then to Lake L9313 via Hägglund.

Ice thickness, snow depth, total water depth, freeboard, temperature, salinity, conductivity, dissolved oxygen (DO), pH, and turbidity measurements were collected at predetermined sample locations. Sampling took place at the deepest location in each lake, identified from previous monitoring events. Specific conductance (SC) was calculated using water temperature and conductivity. Water surface elevations at each sampling location were surveyed using local control established by LCMF.

In-situ water quality parameters were recorded using an EXO1 sonde meter. The water quality meter was calibrated by TTT Environmental in Anchorage and conductivity, pH, and DO parameters were checked for accuracy prior to sampling. Water quality parameters at lakes L9312 and L9313 are summarized below and included in Table 1.

2. Lake L9312 Results

At Lake L9312, SC ranged from a minimum of 288 $\mu\text{S}/\text{cm}$ at a depth of 6 feet to a maximum of 379 $\mu\text{S}/\text{cm}$ at depths of 7 and 9 feet; average SC was 356 $\mu\text{S}/\text{cm}$. Salinity was constant throughout the water column at 0.2 ppt. DO ranged from 109.9% at a depth of 6 feet to 123.1% at a depth of 11 feet; average DO was 118.4%. pH was constant throughout the water column at 6.4.

Turbidity ranged from a minimum of 3.5 nephelometric turbidity units (NTU) at a depth of 7 feet to a maximum of 11.9 NTU at a depth of 11 feet; average turbidity was 6.6 NTU.

3. Lake L9313 Results

At Lake L9313, SC ranged from a minimum of 420 microsiemens per centimeter ($\mu\text{S}/\text{cm}$) at a depth of 6 feet to a maximum of 539 $\mu\text{S}/\text{cm}$ at depths of 7 and 9 feet. Salinity ranged from 0.2 to 0.3 parts per thousand (ppt) throughout the water column. DO ranged from 111.1 percent (%) at a depth of 6 feet to 180.5% at a depth of 9 feet; average DO was 153.6%. pH ranged from a minimum of 6.8 at a depth of 6 feet to a maximum of 6.9 at a depth of 7 feet; average pH was 6.8. Turbidity ranged from a minimum of 2.8 NTU at a depth of 9 feet to a maximum of 6.3 NTU at a depth of 6 feet; average turbidity was 4.2 NTU.

Project Note

This concludes sampling for the 2015/2016 Alpine Lakes Drinking Water Quality program.

Table 1: Water Quality Parameters at Lake L9312 and Lake L9313

**Alpine Lakes Drinking Water Quality
2015/2016 Monitoring Program**

May 3, 2016

Location Date/Time	Water Surface Elevation (ft-BPMSL)	Water Depth (ft)	Ice Thickness (ft)	Snow Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	DO (mg/L)	DO (Percent Saturation)	Salinity (ppt)	pH	Turbidity (NTU)
Lake L9312 N70°19'52.2" W150°56'59.9" 10:00 AM	7.24	11.4	5.6	0.1	0.5	1	-	-	-	-	-	-	-	-
						2	-	-	-	-	-	-	-	-
						3	-	-	-	-	-	-	-	-
						4	-	-	-	-	-	-	-	-
						5	-	-	-	-	-	-	-	-
						6	2.8	162.9	288	14.9	109.9	0.2	6.4	4.3
						7	4.3	224.8	379	14.6	120.0	0.2	6.4	3.5
						8	-	-	-	-	-	-	-	-
						9	4.3	225.2	379	15.7	120.7	0.2	6.4	6.6
						10	-	-	-	-	-	-	-	-
						11	4.3	224.8	378	16.0	123.1	0.2	6.4	11.9
Lake L9313 N70°20'28.1" W150°56'31.5" 12:05 PM	5.83	9.3	5.6	0.4	0.5	1	-	-	-	-	-	-	-	-
						2	-	-	-	-	-	-	-	-
						3	-	-	-	-	-	-	-	-
						4	-	-	-	-	-	-	-	-
						5	-	-	-	-	-	-	-	-
						6	1.6	226.8	420	15.6	111.1	0.2	6.8	6.3
						7	4.2	319.6	539	22.0	169.2	0.3	6.9	3.7
						8	-	-	-	-	-	-	-	-
						9	4.4	321.7	539	23.2	180.5	0.3	6.8	2.8

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Time shown indicates the start of the measurement.
- (3) Elevation of water surface in sample hole correlates to British Petroleum Mean Sea Level
- (4) Water depth is the distance from the water surface in the sample hole to the bottom of the lake.
- (5) Freeboard is the distance from the top of ice to the water surface, negative indicates a water level above ice.
- (6) Sample depth is measured from the water surface.
- (7) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data.
- (8) Temperature measurements have an accuracy of +/- 0.2°C