

# Stream Water Temperatures Associated with Federal Subsistence Fisheries in Alaska

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Prepared For the  
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## **Abstract**

A stream water temperature monitoring project has been initiated by the U.S. Fish and Wildlife Service, Office of Subsistence Management, at 29 stream locations throughout Alaska. Temperature monitoring will augment fisheries studies currently being conducted at these locations. The temperature monitoring project is being developed to provide consistent temperature data, from standard collection and reporting methods, for subsistence fishery management and to evaluate climate influence on stream temperatures and fish habitat. Stream water and air temperature loggers were checked for accuracy and distributed along with deployment instructions and data sheets to 29 sampling locations in 2008 and 2009. Sampling sites are located at fish weirs operated by native corporations, and state and federal agencies. Loggers were deployed by field crews under the supervision of a Principal Investigator. Stream water and air temperatures were obtained from 22 and 20 locations in 2008 and 2009, respectively. Sites ranged in latitude from 57.5° to 66.7° north. Maximum seasonal water temperatures ranged from 5.6° to 16.8° C in 2008 and from 12.3 to 22.3°C in 2009. August degree days ranged from 285 to 435 among sites in 2008 and from 257 to 520 in 2009. Streams near lake outlets and at lower latitudes were generally warmer. Water temperatures at some locations were strongly related to air temperatures with R squared values from 0.7 to 0.9 and are more likely to be influenced by the regional climate. Stream temperatures at some locations were not obtained due to equipment lost during floods or from ice; however, some sites failed to deploy, download, or submit data. The project can be improved by increasing communication with Principal Investigators and training of field technicians.

## **Introduction**

Stream water temperatures are one of the more important physical characteristics of stream systems. Water temperature is an important factor controlling numerous processes that effect fish and their habitats. Currently, the availability of reliable water temperature data records for stream habitats is very limited in Alaska. Daily water temperature data is routinely collected at fish monitoring sites (weirs, counting towers and tagging sites) operated by federal, state and tribal organizations in Alaska; however, methods for data collection, standardization and reporting are not uniformly applied and often are inadequate for analyses required to monitor climate change, and support conservation actions. The U.S. Fish and Wildlife Service (USFWS), Office of Subsistence Management (OSM), funds a number of long term fisheries monitoring sites on Federal Conservation Units throughout Alaska. OSM fisheries staff met with state and federal water resources agencies in 2007 to investigate the potential benefits of initiating long term water quality monitoring at salmon spawning monitoring project sites. Based on their recommendations, OSM initiated a temperature monitoring project where equipment would be provided to principal investigators for deployment by field technicians. External support would conduct equipment accuracy checks, technical support, and data management and analyses. Participation was voluntary and principal investigators were provided written and verbal instruction. The results of the first water temperature data records for this study are provided in this report.

Water temperatures influence rates of primary production, respiration, decomposition, and chemical solubility. Water temperature is a critical factor in the metabolic rate of fishes and influences the energy

balance between food uptake and energy expenditure. Water temperatures influence salmon migration timing. Spawning site selection is often related to run timing, with early runs of salmon often spawning in colder tributaries and later runs spawning in larger, warmer rivers or lake-outlet streams.

Water temperatures are highly variable among stream systems. Water temperatures in headwater streams are controlled by groundwater. Solar energy is the primary heat source for streams; therefore, stream water temperatures are influenced by local climates. Physical and biotic stream characteristics influence stream heating and cooling. Channel form and substrate influences subsurface water movement and hyporheic exchange which buffers and cools stream water. Riparian vegetation shades streams reducing solar input, and as streams become larger or pass through lake systems more solar energy is able to reach the stream surface. Wide shallow streams with a high width to depth ratio can absorb more energy than smaller, narrower streams. Dissolved organics that stain stream water also increase the absorption of solar energy.

Stream water temperature has long been understood to be one of the most important physical characteristics of aquatic systems. Temperature affects the metabolic rate of organisms, chemical reactions, gas saturation constants and many other factors either directly or indirectly (Hauer and Hill 2006). Water temperature can increase rates of primary production (Botwell 1988), organic matter decomposition (Peters et al. 1987), the distribution and growth of aquatic insects (Vanotte and Sweeney 1980), and the distribution, migration, and fitness of fish species. Extensive summaries have been produced examining the effects of water temperature on salmonid species (McCullough et al. 2001, Richter and Kolmes 2005).

Stream water temperatures during periods of no surface runoff is mainly a function of groundwater temperatures, which is generally within 1°C of mean annual air temperature, and is relatively stable (Vanotte and Sweeney 1980). Sunlight is the greatest source of heat to most streams. Small forested streams with forest cover are generally cooler, and land use practices that open the canopy can result in rapid increases in water temperatures (Beschta et al. 1987). Multiple different factors can influence the relative amount of heating from sunlight and cooling from groundwater and hyporheic exchange, including substrate porosity, channel width and depth, presence of lakes and other impoundments, and surface runoff (see Poole and Berman 2001). Due to the high specific heat of water, it takes more solar energy to heat larger streams, which also have lower diel variability. The staining of Alaskan lakes, due to dissolved carbon, has been shown to increase water temperatures relative to other lakes (Edmundson and Mazumder 2002). Much of the work in Alaska has been focused on the larger glacial rivers, which, along with the northern latitude, has promoted the assumption that streams are cool and are not likely to reach levels lethal to salmonids (i.e. Richardson and Milner 2005; Kyle and Brabets 2001). However, salmon die-off has occurred in Southeast Alaska due to low dissolved oxygen, indirectly caused by high temperatures and low flows (Murphy 1985).

Regardless of the importance of stream water temperatures, we have little information on the range of stream temperatures or the relationship between local water temperatures and fish stocks. Increasing our comprehension of this relationship may help us to better understand adult migration timing, spawning site selection, egg incubation rates and emergence timing, juvenile production, juvenile

summer and winter habitat selection, juvenile fresh water residency and smolt migration. The recent development of small temperature data loggers has simplified water temperature data collection and evaluation.

The project goal is to obtain reliable stream water temperatures to support subsistence fishery management. This goal includes short and long term objectives. The short-term objective is to provide an annual record of temperatures and compare these data with subsistence fish tolerance values. Annual temperature data statistics also will be used to determine whether they explain some of the variability in anadromous fish migration timing, spawning timing and locations, freshwater survival and timing of smolt migration. The long-term objective is to determine how stream systems that provide important subsistence resources are responding to changing global and regional climates, which will be determined through investigating the responsiveness of, and relationship between, stream water and air temperatures.

## **Methods**

### **Project Design**

To meet project objectives, water temperature loggers are deployed at approximately 30 sampling locations in streams important for subsistence fisheries management. Streams have been selected to correspond with locations where other fish studies are currently in progress. Specific sampling locations within each stream are chosen where the stream water is flowing and well mixed and not likely to be dewatered during low flows. Side channels, backwaters, or areas below tributary inputs are avoided. A hand-held thermometer is used to ensure that the water is well mixed and that temperatures are consistent both vertically and horizontally. Locations adjacent to the thalweg on the outside of bends are preferred. Sampling location (latitude and longitude), site name, logger serial number, and date and time of deployment are recorded on data sheets.

Two water temperature loggers are used at each location to obtain redundant measures and to provide means to calculate sampling precision. Water temperature loggers meet the minimum technical requirements of 0.2°C accuracy. Prior to deployment, accuracy is checked against a National Institute of Science and Technology (NIST) certified thermometer. The loggers are programmed for a specified launch date. The loggers are then delivered to the USFWS Principal Investigators (PIs). The PIs are given written and verbal instruction on methods of logger deployment as requested by the USFWS Project Manager. Loggers are deployed by field crews under the direction of the PIs.

Air temperatures also are recorded at sampling locations in order to determine the relationship between air and water temperatures. Air temperature is recorded using air and relative humidity thermometers and data recorders. Prior to deployment, accuracy is checked against a NIST certified thermometer. Air temperature recorders are enclosed within a solar radiation shield, which is secured to the branches of trees, posts or other secure object at least 50 feet from the stream channel and at least 6 feet above the ground (Ward 2003, Wilde 2006). Two air temperature loggers are used and they are alternated and downloaded in the same manner as the stream temperature loggers. Air

temperature loggers and solar shields are checked periodically (approximately every other week) to ensure that they are secure and that air vents are free of debris.

Temperature data are transferred to Excel files with a separate worksheet for each logger. Data are analyzed for daily and weekly maximum, minimum and average stream temperatures, weekly and monthly cumulative degree days, and regression relationships between daily and weekly maximum air and stream temperatures. An annual report is prepared describing the temperature regime for each stream, relationships among similar stream types, and the relationships between water temperatures and tolerance values for different stages of salmonid life histories.

## Project Implementation

Water loggers (Hobo Pro V2) were checked for accuracy prior to distribution to sampling locations in 2008 and 2009. Water temperature loggers were placed within a water bath to check for accuracy at temperatures near 18°C. Loggers were set to record at two minute intervals. Ice was added to the water bath to reduce the temperature to near 0°C. Loggers continued to record for an additional 20 minutes. Actual water temperature was measured with a NIST-certified thermometer every 4 minutes. Water logger accuracy was calculated as logger temperature divided by measured temperature multiplied by 100. All of the loggers met the accuracy objective of 99 to 101%. Air loggers were checked for accuracy at ambient air

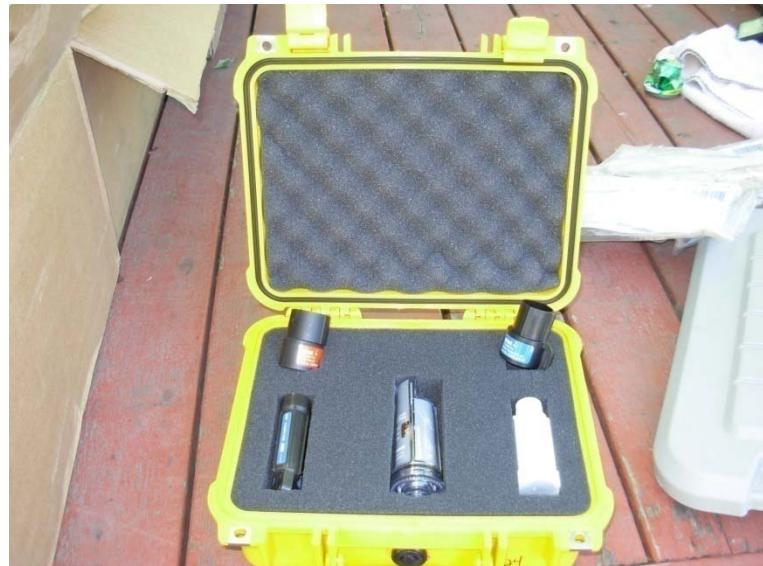
temperatures. Loggers were set to record laboratory air temperatures every 15 minutes for 24 hours.

Laboratory air temperature was measured with a NIST-certified thermometer. All of the loggers met the accuracy objective of 99 to 101%.

The project was initiated as a pilot study in 2008. Stream water temperature loggers were distributed in July of 2008 to 17 individual Principal Investigators for deployment at 29 sampling locations along with

installation instructions and field data forms (Appendix B), data shuttle, and couplers (Figure 1). Two air and two water temperature loggers were to be deployed at stream sampling locations. At the end of the field season, one logger was intended to be downloaded to the shuttle and then returned to the sampling location. The second logger was to be returned to the laboratory to be downloaded and checked for accuracy.

In May of 2009, an additional two water temperature and one air temperature loggers were sent to the Principal Investigators along with additional instructions and data forms (Appendix B). Prior to distribution, all water temperature loggers were checked for accuracy as described previously. All loggers met the accuracy requirements. The air and water temperature loggers that remained in the



field were to be returned to the laboratory and the new loggers deployed. At the end of the field season both loggers were to be downloaded onto the data shuttle and then returned to the sampling location. The data shuttle was to be returned to the laboratory for data management and analyses.

Water and air temperature loggers and data shuttles were downloaded using Hoboware Pro software. Data were exported to Excel spreadsheets. Individual worksheets were used for each sampling location. Logger data were compared with dates and times loggers were deployed, downloaded, or removed from sampling locations. We deleted all data that was recorded when the data loggers were not deployed at sampling locations. At locations where there were data from two loggers deployed side-by-side, precision was calculated as the difference between each data point divided by 20°C. Daily maximum, minimum, and average temperature was calculated for each day from the 15 (2008) to 30 (2009) minutes recorded values throughout the day from 00:00 to 23:45 hours. Weekly average was calculated as the average of the previous 7 days, daily average values. Daily range was the difference between daily maximum and minimum values. Cumulative degree days were the sum of daily average temperature above 0°C.

Regression equations were developed between daily average water temperature and daily average air temperature recorded at the sampling location (local air temperature) and from regional airports (regional air temperature). Equations for the straight line relationship between average air and average water temperature were determined for the ice free-period beginning on May 10 and using all available data or ending on September 30. Air temperature data were obtained from the National Weather Service for the Fairbanks, Bethel, McGrath, Circle, Iliamna, Tok, Kodiak, Haines and Juneau Airports. Daily air temperature from Circle was incomplete and could not be used.

## **Results**

Stream temperature data loggers, data shuttles, and field data sheets were received from 22 of the 29 sampling locations in 2008. Loggers placed within the Chena River were lost in fall floods. Loggers were not deployed at the Klag Bay, Hatchery Creek, Hetta Lake, Inlet Creek, Falls Lake and Karta Creek sites (Table 1). Between June 2009 and March of 2010, water temperature loggers, data shuttles and field data sheets were received from 25 of the 29 sampling locations. We were unable to use data from four southeast sites (Klag Bay, Falls Lake, Three Mile Creek, and Inlet Creek) because data sheets did not record water temperature logger numbers and deployment dates. We also were not able to report data from the Tuluksak River as the temperature loggers and data shuttle had already been downloaded and did not hold any data points. Therefore, data can be reported for 20 of the 29 sampling locations for 2009 (Figure 1 Table 2).

Two loggers were recording at 10 of the 20 sites in 2009 allowing for precision measures at these locations for over 30,000 comparisons. Water temperature loggers met the precision requirements with differences less than 0.2°C at all locations and with most differences less than 0.02°C. Channel cross-section temperatures were measured at the Afognak River, Neva Creek, Kanalku Creek, Tuluksak River, Buskin River, Newhalen River, Tanada Creek, and the Sheenjek River. Water temperature recorded by the two loggers differed by less than 0.5 degrees from the average cross-section temperature at all of

these locations. Seasonal stream water summaries are provided in Tables 1 and 2. Water temperature statistics for all of the sites are provided in Appendix A. This appendix contains site locations, seasonal summaries, temperature charts, site photographs (where available), and tables for maximum, minimum, and average daily temperatures. Water and air temperature data also are provided in electronic format for 2008 and 2009. Data from 2009 will be updated as loggers left deployed on-site through the winter are returned.

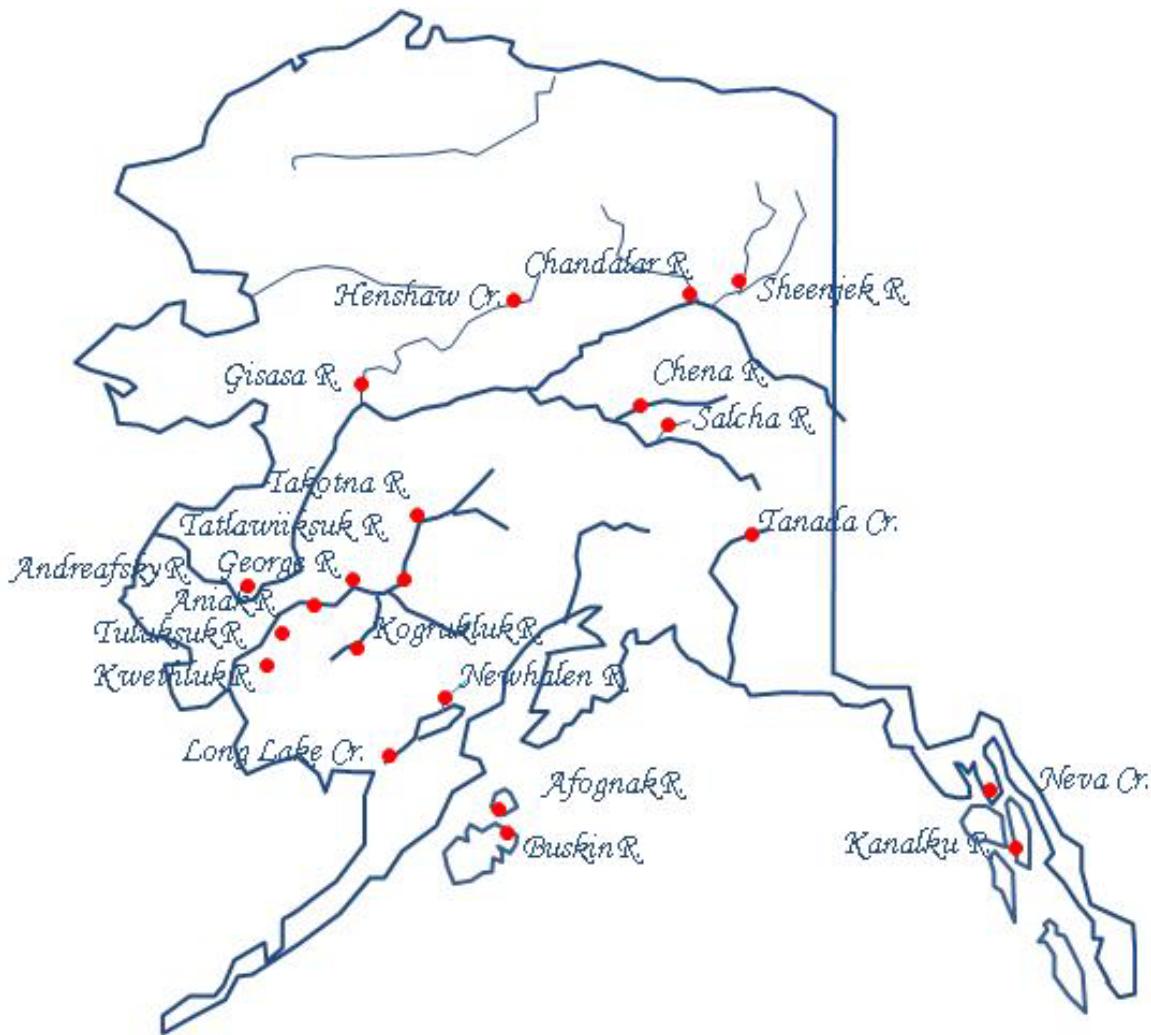


Figure 1. U.S. Fish and Wildlife Service subsistence temperature monitoring locations.

**Table 1.** Summary of 2008 stream water temperature statistics sorted by latitude. Dates of deployment vary among sites (see appendix A). Regression slope intercept and R squared from simple regression with air temperature recorded at the sampling location. NA means data not available.

Stream Name	Latitude	Season Maximum	Max Range	Days Max >13C	Day Max>15C	Days Max>20C	June Degree Days	July Degree Days	August Degree Days	Sept Degree Days	Regression Slope	Regression Intercept	R Squared (SiteAir)
Chandalar R.	66.7017	13.47	1.31	2	0	0	NA	NA	NA	NA	0.66	3.42	0.80
Henshaw Cr.	66.5567	13.95	1.93	4	0	0	NA		286	164	0.24	7.96	0.34
Gisasa R.	65.2526	14.22	1.96	6	0	0	NA	NA	NA	NA	NA	NA	NA
Salcha R.	64.4773	10.12	7.68	0	0	0	NA	NA	NA	NA	NA	NA	NA
Anvik R.	62.7402	14.10	2.48	1	0	0	NA	NA	NA	NA	NA	NA	NA
Tanada Cr.	62.6142	5.62	1.93	0	0	0	NA	NA	NA	NA	NA	NA	NA
Long Lake Cr.	62.6142	15.22	1.04	19	3	0	NA	NA	NA	309	0.49	7.90	0.92
Talawiksuk R.	61.9473	13.83	1.82	6	0	0	NA	NA	350	230	0.60	3.98	0.83
Aniak R.	61.5027	12.17	1.59	0	0	0	NA	NA	321	238	0.55	4.26	0.83
Tuluksak R.	61.0440	12.97	1.63	0	0	0	NA	NA	329	NA	0.31	6.76	0.30
Kwethluk R.	60.4952	14.34	2.59	6	0	0	NA	NA	NA	NA	NA	NA	NA
Newhalen R	59.9190	14.36	1.82	9	0	0	NA	NA	365	312	0.13	9.43	0.09
Neva Cr.	58.4064	16.82	1.83	39	8	0	NA	NA	436	345	0.60	6.53	0.56
Afognak R.	58.0800	14.07	0.97	11	0	0	NA	NA	NA	361	0.36	8.97	0.72
Buskin R.	57.7560	15.70	3.46	13	4	0	NA	NA	340	269	0.39	5.85	0.43
Kanulku Cr.	57.4932	8.89	0.73	0	0	0	NA	NA	NA	NA	NA	NA	NA
Salmon R.	NA	13.14	2.33	1	0	0	NA	282	305	NA	0.31	5.75	0.50
Kogrukluuk R.	NA	14.05	2.15	11	0	0	NA	313	336	217	0.30	6.70	0.47
Chena R.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
George R.	NA	14.24	2.15	16	0	0	NA	NA	359	236	0.65	3.91	0.79
E.F.Andreafsky	NA	12.65	1.54	0	0	0	NA	NA	NA	NA	NA	NA	NA
Takotna R.	NA	16.82	3.22	36	16	0	NA	NA	392	252	0.80	3.71	0.89

**Table 2.** Summary of 2009 stream water temperature statistics sorted by latitude. Dates of deployment vary among sites (see appendix A). Regression slope intercept and R squared from simple regression with air temperature recorded at the sampling location. NA means data not available. Values marked with asterisks are from incomplete data sets.

Stream Name	Latitude	Season Maximum	Max Range	Days Max >13C	Day Max>15C	Days Max>20C	June Degree Days	July Degree Days	August Degree Days	Sept Degree Days	Regression Slope	Regression Intercept	R Squared (Site Air)
Sheenjek	66.7837	16.96	1.35	59	28	0	367	465	350	180*	0.54	3.99	0.55
Chandalar R.	66.7017	13.31	1.04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Henshaw	66.5567	14.70	1.77	12	0	0	272	361	NA	NA	0.67	1.23	0.71
Gisasa R.	65.2526	19.48	2.46	29	27	0	NA	455	NA	NA	0.35	9.97	0.28
Salcha R.	64.4773	17.37	1.88	50	26	0	326	430	342	NA	0.67	2.09	0.65
Tanada Cr.	62.6142	14.75	3.45	3	0	0	NA	NA	NA	NA	NA	NA	NA
Long Lake	62.6142	21.99	3.72	90	71	12	469	525	260*	308*	0.74	5.51	0.54
Talawiksuk	61.9473	20.13	2.20	63	32	1	330	472	382	192*	0.68	3.36	0.62
Aniak R.	61.5027	12.34	1.99	0	0	0	232*	NA	NA	NA	0.59	1.57	0.54
Kwethluk R	60.4952	18.11	3.52	33	11	0	NA	391	346	NA	0.47	5.77	0.56
Newhalen	59.9196	12.80	2.09	0	0	0	207	291	NA	NA	0.32	3.27	0.28
Neva Cr.	58.4064	20.75	4.07	112	71	6	430	543	520	371	0.84	5.18	0.76
Afognak R.	58.0800	22.27	3.08	57	36	9	353	493	NA	NA	1.18	0.95	0.78
Buskin R.	57.7558	19.03	3.69	42	17	0	235	394	367	280	0.81	1.05	0.58
Kanalku R.	57.4932	20.37	4.06	94	49	3	377	499	498	305	0.88	2.71	0.77
Chena R.	NA	14.51	1.33	22	0	0	NA	293	NA	NA	NA	NA	NA
Kogrukuk	NA	16.58	2.12	19	8	0	237	375	316	218*	0.52	4.27	0.90
Andreafsky	NA	20.94	3.21	46	23	3	NA	458	258	NA	0.56	6.88	0.40
George R.	NA	19.58	2.40	59	32	0	296	461	385	231*	0.71	2.84	0.60
Takotna R.	NA	20.77	2.03	59	35	3	310	482	403	NA	0.74	4.62	0.88

## Discussion

The short-term objective of this project is to provide an annual record of temperatures and compare these data with subsistence fish tolerance values. Annual temperature data statistics will be available to fishery managers to evaluate the variability in anadromous fish migration timing, spawning timing and locations, freshwater survival and smolt migration timing. A full season of data collection will not be available until loggers are returned in the spring and summer of 2010. Total ice-free days or total annual degree days are not available for many locations; however, spring data are available that can be related to timing of adult salmon returns.

Optimal water temperatures for rearing juvenile coho and Chinook salmon range between 10 to 17°C (Table 3) (Richter and Kolmes 2005, McCullough et al. 2001). These values can be compared with the temperature regime of the subsistence management sites (Table 3). Comparisons are limited due to incomplete data sets. Stream water temperatures at the colder sites, Tanada Creek to the Kogrukuk River (Tables 1 and 2) are generally below optimal rearing temperatures for juvenile salmon. The moderate temperature sites from the Buskin River to the Talawiksuk River provide conditions optimal for juvenile salmon growth, and the warmer sites from the Takotna to Neva Creek often have temperatures that exceed the optimal range and approach those where the likelihood of disease or mortality increase. However, these warmer sites appear to be below the outlet of lakes, and do not reflect temperatures below the thermocline.

**Table 3. Temperature ranges relative for growth and survival of Pacific salmon (from EPA 2001).**

Anadromous Salmon	Temperature Range
<b>Temperature of common summer habitat use</b>	10-17°C
<b>Lethal temperatures (one week exposure)</b> Adults	>21-22°C
Juveniles	>23-24°C
<b>Adult migration Blocked</b>	>21-22°C
<b>Swimming speed Reduced</b>	>20°C
Optimal	15-19°C
<b>Gamete viability during holding Reduced</b>	>13-16°C
<b>Disease rates Severe</b>	>18-20°C
Elevated	14-17°C
Minimized	<12-13°C
<b>Spawning Initiated</b>	7-14°C
<b>Egg incubation Optimal</b>	6-10°C
<b>Optimal growth Unlimited food</b>	13-19°C
<b>Optimal growth Limited food</b>	10-16°C
<b>Smoltification Suppressed</b>	>11-15°C

The long-term objective is to determine how stream systems that provide important subsistence resources are responding to changing global and regional climates. Sites with strong relationships between daily air and water temperature (high R squared values) are likely to respond to changing climate conditions. Regression relationships between local daily average temperature were better than (higher R squared) relationships with air temperatures recorded at regional airports. However, regression slopes and Y intercepts were generally very similar. The use of regional air temperatures allows for estimating water temperatures for years when local measures are not available. Evaluation of the benefit of using site air temperatures or regional air temperatures can be better evaluated once a complete summer (May through September) of data is available. This should occur as loggers left deployed at the sampling locations are returned in 2010.

Those sites associated with lakes, which have a large surface area for receiving solar energy, are among the warmest of the sampling locations. These sites also have high slopes and stream water temperatures increase from 0.7 to 1.0°C with a 1.0°C increase in daily average air temperature. These sites also show a large daily range, which suggests limited thermal buffering (Poole and Berman 2001). The Kogrukuk and Henshaw Creeks had a strong relationship with air temperatures, but low regression slopes and small daily ranges suggests buffering from groundwater or hyporheic exchange. The Buskin River has a steep regression slope and a relatively large daily range, but a weaker relationship with air temperatures.

Project completeness was low with useable data from 22 of 29 sites in 2008 and 19 of 29 sites in 2009. Limited site data was due to loggers not being deployed, loggers not returned, loggers and shuttles returned without data, and incomplete data sheets. Increased communication between the USFWS Project Manager and the Principal Investigators and between the Principal Investigators and the field crews should improve logger deployment. The PI's should read through the field instructions and make sure that the field crews understand how and where to deploy the loggers. If there are any questions, they should be addressed by the Project Manager as soon as possible. Additional training for field crews, including instructional videos, should improve project results. These instructions should include measures of cross-channel temperatures, logger deployment, and shuttle operation. The current project design has been simplified from the pilot year and should help in the return of data loggers and shuttles. Both loggers are replaced every spring and the new loggers downloaded onto the data shuttle prior to departing the site.

Data was not available from some locations because loggers and data shuttles were downloaded prior to their return. Water temperature data from these data loggers may be used by agencies for multiple different purposes. However, if data are removed from the loggers or shuttles, the Principal Investigator must return a copy of the HOBO data files. Completed data sheets are necessary to confirm the logger deployment location by the logger serial number. In some cases, the logger serial numbers were not included on the data sheet so the resulting values could not be matched to a specific location. The date of logger deployment and retrieval also is necessary. A review of the temperature values can be used to determine when the logger was within the stream channel, but it is much easier and more accurate to limit data to deployment times on loggers. Site latitude and longitude also were not provided on many of the data sheets. Exact deployment locations can't be determined from place names, and the latitude

and longitude from GPS receivers can help locate loggers left over the winter, particularly with changes in project personnel.

Site photographs submitted on computer discs were requested in the field instructions but not received from most sampling locations. Site photographs can be used to display information such as channel shape, confinement, vegetation cover, and proximity to lakes or ponds that can be used to evaluate differences in water temperature. The original project design included Rosgen stream classification; however, site photographs were used as a compromise to simplify field data collection. Blank labeled computer discs have been included with the temperature loggers so that site photographs can be downloaded in the field.

Water temperature at a stream cross-section is necessary to ensure that temperature data is representative of site conditions. We received cross-section temperature data from a few of the sampling locations that returned usable data. To improve collection of cross-sectional temperatures, hand-held thermometers that have been checked for accuracy and precision have been distributed to the Principal Investigators. Instructional videos and other training should be considered for seasonal field personnel.

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## **Appendix A. Data Summaries for Sampling Locations**

## Chandalar River

Stream Name	Chandalar River	
Principal Investigator	Tom McLain, ADFG	
Drainage Name	Yukon River	
Latitude:	66.7017	
Longitude:	146.0386	
Start:	8/11/2008	8/17/2009
End:	9/26/2008	8/25/2009
Season Maximum:	13.47	13.31
Max Range	1.31	1.04
Days Max >13C	2	1
Day Max>15C	0	0
Days Max>20C	0	0
June Degree Days	Not Available	Not Available
July Degree Days	Not Available	Not Available
August Degree Days	Not Available	Not Available
Sept Degree Days	Not Available	Not Available

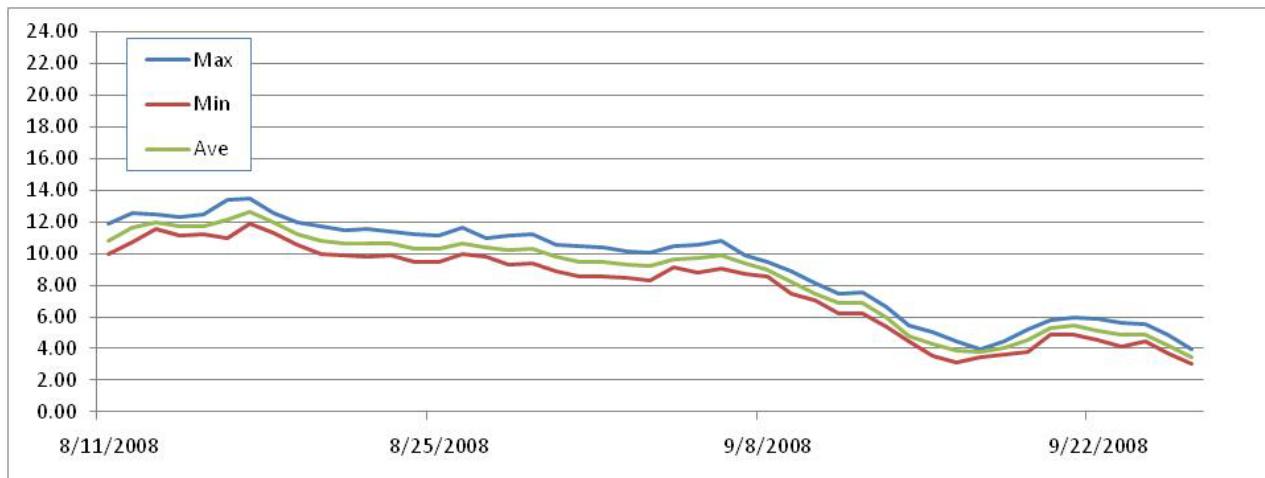


Figure 2. Daily 2008 water temperature (C) for the Chandalar River.

**Table 4. Daily 2008 and 2009 temperature (C) statistics for the Chandalar River**

Day	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
8/11	11.86	9.98	10.82			
8/12	12.58	10.76	11.66			
8/13	12.46	11.59	12.01			
8/14	12.29	11.15	11.69			
8/15	12.51	11.25	11.74			
8/16	13.43	10.96	12.12			
8/17	13.47	11.93	12.67	13.31	11.44	12.36
8/18	12.58	11.27	11.95	12.65	11.81	12.32
8/19	12.00	10.54	11.23	12.10	10.79	11.48
8/20	11.71	9.95	10.79	11.57	9.83	10.74
8/21	11.49	9.88	10.67	11.66	9.63	10.63
8/22	11.59	9.78	10.65	12.05	10.37	11.20
8/23	11.42	9.90	10.63	12.15	10.57	11.37
8/24	11.25	9.49	10.32	12.07	10.79	11.38
8/25	11.10	9.44	10.28	11.32	10.59	10.98
8/26	11.61	9.93	10.66			
8/27	11.01	9.83	10.37			
8/28	11.15	9.31	10.26			
8/29	11.25	9.41	10.29			
8/30	10.57	8.89	9.77			
8/31	10.47	8.54	9.49			
9/1	10.42	8.57	9.48			
9/2	10.12	8.44	9.29			
9/3	10.08	8.30	9.21			
9/4	10.44	9.11	9.67			
9/5	10.57	8.82	9.70			
9/6	10.83	9.04	9.90			
9/7	9.85	8.72	9.37			
9/8	9.51	8.52	8.94			
9/9	8.89	7.49	8.22			
9/10	8.17	7.02	7.44			
9/11	7.44	6.23	6.88			
9/12	7.54	6.23	6.85			
9/13	6.64	5.33	5.97			
9/14	5.49	4.45	4.79			
9/15	5.08	3.56	4.32			
9/16	4.48	3.14	3.85			
9/17	3.96	3.46	3.75			
9/18	4.48	3.64	4.05			
9/19	5.21	3.80	4.51			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Chandalar River**

**February 20, 2011**

<b>Day</b>	<b>2008 Max</b>	<b>2008 Min</b>	<b>2008 Ave</b>	<b>2009 Max</b>	<b>2009 Min</b>	<b>2009 Ave</b>
<b>9/20</b>	5.80	4.90	5.33			
<b>9/21</b>	6.00	4.87	5.43			
<b>9/22</b>	5.87	4.56	5.13			
<b>9/23</b>	5.67	4.12	4.85			
<b>9/24</b>	5.54	4.45	4.91			
<b>9/25</b>	4.84	3.70	4.21			
<b>9/26</b>	3.99	3.01	3.50			

**Sheenjek Creek**

<b>Stream Name</b>	<b>Sheenjek Creek</b>
<b>Principal Investigator</b>	Bonnie Borba, ADFG
<b>Drainage Name</b>	Sheenjek River
<b>Latitude:</b>	66.7837
<b>Longitude:</b>	144.4637
<b>Start:</b>	1/1/2009
<b>End:</b>	9/23/2009
<b>Season Maximum:</b>	16.96
<b>Max Range</b>	1.35
<b>Days Max &gt;13C</b>	59
<b>Day Max &gt;15C</b>	28
<b>Days Max &gt;20C</b>	0
<b>June Degree Days</b>	367
<b>July Degree Days</b>	465
<b>August Degree Days</b>	350
<b>Sept Degree Days</b>	180*
<b>Regression Local Air</b>	
<b>Slope</b>	0.54
<b>Y Intercept</b>	3.95
<b>R Squared</b>	0.55
<b>Regression Fairbanks Air</b>	
<b>Slope</b>	0.56
<b>Y Intercept</b>	2.86
<b>R Squared</b>	0.50

**Table 5.** Cross-section water temperatures at monitoring location.

<b>Measurement</b>	1	2	3	4	5	6	7	8	9	10
<b>Water Temperature Aug (C)</b>	11.0	11.0	11.0	10.5	10.5	10	10.5	10.5	11	11
<b>Water Temperature Sept (C)</b>	3.0	3.0	3.0	2.5	2.0	2.5	2.0	3.0	3.0	3.0



Photograph 1. Sheenjek River weir camp.

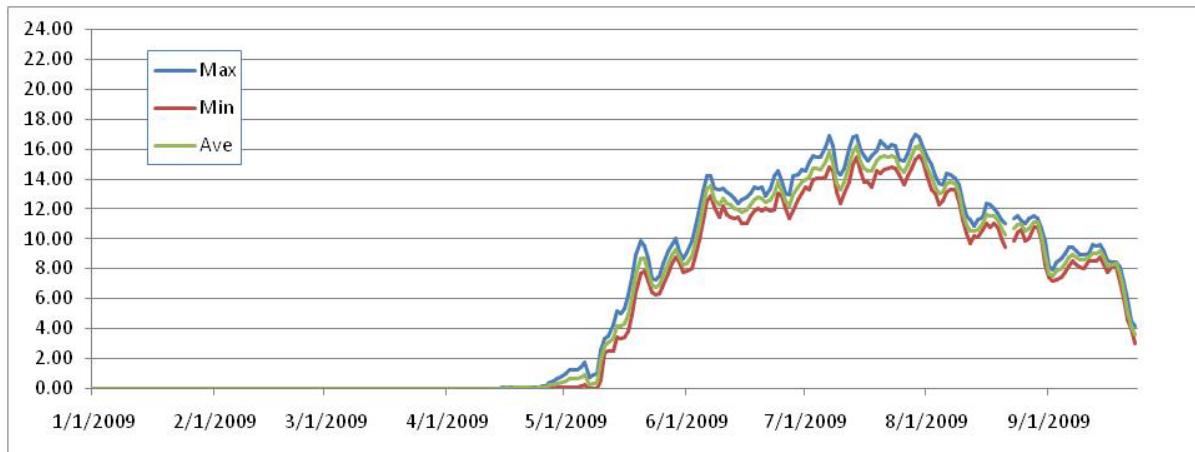


Figure 3. Daily 2009 water temperatures (C) for Sheenjek Creek.

Table 6. Daily Sheenjek Creek water temperature (C) statistics.

Date	2009 Max	2009 Min	2009 Ave
1/1/2009	0.02	0.00	0.00
1/2/2009	0.02	0.00	0.00
1/3/2009	0.02	0.00	0.00
1/4/2009	0.02	0.00	0.00
1/5/2009	0.02	0.00	0.00
1/6/2009	0.02	0.00	0.00
1/7/2009	0.02	0.00	0.00
1/8/2009	0.02	0.00	0.00
1/9/2009	0.02	0.00	0.00

**Temperatures in Waters Associated with Federal Subsistence Fisheries      February 20, 2011**  
**Sheenjek Creek**

Date	2009 Max	2009 Min	2009 Ave
1/10/2009	0.02	0.00	0.00
1/11/2009	0.02	0.00	0.00
1/12/2009	0.02	0.00	0.00
1/13/2009	0.02	0.00	0.00
1/14/2009	0.02	0.00	0.01
1/15/2009	0.02	0.00	0.02
1/16/2009	0.02	0.00	0.02
1/17/2009	0.02	0.00	0.02
1/18/2009	0.02	0.00	0.02
1/19/2009	0.02	0.02	0.02
1/20/2009	0.02	0.00	0.02
1/21/2009	0.02	0.00	0.01
1/22/2009	0.02	0.00	0.01
1/23/2009	0.02	0.00	0.01
1/24/2009	0.02	0.00	0.01
1/25/2009	0.02	0.00	0.00
1/26/2009	0.02	0.00	0.00
1/27/2009	0.02	0.00	0.01
1/28/2009	0.02	0.00	0.02
1/29/2009	0.02	0.00	0.02
1/30/2009	0.02	0.00	0.02
1/31/2009	0.02	0.00	0.02
2/1/2009	0.02	0.00	0.02
2/2/2009	0.02	0.00	0.02
2/3/2009	0.02	0.00	0.02
2/4/2009	0.02	0.00	0.01
2/5/2009	0.02	0.00	0.01
2/6/2009	0.02	0.00	0.01
2/7/2009	0.02	0.00	0.01
2/8/2009	0.02	0.00	0.02
2/9/2009	0.02	0.00	0.02
2/10/2009	0.02	0.00	0.01
2/11/2009	0.02	0.00	0.01
2/12/2009	0.02	0.00	0.01
2/13/2009	0.02	0.00	0.01
2/14/2009	0.02	0.00	0.01
2/15/2009	0.02	0.00	0.01
2/16/2009	0.02	0.00	0.01
2/17/2009	0.02	0.00	0.01
2/18/2009	0.02	0.00	0.01
2/19/2009	0.02	0.00	0.01
2/20/2009	0.02	0.00	0.01
2/21/2009	0.02	0.00	0.01
2/22/2009	0.02	0.00	0.01
2/23/2009	0.02	0.00	0.02
2/24/2009	0.02	0.00	0.02
2/25/2009	0.02	0.00	0.02

**Temperatures in Waters Associated with Federal Subsistence Fisheries      February 20, 2011**  
**Sheenjek Creek**

Date	2009 Max	2009 Min	2009 Ave
2/26/2009	0.02	0.00	0.02
2/27/2009	0.02	0.00	0.02
2/28/2009	0.02	0.00	0.02
3/1/2009	0.02	0.00	0.02
3/2/2009	0.02	0.00	0.02
3/3/2009	0.02	0.00	0.01
3/4/2009	0.02	0.00	0.01
3/5/2009	0.02	0.00	0.01
3/6/2009	0.02	0.00	0.01
3/7/2009	0.02	0.00	0.01
3/8/2009	0.02	0.00	0.01
3/9/2009	0.02	0.00	0.01
3/10/2009	0.02	0.00	0.01
3/11/2009	0.02	0.00	0.01
3/12/2009	0.02	0.00	0.02
3/13/2009	0.02	0.00	0.02
3/14/2009	0.02	0.00	0.02
3/15/2009	0.02	0.00	0.02
3/16/2009	0.02	0.00	0.02
3/17/2009	0.02	0.00	0.02
3/18/2009	0.02	0.00	0.02
3/19/2009	0.02	0.00	0.02
3/20/2009	0.02	0.00	0.02
3/21/2009	0.02	0.00	0.02
3/22/2009	0.02	0.00	0.02
3/23/2009	0.02	0.02	0.02
3/24/2009	0.02	0.00	0.02
3/25/2009	0.02	0.02	0.02
3/26/2009	0.02	0.02	0.02
3/27/2009	0.02	0.00	0.02
3/28/2009	0.02	0.02	0.02
3/29/2009	0.02	0.00	0.02
3/30/2009	0.02	0.00	0.02
3/31/2009	0.02	0.02	0.02
4/1/2009	0.02	0.02	0.02
4/2/2009	0.02	0.00	0.02
4/3/2009	0.02	0.02	0.02
4/4/2009	0.02	0.00	0.02
4/5/2009	0.02	0.00	0.02
4/6/2009	0.02	0.02	0.02
4/7/2009	0.02	0.00	0.02
4/8/2009	0.02	0.00	0.02
4/9/2009	0.02	0.00	0.02
4/10/2009	0.02	0.00	0.02
4/11/2009	0.02	0.02	0.02
4/12/2009	0.02	0.02	0.02
4/13/2009	0.02	0.02	0.02

**Temperatures in Waters Associated with Federal Subsistence Fisheries      February 20, 2011**  
**Sheenjek Creek**

Date	2009 Max	2009 Min	2009 Ave
4/14/2009	0.02	0.02	0.02
4/15/2009	0.05	0.02	0.02
4/16/2009	0.05	0.02	0.03
4/17/2009	0.05	0.02	0.03
4/18/2009	0.05	0.02	0.03
4/19/2009	0.05	0.02	0.03
4/20/2009	0.05	0.02	0.04
4/21/2009	0.05	0.02	0.04
4/22/2009	0.05	0.02	0.04
4/23/2009	0.05	0.02	0.03
4/24/2009	0.08	0.02	0.05
4/25/2009	0.14	0.02	0.07
4/26/2009	0.19	0.02	0.11
4/27/2009	0.44	0.05	0.21
4/28/2009	0.50	0.08	0.28
4/29/2009	0.63	0.08	0.35
4/30/2009	0.80	0.08	0.40
5/1/2009	0.99	0.08	0.49
5/2/2009	1.26	0.08	0.62
5/3/2009	1.26	0.08	0.64
5/4/2009	1.26	0.08	0.64
5/5/2009	1.37	0.14	0.71
5/6/2009	1.72	0.27	0.93
5/7/2009	0.74	0.02	0.22
5/8/2009	0.93	0.00	0.31
5/9/2009	0.96	-0.03	0.40
5/10/2009	2.61	0.55	1.91
5/11/2009	3.30	2.45	2.79
5/12/2009	3.49	2.53	3.05
5/13/2009	4.27	2.48	3.34
5/14/2009	5.13	3.41	4.20
5/15/2009	5.00	3.35	4.17
5/16/2009	5.33	3.41	4.35
5/17/2009	6.23	3.80	4.94
5/18/2009	7.42	4.90	6.07
5/19/2009	8.92	6.46	7.57
5/20/2009	9.81	7.65	8.67
5/21/2009	9.49	7.82	8.70
5/22/2009	8.67	7.19	7.75
5/23/2009	7.37	6.46	6.94
5/24/2009	7.22	6.28	6.72
5/25/2009	7.52	6.31	6.91
5/26/2009	8.32	6.89	7.58
5/27/2009	9.19	7.65	8.38
5/28/2009	9.56	8.37	8.95
5/29/2009	10.05	8.74	9.27
5/30/2009	9.11	8.42	8.75

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Sheenjek Creek**

**February 20, 2011**

<b>Date</b>	<b>2009 Max</b>	<b>2009 Min</b>	<b>2009 Ave</b>
5/31/2009	8.64	7.77	8.26
6/1/2009	9.06	7.85	8.38
6/2/2009	9.81	8.00	8.88
6/3/2009	10.86	8.92	9.86
6/4/2009	12.00	9.90	10.89
6/5/2009	13.21	11.15	12.16
6/6/2009	14.19	12.53	13.34
6/7/2009	14.15	12.87	13.54
6/8/2009	13.35	12.12	12.56
6/9/2009	13.23	11.42	12.28
6/10/2009	13.35	12.15	12.70
6/11/2009	13.06	11.61	12.35
6/12/2009	12.97	11.47	12.24
6/13/2009	12.70	11.37	12.03
6/14/2009	12.36	11.42	11.91
6/15/2009	12.58	11.05	11.80
6/16/2009	12.73	11.05	11.91
6/17/2009	13.04	11.52	12.29
6/18/2009	13.47	11.81	12.63
6/19/2009	13.33	11.98	12.73
6/20/2009	13.43	11.88	12.72
6/21/2009	12.82	12.05	12.39
6/22/2009	13.35	11.83	12.57
6/23/2009	14.15	11.93	13.02
6/24/2009	14.48	13.04	13.77
6/25/2009	13.88	12.82	13.18
6/26/2009	13.02	11.98	12.54
6/27/2009	12.92	11.37	12.16
6/28/2009	14.19	11.81	12.93
6/29/2009	14.24	12.61	13.42
6/30/2009	14.60	13.04	13.80
7/1/2009	14.48	13.40	13.95
7/2/2009	15.13	13.31	14.14
7/3/2009	15.51	13.98	14.72
7/4/2009	15.44	14.03	14.73
7/5/2009	15.46	14.00	14.64
7/6/2009	16.13	14.12	15.13
7/7/2009	16.84	14.77	15.79
7/8/2009	16.15	14.53	15.06
7/9/2009	14.48	13.14	13.65
7/10/2009	14.24	12.34	13.27
7/11/2009	14.65	13.04	13.80
7/12/2009	16.06	13.79	14.91
7/13/2009	16.75	14.94	15.81
7/14/2009	16.87	15.41	16.17
7/15/2009	15.96	14.51	15.12
7/16/2009	15.51	13.79	14.67

**Temperatures in Waters Associated with Federal Subsistence Fisheries      February 20, 2011**  
**Sheenjek Creek**

Date	2009 Max	2009 Min	2009 Ave
7/17/2009	15.20	13.76	14.54
7/18/2009	15.53	13.47	14.49
7/19/2009	15.89	14.48	15.16
7/20/2009	16.49	14.39	15.41
7/21/2009	16.30	14.60	15.49
7/22/2009	16.01	14.70	15.41
7/23/2009	16.25	14.75	15.52
7/24/2009	16.20	14.72	15.41
7/25/2009	15.27	14.24	14.75
7/26/2009	15.18	13.64	14.44
7/27/2009	15.68	14.19	14.95
7/28/2009	16.49	14.67	15.50
7/29/2009	16.96	15.25	16.12
7/30/2009	16.77	15.56	16.17
7/31/2009	16.13	15.18	15.68
8/1/2009	15.51	14.29	14.84
8/2/2009	14.94	13.31	14.13
8/3/2009	14.19	13.04	13.44
8/4/2009	13.71	12.29	13.02
8/5/2009	13.62	12.53	13.10
8/6/2009	14.36	13.09	13.72
8/7/2009	14.27	13.26	13.79
8/8/2009	14.00	13.26	13.68
8/9/2009	13.57	12.46	13.02
8/10/2009	12.41	11.25	11.72
8/11/2009	11.52	10.32	10.92
8/12/2009	11.30	9.66	10.50
8/13/2009	10.81	10.15	10.53
8/14/2009	11.22	10.12	10.63
8/15/2009	11.44	10.57	11.03
8/16/2009	12.34	11.05	11.56
8/17/2009	12.29	10.74	11.53
8/18/2009	11.98	10.98	11.52
8/19/2009	11.66	10.79	11.26
8/20/2009	11.27	10.03	10.70
8/21/2009	11.05	9.46	10.29
8/22/2009			
8/23/2009	11.35	9.88	10.67
8/24/2009	11.49	10.44	10.97
8/25/2009	11.15	10.61	10.89
8/26/2009	11.01	9.88	10.53
8/27/2009	11.37	10.05	10.67
8/28/2009	11.49	10.79	11.10
8/29/2009	11.32	10.74	11.06
8/30/2009	10.69	9.93	10.18
8/31/2009	9.88	8.27	8.94
9/1/2009	8.20	7.39	7.70

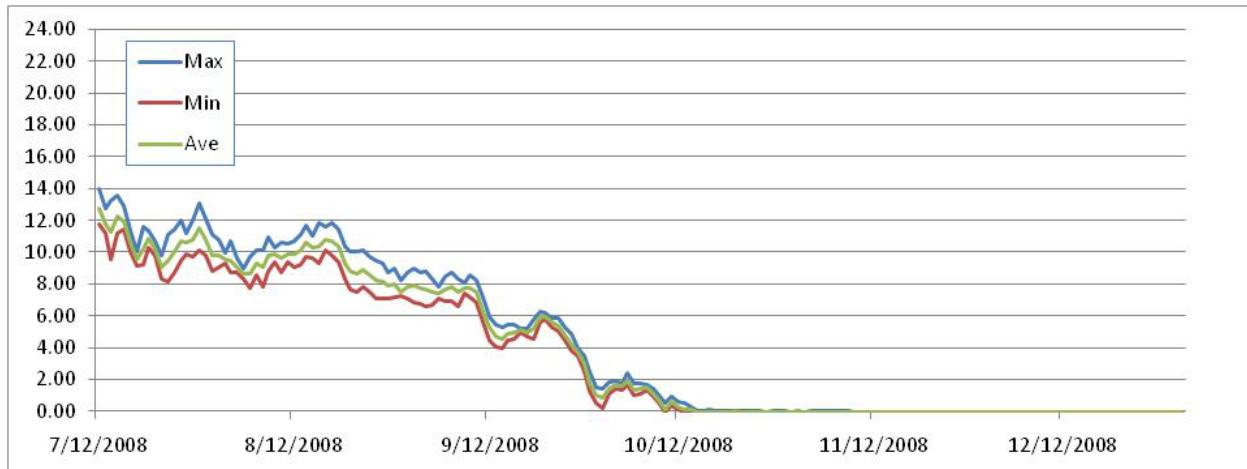
**Temperatures in Waters Associated with Federal Subsistence Fisheries      February 20, 2011**  
**Sheenjek Creek**

<b>Date</b>	<b>2009 Max</b>	<b>2009 Min</b>	<b>2009 Ave</b>
9/2/2009	7.95	7.14	7.50
9/3/2009	8.39	7.29	7.81
9/4/2009	8.64	7.39	8.00
9/5/2009	9.02	7.72	8.36
9/6/2009	9.44	8.20	8.80
9/7/2009	9.44	8.52	8.96
9/8/2009	9.16	8.25	8.77
9/9/2009	8.97	8.12	8.60
9/10/2009	8.97	8.05	8.56
9/11/2009	9.02	8.47	8.74
9/12/2009	9.58	8.54	9.02
9/13/2009	9.49	8.52	9.01
9/14/2009	9.58	8.77	9.15
9/15/2009	9.14	8.25	8.73
9/16/2009	8.54	7.75	8.20
9/17/2009	8.42	8.15	8.30
9/18/2009	8.39	8.10	8.32
9/19/2009	8.07	7.09	7.63
9/20/2009	7.07	5.98	6.50
9/21/2009	5.92	4.56	5.08
9/22/2009	4.53	3.96	4.19
9/23/2009	4.14	2.96	3.60

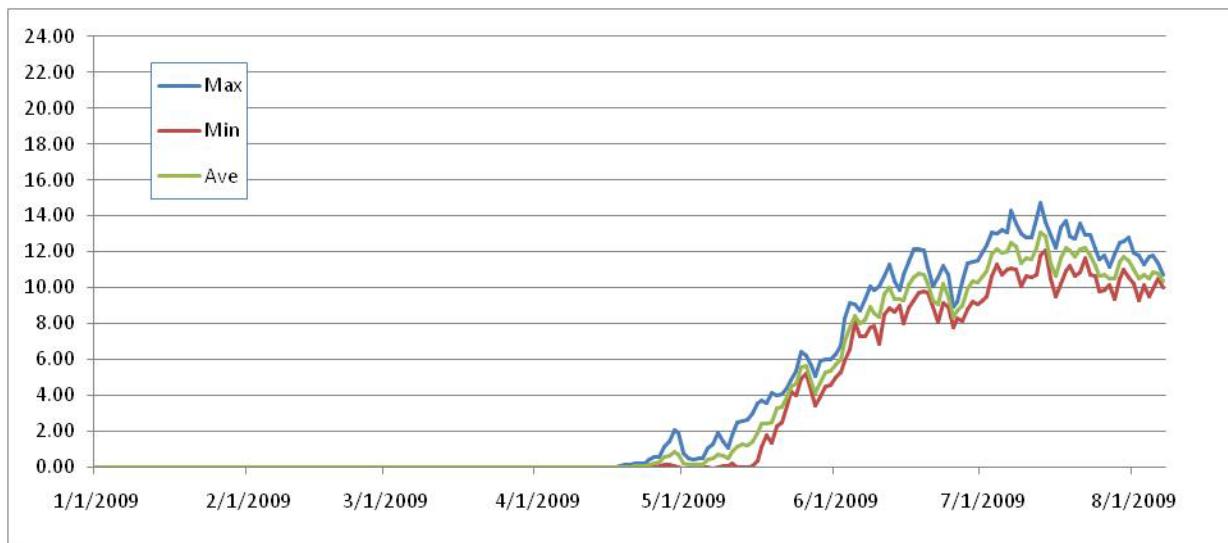
## Henshaw Creek

<b>Stream Name</b>	<b>Henshaw Creek</b>	
<b>Principal Investigator</b>	Brandy Berkbigler, Tanana Chiefs	
<b>Drainage Name</b>	Koyukuk	
<b>Latitude:</b>	66.5567	
<b>Longitude:</b>	152.2095	
<b>Start:</b>	7/12/2008	1/1/2009
<b>End:</b>	12/31/2008	8/7/2009
<b>Season Maximum:</b>	13.95	14.70
<b>Max Range</b>	1.93	1.77
<b>Days Max &gt;13C</b>	4	12
<b>Day Max&gt;15C</b>	0	0
<b>Days Max&gt;20C</b>	0	0
<b>June Degree Days</b>	Not Available	272
<b>July Degree Days</b>	Not Available	361
<b>August Degree Days</b>	286	Not Available
<b>Sept Degree Days</b>	164	Not Available
<b>Regression Local Air</b>		
<b>Slope</b>	0.24	0.67
<b>Y Intercept</b>	7.96	-1.23
<b>R Squared</b>	0.34	0.71
<b>Regression Bettles Air</b>		
<b>Slope</b>	0.55	0.64
<b>Y Intercept</b>	3.23	-0.27
<b>R Squared</b>	0.83	0.64

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Henshaw Creek**



**Figure 4. Daily 2008 water temperature for Henshaw Creek.**



**Figure 5. Daily 2009 water temperature for Henshaw Creek.**

**Table 7. Daily Henshaw Creek water temperature (C) statistics.**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/1				-0.03	-0.03	-0.03
1/2				-0.03	-0.03	-0.03
1/3				-0.03	-0.03	-0.03
1/4				-0.03	-0.03	-0.03
1/5				-0.03	-0.03	-0.03
1/6				-0.03	-0.03	-0.03
1/7				-0.03	-0.03	-0.03
1/8				-0.03	-0.03	-0.03

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Henshaw Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/9				-0.03	-0.03	-0.03
1/10				-0.03	-0.03	-0.03
1/11				-0.03	-0.03	-0.03
1/12				-0.03	-0.03	-0.03
1/13				-0.03	-0.03	-0.03
1/14				-0.03	-0.03	-0.03
1/15				-0.03	-0.06	-0.03
1/16				-0.03	-0.06	-0.03
1/17				-0.03	-0.06	-0.04
1/18				-0.03	-0.06	-0.05
1/19				-0.03	-0.06	-0.04
1/20				-0.03	-0.06	-0.06
1/21				-0.03	-0.06	-0.05
1/22				-0.03	-0.06	-0.04
1/23				-0.03	-0.06	-0.04
1/24				-0.03	-0.06	-0.03
1/25				-0.03	-0.06	-0.05
1/26				-0.03	-0.06	-0.05
1/27				-0.03	-0.06	-0.06
1/28				-0.03	-0.06	-0.05
1/29				-0.03	-0.06	-0.04
1/30				-0.03	-0.06	-0.04
1/31				-0.03	-0.06	-0.04
2/1				-0.03	-0.06	-0.03
2/2				-0.03	-0.06	-0.03
2/3				-0.03	-0.06	-0.03
2/4				-0.03	-0.06	-0.03
2/5				-0.03	-0.06	-0.03
2/6				-0.03	-0.06	-0.04
2/7				-0.03	-0.06	-0.06
2/8				-0.03	-0.06	-0.06
2/9				-0.03	-0.06	-0.05
2/10				-0.03	-0.06	-0.05
2/11				-0.03	-0.06	-0.04
2/12				-0.03	-0.06	-0.05
2/13				-0.03	-0.06	-0.06
2/14				-0.03	-0.06	-0.06
2/15				-0.06	-0.06	-0.06
2/16				-0.03	-0.06	-0.06
2/17				-0.03	-0.06	-0.06
2/18				-0.03	-0.06	-0.06

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Henshaw Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
2/19				-0.06	-0.06	-0.06
2/20				-0.06	-0.06	-0.06
2/21				-0.03	-0.06	-0.06
2/22				-0.03	-0.06	-0.06
2/23				-0.03	-0.06	-0.06
2/24				-0.06	-0.06	-0.06
2/25				-0.03	-0.06	-0.06
2/26				-0.03	-0.06	-0.06
2/27				-0.06	-0.06	-0.06
2/28				-0.06	-0.06	-0.06
3/1				-0.06	-0.06	-0.06
3/2				-0.06	-0.06	-0.06
3/3				-0.03	-0.06	-0.06
3/4				-0.03	-0.06	-0.06
3/5				-0.06	-0.06	-0.06
3/6				-0.06	-0.06	-0.06
3/7				-0.03	-0.06	-0.06
3/8				-0.03	-0.06	-0.06
3/9				-0.03	-0.06	-0.06
3/10				-0.03	-0.06	-0.06
3/11				-0.03	-0.06	-0.06
3/12				-0.03	-0.06	-0.06
3/13				-0.03	-0.06	-0.06
3/14				-0.03	-0.06	-0.06
3/15				-0.03	-0.06	-0.06
3/16				-0.03	-0.06	-0.06
3/17				-0.03	-0.06	-0.06
3/18				-0.03	-0.06	-0.06
3/19				-0.03	-0.06	-0.06
3/20				-0.03	-0.06	-0.05
3/21				-0.03	-0.06	-0.05
3/22				-0.03	-0.06	-0.05
3/23				-0.03	-0.06	-0.05
3/24				-0.03	-0.06	-0.05
3/25				-0.03	-0.06	-0.05
3/26				-0.03	-0.06	-0.05
3/27				-0.03	-0.06	-0.05
3/28				-0.03	-0.06	-0.05
3/29				-0.03	-0.06	-0.05
3/30				-0.03	-0.06	-0.05
3/31				-0.03	-0.06	-0.05

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Henshaw Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
4/1				-0.03	-0.06	-0.06
4/2				-0.03	-0.06	-0.05
4/3				-0.03	-0.06	-0.06
4/4				-0.03	-0.06	-0.06
4/5				-0.03	-0.06	-0.06
4/6				-0.03	-0.06	-0.05
4/7				-0.03	-0.06	-0.06
4/8				-0.03	-0.06	-0.06
4/9				-0.06	-0.06	-0.06
4/10				-0.03	-0.06	-0.05
4/11				-0.03	-0.06	-0.05
4/12				-0.03	-0.06	-0.05
4/13				-0.03	-0.06	-0.05
4/14				-0.03	-0.06	-0.05
4/15				-0.03	-0.06	-0.05
4/16				-0.03	-0.06	-0.05
4/17				0.00	-0.06	-0.04
4/18				0.05	-0.06	-0.02
4/19				0.08	-0.06	-0.01
4/20				0.14	-0.06	0.00
4/21				0.19	-0.06	0.03
4/22				0.16	-0.09	0.01
4/23				0.19	-0.03	0.05
4/24				0.41	-0.06	0.11
4/25				0.52	-0.06	0.18
4/26				0.55	0.05	0.24
4/27				1.13	0.11	0.51
4/28				1.40	0.11	0.65
4/29				2.05	0.05	0.86
4/30				1.89	-0.06	0.69
5/1				0.74	-0.09	0.21
5/2				0.44	-0.09	0.12
5/3				0.41	-0.06	0.08
5/4				0.44	-0.06	0.13
5/5				0.44	-0.06	0.11
5/6				1.04	-0.06	0.38
5/7				1.29	-0.09	0.45
5/8				1.89	-0.03	0.68
5/9				1.43	0.02	0.60
5/10				1.04	0.02	0.49
5/11				1.75	0.16	0.81

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Henshaw Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
5/12				2.50	-0.03	1.14
5/13				2.56	0.00	1.23
5/14				2.61	0.00	1.22
5/15				2.98	0.05	1.43
5/16				3.56	0.36	1.90
5/17				3.72	1.13	2.41
5/18				3.56	1.75	2.38
5/19				4.12	1.32	2.51
5/20				4.01	2.26	3.23
5/21				4.06	2.48	3.36
5/22				4.43	3.43	3.93
5/23				4.87	4.22	4.50
5/24				5.36	4.01	4.61
5/25				6.38	4.90	5.52
5/26				6.18	5.18	5.60
5/27				5.62	4.22	4.72
5/28				5.02	3.38	4.14
5/29				5.90	3.88	4.69
5/30				6.00	4.48	5.25
5/31				6.00	4.53	5.35
6/1				6.28	5.00	5.69
6/2				6.76	5.26	5.96
6/3				8.27	5.90	6.96
6/4				9.14	6.54	7.77
6/5				9.06	8.05	8.40
6/6				8.72	7.27	7.96
6/7				9.36	7.27	8.21
6/8				10.05	7.75	8.89
6/9				9.85	7.85	8.54
6/10				10.08	6.86	8.35
6/11				10.66	8.52	9.61
6/12				11.30	8.87	10.00
6/13				10.32	8.62	9.36
6/14				9.88	8.99	9.35
6/15				10.69	8.00	9.25
6/16				11.42	8.87	10.16
6/17				12.15	9.26	10.60
6/18				12.12	9.73	10.80
6/19				12.07	9.81	10.70
6/20				11.13	9.68	10.22
6/21				10.10	8.89	9.31

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Henshaw Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
6/22				10.59	8.05	9.09
6/23				11.22	9.14	10.22
6/24				10.69	8.89	9.48
6/25				8.94	7.75	8.38
6/26				9.24	8.27	8.71
6/27				10.32	8.12	9.00
6/28				11.35	8.79	9.91
6/29				11.42	9.24	10.35
6/30				11.47	9.04	10.28
7/1				12.03	9.26	10.63
7/2				12.34	9.49	10.92
7/3				13.09	10.61	11.83
7/4				13.02	11.25	12.13
7/5				13.19	10.69	11.94
7/6				13.04	11.03	11.99
7/7				14.29	11.08	12.52
7/8				13.59	10.98	12.31
7/9				12.97	10.08	11.39
7/10				12.75	10.64	11.66
7/11				12.78	10.59	11.59
7/12	13.95	11.73	12.73	13.88	10.71	12.18
7/13	12.78	11.18	11.73	14.70	11.76	13.10
7/14	13.21	9.58	11.27	13.67	12.05	12.84
7/15	13.59	11.22	12.29	12.92	10.47	11.36
7/16	12.92	11.42	11.93	12.20	9.46	10.62
7/17	11.37	10.08	10.57	13.38	10.20	11.63
7/18	10.03	9.14	9.52	13.71	10.91	12.22
7/19	11.59	9.19	10.20	12.82	11.22	12.09
7/20	11.37	10.30	10.86	12.70	10.64	11.69
7/21	10.74	9.83	10.20	13.55	10.88	12.11
7/22	9.83	8.34	9.06	12.90	11.64	12.21
7/23	11.08	8.17	9.46	12.92	10.71	11.76
7/24	11.44	8.69	10.08	12.17	10.61	11.19
7/25	11.98	9.46	10.68	11.59	9.81	10.66
7/26	11.15	9.90	10.58	11.81	9.85	10.74
7/27	11.98	9.73	10.75	11.15	10.12	10.47
7/28	13.06	10.10	11.49	11.86	9.34	10.50
7/29	12.07	9.78	10.77	12.53	10.52	11.39
7/30	11.13	8.79	9.82	12.56	11.01	11.73
7/31	10.76	9.02	9.81	12.78	10.54	11.48
8/1	9.98	9.26	9.52	11.93	10.20	11.03

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Henshaw Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
8/2	10.74	8.74	9.49	11.76	9.29	10.51
8/3	9.63	8.69	9.10	11.25	10.12	10.68
8/4	8.97	8.30	8.61	11.71	9.46	10.52
8/5	9.73	7.75	8.61	11.81	9.93	10.84
8/6	10.12	8.54	9.28	11.32	10.47	10.80
8/7	10.10	7.85	9.07	10.71	10.03	10.36
8/8	10.91	8.82	9.76			
8/9	10.32	9.36	9.84			
8/10	10.64	8.77	9.64			
8/11	10.54	9.39	9.88			
8/12	10.71	9.09	9.84			
8/13	11.10	9.24	10.15			
8/14	11.71	9.68	10.58			
8/15	11.03	9.63	10.31			
8/16	11.81	9.26	10.36			
8/17	11.64	10.10	10.78			
8/18	11.83	9.81	10.73			
8/19	11.39	9.36	10.35			
8/20	10.39	8.30	9.34			
8/21	10.00	7.67	8.79			
8/22	10.03	7.49	8.68			
8/23	10.12	7.80	8.86			
8/24	9.73	7.49	8.57			
8/25	9.46	7.12	8.25			
8/26	9.29	7.12	8.17			
8/27	8.72	7.12	7.94			
8/28	8.99	7.14	8.01			
8/29	8.25	7.24	7.51			
8/30	8.74	7.07	7.79			
8/31	8.94	6.86	7.90			
9/1	8.72	6.79	7.71			
9/2	8.84	6.64	7.68			
9/3	8.34	6.66	7.53			
9/4	7.85	7.09	7.42			
9/5	8.52	6.91	7.65			
9/6	8.74	6.94	7.81			
9/7	8.34	6.59	7.47			
9/8	8.05	7.39	7.71			
9/9	8.54	7.17	7.75			
9/10	8.22	6.84	7.48			
9/11	7.17	5.64	6.24			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Henshaw Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
9/12	5.98	4.43	5.27			
9/13	5.46	4.04	4.71			
9/14	5.26	3.93	4.55			
9/15	5.46	4.45	4.90			
9/16	5.44	4.53	4.97			
9/17	5.21	4.97	5.09			
9/18	5.21	4.74	5.00			
9/19	5.80	4.58	5.17			
9/20	6.31	5.62	5.90			
9/21	6.15	5.75	5.92			
9/22	5.87	5.28	5.57			
9/23	5.85	5.02	5.36			
9/24	5.31	4.48	4.83			
9/25	4.84	3.78	4.23			
9/26	4.01	3.49	3.73			
9/27	3.46	2.53	2.96			
9/28	2.50	1.29	1.78			
9/29	1.53	0.50	1.02			
9/30	1.40	0.19	0.82			
10/1	1.86	1.07	1.40			
10/2	1.94	1.43	1.65			
10/3	1.78	1.37	1.60			
10/4	2.40	1.67	1.93			
10/5	1.78	0.99	1.33			
10/6	1.78	1.10	1.41			
10/7	1.67	1.34	1.50			
10/8	1.40	0.96	1.12			
10/9	0.93	0.41	0.64			
10/10	0.52	-0.03	0.15			
10/11	0.96	0.36	0.62			
10/12	0.58	0.08	0.29			
10/13	0.50	-0.09	0.13			
10/14	0.30	-0.09	0.08			
10/15	0.02	-0.09	-0.05			
10/16	0.00	-0.09	-0.04			
10/17	0.08	-0.03	-0.01			
10/18	0.05	-0.03	-0.01			
10/19	0.02	-0.03	-0.02			
10/20	0.02	-0.03	-0.01			
10/21	0.02	0.00	0.00			
10/22	0.00	-0.03	-0.03			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Henshaw Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>10/23</b>	0.00	-0.03	-0.02			
<b>10/24</b>	0.00	-0.03	-0.03			
<b>10/25</b>	0.00	-0.03	-0.03			
<b>10/26</b>	-0.03	-0.03	-0.03			
<b>10/27</b>	0.00	-0.03	-0.02			
<b>10/28</b>	0.00	-0.03	-0.02			
<b>10/29</b>	0.00	-0.03	-0.02			
<b>10/30</b>	-0.03	-0.03	-0.03			
<b>10/31</b>	0.00	-0.03	-0.03			
<b>11/1</b>	-0.03	-0.03	-0.03			
<b>11/2</b>	0.00	-0.03	-0.03			
<b>11/3</b>	0.00	-0.03	-0.02			
<b>11/4</b>	0.00	-0.03	-0.03			
<b>11/5</b>	0.00	-0.03	-0.02			
<b>11/6</b>	0.00	-0.03	-0.03			
<b>11/7</b>	0.00	-0.06	-0.03			
<b>11/8</b>	0.00	-0.03	-0.03			
<b>11/9</b>	-0.03	-0.06	-0.04			
<b>11/10</b>	-0.03	-0.03	-0.03			
<b>11/11</b>	-0.03	-0.03	-0.03			
<b>11/12</b>	-0.03	-0.03	-0.03			
<b>11/13</b>	-0.03	-0.03	-0.03			
<b>11/14</b>	-0.03	-0.03	-0.03			
<b>11/15</b>	-0.03	-0.03	-0.03			
<b>11/16</b>	-0.03	-0.03	-0.03			
<b>11/17</b>	-0.03	-0.06	-0.03			
<b>11/18</b>	-0.03	-0.06	-0.05			
<b>11/19</b>	-0.03	-0.06	-0.06			
<b>11/20</b>	-0.03	-0.06	-0.04			
<b>11/21</b>	-0.03	-0.03	-0.03			
<b>11/22</b>	-0.03	-0.03	-0.03			
<b>11/23</b>	-0.03	-0.03	-0.03			
<b>11/24</b>	-0.03	-0.03	-0.03			
<b>11/25</b>	-0.03	-0.03	-0.03			
<b>11/26</b>	-0.03	-0.03	-0.03			
<b>11/27</b>	-0.03	-0.03	-0.03			
<b>11/28</b>	-0.03	-0.03	-0.03			
<b>11/29</b>	-0.03	-0.03	-0.03			
<b>11/30</b>	-0.03	-0.03	-0.03			
<b>12/1</b>	-0.03	-0.03	-0.03			
<b>12/2</b>	-0.03	-0.03	-0.03			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Henshaw Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
12/3	-0.03	-0.03	-0.03			
12/4	-0.03	-0.03	-0.03			
12/5	-0.03	-0.03	-0.03			
12/6	-0.03	-0.06	-0.03			
12/7	-0.03	-0.06	-0.05			
12/8	-0.03	-0.06	-0.03			
12/9	-0.03	-0.06	-0.03			
12/10	-0.03	-0.03	-0.03			
12/11	-0.03	-0.03	-0.03			
12/12	-0.03	-0.03	-0.03			
12/13	-0.03	-0.03	-0.03			
12/14	-0.03	-0.03	-0.03			
12/15	-0.03	-0.03	-0.03			
12/16	-0.03	-0.03	-0.03			
12/17	-0.03	-0.03	-0.03			
12/18	-0.03	-0.03	-0.03			
12/19	-0.03	-0.03	-0.03			
12/20	-0.03	-0.03	-0.03			
12/21	-0.03	-0.03	-0.03			
12/22	-0.03	-0.03	-0.03			
12/23	-0.03	-0.03	-0.03			
12/24	-0.03	-0.03	-0.03			
12/25	-0.03	-0.03	-0.03			
12/26	-0.03	-0.03	-0.03			
12/27	-0.03	-0.03	-0.03			
12/28	-0.03	-0.03	-0.03			
12/29	-0.03	-0.03	-0.03			
12/30	-0.03	-0.03	-0.03			
12/31	-0.03	-0.03	-0.03			

Salcha River

<b>Stream Name</b>	<b>Salcha River</b>	
<b>Principal Investigator</b>	Chris Stark, UAF	
<b>Drainage Name</b>	Salcha River	
<b>Latitude:</b>	64.4772	
<b>Longitude:</b>	146.7826	
<b>Start:</b>	7/30/2008	1/1/2009
<b>End:</b>	12/31/2008	9/10/2009
<b>Season Maximum:</b>	10.12	17.37
<b>Max Range</b>	7.68	1.88
<b>Days Max &gt;13C</b>	0	50
<b>Day Max&gt;15C</b>	0	26
<b>Days Max&gt;20C</b>	0	0
<b>June Degree Days</b>	NA	326
<b>July Degree Days</b>	NA	430
<b>August Degree Days</b>	NA	342
<b>Sept Degree Days</b>	NA	NA
<b>Regression Local Air</b>		
<b>Slope</b>		0.67
<b>Y Intercept</b>		2.09
<b>R Squared</b>		0.65
<b>Regression Fairbanks Air</b>		
<b>Slope</b>		0.57
<b>Y Intercept</b>		2.19
<b>R Squared</b>		0.55

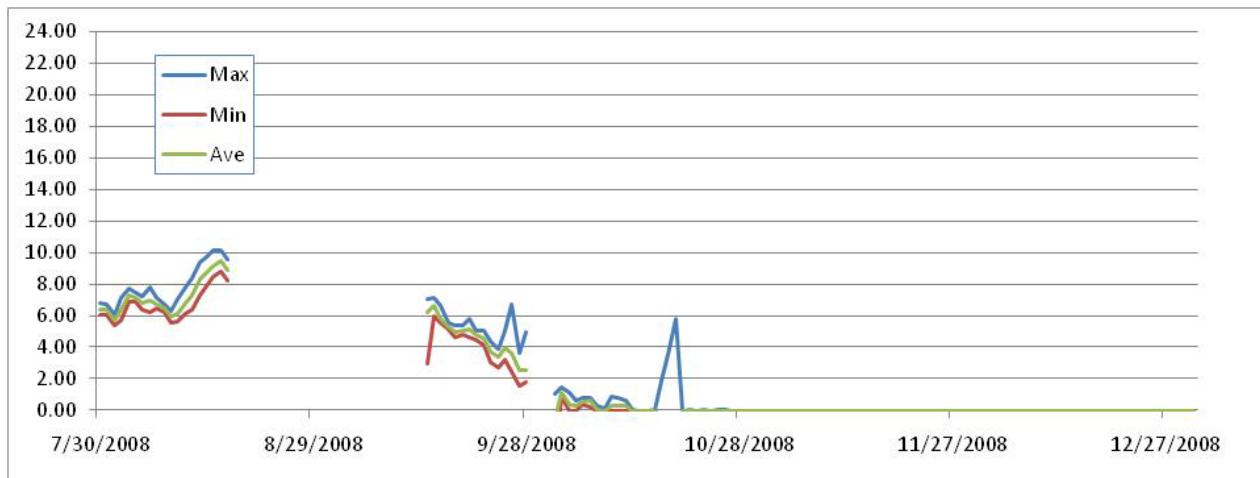
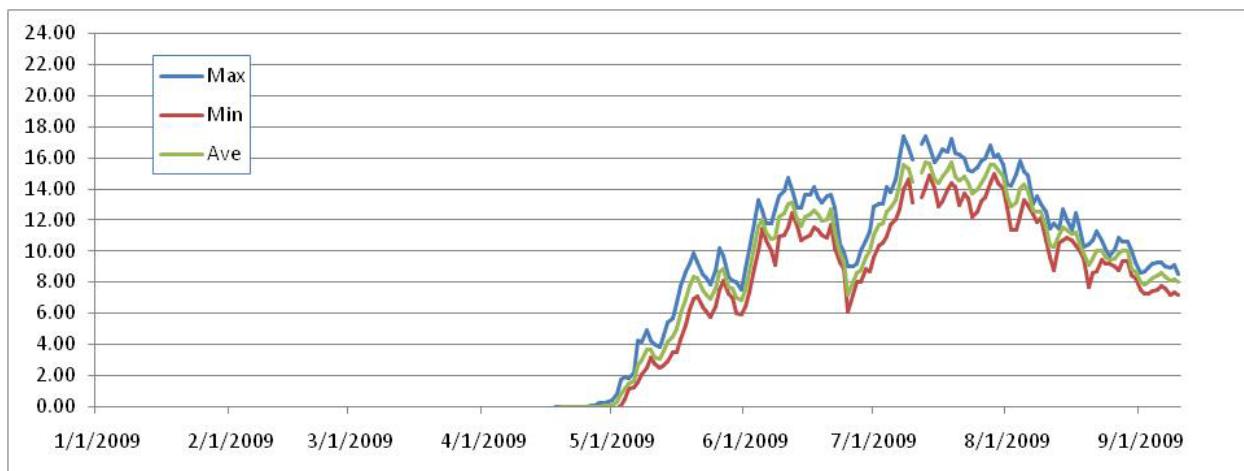


Figure 6. Daily 2008 water temperature (C) for the Salcha River. Missing values due to flood.

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Salcha River**



**Figure 7.** Daily 2009 water temperature in the Salcha River.

**Table 8.** Daily Salcha River water temperature (C) statistics.

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/1				-0.06	-0.06	-0.06
1/2				-0.06	-0.06	-0.06
1/3				-0.06	-0.06	-0.06
1/4				-0.06	-0.06	-0.06
1/5				-0.06	-0.06	-0.06
1/6				-0.06	-0.06	-0.06
1/7				-0.06	-0.06	-0.06
1/8				-0.06	-0.06	-0.06
1/9				-0.06	-0.06	-0.06
1/10				-0.06	-0.06	-0.06
1/11				-0.06	-0.06	-0.06
1/12				-0.06	-0.06	-0.06
1/13				-0.06	-0.06	-0.06
1/14				-0.06	-0.06	-0.06
1/15				-0.06	-0.06	-0.06
1/16				-0.06	-0.06	-0.06
1/17				-0.06	-0.06	-0.06
1/18				-0.06	-0.06	-0.06
1/19				-0.06	-0.06	-0.06
1/20				-0.06	-0.06	-0.06
1/21				-0.06	-0.06	-0.06
1/22				-0.06	-0.06	-0.06
1/23				-0.06	-0.06	-0.06

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Salcha River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/24				-0.06	-0.06	-0.06
1/25				-0.06	-0.06	-0.06
1/26				-0.06	-0.06	-0.06
1/27				-0.06	-0.06	-0.06
1/28				-0.06	-0.06	-0.06
1/29				-0.06	-0.06	-0.06
1/30				-0.06	-0.06	-0.06
1/31				-0.06	-0.06	-0.06
2/1				-0.06	-0.06	-0.06
2/2				-0.06	-0.06	-0.06
2/3				-0.06	-0.06	-0.06
2/4				-0.06	-0.06	-0.06
2/5				-0.06	-0.09	-0.08
2/6				-0.09	-0.09	-0.09
2/7				-0.09	-0.09	-0.09
2/8				-0.09	-0.12	-0.09
2/9				-0.12	-0.12	-0.12
2/10				-0.12	-0.14	-0.13
2/11				-0.14	-0.20	-0.17
2/12				-0.20	-0.23	-0.22
2/13				-0.23	-0.28	-0.25
2/14				-0.26	-0.28	-0.28
2/15				-0.28	-0.31	-0.29
2/16				-0.31	-0.31	-0.31
2/17				-0.31	-0.34	-0.32
2/18				-0.34	-0.37	-0.35
2/19				-0.37	-0.40	-0.39
2/20				-0.34	-0.40	-0.36
2/21				-0.31	-0.34	-0.32
2/22				-0.31	-0.34	-0.31
2/23				-0.31	-0.34	-0.34
2/24				-0.34	-0.37	-0.35
2/25				-0.37	-0.40	-0.38
2/26				-0.37	-0.40	-0.39
2/27				-0.37	-0.40	-0.37
2/28				-0.31	-0.37	-0.34
3/1				-0.28	-0.31	-0.31
3/2				-0.28	-0.31	-0.28
3/3				-0.28	-0.28	-0.28
3/4				-0.28	-0.28	-0.28
3/5				-0.28	-0.28	-0.28

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Salcha River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
3/6				-0.28	-0.28	-0.28
3/7				-0.26	-0.28	-0.26
3/8				-0.26	-0.26	-0.26
3/9				-0.26	-0.28	-0.26
3/10				-0.28	-0.28	-0.28
3/11				-0.28	-0.28	-0.28
3/12				-0.28	-0.28	-0.28
3/13				-0.28	-0.28	-0.28
3/14				-0.28	-0.28	-0.28
3/15				-0.28	-0.34	-0.31
3/16				-0.34	-0.42	-0.38
3/17				-0.42	-0.48	-0.44
3/18				-0.48	-0.51	-0.49
3/19				-0.51	-0.56	-0.55
3/20				-0.56	-0.62	-0.59
3/21				-0.62	-0.62	-0.62
3/22				-0.62	-0.65	-0.64
3/23				-0.65	-0.65	-0.65
3/24				-0.62	-0.65	-0.63
3/25				-0.59	-0.62	-0.61
3/26				-0.56	-0.59	-0.58
3/27				-0.51	-0.56	-0.54
3/28				-0.48	-0.51	-0.49
3/29				-0.45	-0.48	-0.47
3/30				-0.45	-0.48	-0.45
3/31				-0.42	-0.45	-0.43
4/1				-0.40	-0.42	-0.40
4/2				-0.40	-0.42	-0.40
4/3				-0.42	-0.45	-0.43
4/4				-0.42	-0.45	-0.44
4/5				-0.42	-0.45	-0.42
4/6				-0.42	-0.45	-0.45
4/7				-0.42	-0.45	-0.44
4/8				-0.31	-0.42	-0.37
4/9				-0.23	-0.31	-0.28
4/10				-0.20	-0.23	-0.21
4/11				-0.14	-0.20	-0.16
4/12				-0.12	-0.14	-0.13
4/13				-0.12	-0.14	-0.12
4/14				-0.09	-0.12	-0.10
4/15				-0.06	-0.12	-0.10

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Salcha River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
4/16				-0.06	-0.12	-0.08
4/17				-0.06	-0.09	-0.07
4/18				-0.03	-0.09	-0.06
4/19				-0.03	-0.06	-0.05
4/20				-0.03	-0.06	-0.05
4/21				0.00	-0.06	-0.04
4/22				0.00	-0.06	-0.04
4/23				0.00	-0.06	-0.04
4/24				0.02	-0.06	-0.04
4/25				0.02	-0.06	-0.04
4/26				0.08	-0.06	-0.02
4/27				0.08	-0.06	-0.02
4/28				0.22	-0.06	0.02
4/29				0.27	-0.06	0.03
4/30				0.36	-0.06	0.05
5/1				0.44	-0.06	0.10
5/2				0.80	-0.06	0.29
5/3				1.72	0.08	0.81
5/4				1.94	0.50	1.20
5/5				1.83	1.15	1.48
5/6				2.13	1.26	1.63
5/7				4.22	1.59	2.65
5/8				4.14	2.05	3.02
5/9				4.95	2.48	3.68
5/10				4.27	3.17	3.65
5/11				4.01	2.77	3.13
5/12				3.80	2.50	3.06
5/13				4.58	2.66	3.57
5/14				5.44	2.88	4.14
5/15				5.67	3.49	4.54
5/16				6.66	3.46	5.03
5/17				7.75	4.32	5.99
5/18				8.69	5.26	6.96
5/19				9.21	6.23	7.73
5/20				9.88	6.89	8.32
5/21				9.29	7.09	8.22
5/22				8.49	6.46	7.47
5/23				8.27	6.05	7.15
5/24				7.85	5.75	6.88
5/25				8.72	6.43	7.57
5/26				10.20	7.49	8.71

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Salcha River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
5/27				9.68	8.12	8.80
5/28				8.32	7.27	7.71
5/29				8.10	7.04	7.62
5/30				8.02	5.98	6.99
5/31				7.52	5.95	6.80
6/1				8.82	6.46	7.53
6/2				10.08	7.32	8.70
6/3				11.86	8.89	10.31
6/4				13.31	10.05	11.61
6/5				12.58	11.42	12.04
6/6				11.78	10.66	11.20
6/7				11.78	10.00	10.79
6/8				12.68	9.06	10.89
6/9				13.52	10.93	12.16
6/10				13.83	11.01	12.44
6/11				14.65	11.49	13.04
6/12				13.98	12.41	13.10
6/13				12.78	11.61	12.03
6/14				12.80	10.71	11.62
6/15				13.64	10.83	12.22
6/16				13.57	11.05	12.33
6/17				14.10	11.49	12.63
6/18				13.45	11.35	12.33
6/19				13.06	11.05	11.96
6/20				13.50	10.88	12.04
6/21				13.59	11.71	12.69
6/22				12.73	10.15	11.14
6/23				10.42	9.26	9.87
6/24				9.95	8.82	9.33
6/25				9.04	6.10	7.16
6/26				9.04	7.14	8.02
6/27				9.14	8.00	8.55
6/28				10.03	8.02	8.76
6/29				10.69	8.84	9.57
6/30				11.27	8.67	9.97
7/1				12.87	9.61	11.01
7/2				13.02	10.32	11.64
7/3				13.04	10.49	11.75
7/4				14.07	10.91	12.48
7/5				13.76	11.69	12.75
7/6				14.63	12.00	13.27

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Salcha River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
7/7				16.03	12.68	14.25
7/8				17.37	13.91	15.52
7/9				16.61	14.60	15.25
7/10				15.87	13.14	14.45
7/11						
7/12				16.82	13.43	15.04
7/13				17.32	14.10	15.72
7/14				16.68	14.82	15.64
7/15				15.65	14.05	14.60
7/16				16.06	12.87	14.36
7/17				16.49	13.19	14.76
7/18				16.34	13.93	15.17
7/19				17.20	14.31	15.70
7/20				16.27	14.07	14.80
7/21				16.18	12.90	14.51
7/22				15.92	13.67	14.78
7/23				15.22	13.38	14.38
7/24				15.08	12.17	13.69
7/25				15.37	12.56	13.92
7/26				15.80	13.19	14.35
7/27				15.96	13.47	14.78
7/28				16.80	14.31	15.54
7/29				16.03	14.96	15.56
7/30	6.76	6.08	6.40	16.15	14.31	15.21
7/31	6.69	6.08	6.35	15.49	14.05	14.79
8/1	6.08	5.41	5.72	14.29	12.75	13.48
8/2	7.17	5.69	6.39	14.19	11.32	12.83
8/3	7.72	6.89	7.28	14.91	11.37	13.09
8/4	7.49	6.84	7.12	15.80	12.24	14.01
8/5	7.24	6.41	6.77	15.10	13.28	14.24
8/6	7.77	6.18	6.94	14.86	12.92	13.83
8/7	7.12	6.43	6.75	12.99	12.32	12.63
8/8	6.71	6.23	6.42	13.50	11.83	12.56
8/9	6.28	5.57	5.94	12.99	12.07	12.55
8/10	7.04	5.64	6.16	12.49	10.66	11.55
8/11	7.77	6.10	6.83	11.42	9.58	10.36
8/12	8.42	6.38	7.31	11.73	8.74	10.23
8/13	9.36	7.27	8.26	11.42	10.49	11.02
8/14	9.68	7.87	8.71	12.70	10.69	11.50
8/15	10.12	8.49	9.17	12.03	10.83	11.31
8/16	10.12	8.84	9.45	11.35	10.71	11.07

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Salcha River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
8/17	9.56	8.25	8.89	12.44	10.35	11.20
8/18				11.47	9.98	10.41
8/19				10.27	9.49	9.85
8/20				10.42	7.70	9.07
8/21				10.69	8.57	9.48
8/22				11.27	8.67	9.98
8/23				10.69	9.46	10.03
8/24				10.10	9.21	9.63
8/25				9.71	9.14	9.40
8/26				10.12	8.99	9.53
8/27				10.83	8.74	9.81
8/28				10.59	9.34	10.01
8/29				10.61	9.36	9.99
8/30				9.98	8.44	8.87
8/31				9.24	8.30	8.69
9/1				8.57	7.54	8.00
9/2				8.67	7.24	7.87
9/3				8.89	7.24	8.04
9/4				9.19	7.44	8.30
9/5				9.24	7.49	8.39
9/6				9.29	7.75	8.56
9/7				9.02	7.57	8.38
9/8				8.89	7.17	8.10
9/9				9.06	7.32	8.21
9/10				8.54	7.17	8.02
9/11						
9/12						
9/13						
9/14	7.02	2.93	6.22			
9/15	7.14	6.00	6.60			
9/16	6.64	5.54	5.80			
9/17	5.57	5.10	5.30			
9/18	5.33	4.64	4.97			
9/19	5.36	4.79	5.07			
9/20	5.82	4.64	5.12			
9/21	5.08	4.48	4.77			
9/22	5.02	4.14	4.50			
9/23	4.35	3.06	3.68			
9/24	3.91	2.74	3.34			
9/25	5.02	3.17	3.92			
9/26	6.74	2.45	3.65			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Salcha River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>9/27</b>	3.59	1.53	2.51			
<b>9/28</b>	4.97	1.78	2.51			
<b>9/29</b>						
<b>9/30</b>	2.26	-1.78	-0.34			
<b>10/1</b>						
<b>10/2</b>	1.07	-3.06	-0.60			
<b>10/3</b>	1.48	0.85	1.09			
<b>10/4</b>	1.13	-0.09	0.36			
<b>10/5</b>	0.58	-0.03	0.28			
<b>10/6</b>	0.77	0.33	0.52			
<b>10/7</b>	0.74	0.22	0.63			
<b>10/8</b>	0.30	-0.09	0.06			
<b>10/9</b>	0.11	-0.06	-0.03			
<b>10/10</b>	0.91	-0.06	0.32			
<b>10/11</b>	0.74	-0.09	0.31			
<b>10/12</b>	0.63	-0.03	0.28			
<b>10/13</b>	0.05	-0.09	-0.05			
<b>10/14</b>	-0.03	-0.09	-0.05			
<b>10/15</b>	-0.03	-0.06	-0.06			
<b>10/16</b>	0.02	-0.06	-0.05			
<b>10/17</b>	1.89	-2.16	-0.35			
<b>10/18</b>	3.54	-4.08	-1.45			
<b>10/19</b>	5.82	-6.71	-1.86			
<b>10/20</b>	-0.03	-0.23	-0.06			
<b>10/21</b>	0.05	-0.06	-0.04			
<b>10/22</b>	-0.03	-0.06	-0.05			
<b>10/23</b>	0.00	-0.06	-0.05			
<b>10/24</b>	-0.03	-0.06	-0.06			
<b>10/25</b>	0.00	-0.06	-0.05			
<b>10/26</b>	0.00	-0.06	-0.05			
<b>10/27</b>	-0.03	-0.06	-0.06			
<b>10/28</b>	-0.03	-0.06	-0.05			
<b>10/29</b>	-0.03	-0.06	-0.05			
<b>10/30</b>	-0.06	-0.06	-0.06			
<b>10/31</b>	-0.03	-0.06	-0.06			
<b>11/1</b>	-0.03	-0.06	-0.06			
<b>11/2</b>	-0.06	-0.06	-0.06			
<b>11/3</b>	-0.06	-0.06	-0.06			
<b>11/4</b>	-0.06	-0.06	-0.06			
<b>11/5</b>	-0.06	-0.06	-0.06			
<b>11/6</b>	-0.06	-0.06	-0.06			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Salcha River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>11/7</b>	-0.06	-0.06	-0.06			
<b>11/8</b>	-0.06	-0.06	-0.06			
<b>11/9</b>	-0.06	-0.06	-0.06			
<b>11/10</b>	-0.06	-0.06	-0.06			
<b>11/11</b>	-0.06	-0.06	-0.06			
<b>11/12</b>	-0.03	-0.06	-0.06			
<b>11/13</b>	-0.06	-0.06	-0.06			
<b>11/14</b>	-0.06	-0.06	-0.06			
<b>11/15</b>	-0.06	-0.06	-0.06			
<b>11/16</b>	-0.03	-0.06	-0.06			
<b>11/17</b>	-0.06	-0.06	-0.06			
<b>11/18</b>	-0.03	-0.06	-0.06			
<b>11/19</b>	-0.06	-0.06	-0.06			
<b>11/20</b>	-0.06	-0.06	-0.06			
<b>11/21</b>	-0.06	-0.06	-0.06			
<b>11/22</b>	-0.06	-0.06	-0.06			
<b>11/23</b>	-0.06	-0.06	-0.06			
<b>11/24</b>	-0.06	-0.06	-0.06			
<b>11/25</b>	-0.03	-0.06	-0.06			
<b>11/26</b>	-0.06	-0.06	-0.06			
<b>11/27</b>	-0.06	-0.06	-0.06			
<b>11/28</b>	-0.03	-0.06	-0.06			
<b>11/29</b>	-0.06	-0.06	-0.06			
<b>11/30</b>	-0.06	-0.06	-0.06			
<b>12/1</b>	-0.06	-0.06	-0.06			
<b>12/2</b>	-0.06	-0.06	-0.06			
<b>12/3</b>	-0.06	-0.06	-0.06			
<b>12/5</b>	-0.06	-0.06	-0.06			
<b>12/6</b>	-0.06	-0.06	-0.06			
<b>12/7</b>	-0.06	-0.06	-0.06			
<b>12/8</b>	-0.06	-0.06	-0.06			
<b>12/9</b>	-0.06	-0.06	-0.06			
<b>12/10</b>	-0.06	-0.06	-0.06			
<b>12/11</b>	-0.06	-0.06	-0.06			
<b>12/12</b>	-0.06	-0.06	-0.06			
<b>12/13</b>	-0.06	-0.06	-0.06			
<b>12/15</b>	-0.06	-0.06	-0.06			
<b>12/16</b>	-0.06	-0.06	-0.06			
<b>12/17</b>	-0.06	-0.06	-0.06			
<b>12/18</b>	-0.06	-0.06	-0.06			
<b>12/19</b>	-0.06	-0.06	-0.06			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Salcha River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>12/20</b>	-0.06	-0.06	-0.06			
<b>12/21</b>	-0.06	-0.06	-0.06			
<b>12/22</b>	-0.06	-0.06	-0.06			
<b>12/23</b>	-0.06	-0.06	-0.06			
<b>12/24</b>	-0.06	-0.06	-0.06			
<b>12/25</b>	-0.06	-0.06	-0.06			
<b>12/26</b>	-0.06	-0.06	-0.06			
<b>12/27</b>	-0.06	-0.06	-0.06			
<b>12/28</b>	-0.06	-0.06	-0.06			
<b>12/29</b>	-0.06	-0.06	-0.06			
<b>12/30</b>	-0.06	-0.06	-0.06			
<b>12/31</b>	-0.06	-0.06	-0.06			

Chena River

<b>Stream Name</b>	Chena River	
<b>Principal Investigator</b>	Audra Brase, ADFG	
<b>Drainage Name</b>	Tanana River	
<b>Latitude:</b>		
<b>Longitude:</b>		
<b>Start:</b>	Loggers Lost to Flood	7/9/2009
<b>End:</b>	2008 Data not Available	8/10/2009
<b>Season Maximum:</b>		14.51
<b>Max Range</b>		1.33
<b>Days Max &gt;13C</b>		22
<b>Day Max&gt;15C</b>		0
<b>Days Max&gt;20C</b>		0
<b>June Degree Days</b>		Not Available
<b>July Degree Days</b>		293*
<b>August Degree Days</b>		Not Available
<b>Sept Degree Days</b>		Not Available

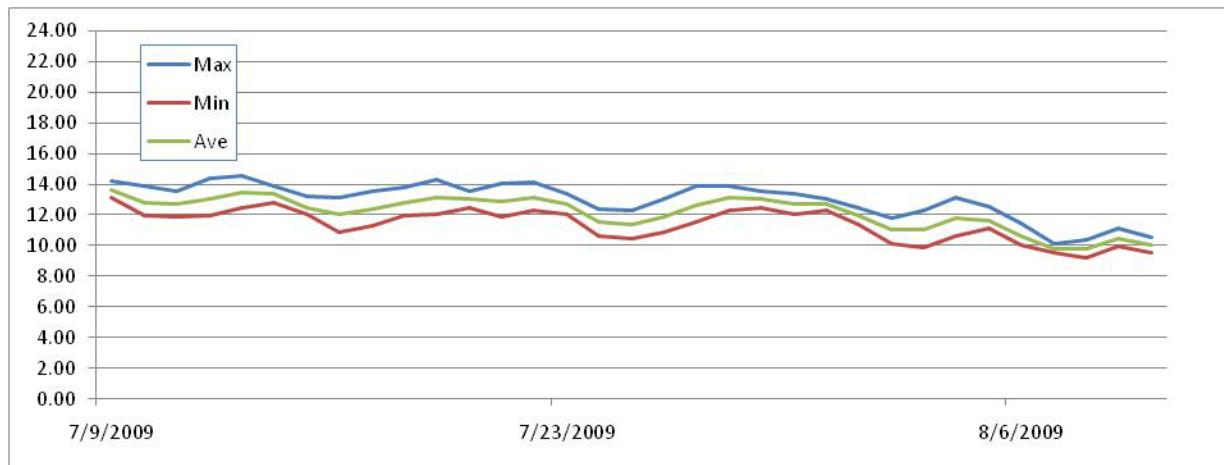


Figure 8. Daily 2009 water temperature for the Chena River.

**Table 9. Daily Chena River water temperature (C) statistics.**

<b>Date</b>	<b>2009 Max</b>	<b>2009 Min</b>	<b>2009 Ave</b>
7/9/2009	14.19	13.11	13.64
7/10/2009	13.86	11.93	12.82
7/11/2009	13.57	11.90	12.72
7/12/2009	14.34	11.95	13.04
7/13/2009	14.51	12.49	13.47
7/14/2009	13.91	12.80	13.41
7/15/2009	13.23	12.07	12.49
7/16/2009	13.14	10.91	12.01
7/17/2009	13.57	11.30	12.38
7/18/2009	13.76	11.95	12.80
7/19/2009	14.31	12.03	13.09
7/20/2009	13.57	12.44	13.04
7/21/2009	14.07	11.83	12.89
7/22/2009	14.15	12.29	13.10
7/23/2009	13.35	12.05	12.70
7/24/2009	12.34	10.59	11.55
7/25/2009	12.29	10.42	11.35
7/26/2009	13.02	10.91	11.84
7/27/2009	13.86	11.57	12.58
7/28/2009	13.88	12.32	13.12
7/29/2009	13.55	12.41	13.08
7/30/2009	13.40	12.00	12.69
7/31/2009	13.06	12.32	12.71
8/1/2009	12.44	11.35	11.94
8/2/2009	11.78	10.08	11.00
8/3/2009	12.29	9.90	11.02
8/4/2009	13.11	10.59	11.78
8/5/2009	12.51	11.10	11.65
8/6/2009	11.42	10.03	10.64
8/7/2009	10.15	9.51	9.82
8/8/2009	10.37	9.24	9.76
8/9/2009	11.13	9.98	10.42
8/10/2009	10.57	9.53	10.03

Gisasa River

<b>Stream Name</b>	Gisasa River	
<b>Principal Investigator</b>	Tom McLain, USFWS	
<b>Drainage Name</b>	Gisasa	
<b>Latitude:</b>	65.25295	
<b>Longitude:</b>	157.7144	
<b>Start:</b>	7/13/2008	7/1/2009
<b>End:</b>	7/31/2008	7/29/2009
<b>Season Maximum:</b>	14.22	19.48
<b>Max Range</b>	1.96	2.46
<b>Days Max &gt;13C</b>	6	29
<b>Day Max&gt;15C</b>	0	27
<b>Days Max&gt;20C</b>	0	0
<b>June Degree Days</b>	Not Available	Not Available
<b>July Degree Days</b>	Not Available	455
<b>August Degree Days</b>	Not Available	Not Available
<b>Sept Degree Days</b>	Not Available	Not Available

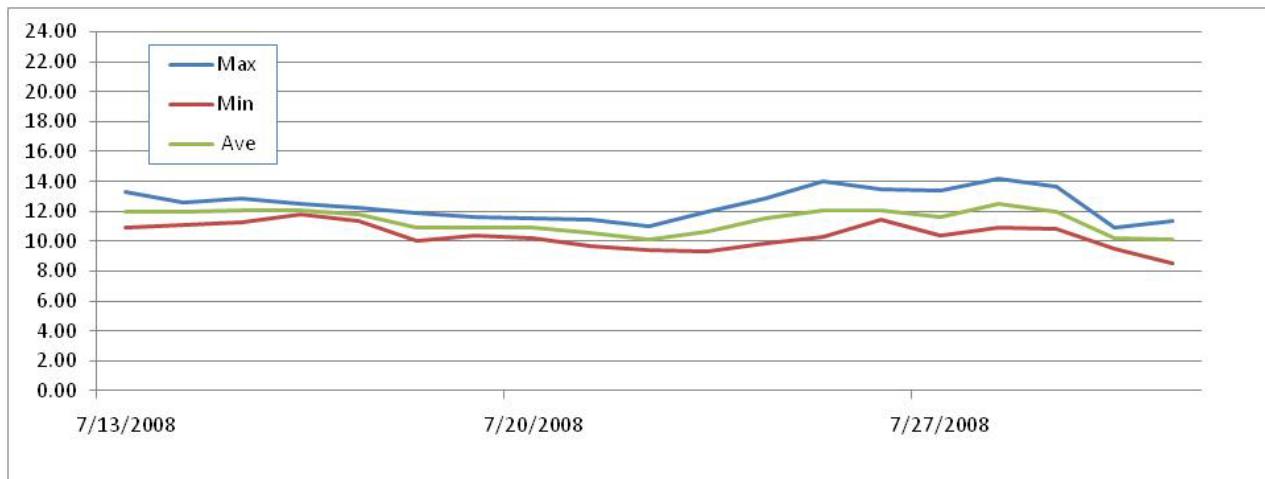
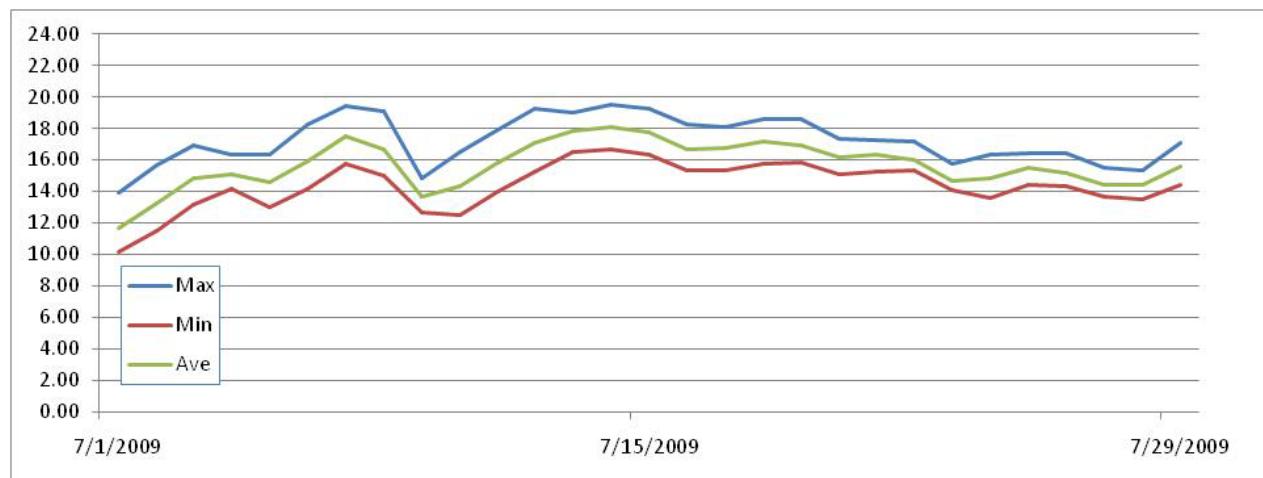


Figure 9. Daily 2008 water temperature (C) for the Gisasa River.

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Gisasa River**



**Figure 10. Daily 2009 water temperature for the Gisasa River.**

**Table 10. Daily Gisasa River water temperature (C) statistics.**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
7/1				13.93	10.12	11.67
7/2				15.63	11.49	13.27
7/3				16.92	13.19	14.84
7/4				16.32	14.19	15.06
7/5				16.37	12.99	14.58
7/6				18.27	14.17	15.88
7/7				19.44	15.72	17.53
7/8				19.10	14.96	16.64
7/9				14.86	12.65	13.67
7/10				16.46	12.53	14.36
7/11				17.94	14.00	15.84
7/12				19.25	15.27	17.11
7/13	13.31	10.96	11.96	19.03	16.49	17.82
7/14	12.56	11.10	11.97	19.48	16.70	18.06
7/15	12.90	11.30	12.02	19.29	16.37	17.76
7/16	12.53	11.76	12.08	18.22	15.34	16.64
7/17	12.27	11.39	11.76	18.06	15.32	16.74
7/18	11.86	10.05	10.92	18.63	15.72	17.20
7/19	11.59	10.42	10.90	18.58	15.84	16.88
7/20	11.57	10.22	10.89	17.32	15.06	16.15
7/21	11.44	9.68	10.60	17.25	15.27	16.33
7/22	10.98	9.39	10.16	17.20	15.37	15.98
7/23	11.98	9.29	10.65	15.72	14.10	14.71
7/24	12.85	9.88	11.56	16.34	13.55	14.79
7/25	14.03	10.27	12.07	16.44	14.39	15.51

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Gisasa River**

**February 20, 2011**

<b>7/26</b>	13.50	11.47	12.10	16.39	14.36	15.20
<b>7/27</b>	13.43	10.39	11.65	15.49	13.67	14.39
<b>7/28</b>	14.22	10.96	12.54	15.32	13.50	14.40
<b>7/29</b>	13.64	10.86	11.97	17.11	14.41	15.61
<b>7/30</b>	10.88	9.49	10.17			
<b>7/31</b>	11.32	8.54	10.15			

East Fork Andreafsky

<b>Stream Name</b>	<b>E. F. Andreafsky</b>	
<b>Principal Investigator</b>	Tom McLain, USFWS	
<b>Drainage Name</b>	Yukon River	
<b>Latitude:</b>		
<b>Longitude:</b>		
<b>Start:</b>	7/12/2008	6/27/2009
<b>End:</b>	7/31/2008	8/20/2009
<b>Season Maximum:</b>	12.65	20.94
<b>Max Range</b>	1.54	3.21
<b>Days Max &gt;13C</b>	0	46
<b>Day Max&gt;15C</b>	0	23
<b>Days Max&gt;20C</b>	0	3
<b>June Degree Days</b>	NA	Not Available
<b>July Degree Days</b>	NA	458
<b>August Degree Days</b>	NA	258*
<b>Sept Degree Days</b>	NA	Not Available

\* Partial data

Table 11. Cross-section water temperatures at monitoring location.

Measurement	1	2	3	4	5	6	7	8	9	10
Water Temperature June (C)	8.5	8.0	8.0	8.0	8.5	8.5	8.0	8.0	8.0	8.5

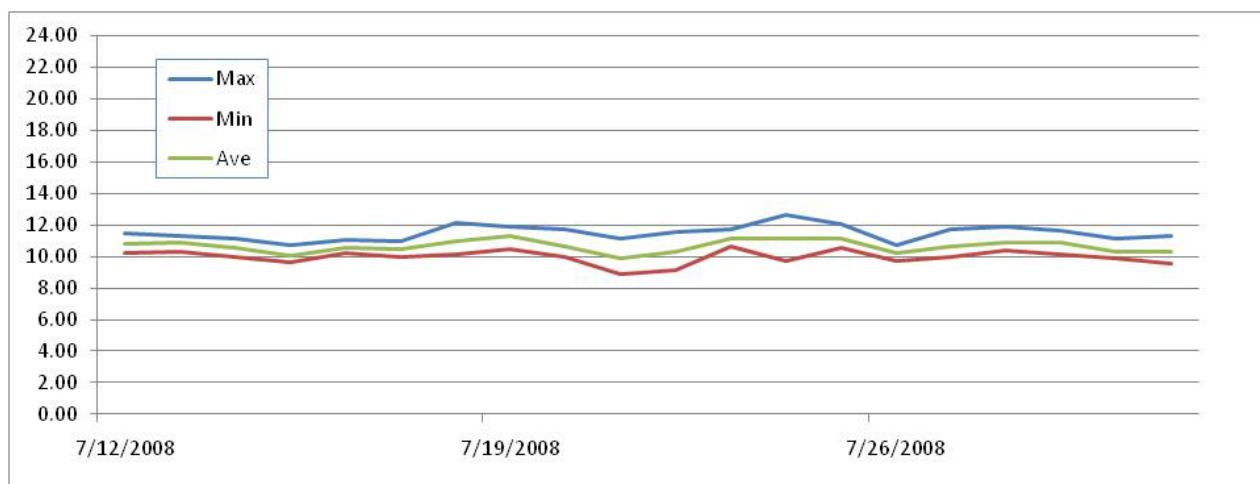
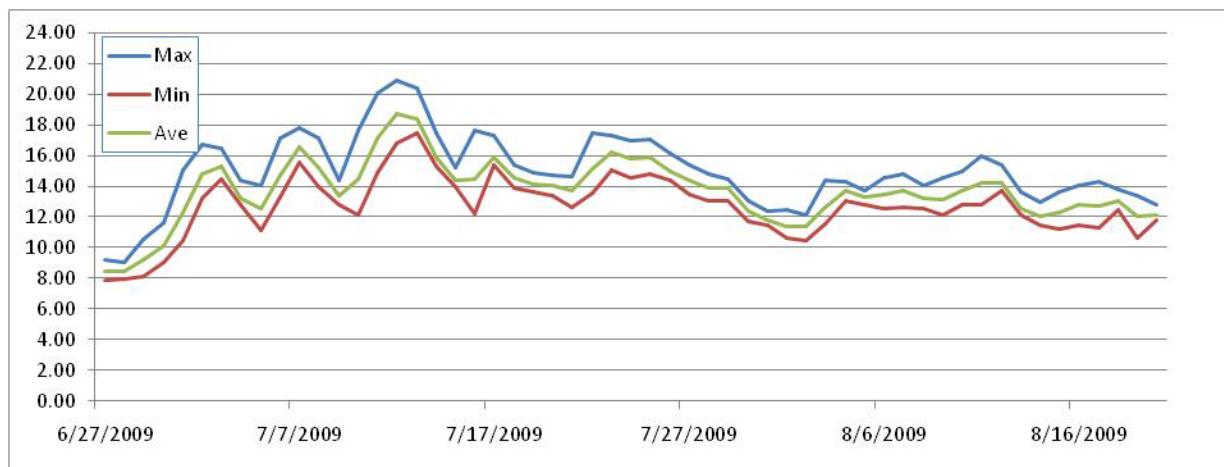


Figure 11. Daily 2008 water temperature (C) for the East Fork Andreafsky River.

**Temperatures in Waters Associated with Federal Subsistence Fisheries      February 20, 2011**  
**East Fork Andreafsky River**



**Figure 12. Daily 2009 water temperature for the East Fork Andreafsky River.**

**Table 12. Daily E.F. Andreafsky River water temperature (C) statistics.**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
6/27				9.19	7.90	8.50
6/28				9.04	8.00	8.47
6/29				10.52	8.12	9.22
6/30				11.64	9.02	10.14
7/1				15.10	10.44	12.27
7/2				16.73	13.21	14.80
7/3				16.46	14.48	15.32
7/4				14.36	12.80	13.24
7/5				14.10	11.13	12.56
7/6				17.15	13.31	14.74
7/7				17.82	15.56	16.54
7/8				17.15	14.00	15.20
7/9				14.39	12.78	13.40
7/10				17.68	12.17	14.46
7/11				20.06	14.91	17.16
7/12	11.47	10.25	10.79	20.94	16.80	18.73
7/13	11.32	10.32	10.85	20.39	17.51	18.44
7/14	11.10	9.98	10.56	17.46	15.32	15.90
7/15	10.69	9.66	10.09	15.25	13.95	14.38
7/16	11.03	10.22	10.58	17.63	12.20	14.49
7/17	11.01	9.98	10.48	17.34	15.39	15.91
7/18	12.15	10.12	10.97	15.37	13.91	14.57
7/19	11.90	10.47	11.32	14.86	13.64	14.18

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
East Fork Andreafsky River**

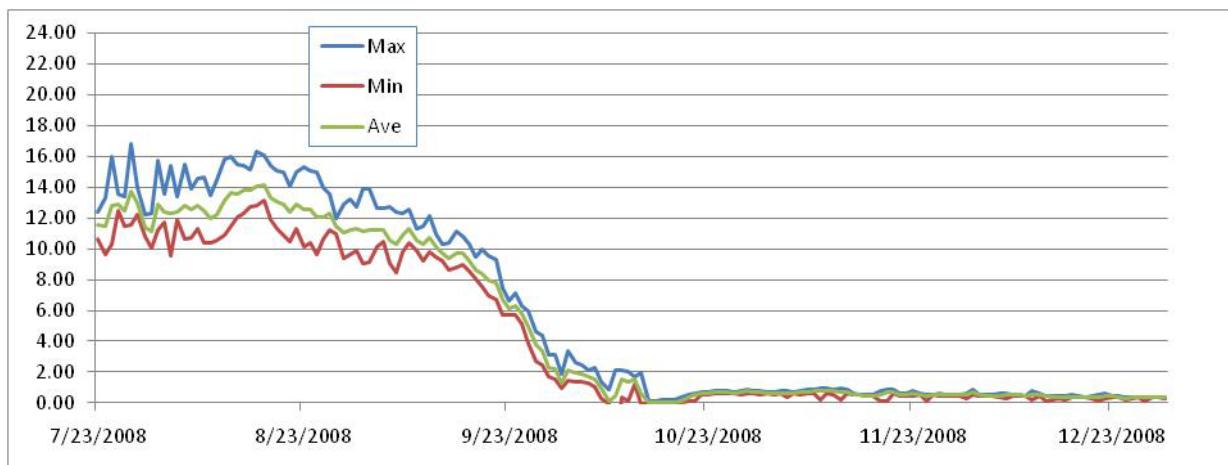
**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
7/20	11.69	9.98	10.62	14.72	13.40	14.03
7/21	11.10	8.92	9.91	14.67	12.63	13.75
7/22	11.54	9.16	10.26	17.46	13.57	15.17
7/23	11.73	10.61	11.16	17.34	15.08	16.26
7/24	12.65	9.68	11.12	16.96	14.53	15.83
7/25	12.10	10.52	11.15	17.03	14.79	15.86
7/26	10.71	9.71	10.19	16.15	14.41	14.95
7/27	11.73	9.98	10.63	15.41	13.50	14.36
7/28	11.93	10.37	10.93	14.82	13.04	13.87
7/29	11.61	10.17	10.89	14.51	13.06	13.90
7/30	11.18	9.85	10.32	13.04	11.71	12.36
7/31	11.35	9.56	10.27	12.36	11.44	11.79
8/1				12.49	10.61	11.35
8/2				12.15	10.47	11.40
8/3				14.43	11.59	12.65
8/4				14.34	13.06	13.71
8/5				13.74	12.82	13.28
8/6				14.55	12.56	13.47
8/7				14.84	12.68	13.73
8/8				14.10	12.58	13.26
8/9				14.60	12.15	13.11
8/10				14.98	12.82	13.76
8/11				15.96	12.80	14.21
8/12				15.41	13.71	14.26
8/13				13.64	12.15	12.58
8/14				12.97	11.44	12.03
8/15				13.64	11.25	12.30
8/16				14.07	11.47	12.79
8/17				14.34	11.32	12.76
8/18				13.83	12.49	13.07
8/19				13.35	10.61	12.03
8/20				12.85	11.78	12.15

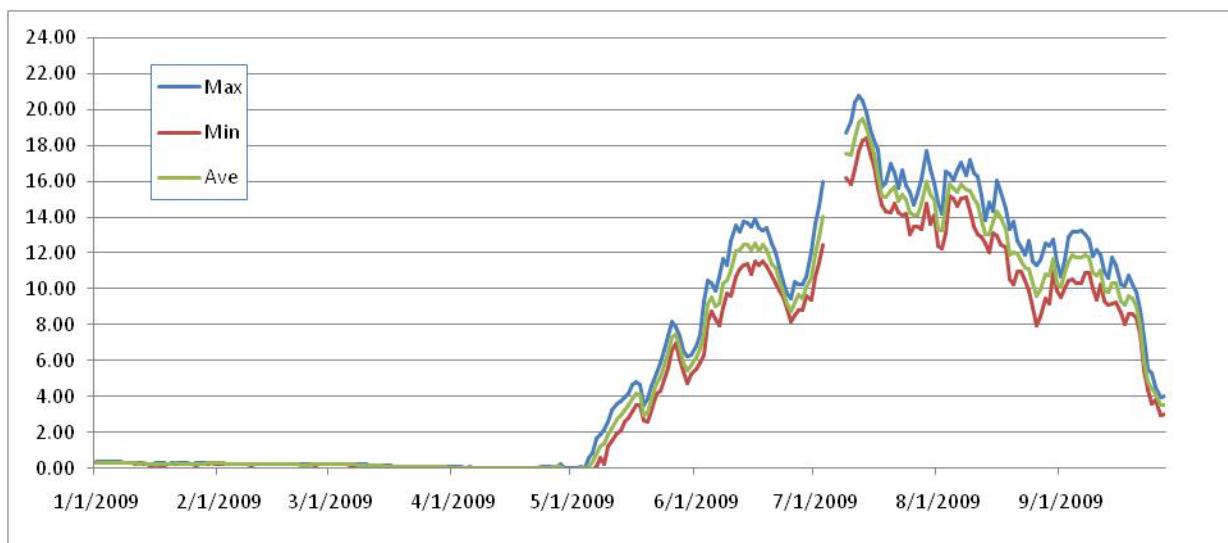
Takotna River

<b>Stream Name</b>	Takotna River	
<b>Principal Investigator</b>	Travis Elison, ADFG	
<b>Drainage Name</b>	Kuskokwim	
<b>Latitude:</b>	Not Available	
<b>Longitude:</b>	Not Available	
<b>Start:</b>	7/23/2008	1/1/2009
<b>End:</b>	12/31/2008	9/27/2009
<b>Season Maximum:</b>	16.82	20.77
<b>Max Range</b>	3.22	2.03
<b>Days Max &gt;13C</b>	36	59
<b>Day Max&gt;15C</b>	16	35
<b>Days Max&gt;20C</b>	0	3
<b>June Degree Days</b>	NA	310
<b>July Degree Days</b>	NA	412
<b>August Degree Days</b>	392	403
<b>Sept Degree Days</b>	252	Not Available
<b>Regression Local Air</b>		
<b>Slope</b>	0.80	0.74
<b>Y Intercept</b>	3.71	4.62
<b>R squared</b>	0.89	0.88
<b>Regression McGrath Air</b>		
<b>Slope</b>	0.73	0.96
<b>Y Intercept</b>	3.07	0.89
<b>R squared</b>	0.87	0.67

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Takotna River**



**Figure 13. Daily 2008 water temperature (C) for the Takotna River.**



**Figure 14. Daily 2009 water temperature (C) for the Takotna River.**

**Table 13. Daily Takotna River water temperature (C) statistics.**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/1				0.33	0.30	0.31
1/2				0.36	0.30	0.33
1/3				0.36	0.30	0.33
1/4				0.33	0.30	0.33
1/5				0.36	0.30	0.33
1/6				0.36	0.30	0.33
1/7				0.33	0.27	0.30
1/8				0.30	0.27	0.29
1/9				0.30	0.27	0.28

**Temperatures in Waters Associated with Federal Subsistence Fisheries**  
**Takotna River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/10				0.30	0.27	0.28
1/11				0.30	0.25	0.27
1/12				0.27	0.25	0.26
1/13				0.27	0.25	0.27
1/14				0.25	0.19	0.24
1/15				0.25	0.11	0.20
1/16				0.27	0.22	0.24
1/17				0.27	0.08	0.23
1/18				0.27	0.16	0.23
1/19				0.25	0.22	0.24
1/20				0.27	0.25	0.25
1/21				0.27	0.25	0.27
1/22				0.27	0.25	0.25
1/23				0.27	0.25	0.25
1/24				0.27	0.25	0.25
1/25				0.25	0.22	0.22
1/26				0.30	0.16	0.24
1/27				0.27	0.25	0.25
1/28				0.27	0.25	0.25
1/29				0.30	0.25	0.26
1/30				0.27	0.27	0.27
1/31				0.27	0.25	0.26
2/1				0.27	0.25	0.26
2/2				0.27	0.25	0.26
2/3				0.25	0.25	0.25
2/4				0.25	0.25	0.25
2/5				0.25	0.25	0.25
2/6				0.25	0.22	0.25
2/7				0.25	0.22	0.24
2/8				0.25	0.22	0.24
2/9				0.25	0.16	0.22
2/10				0.25	0.22	0.23
2/11				0.25	0.22	0.22
2/12				0.25	0.22	0.23
2/13				0.25	0.22	0.22
2/14				0.25	0.22	0.23
2/15				0.22	0.22	0.22
2/16				0.22	0.22	0.22
2/17				0.22	0.22	0.22
2/18				0.25	0.19	0.22
2/19				0.22	0.19	0.20

**Temperatures in Waters Associated with Federal Subsistence Fisheries**  
**Takotna River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
2/20				0.22	0.19	0.20
2/21				0.22	0.19	0.19
2/22				0.19	0.16	0.18
2/23				0.19	0.16	0.18
2/24				0.19	0.19	0.19
2/25				0.22	0.16	0.20
2/26				0.22	0.19	0.20
2/27				0.22	0.19	0.22
2/28				0.22	0.19	0.22
3/1				0.22	0.22	0.22
3/2				0.22	0.19	0.20
3/3				0.22	0.19	0.20
3/4				0.22	0.19	0.20
3/5				0.22	0.19	0.21
3/6				0.22	0.16	0.21
3/7				0.19	0.16	0.19
3/8				0.19	0.16	0.18
3/9				0.19	0.16	0.18
3/10				0.19	0.14	0.16
3/11				0.16	0.14	0.16
3/12				0.16	0.14	0.16
3/13				0.16	0.14	0.15
3/14				0.16	0.08	0.13
3/15				0.14	0.08	0.11
3/16				0.14	0.02	0.07
3/17				0.11	0.02	0.08
3/18				0.11	0.02	0.08
3/19				0.08	0.00	0.07
3/20				0.08	0.02	0.06
3/21				0.08	0.02	0.06
3/22				0.11	0.02	0.09
3/23				0.08	0.02	0.06
3/24				0.11	0.02	0.06
3/25				0.08	0.02	0.06
3/26				0.11	0.02	0.08
3/27				0.11	0.08	0.08
3/28				0.11	0.02	0.07
3/29				0.08	0.02	0.05
3/30				0.08	0.02	0.05
3/31				0.05	0.00	0.04
4/1				0.05	0.00	0.02

**Temperatures in Waters Associated with Federal Subsistence Fisheries**  
**Takotna River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
4/2				0.05	0.02	0.03
4/3				0.05	0.00	0.02
4/4				0.02	0.00	0.01
4/5				0.05	0.00	0.02
4/6				0.02	0.00	0.01
4/7				0.02	0.00	0.01
4/8				0.02	0.00	0.01
4/9				0.02	0.00	0.02
4/10				0.02	0.00	0.01
4/11				0.02	0.00	0.00
4/12				0.02	-0.03	-0.01
4/13				0.00	0.00	0.00
4/14				0.00	-0.03	0.00
4/15				0.02	-0.03	-0.01
4/16				0.02	-0.03	0.00
4/17				0.00	-0.03	0.00
4/18				0.00	-0.03	-0.01
4/19				0.00	-0.03	-0.01
4/20				0.02	-0.03	-0.01
4/21				0.02	-0.03	-0.01
4/22				0.00	-0.03	-0.03
4/23				0.05	-0.03	0.01
4/24				0.05	-0.03	0.03
4/25				0.05	0.00	0.02
4/26				0.08	0.02	0.05
4/27				0.08	0.05	0.06
4/28				0.25	-0.06	0.06
4/29				0.02	-0.06	-0.04
4/30				0.00	-0.09	-0.05
5/1				0.02	-0.09	-0.05
5/2				0.02	-0.09	-0.05
5/3				0.11	-0.06	-0.02
5/4				0.02	-0.06	-0.02
5/5				0.58	-0.06	0.05
5/6				0.85	-0.03	0.34
5/7				1.64	0.05	0.77
5/8				1.89	0.55	1.20
5/9				2.16	0.25	1.34
5/10				2.58	1.21	1.86
5/11				3.22	1.51	2.24
5/12				3.62	1.91	2.71

**Temperatures in Waters Associated with Federal Subsistence Fisheries**  
**Takotna River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
5/13				3.72	2.10	2.91
5/14				3.96	2.56	3.25
5/15				4.19	2.80	3.48
5/16				4.66	3.14	3.86
5/17				4.82	3.51	4.18
5/18				4.66	3.54	4.07
5/19				3.54	2.64	2.98
5/20				3.91	2.58	3.06
5/21				4.58	3.25	3.89
5/22				5.31	4.19	4.71
5/23				5.90	4.32	5.08
5/24				6.61	4.97	5.74
5/25				7.39	5.57	6.43
5/26				8.17	6.61	7.34
5/27				7.90	6.94	7.42
5/28				7.37	6.08	6.76
5/29				6.51	5.36	5.87
5/30				6.23	4.74	5.46
5/31				6.33	5.26	5.75
6/1				6.81	5.51	6.13
6/2				7.42	5.87	6.64
6/3				9.31	6.28	7.51
6/4				10.44	8.15	9.18
6/5				10.32	8.77	9.55
6/6				9.85	8.32	9.04
6/7				10.66	7.97	9.18
6/8				11.66	8.94	10.31
6/9				11.32	9.76	10.49
6/10				12.70	9.63	11.02
6/11				13.52	10.66	12.08
6/12				13.16	11.08	12.20
6/13				13.79	11.32	12.47
6/14				13.71	11.37	12.45
6/15				13.45	10.81	12.19
6/16				13.91	11.54	12.54
6/17				13.43	11.32	12.13
6/18				13.26	11.52	12.46
6/19				13.40	11.25	12.17
6/20				12.56	10.76	11.41
6/21				12.00	10.32	11.18
6/22				11.18	9.90	10.47

**Temperatures in Waters Associated with Federal Subsistence Fisheries**  
**Takotna River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
6/23				10.42	9.51	9.83
6/24				9.73	8.92	9.17
6/25				9.46	8.20	8.74
6/26				10.42	8.49	9.21
6/27				10.22	8.79	9.68
6/28				10.25	8.79	9.46
6/29				10.66	9.63	10.11
6/30				12.07	9.41	10.57
7/1				13.62	10.66	11.96
7/2				14.58	11.44	12.92
7/3				15.99	12.49	14.05
7/4						
7/5						
7/6						
7/7						
7/8						
7/9				18.70	16.15	17.52
7/10				19.32	15.80	17.44
7/11				20.44	16.65	18.41
7/12				20.77	17.68	19.25
7/13				20.51	18.25	19.47
7/14				19.84	18.41	19.00
7/15				18.89	17.53	18.23
7/16				18.30	16.84	17.53
7/17				17.75	15.63	16.35
7/18				15.65	14.70	15.16
7/19				15.87	14.34	15.08
7/20				16.99	14.24	15.44
7/21				16.49	14.72	15.67
7/22				15.58	14.27	14.93
7/23	12.41	10.66	11.54	16.63	14.10	15.26
7/24	13.33	9.63	11.47	15.77	14.15	14.94
7/25	16.01	10.30	12.79	15.39	13.04	14.24
7/26	13.59	12.46	12.88	14.70	13.50	14.10
7/27	13.43	11.47	12.48	15.34	13.45	14.13
7/28	16.82	11.57	13.76	16.13	13.35	14.73
7/29	13.98	12.24	13.00	17.65	14.75	15.95
7/30	12.20	10.83	11.35	16.65	13.59	15.26
7/31	12.27	10.08	11.10	15.92	14.12	14.93
8/1	15.75	11.20	12.87	14.84	12.41	13.32
8/2	13.55	11.69	12.41	14.19	12.27	13.25

**Temperatures in Waters Associated with Federal Subsistence Fisheries**  
**Takotna River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
8/3	15.37	9.53	12.29	16.51	13.09	14.61
8/4	13.35	11.86	12.37	16.39	15.15	15.85
8/5	15.51	10.64	12.79	16.06	15.03	15.63
8/6	13.86	10.76	12.54	16.58	14.63	15.39
8/7	14.58	11.30	12.83	17.06	15.06	15.81
8/8	14.63	10.42	12.51	16.32	15.13	15.55
8/9	13.45	10.37	11.94	17.20	14.34	15.47
8/10	14.51	10.54	12.20	16.46	13.45	15.01
8/11	15.82	10.86	13.14	16.27	13.04	14.65
8/12	16.01	11.49	13.62	15.18	12.90	13.83
8/13	15.46	12.03	13.60	13.86	12.53	13.03
8/14	15.37	12.34	13.81	14.82	12.00	13.07
8/15	15.18	12.73	13.82	14.34	13.11	13.74
8/16	16.32	12.82	14.07	16.01	12.99	14.30
8/17	16.08	13.14	14.16	15.37	12.49	13.97
8/18	15.41	11.88	13.32	14.48	12.29	13.30
8/19	15.08	11.32	13.06	13.31	10.52	11.87
8/20	14.98	10.91	12.89	13.79	10.25	12.02
8/21	14.05	10.49	12.43	12.70	10.96	11.93
8/22	14.98	11.32	12.86	12.29	10.96	11.54
8/23	15.34	10.17	12.59	11.88	10.47	11.21
8/24	15.06	10.42	12.59	12.70	9.90	11.10
8/25	14.98	9.66	12.04	11.54	8.94	10.28
8/26	13.98	10.64	12.08	11.35	7.95	9.57
8/27	13.59	11.20	12.29	11.61	8.44	9.98
8/28	12.00	11.01	11.47	12.56	9.49	10.82
8/29	12.92	9.36	11.09	12.41	9.16	10.78
8/30	13.23	9.63	11.19	12.73	10.98	11.64
8/31	12.75	9.88	11.27	11.47	9.85	10.34
9/1	13.91	9.02	11.12	10.64	9.53	10.13
9/2	13.86	9.11	11.25	11.64	10.05	10.87
9/3	12.61	10.10	11.23	12.87	10.49	11.52
9/4	12.65	10.47	11.24	13.21	10.52	11.86
9/5	12.73	9.09	10.53	13.21	10.32	11.76
9/6	12.36	8.47	10.27	13.23	10.35	11.76
9/7	12.27	9.78	10.90	13.02	10.88	11.89
9/8	12.58	10.39	11.33	12.78	10.91	11.75
9/9	11.30	9.85	10.57	11.83	10.03	10.89
9/10	11.44	9.19	10.29	12.15	9.39	10.72
9/11	12.12	9.78	10.76	11.86	10.22	11.01
9/12	10.96	9.44	10.10	10.93	9.34	9.91

**Temperatures in Waters Associated with Federal Subsistence Fisheries**  
**Takotna River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
9/13	10.27	9.21	9.68	10.61	9.09	9.84
9/14	10.39	8.59	9.41	11.73	9.19	10.32
9/15	11.15	8.82	9.70	11.32	9.24	10.29
9/16	10.79	8.94	9.70	10.27	8.64	9.35
9/17	10.27	8.54	9.25	10.20	8.05	9.09
9/18	9.44	8.07	8.63	10.71	8.62	9.56
9/19	9.95	7.54	8.36	10.27	8.59	9.45
9/20	9.53	6.97	7.97	9.81	8.37	9.03
9/21	9.26	6.69	7.77	8.79	7.42	7.87
9/22	7.47	5.72	6.71	7.32	5.46	5.97
9/23	6.61	5.67	6.15	5.51	4.35	4.79
9/24	7.12	5.72	6.26	5.31	3.56	4.45
9/25	6.31	5.13	5.76	4.53	3.80	4.13
9/26	5.95	3.91	4.94	3.96	2.96	3.49
9/27	4.64	2.74	3.83	4.04	3.04	3.53
9/28	4.40	2.45	3.35			
9/29	3.12	1.70	2.31			
9/30	3.14	1.53	2.18			
10/1	1.86	0.99	1.32			
10/2	3.38	1.43	2.11			
10/3	2.64	1.34	1.95			
10/4	2.45	1.40	1.86			
10/5	2.13	1.26	1.70			
10/6	2.32	1.04	1.51			
10/7	1.40	0.25	0.96			
10/8	0.85	-0.09	0.16			
10/9	2.13	-3.06	0.41			
10/10	2.13	0.38	1.53			
10/11	1.99	0.14	1.39			
10/12	1.72	1.18	1.55			
10/13	1.97	-0.06	0.62			
10/14	0.14	0.00	0.04			
10/15	0.11	0.00	0.04			
10/16	0.16	0.02	0.06			
10/17	0.16	0.02	0.07			
10/18	0.16	0.02	0.07			
10/19	0.33	0.02	0.14			
10/20	0.50	0.14	0.36			
10/21	0.58	0.14	0.50			
10/22	0.66	0.52	0.58			
10/23	0.69	0.55	0.62			

**Temperatures in Waters Associated with Federal Subsistence Fisheries**  
**Takotna River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>10/24</b>	0.77	0.61	0.70			
<b>10/25</b>	0.74	0.61	0.67			
<b>10/26</b>	0.74	0.63	0.68			
<b>10/27</b>	0.72	0.61	0.65			
<b>10/28</b>	0.80	0.55	0.69			
<b>10/29</b>	0.85	0.63	0.77			
<b>10/30</b>	0.74	0.63	0.69			
<b>10/31</b>	0.77	0.55	0.69			
<b>11/1</b>	0.69	0.61	0.64			
<b>11/2</b>	0.72	0.55	0.64			
<b>11/3</b>	0.74	0.58	0.65			
<b>11/4</b>	0.74	0.36	0.63			
<b>11/5</b>	0.72	0.61	0.65			
<b>11/6</b>	0.74	0.55	0.67			
<b>11/7</b>	0.83	0.61	0.69			
<b>11/8</b>	0.91	0.61	0.74			
<b>11/9</b>	0.99	0.19	0.79			
<b>11/10</b>	0.93	0.61	0.79			
<b>11/11</b>	0.85	0.55	0.76			
<b>11/12</b>	0.93	0.16	0.71			
<b>11/13</b>	0.83	0.58	0.68			
<b>11/14</b>	0.61	0.52	0.57			
<b>11/15</b>	0.55	0.50	0.52			
<b>11/16</b>	0.52	0.44	0.48			
<b>11/17</b>	0.52	0.44	0.47			
<b>11/18</b>	0.80	0.14	0.53			
<b>11/19</b>	0.91	0.14	0.67			
<b>11/20</b>	0.85	0.58	0.69			
<b>11/21</b>	0.58	0.47	0.54			
<b>11/22</b>	0.58	0.47	0.51			
<b>11/23</b>	0.80	0.44	0.64			
<b>11/24</b>	0.63	0.52	0.57			
<b>11/25</b>	0.55	0.08	0.48			
<b>11/26</b>	0.55	0.50	0.53			
<b>11/27</b>	0.63	0.47	0.54			
<b>11/28</b>	0.52	0.44	0.50			
<b>11/29</b>	0.55	0.41	0.52			
<b>11/30</b>	0.55	0.47	0.50			
<b>12/1</b>	0.58	0.25	0.50			
<b>12/2</b>	0.88	0.55	0.70			
<b>12/3</b>	0.55	0.47	0.52			

**Temperatures in Waters Associated with Federal Subsistence Fisheries      February 20, 2011**  
**Takotna River**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>12/5</b>	0.50	0.44	0.46			
<b>12/6</b>	0.58	0.33	0.48			
<b>12/7</b>	0.63	0.27	0.53			
<b>12/8</b>	0.55	0.47	0.51			
<b>12/9</b>	0.55	0.41	0.50			
<b>12/10</b>	0.47	0.41	0.45			
<b>12/11</b>	0.74	0.16	0.51			
<b>12/12</b>	0.58	0.44	0.50			
<b>12/13</b>	0.44	0.14	0.41			
<b>12/15</b>	0.44	0.30	0.40			
<b>12/16</b>	0.44	0.19	0.40			
<b>12/17</b>	0.55	0.33	0.40			
<b>12/18</b>	0.41	0.36	0.38			
<b>12/19</b>	0.38	0.33	0.35			
<b>12/20</b>	0.47	0.30	0.39			
<b>12/21</b>	0.52	0.14	0.39			
<b>12/22</b>	0.58	0.25	0.47			
<b>12/23</b>	0.44	0.36	0.41			
<b>12/24</b>	0.41	0.33	0.37			
<b>12/25</b>	0.38	0.16	0.32			
<b>12/26</b>	0.36	0.27	0.32			
<b>12/27</b>	0.36	0.33	0.36			
<b>12/28</b>	0.38	0.11	0.36			
<b>12/29</b>	0.36	0.33	0.35			
<b>12/30</b>	0.38	0.33	0.36			
<b>12/31</b>	0.36	0.30	0.33			

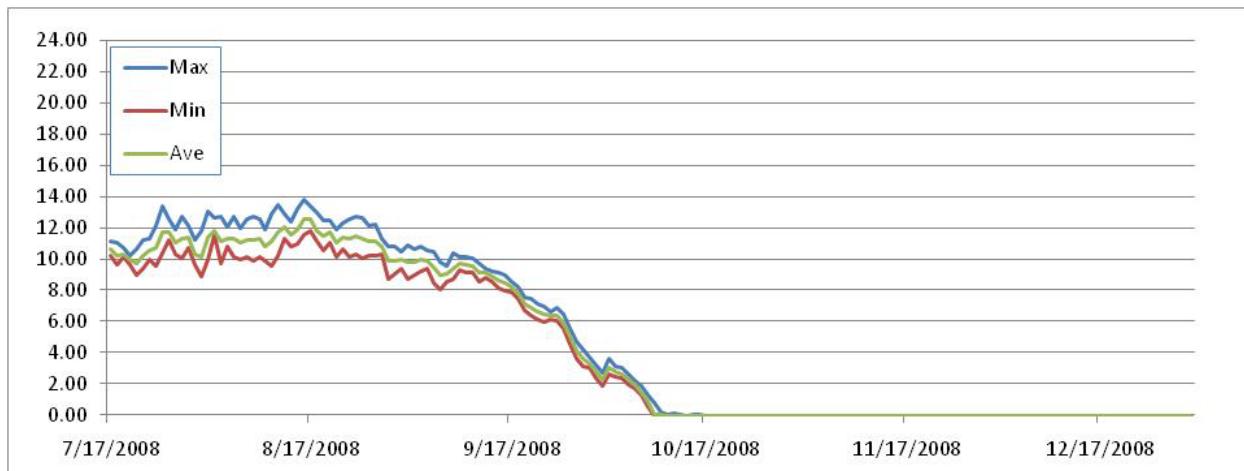
**Talawiksuk River**

<b>Stream Name</b>	<b>Talawiksuk River.</b>	
<b>Principal Investigator</b>	Travis Elison, ADFG	
<b>Drainage Name</b>	Kuskokwim	
<b>Latitude:</b>	61.94733	
<b>Longitude:</b>	156.19287	
<b>Start:</b>	7/17/2008	1/1/2009
<b>End:</b>	12/31/2008	9/21/2009
<b>Season Maximum:</b>	13.83	20.13
<b>Max Range</b>	1.82	2.20
<b>Days Max &gt;13C</b>	6	63
<b>Day Max&gt;15C</b>	0	32
<b>Days Max&gt;20C</b>	0	1
<b>June Degree Days</b>	NA	330
<b>July Degree Days</b>	NA	472
<b>August Degree Days</b>	350.18	382
<b>Sept Degree Days</b>	229.69	192*
<b>Regression Local Air</b>		
<b>Slope</b>	0.60	0.68
<b>Y Intercept</b>	3.98	3.36
<b>R Squared</b>	0.83	0.62
<b>Regression Bethel Air</b>		
<b>Slope</b>	0.57	0.78
<b>Y Intercept</b>	3.79	2.99
<b>R Squared</b>	0.58	0.57

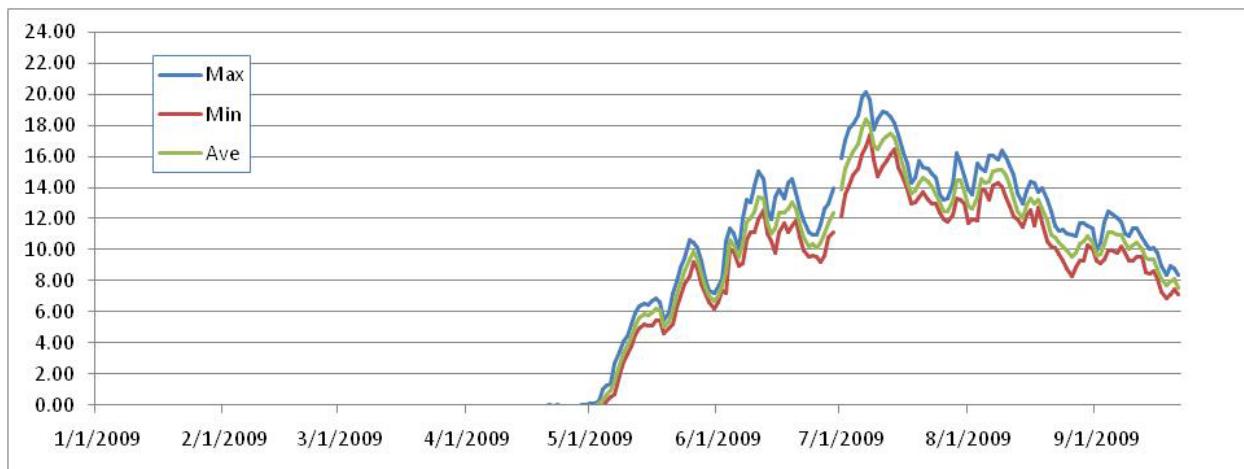
Table 14. Cross-section water temperatures at monitoring location.

Distance Across Channel (Portion of Channel Width)	0.1	0.3	0.5	0.7	0.9
Water Temperature (C)	9.5	9.5	9.5	9.5	9.5

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Talawiksuk River**



**Figure 15.** Daily 2008 water temperature (C) for the Talawiksuk River.



**Figure 16.** Daily 2009 water temperature for the Talawiksuk River.

**Table 15.** Daily Talawiksuk River water temperature (C) statistics.

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/1				-0.06	-0.06	-0.06
1/2				-0.06	-0.06	-0.06
1/3				-0.06	-0.06	-0.06
1/4				-0.06	-0.06	-0.06
1/5				-0.06	-0.06	-0.06
1/6				-0.06	-0.06	-0.06
1/7				-0.06	-0.06	-0.06
1/8				-0.06	-0.06	-0.06
1/9				-0.06	-0.06	-0.06
1/10				-0.06	-0.06	-0.06
1/11				-0.06	-0.06	-0.06

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Talawiksuk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/12				-0.06	-0.06	-0.06
1/13				-0.06	-0.06	-0.06
1/14				-0.06	-0.06	-0.06
1/15				-0.06	-0.06	-0.06
1/16				-0.06	-0.06	-0.06
1/17				-0.06	-0.06	-0.06
1/18				-0.06	-0.06	-0.06
1/19				-0.06	-0.06	-0.06
1/20				-0.06	-0.06	-0.06
1/21				-0.06	-0.06	-0.06
1/22				-0.06	-0.06	-0.06
1/23				-0.06	-0.06	-0.06
1/24				-0.06	-0.06	-0.06
1/25				-0.06	-0.06	-0.06
1/26				-0.06	-0.06	-0.06
1/27				-0.06	-0.06	-0.06
1/28				-0.06	-0.06	-0.06
1/29				-0.06	-0.06	-0.06
1/30				-0.06	-0.06	-0.06
1/31				-0.06	-0.06	-0.06
2/1				-0.06	-0.06	-0.06
2/2				-0.06	-0.06	-0.06
2/3				-0.06	-0.06	-0.06
2/4				-0.06	-0.06	-0.06
2/5				-0.06	-0.06	-0.06
2/6				-0.06	-0.06	-0.06
2/7				-0.06	-0.06	-0.06
2/8				-0.06	-0.06	-0.06
2/9				-0.06	-0.06	-0.06
2/10				-0.06	-0.06	-0.06
2/11				-0.06	-0.06	-0.06
2/12				-0.06	-0.06	-0.06
2/13				-0.06	-0.06	-0.06
2/14				-0.06	-0.06	-0.06
2/15				-0.06	-0.06	-0.06
2/16				-0.06	-0.06	-0.06
2/17				-0.06	-0.06	-0.06
2/18				-0.06	-0.06	-0.06
2/19				-0.06	-0.06	-0.06
2/20				-0.06	-0.06	-0.06
2/21				-0.06	-0.06	-0.06

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Talawiksuk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
2/22				-0.06	-0.06	-0.06
2/23				-0.06	-0.06	-0.06
2/24				-0.06	-0.06	-0.06
2/25				-0.06	-0.06	-0.06
2/26				-0.06	-0.06	-0.06
2/27				-0.06	-0.06	-0.06
2/28				-0.06	-0.06	-0.06
3/1				-0.06	-0.06	-0.06
3/2				-0.06	-0.06	-0.06
3/3				-0.06	-0.06	-0.06
3/4				-0.06	-0.06	-0.06
3/5				-0.06	-0.06	-0.06
3/6				-0.06	-0.06	-0.06
3/7				-0.06	-0.06	-0.06
3/8				-0.06	-0.06	-0.06
3/9				-0.06	-0.06	-0.06
3/10				-0.06	-0.06	-0.06
3/11				-0.06	-0.06	-0.06
3/12				-0.06	-0.06	-0.06
3/13				-0.06	-0.06	-0.06
3/14				-0.06	-0.06	-0.06
3/15				-0.06	-0.06	-0.06
3/16				-0.06	-0.06	-0.06
3/17				-0.06	-0.06	-0.06
3/18				-0.06	-0.06	-0.06
3/19				-0.06	-0.06	-0.06
3/20				-0.06	-0.06	-0.06
3/21				-0.06	-0.06	-0.06
3/22				-0.06	-0.06	-0.06
3/23				-0.06	-0.06	-0.06
3/24				-0.06	-0.06	-0.06
3/25				-0.06	-0.06	-0.06
3/26				-0.06	-0.06	-0.06
3/27				-0.06	-0.06	-0.06
3/28				-0.06	-0.06	-0.06
3/29				-0.06	-0.06	-0.06
3/30				-0.06	-0.06	-0.06
3/31				-0.06	-0.06	-0.06
4/1				-0.06	-0.06	-0.06
4/2				-0.06	-0.06	-0.06
4/3				-0.06	-0.06	-0.06

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Talawiksuk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
4/4				-0.06	-0.06	-0.06
4/5				-0.06	-0.06	-0.06
4/6				-0.06	-0.06	-0.06
4/7				-0.06	-0.06	-0.06
4/8				-0.06	-0.06	-0.06
4/9				-0.06	-0.06	-0.06
4/10				-0.06	-0.06	-0.06
4/11				-0.06	-0.06	-0.06
4/12				-0.06	-0.06	-0.06
4/13				-0.06	-0.06	-0.06
4/14				-0.06	-0.06	-0.06
4/15				-0.06	-0.06	-0.06
4/16				-0.06	-0.06	-0.06
4/17				-0.06	-0.06	-0.06
4/18				-0.03	-0.06	-0.06
4/19				-0.03	-0.06	-0.05
4/20				-0.03	-0.06	-0.05
4/21				0.00	-0.06	-0.04
4/22				-0.03	-0.06	-0.05
4/23				0.00	-0.06	-0.04
4/24				-0.03	-0.06	-0.05
4/25				-0.03	-0.06	-0.05
4/26				-0.03	-0.06	-0.05
4/27				-0.03	-0.06	-0.05
4/28				-0.03	-0.06	-0.05
4/29				0.00	-0.09	-0.04
4/30				0.02	-0.09	-0.04
5/1				0.08	-0.09	-0.03
5/2				0.11	-0.09	-0.02
5/3				0.27	-0.09	0.07
5/4				1.04	-0.06	0.40
5/5				1.26	0.30	0.73
5/6				1.40	0.50	0.94
5/7				2.69	0.69	1.50
5/8				3.43	1.97	2.64
5/9				4.12	2.80	3.40
5/10				4.45	3.33	3.88
5/11				5.18	3.75	4.40
5/12				5.95	4.51	5.16
5/13				6.38	4.97	5.64
5/14				6.54	5.23	5.88

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Talawiksuk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
5/15				6.43	5.13	5.82
5/16				6.74	5.15	5.93
5/17				6.84	5.49	6.19
5/18				6.66	5.46	6.09
5/19				5.46	4.64	5.06
5/20				5.92	4.97	5.35
5/21				7.19	5.21	6.09
5/22				8.00	6.31	7.11
5/23				8.87	7.04	7.88
5/24				9.51	7.80	8.60
5/25				10.66	8.27	9.38
5/26				10.49	9.19	9.88
5/27				10.12	8.77	9.41
5/28				9.26	7.77	8.49
5/29				8.17	7.22	7.62
5/30				7.37	6.64	7.04
5/31				7.24	6.23	6.72
6/1				7.59	6.66	7.02
6/2				8.10	7.39	7.70
6/3				10.54	7.19	8.56
6/4				11.39	10.08	10.68
6/5				11.05	9.85	10.29
6/6				10.05	8.94	9.53
6/7				12.07	9.11	10.36
6/8				13.23	10.64	11.78
6/9				13.04	11.18	12.07
6/10				14.12	11.13	12.50
6/11				15.08	11.95	13.41
6/12				14.58	12.58	13.29
6/13				12.53	11.08	11.76
6/14				11.95	10.57	11.04
6/15				13.40	9.78	11.38
6/16				13.86	11.15	12.37
6/17				13.33	11.69	12.39
6/18				14.31	11.15	12.61
6/19				14.58	11.57	13.02
6/20				13.62	11.88	12.62
6/21				12.61	10.81	11.66
6/22				11.86	10.00	10.78
6/23				11.18	9.56	10.19
6/24				10.93	9.66	10.37

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Talawiksuk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
6/25				10.96	9.58	10.17
6/26				11.66	9.21	10.50
6/27				12.61	9.61	11.05
6/28				12.99	10.79	11.75
6/29				14.00	11.18	12.41
6/30						
7/1				15.89	12.17	13.89
7/2				17.11	13.59	15.22
7/3				17.80	14.15	15.83
7/4				18.11	14.84	16.34
7/5				18.63	15.22	16.84
7/6				19.84	16.15	17.82
7/7				20.13	16.68	18.37
7/8				19.65	17.37	18.03
7/9				17.75	15.84	16.76
7/10				18.41	14.75	16.46
7/11				18.89	15.41	17.06
7/12				18.82	15.75	17.32
7/13				18.58	16.13	17.48
7/14				18.13	16.49	17.23
7/15				17.42	15.34	16.36
7/16				16.27	14.58	15.29
7/17	11.15	10.25	10.65	15.53	13.86	14.32
7/18	11.03	9.61	10.23	14.29	13.02	13.62
7/19	10.74	10.10	10.33	14.65	13.04	13.77
7/20	10.25	9.66	9.95	15.77	13.38	14.34
7/21	10.64	8.99	9.69	15.32	13.71	14.61
7/22	11.20	9.41	10.24	15.27	13.26	14.35
7/23	11.30	9.95	10.51	14.94	12.97	14.05
7/24	12.15	9.51	10.73	14.65	12.99	13.57
7/25	13.40	10.39	11.73	13.57	12.41	13.04
7/26	12.56	11.25	11.69	13.26	12.00	12.45
7/27	11.90	10.30	11.01	13.33	11.81	12.44
7/28	12.75	10.08	11.28	14.24	12.20	13.10
7/29	12.15	10.74	11.42	16.27	13.33	14.50
7/30	11.20	9.66	10.29	15.53	13.19	14.44
7/31	11.78	8.84	10.12	14.77	12.97	13.69
8/1	13.06	9.93	11.35	13.91	11.76	12.81
8/2	12.63	11.52	11.82	13.57	11.98	12.67
8/3	12.68	9.68	11.11	15.61	11.86	13.40
8/4	12.05	10.76	11.34	15.25	13.91	14.58

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Talawiksuk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
8/5	12.68	10.10	11.26	15.10	13.83	14.33
8/6	12.00	10.00	11.04	16.03	13.19	14.39
8/7	12.53	10.15	11.19	16.08	14.12	15.08
8/8	12.68	9.85	11.26	15.82	14.34	15.12
8/9	12.58	10.12	11.34	16.44	14.10	15.11
8/10	11.88	9.90	10.76	16.01	13.35	14.78
8/11	12.92	9.51	11.10	15.41	12.78	14.18
8/12	13.45	10.25	11.74	14.82	12.17	13.32
8/13	12.87	11.27	12.09	13.64	11.98	12.45
8/14	12.39	10.76	11.58	12.97	11.49	12.08
8/15	13.23	10.93	11.91	13.81	12.24	12.89
8/16	13.83	11.59	12.52	14.36	12.58	13.33
8/17	13.38	11.83	12.57	14.34	11.52	12.97
8/18	12.94	11.13	11.82	13.71	12.70	13.23
8/19	12.51	10.57	11.47	13.98	11.71	12.67
8/20	12.44	11.03	11.74	13.19	10.52	11.92
8/21	11.88	10.12	11.06	12.51	10.25	11.01
8/22	12.34	10.59	11.34	11.54	10.17	10.78
8/23	12.56	10.10	11.26	11.20	9.73	10.49
8/24	12.73	10.32	11.47	11.30	9.31	10.23
8/25	12.61	10.05	11.29	11.08	8.84	9.99
8/26	12.12	10.25	11.17	11.01	8.27	9.59
8/27	12.24	10.25	11.10	10.91	8.89	9.82
8/28	11.30	10.32	10.79	11.71	9.26	10.40
8/29	10.76	8.74	9.86	11.76	9.29	10.54
8/30	10.81	9.02	9.91	11.57	10.27	10.90
8/31	10.44	9.39	9.94	11.42	10.03	10.45
9/1	10.91	8.74	9.77	10.00	9.34	9.66
9/2	10.66	8.97	9.83	10.44	9.11	9.71
9/3	10.76	9.21	9.96	11.81	9.41	10.39
9/4	10.52	9.39	9.90	12.49	9.95	11.10
9/5	10.49	8.49	9.43	12.34	9.93	11.18
9/6	9.83	8.05	8.94	12.05	9.78	10.95
9/7	9.51	8.52	9.01	11.81	10.25	10.95
9/8	10.35	8.67	9.35	11.05	9.81	10.44
9/9	10.12	9.29	9.72	10.86	9.34	10.08
9/10	10.12	9.11	9.59	11.37	9.31	10.30
9/11	10.05	9.09	9.52	11.37	9.56	10.46
9/12	9.71	8.57	9.10	10.83	9.53	10.03
9/13	9.41	8.77	9.09	10.39	8.54	9.48
9/14	9.19	8.52	8.84	10.03	8.49	9.37

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Talawiksuk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
9/15	9.16	8.15	8.64	10.12	8.59	9.34
9/16	8.97	8.00	8.45	9.78	8.12	8.76
9/17	8.54	7.90	8.22	8.94	7.27	8.10
9/18	8.17	7.47	7.76	8.42	6.86	7.71
9/19	7.57	6.71	7.15	8.97	7.17	8.00
9/20	7.42	6.41	6.88	8.77	7.44	8.16
9/21	7.09	6.13	6.59	8.34	7.09	7.51
9/22	6.94	5.98	6.44			
9/23	6.59	6.13	6.35			
9/24	6.86	6.08	6.39			
9/25	6.43	5.57	5.89			
9/26	5.57	4.51	4.99			
9/27	4.69	3.62	4.12			
9/28	4.17	3.12	3.65			
9/29	3.70	3.01	3.29			
9/30	3.22	2.40	2.82			
10/1	2.72	1.86	2.27			
10/2	3.64	2.64	3.03			
10/3	3.12	2.45	2.77			
10/4	3.01	2.34	2.63			
10/5	2.61	1.97	2.28			
10/6	2.24	1.67	1.98			
10/7	1.89	1.24	1.48			
10/8	1.24	0.55	0.88			
10/9	0.74	-0.09	0.04			
10/10	0.16	-0.06	0.02			
10/11	0.02	-0.09	-0.04			
10/12	0.08	-0.09	-0.04			
10/13	0.02	-0.09	-0.06			
10/14	-0.03	-0.06	-0.05			
10/15	0.00	-0.09	-0.06			
10/16	0.00	-0.09	-0.06			
10/17	-0.03	-0.09	-0.07			
10/18	-0.03	-0.09	-0.06			
10/19	-0.03	-0.09	-0.05			
10/20	-0.03	-0.06	-0.05			
10/21	-0.03	-0.06	-0.05			
10/22	-0.03	-0.06	-0.05			
10/23	-0.03	-0.06	-0.05			
10/24	-0.03	-0.06	-0.06			
10/25	-0.03	-0.06	-0.06			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Talawiksuk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>10/26</b>	-0.06	-0.06	-0.06			
<b>10/27</b>	-0.06	-0.06	-0.06			
<b>10/28</b>	-0.06	-0.06	-0.06			
<b>10/29</b>	-0.06	-0.06	-0.06			
<b>10/30</b>	-0.06	-0.06	-0.06			
<b>10/31</b>	-0.06	-0.06	-0.06			
<b>11/1</b>	-0.06	-0.06	-0.06			
<b>11/2</b>	-0.06	-0.06	-0.06			
<b>11/3</b>	-0.03	-0.06	-0.06			
<b>11/4</b>	-0.06	-0.06	-0.06			
<b>11/5</b>	-0.03	-0.06	-0.06			
<b>11/6</b>	-0.03	-0.06	-0.06			
<b>11/7</b>	-0.03	-0.06	-0.06			
<b>11/8</b>	-0.03	-0.06	-0.06			
<b>11/9</b>	-0.03	-0.06	-0.06			
<b>11/10</b>	-0.03	-0.06	-0.06			
<b>11/11</b>	-0.03	-0.06	-0.05			
<b>11/12</b>	-0.03	-0.06	-0.06			
<b>11/13</b>	-0.03	-0.06	-0.06			
<b>11/14</b>	-0.06	-0.06	-0.06			
<b>11/15</b>	-0.06	-0.06	-0.06			
<b>11/16</b>	-0.03	-0.06	-0.05			
<b>11/17</b>	-0.03	-0.06	-0.06			
<b>11/18</b>	-0.03	-0.06	-0.06			
<b>11/19</b>	-0.03	-0.06	-0.06			
<b>11/20</b>	-0.03	-0.06	-0.06			
<b>11/21</b>	-0.03	-0.06	-0.06			
<b>11/22</b>	-0.03	-0.06	-0.06			
<b>11/23</b>	-0.03	-0.06	-0.06			
<b>11/24</b>	-0.03	-0.06	-0.06			
<b>11/25</b>	-0.06	-0.06	-0.06			
<b>11/26</b>	-0.06	-0.06	-0.06			
<b>11/27</b>	-0.06	-0.06	-0.06			
<b>11/28</b>	-0.03	-0.06	-0.06			
<b>11/29</b>	-0.06	-0.06	-0.06			
<b>11/30</b>	-0.06	-0.06	-0.06			
<b>12/1</b>	-0.06	-0.06	-0.06			
<b>12/2</b>	-0.06	-0.06	-0.06			
<b>12/3</b>	-0.03	-0.06	-0.06			
<b>12/5</b>	-0.03	-0.06	-0.06			
<b>12/6</b>	-0.03	-0.06	-0.06			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Talawiksuk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>12/7</b>	-0.06	-0.06	-0.06			
<b>12/8</b>	-0.03	-0.06	-0.06			
<b>12/9</b>	-0.03	-0.06	-0.06			
<b>12/10</b>	-0.06	-0.06	-0.06			
<b>12/11</b>	-0.06	-0.06	-0.06			
<b>12/12</b>	-0.06	-0.06	-0.06			
<b>12/13</b>	-0.06	-0.06	-0.06			
<b>12/15</b>	-0.06	-0.06	-0.06			
<b>12/16</b>	-0.06	-0.06	-0.06			
<b>12/17</b>	-0.06	-0.06	-0.06			
<b>12/18</b>	-0.06	-0.06	-0.06			
<b>12/19</b>	-0.06	-0.06	-0.06			
<b>12/20</b>	-0.06	-0.06	-0.06			
<b>12/21</b>	-0.06	-0.06	-0.06			
<b>12/22</b>	-0.06	-0.06	-0.06			
<b>12/23</b>	-0.06	-0.06	-0.06			
<b>12/24</b>	-0.06	-0.06	-0.06			
<b>12/25</b>	-0.06	-0.06	-0.06			
<b>12/26</b>	-0.06	-0.06	-0.06			
<b>12/27</b>	-0.06	-0.06	-0.06			
<b>12/28</b>	-0.06	-0.06	-0.06			
<b>12/29</b>	-0.06	-0.06	-0.06			
<b>12/30</b>	-0.06	-0.06	-0.06			
<b>12/31</b>	-0.06	-0.06	-0.06			

**Kogruklu River**

<b>Stream Name</b>	<b>Kogruklu River</b>	
<b>Principal Investigator</b>	Travis Elison, ADFG	
<b>Drainage Name</b>	Kuskokwim	
<b>Latitude:</b>		
<b>Longitude:</b>		
<b>Start:</b>	6/30/2008	1/1/2009
<b>End:</b>	12/31/2008	9/28/2009
<b>Season Maximum:</b>	14.05	16.58
<b>Max Range</b>	2.15	2.12
<b>Days Max &gt;13C</b>	11	19
<b>Day Max &gt;15C</b>	0	8
<b>Days Max &gt;20C</b>	0	0
<b>June Degree Days</b>	Not Available	237
<b>July Degree Days</b>	313	375
<b>August Degree Days</b>	336	316
<b>Sept Degree Days</b>	217	218*
<b>Regression Local Air</b>		
<b>Slope</b>	0.30	0.52
<b>Y Intercept</b>	6.70	4.27
<b>R Squared</b>	0.47	0.90
<b>Regression Bethel Air</b>		
<b>Slope</b>	0.42	0.62
<b>Y Intercept</b>	4.92	2.34
<b>R Squared</b>	0.52	0.59

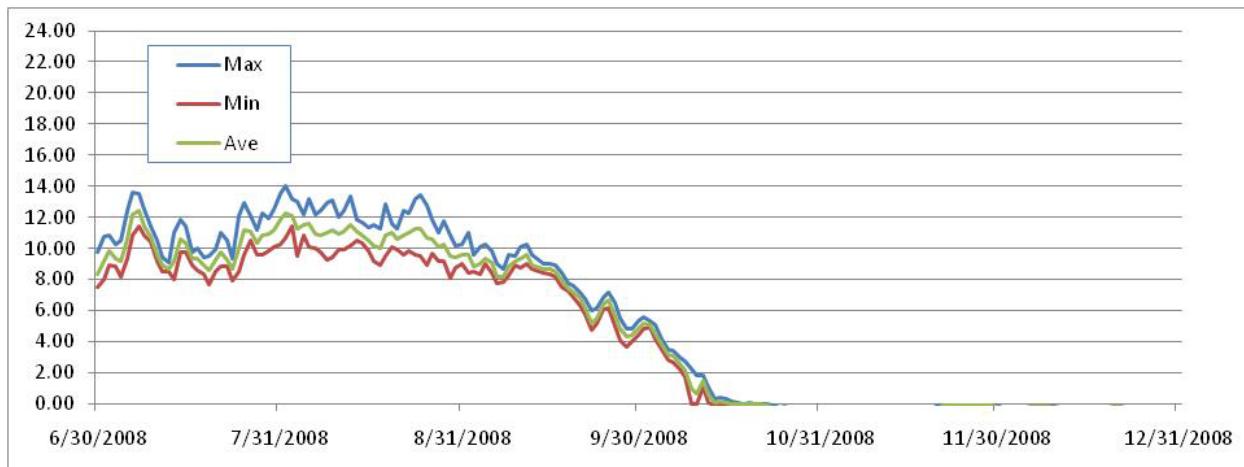
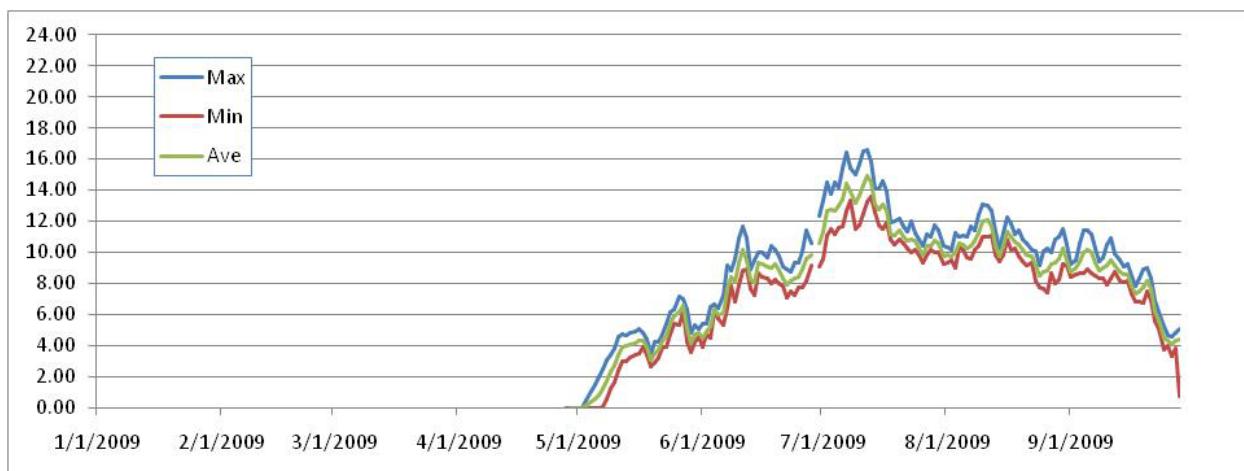


Figure 17. Daily 2008 water temperature (C) for the Kogruklu River.

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Kogrukuk River**



**Figure 18.** Daily 2009 water temperature (C) for the Kogrukuk River.

**Table 16.** Daily Kogrukuk River water temperature (C) statistics.

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/1				-0.40	-0.48	-0.44
1/2				-0.48	-0.56	-0.52
1/3				-0.56	-0.65	-0.59
1/4				-0.65	-0.70	-0.68
1/5				-0.70	-0.73	-0.73
1/6				-0.70	-0.73	-0.73
1/7				-0.68	-0.70	-0.70
1/8				-0.70	-0.73	-0.71
1/9				-0.73	-0.79	-0.76
1/10				-0.73	-0.76	-0.75
1/11				-0.70	-0.73	-0.71
1/12				-0.70	-0.73	-0.72
1/13				-0.68	-0.70	-0.69
1/14				-0.59	-0.68	-0.62
1/15				-0.45	-0.59	-0.52
1/16				-0.31	-0.45	-0.39
1/17				-0.20	-0.31	-0.24
1/18				-0.14	-0.20	-0.18
1/19				-0.12	-0.14	-0.13
1/20				-0.12	-0.12	-0.12
1/21				-0.12	-0.12	-0.12
1/22				-0.12	-0.14	-0.13
1/23				-0.14	-0.20	-0.17

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kogrukluuk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/24				-0.20	-0.26	-0.22
1/25				-0.23	-0.26	-0.25
1/26				-0.20	-0.26	-0.24
1/27				-0.17	-0.23	-0.19
1/28				-0.14	-0.17	-0.15
1/29				-0.12	-0.14	-0.14
1/30				-0.12	-0.14	-0.12
1/31				-0.12	-0.12	-0.12
2/1				-0.12	-0.12	-0.12
2/2				-0.09	-0.12	-0.11
2/3				-0.09	-0.12	-0.11
2/4				-0.12	-0.17	-0.13
2/5				-0.17	-0.34	-0.26
2/6				-0.34	-0.37	-0.36
2/7				-0.37	-0.37	-0.37
2/8				-0.31	-0.37	-0.34
2/9				-0.28	-0.31	-0.30
2/10				-0.28	-0.31	-0.28
2/11				-0.28	-0.34	-0.32
2/12				-0.34	-0.37	-0.36
2/13				-0.37	-0.37	-0.37
2/14				-0.34	-0.37	-0.36
2/15				-0.28	-0.34	-0.31
2/16				-0.23	-0.28	-0.26
2/17				-0.20	-0.26	-0.22
2/18				-0.20	-0.20	-0.20
2/19				-0.20	-0.20	-0.20
2/20				-0.20	-0.20	-0.20
2/21				-0.20	-0.20	-0.20
2/22				-0.20	-0.20	-0.20
2/23				-0.20	-0.20	-0.20
2/24				-0.20	-0.23	-0.21
2/25				-0.20	-0.23	-0.23
2/26				-0.20	-0.23	-0.21
2/27				-0.20	-0.20	-0.20
2/28				-0.20	-0.20	-0.20
3/1				-0.20	-0.20	-0.20
3/2				-0.20	-0.20	-0.20
3/3				-0.20	-0.20	-0.20
3/4				-0.20	-0.23	-0.21
3/5				-0.23	-0.23	-0.23

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kogrukuk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
3/6				-0.23	-0.23	-0.23
3/7				-0.20	-0.23	-0.21
3/8				-0.20	-0.20	-0.20
3/9				-0.17	-0.20	-0.20
3/10				-0.17	-0.20	-0.18
3/11				-0.17	-0.17	-0.17
3/12				-0.14	-0.17	-0.17
3/13				-0.14	-0.17	-0.14
3/14				-0.14	-0.14	-0.14
3/15				-0.14	-0.14	-0.14
3/16				-0.14	-0.14	-0.14
3/17				-0.14	-0.17	-0.15
3/18				-0.17	-0.20	-0.17
3/19				-0.20	-0.23	-0.21
3/20				-0.23	-0.26	-0.24
3/21				-0.26	-0.31	-0.28
3/22				-0.31	-0.34	-0.32
3/23				-0.34	-0.37	-0.34
3/24				-0.37	-0.37	-0.37
3/25				-0.34	-0.37	-0.37
3/26				-0.34	-0.37	-0.35
3/27				-0.31	-0.34	-0.33
3/28				-0.28	-0.31	-0.31
3/29				-0.28	-0.31	-0.28
3/30				-0.26	-0.28	-0.26
3/31				-0.23	-0.26	-0.25
4/1				-0.23	-0.23	-0.23
4/2				-0.20	-0.23	-0.21
4/3				-0.20	-0.20	-0.20
4/4				-0.17	-0.20	-0.18
4/5				-0.17	-0.17	-0.17
4/6				-0.14	-0.17	-0.17
4/7				-0.14	-0.17	-0.15
4/8				-0.14	-0.14	-0.14
4/9				-0.14	-0.14	-0.14
4/10				-0.14	-0.14	-0.14
4/11				-0.14	-0.14	-0.14
4/12				-0.14	-0.14	-0.14
4/13				-0.12	-0.14	-0.14
4/14				-0.12	-0.14	-0.13
4/15				-0.12	-0.12	-0.12

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kogrukluk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
4/16				-0.12	-0.12	-0.12
4/17				-0.12	-0.12	-0.12
4/18				-0.09	-0.12	-0.11
4/19				-0.09	-0.12	-0.11
4/20				-0.09	-0.12	-0.10
4/21				-0.09	-0.12	-0.09
4/22				-0.09	-0.09	-0.09
4/23				-0.09	-0.09	-0.09
4/24				-0.09	-0.09	-0.09
4/25				-0.09	-0.09	-0.09
4/26				-0.09	-0.09	-0.09
4/27				-0.09	-0.09	-0.09
4/28				-0.06	-0.09	-0.08
4/29				-0.06	-0.06	-0.06
4/30				-0.06	-0.06	-0.06
5/1				-0.06	-0.06	-0.06
5/2				-0.03	-0.06	-0.06
5/3				0.44	-0.06	0.11
5/4				1.07	-0.06	0.38
5/5				1.45	-0.03	0.58
5/6				1.94	-0.03	0.81
5/7				2.48	0.08	1.20
5/8				3.06	0.52	1.72
5/9				3.38	1.24	2.28
5/10				3.78	1.67	2.70
5/11				4.53	2.42	3.41
5/12				4.71	2.98	3.93
5/13				4.64	3.01	3.94
5/14				4.79	3.22	4.04
5/15				4.87	3.41	4.17
5/16				5.05	3.49	4.29
5/17				4.84	3.85	4.35
5/18				4.40	3.41	3.91
5/19				3.41	2.66	3.05
5/20				4.19	2.88	3.46
5/21				4.22	3.20	3.76
5/22				4.74	3.85	4.31
5/23				5.36	3.85	4.59
5/24				6.18	4.69	5.38
5/25				6.28	5.44	5.89
5/26				7.14	5.33	6.17

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kogrukluuk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
5/27				7.02	6.13	6.56
5/28				6.28	4.19	5.05
5/29				4.82	3.54	4.15
5/30				5.28	4.22	4.76
5/31				5.02	4.56	4.79
6/1				5.41	3.93	4.50
6/2				5.41	4.71	4.89
6/3				6.46	4.51	5.20
6/4				6.61	6.13	6.31
6/5				6.41	5.77	6.00
6/6				7.22	5.31	6.09
6/7				9.14	6.43	7.61
6/8				8.84	7.85	8.36
6/9				9.53	6.79	8.03
6/10				10.91	7.92	9.31
6/11				11.64	8.82	10.16
6/12				10.93	8.89	9.47
6/13				8.94	7.65	8.21
6/14				9.51	7.22	8.09
6/15				9.95	8.69	9.34
6/16				9.98	8.37	9.22
6/17				9.68	8.32	9.05
6/18				10.44	7.95	9.02
6/19				10.12	8.25	9.28
6/20				9.73	7.97	8.85
6/21				9.09	7.85	8.33
6/22				8.92	7.07	7.91
6/23				8.72	7.47	8.18
6/24				9.29	7.27	8.28
6/25				9.34	7.75	8.43
6/26				10.10	7.72	8.90
6/27				11.44	8.12	9.59
6/28				10.61	9.16	9.79
6/29						
6/30	9.78	7.47	8.31	12.34	9.09	10.61
7/1	10.76	8.00	9.18	13.35	9.56	11.36
7/2	10.83	8.94	9.86	14.53	11.08	12.63
7/3	10.22	8.87	9.31	13.76	11.49	12.78
7/4	10.49	8.15	9.20	14.53	11.13	12.63
7/5	12.44	9.34	10.62	14.19	11.59	12.96
7/6	13.64	10.81	12.15	15.44	11.69	13.44

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kogrukluk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
7/7	13.55	11.39	12.46	16.39	12.68	14.41
7/8	12.56	10.88	11.45	15.41	13.33	13.92
7/9	11.39	10.47	10.78	15.01	11.47	13.13
7/10	10.52	9.21	9.62	15.63	11.78	13.64
7/11	9.41	8.49	8.96	16.49	12.46	14.37
7/12	9.06	8.49	8.69	16.58	13.23	14.93
7/13	11.03	8.05	9.18	15.80	13.62	14.47
7/14	11.86	9.73	10.62	14.07	12.56	13.09
7/15	11.39	9.76	10.36	14.12	11.78	12.77
7/16	9.73	8.92	9.30	14.55	11.49	13.07
7/17	10.00	8.62	9.32	13.93	11.93	12.62
7/18	9.46	8.34	8.89	11.88	10.86	11.18
7/19	9.49	7.67	8.57	11.98	10.49	11.07
7/20	9.90	8.49	9.27	12.17	10.86	11.43
7/21	10.98	8.82	9.76	11.66	10.57	11.00
7/22	10.54	8.82	9.29	11.35	10.22	10.78
7/23	9.34	7.90	8.63	11.95	10.00	10.79
7/24	12.07	8.49	10.01	11.25	10.20	10.70
7/25	12.97	9.56	11.19	10.86	9.83	10.22
7/26	12.10	10.52	11.05	10.44	9.31	9.79
7/27	11.20	9.58	10.32	11.15	9.85	10.43
7/28	12.24	9.56	10.81	10.98	10.15	10.38
7/29	11.90	9.83	10.94	11.71	10.03	10.74
7/30	12.53	10.12	11.21	11.42	9.98	10.56
7/31	13.55	10.22	11.81	10.37	9.26	9.78
8/1	14.05	10.64	12.28	10.30	9.36	9.78
8/2	13.21	11.47	12.06	10.20	9.49	9.76
8/3	12.99	9.51	11.24	11.22	9.02	9.97
8/4	12.20	10.83	11.52	10.98	10.32	10.57
8/5	13.19	10.12	11.56	11.08	10.12	10.49
8/6	12.15	10.00	10.94	10.96	9.68	10.27
8/7	12.44	9.78	10.87	11.64	9.53	10.44
8/8	12.97	9.29	11.03	11.42	10.17	10.78
8/9	13.06	9.44	11.15	12.44	10.39	11.21
8/10	12.03	9.90	10.93	13.04	11.03	11.98
8/11	12.46	9.93	11.11	13.02	10.98	12.05
8/12	13.33	10.17	11.50	12.68	11.08	11.68
8/13	11.86	10.49	11.14	11.30	9.81	10.40
8/14	11.69	10.32	10.89	10.27	9.39	9.75
8/15	11.35	9.81	10.50	11.22	9.85	10.40
8/16	11.52	9.14	10.18	12.24	10.81	11.30

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kogrukluuk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
8/17	11.27	8.89	10.03	11.83	10.15	11.02
8/18	12.85	9.53	10.86	11.18	10.22	10.68
8/19	11.64	10.12	10.98	11.44	9.73	10.50
8/20	11.30	9.93	10.56	10.83	9.41	10.13
8/21	12.46	9.61	10.86	10.59	9.11	9.84
8/22	12.29	9.81	10.99	10.20	9.34	9.74
8/23	13.19	9.61	11.30	10.10	8.17	9.14
8/24	13.45	9.49	11.30	9.16	7.72	8.49
8/25	12.80	8.89	10.67	10.08	7.62	8.74
8/26	11.86	9.66	10.56	10.22	7.37	8.79
8/27	11.03	9.14	10.07	9.98	8.67	9.27
8/28	11.78	9.19	10.29	10.83	7.97	9.32
8/29	10.88	8.10	9.49	11.01	8.25	9.58
8/30	10.20	8.74	9.39	11.49	9.26	10.20
8/31	10.30	8.99	9.57	10.49	9.11	9.50
9/1	11.01	8.44	9.63	9.21	8.37	8.76
9/2	9.61	8.49	8.83	9.49	8.57	9.02
9/3	10.08	8.34	9.03	10.61	8.62	9.41
9/4	10.22	8.99	9.37	11.44	8.64	9.96
9/5	9.88	8.42	9.06	11.44	8.87	10.15
9/6	9.04	7.77	8.20	11.20	8.62	9.96
9/7	8.64	7.85	8.19	10.27	8.52	9.29
9/8	9.58	8.27	8.83	9.39	8.30	8.82
9/9	9.51	8.94	9.22	9.66	8.34	8.98
9/10	10.12	8.77	9.35	10.52	7.87	9.13
9/11	10.27	9.04	9.57	10.93	8.34	9.52
9/12	9.56	8.69	8.93	9.88	8.77	9.12
9/14	9.02	8.44	8.68	9.46	8.12	8.72
9/15	9.02	8.32	8.66	9.04	8.05	8.56
9/16	8.94	8.17	8.54	9.24	8.17	8.61
9/17	8.44	7.47	7.93	8.49	7.34	7.82
9/18	7.75	7.24	7.41	7.80	6.84	7.36
9/19	7.57	6.81	7.17	8.34	6.81	7.52
9/20	7.17	6.31	6.81	8.89	6.74	7.76
9/21	6.71	5.75	6.16	8.99	7.52	8.18
9/22	6.00	4.74	5.18	8.30	6.91	7.61
9/23	6.20	5.13	5.53	6.91	5.54	6.17
9/24	6.86	6.08	6.42	6.13	5.10	5.63
9/25	7.17	6.15	6.64	5.21	3.70	4.45
9/26	6.48	5.00	5.65	4.66	4.01	4.32
9/27	5.46	4.09	4.87	4.58	3.30	4.08

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kogruklu River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>9/28</b>	4.87	3.67	4.33	4.84	3.83	4.34
<b>9/29</b>	4.84	3.96	4.40	5.02	0.74	4.36
<b>9/30</b>	5.31	4.40	4.80			
<b>10/1</b>	5.62	4.84	5.17			
<b>10/2</b>	5.36	4.92	5.10			
<b>10/3</b>	5.10	4.14	4.48			
<b>10/4</b>	4.19	3.46	3.81			
<b>10/5</b>	3.46	2.82	3.17			
<b>10/6</b>	3.41	2.66	3.04			
<b>10/7</b>	2.96	2.21	2.56			
<b>10/8</b>	2.74	1.72	2.20			
<b>10/9</b>	2.21	-0.03	0.98			
<b>10/10</b>	1.83	-0.03	0.67			
<b>10/11</b>	1.83	1.10	1.51			
<b>10/12</b>	1.07	0.11	0.60			
<b>10/13</b>	0.33	-0.06	0.08			
<b>10/14</b>	0.44	-0.03	0.14			
<b>10/15</b>	0.30	-0.09	0.06			
<b>10/16</b>	0.19	-0.09	0.00			
<b>10/17</b>	0.08	-0.03	-0.01			
<b>10/18</b>	0.02	-0.03	-0.02			
<b>10/19</b>	0.08	-0.03	-0.02			
<b>10/20</b>	-0.03	-0.03	-0.03			
<b>10/21</b>	0.02	-0.06	-0.03			
<b>10/22</b>	-0.03	-0.20	-0.10			
<b>10/23</b>	-0.09	-0.40	-0.25			
<b>10/24</b>	-0.26	-0.73	-0.44			
<b>10/25</b>	-0.20	-0.73	-0.48			
<b>10/26</b>	-0.34	-1.18	-0.81			
<b>10/27</b>	-0.68	-1.81	-1.39			
<b>10/28</b>	-1.61	-2.48	-2.05			
<b>10/29</b>	-1.18	-1.96	-1.68			
<b>10/30</b>	-0.40	-1.18	-0.73			
<b>10/31</b>	-0.31	-0.48	-0.41			
<b>11/1</b>	-0.34	-0.56	-0.46			
<b>11/2</b>	-0.56	-1.53	-0.91			
<b>11/3</b>	-1.21	-2.04	-1.64			
<b>11/4</b>	-1.21	-1.56	-1.36			
<b>11/5</b>	-1.16	-1.64	-1.40			
<b>11/6</b>	-1.47	-2.16	-1.81			
<b>11/7</b>	-1.67	-2.39	-2.00			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kogruklu River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>11/8</b>	-1.07	-1.67	-1.37			
<b>11/9</b>	-0.54	-1.07	-0.84			
<b>11/10</b>	-0.31	-0.54	-0.40			
<b>11/11</b>	-0.28	-0.31	-0.29			
<b>11/12</b>	-0.28	-0.28	-0.28			
<b>11/13</b>	-0.28	-0.37	-0.33			
<b>11/14</b>	-0.23	-0.31	-0.27			
<b>11/15</b>	-0.23	-0.37	-0.31			
<b>11/16</b>	-0.26	-0.34	-0.29			
<b>11/17</b>	-0.31	-0.37	-0.36			
<b>11/18</b>	-0.37	-0.54	-0.40			
<b>11/19</b>	-0.34	-0.65	-0.47			
<b>11/20</b>	-0.12	-0.68	-0.33			
<b>11/21</b>	-0.09	-0.12	-0.09			
<b>11/22</b>	-0.09	-0.09	-0.09			
<b>11/23</b>	-0.06	-0.09	-0.08			
<b>11/24</b>	-0.09	-0.14	-0.11			
<b>11/25</b>	-0.12	-0.12	-0.12			
<b>11/26</b>	-0.09	-0.12	-0.11			
<b>11/27</b>	-0.09	-0.12	-0.09			
<b>11/28</b>	-0.09	-0.09	-0.09			
<b>11/29</b>	-0.09	-0.12	-0.09			
<b>11/30</b>	-0.12	-0.28	-0.16			
<b>12/1</b>	-0.28	-0.54	-0.45			
<b>12/2</b>	-0.51	-0.54	-0.53			
<b>12/3</b>	-0.37	-0.51	-0.44			
<b>12/4</b>	-0.31	-0.37	-0.35			
<b>12/5</b>	-0.26	-0.31	-0.27			
<b>12/6</b>	-0.20	-0.26	-0.21			
<b>12/7</b>	-0.17	-0.20	-0.18			
<b>12/8</b>	-0.17	-0.17	-0.17			
<b>12/9</b>	-0.17	-0.20	-0.19			
<b>12/10</b>	-0.20	-0.26	-0.24			
<b>12/11</b>	-0.26	-0.31	-0.28			
<b>12/12</b>	-0.31	-0.40	-0.35			
<b>12/13</b>	-0.42	-0.42	-0.42			
<b>12/14</b>	-0.37	-0.42	-0.40			
<b>12/15</b>	-0.37	-0.37	-0.37			
<b>12/16</b>	-0.31	-0.37	-0.33			
<b>12/17</b>	-0.26	-0.31	-0.28			
<b>12/18</b>	-0.26	-0.26	-0.26			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kogrukluuk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>12/19</b>	-0.23	-0.26	-0.23			
<b>12/20</b>	-0.20	-0.23	-0.20			
<b>12/21</b>	-0.20	-0.23	-0.21			
<b>12/22</b>	-0.23	-0.31	-0.27			
<b>12/23</b>	-0.28	-0.31	-0.31			
<b>12/24</b>	-0.26	-0.28	-0.27			
<b>12/25</b>	-0.26	-0.26	-0.26			
<b>12/26</b>	-0.23	-0.26	-0.23			
<b>12/27</b>	-0.23	-0.23	-0.23			
<b>12/28</b>	-0.23	-0.23	-0.23			
<b>12/29</b>	-0.23	-0.28	-0.25			
<b>12/30</b>	-0.28	-0.34	-0.30			
<b>12/31</b>	-0.34	-0.40	-0.36			

**George River**

<b>Stream Name</b>	<b>George River</b>	
<b>Principal Investigator</b>	Travis Elison, ADFG	
<b>Drainage Name</b>	Kuskokwim	
<b>Latitude:</b>		
<b>Longitude:</b>		
<b>Start:</b>	7/16/2008	1/1/2009
<b>End:</b>	12/31/2008	9/27/2009
<b>Season Maximum:</b>	14.24	19.58
<b>Max Range</b>	2.15	2.40
<b>Days Max &gt;13C</b>	16	59
<b>Day Max&gt;15C</b>	0	32
<b>Days Max&gt;20C</b>	0	0
<b>June Degree Days</b>	NA	296
<b>July Degree Days</b>	NA	461
<b>August Degree Days</b>	359.48	385
<b>Sept Degree Days</b>	235.78	230*
<b>Regression Local Air</b>		
<b>Slope</b>	0.65	0.71
<b>Y Intercept</b>	3.91	2.84
<b>R Squared</b>	0.79	0.60
<b>Regression McGrath Airport</b>		
<b>Slope</b>	0.66	0.86
<b>Y Intercept</b>	2.79	1.51
<b>R Squared</b>	0.80	0.63

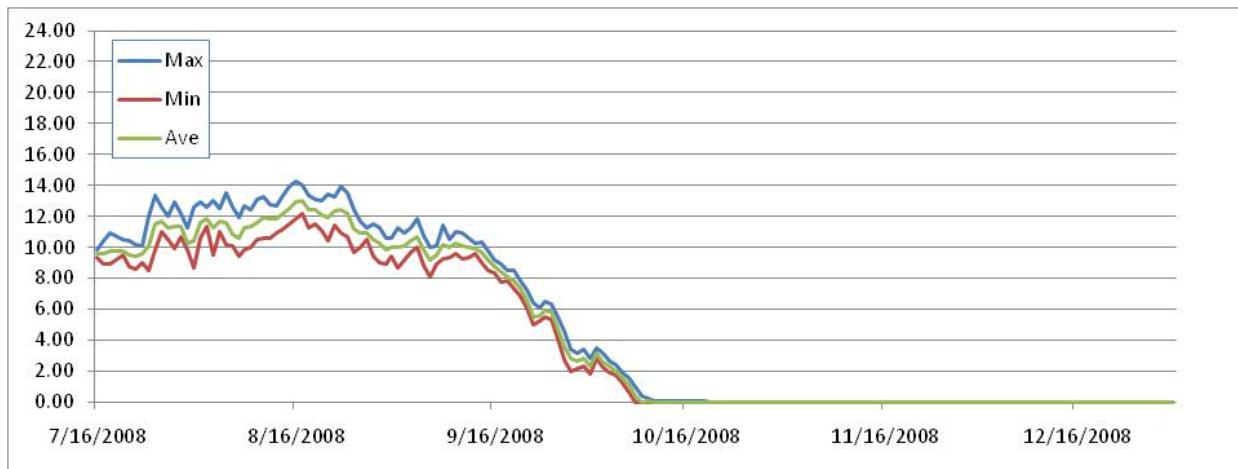
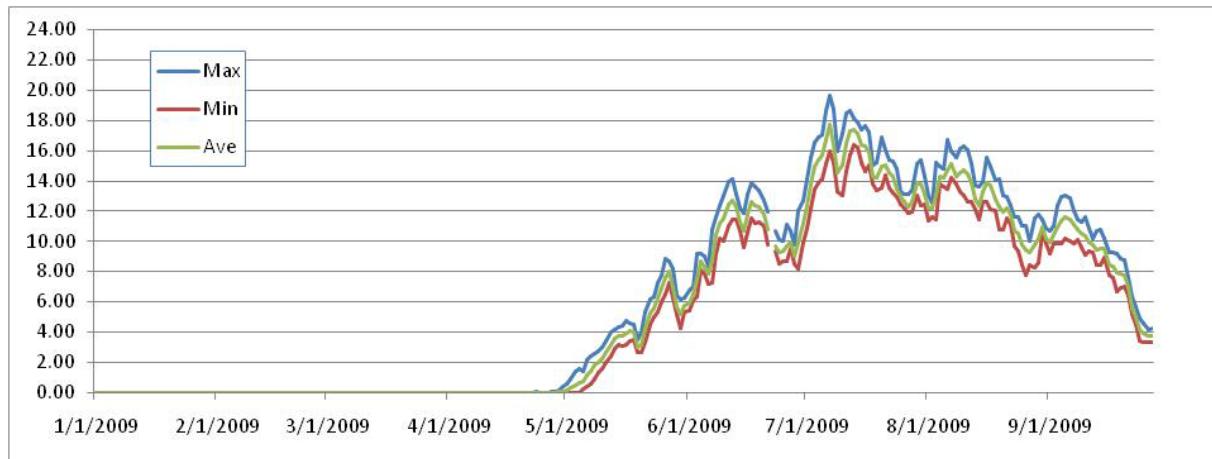


Figure 19. Daily 2008 water temperature (C) for the George River.

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**George River**



**Figure 20.** Daily 2009 water temperature for the George River.

**Table 17.** Daily George River water temperature (C) statistics.

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/1				0.02	0.00	0.00
1/2				0.02	0.00	0.00
1/3				0.02	0.00	0.01
1/4				0.02	0.00	0.01
1/5				0.02	0.00	0.01
1/6				0.02	0.00	0.02
1/7				0.02	0.00	0.02
1/8				0.02	0.00	0.02
1/9				0.02	0.00	0.02
1/10				0.02	0.00	0.02
1/11				0.02	0.00	0.02
1/12				0.02	0.00	0.02
1/13				0.02	0.00	0.02
1/14				0.02	0.00	0.02
1/15				0.02	0.00	0.02
1/16				0.02	0.02	0.02
1/17				0.02	0.00	0.02
1/18				0.02	0.00	0.01
1/19				0.02	0.00	0.01
1/20				0.02	0.00	0.01
1/21				0.02	0.00	0.01
1/22				0.02	0.00	0.00
1/23				0.02	0.00	0.01
1/24				0.02	0.00	0.00
1/25				0.02	0.00	0.00

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
George River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/26				0.02	0.00	0.00
1/27				0.02	0.00	0.00
1/28				0.02	0.00	0.00
1/29				0.02	0.00	0.00
1/30				0.02	0.00	0.00
1/31				0.02	0.00	0.00
2/1				0.02	0.00	0.00
2/2				0.00	0.00	0.00
2/3				0.02	0.00	0.00
2/4				0.02	0.00	0.00
2/5				0.02	0.00	0.00
2/6				0.02	0.00	0.00
2/7				0.00	0.00	0.00
2/8				0.02	0.00	0.00
2/9				0.00	0.00	0.00
2/10				0.00	0.00	0.00
2/11				0.00	0.00	0.00
2/12				0.02	0.00	0.00
2/13				0.00	0.00	0.00
2/14				0.00	0.00	0.00
2/15				0.02	0.00	0.00
2/16				0.02	0.00	0.00
2/17				0.02	0.00	0.00
2/18				0.00	0.00	0.00
2/19				0.02	0.00	0.00
2/20				0.02	0.00	0.00
2/21				0.00	0.00	0.00
2/22				0.02	0.00	0.00
2/23				0.02	0.00	0.00
2/24				0.00	0.00	0.00
2/25				0.00	0.00	0.00
2/26				0.02	0.00	0.00
2/27				0.00	0.00	0.00
2/28				0.00	0.00	0.00
3/1				0.00	0.00	0.00
3/2				0.00	0.00	0.00
3/3				0.02	0.00	0.00
3/4				0.00	0.00	0.00
3/5				0.00	0.00	0.00
3/6				0.00	0.00	0.00
3/7				0.00	0.00	0.00

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
George River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
3/8				0.02	0.00	0.00
3/9				0.00	0.00	0.00
3/10				0.00	0.00	0.00
3/11				0.00	0.00	0.00
3/12				0.00	0.00	0.00
3/13				0.00	0.00	0.00
3/14				0.00	0.00	0.00
3/15				0.02	0.00	0.00
3/16				0.00	0.00	0.00
3/17				0.00	0.00	0.00
3/18				0.00	0.00	0.00
3/19				0.00	0.00	0.00
3/20				0.00	0.00	0.00
3/21				0.00	0.00	0.00
3/22				0.00	0.00	0.00
3/23				0.00	0.00	0.00
3/24				0.00	0.00	0.00
3/25				0.00	0.00	0.00
3/26				0.00	0.00	0.00
3/27				0.00	0.00	0.00
3/28				0.00	0.00	0.00
3/29				0.00	0.00	0.00
3/30				0.00	0.00	0.00
3/31				0.00	0.00	0.00
4/1				0.00	0.00	0.00
4/2				0.00	0.00	0.00
4/3				0.00	0.00	0.00
4/4				0.00	0.00	0.00
4/5				0.00	0.00	0.00
4/6				0.00	0.00	0.00
4/7				0.00	0.00	0.00
4/8				0.00	0.00	0.00
4/9				0.00	0.00	0.00
4/10				0.00	0.00	0.00
4/11				0.00	0.00	0.00
4/12				0.02	0.00	0.00
4/13				0.00	0.00	0.00
4/14				0.02	0.00	0.00
4/15				0.02	0.00	0.00
4/16				0.02	0.00	0.00
4/17				0.02	0.00	0.00

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
George River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
4/18				0.02	0.00	0.00
4/19				0.02	0.00	0.00
4/20				0.02	0.00	0.00
4/21				0.02	0.00	0.01
4/22				0.02	0.00	0.00
4/23				0.05	0.00	0.01
4/24				0.02	0.00	0.01
4/25				0.02	0.00	0.01
4/26				0.02	0.00	0.01
4/27				0.05	0.00	0.02
4/28				0.05	0.00	0.02
4/29				0.14	0.00	0.03
4/30				0.38	0.00	0.08
5/1				0.55	0.00	0.16
5/2				0.91	0.00	0.31
5/3				1.40	0.00	0.51
5/4				1.53	0.00	0.67
5/5				1.40	0.25	0.76
5/6				2.13	0.41	1.17
5/7				2.40	0.61	1.45
5/8				2.61	0.93	1.78
5/9				2.72	1.29	2.02
5/10				2.98	1.53	2.25
5/11				3.38	1.97	2.67
5/12				3.96	2.45	3.15
5/13				4.19	2.88	3.54
5/14				4.35	3.20	3.78
5/15				4.38	3.12	3.78
5/16				4.71	3.20	3.93
5/17				4.58	3.43	4.09
5/18				4.51	3.51	4.02
5/19				3.49	2.64	3.03
5/20				4.01	2.64	3.18
5/21				5.31	3.35	4.21
5/22				6.13	4.53	5.27
5/23				6.31	4.97	5.60
5/24				7.29	5.33	6.21
5/25				7.72	6.03	6.93
5/26				8.87	6.54	7.59
5/27				8.69	7.24	8.02
5/28				8.17	6.23	6.93

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
George River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
5/29				6.43	5.13	5.66
5/30				6.13	4.27	5.16
5/31				6.23	5.36	5.74
6/1				6.79	5.41	5.94
6/2				6.99	6.10	6.52
6/3				9.19	6.31	7.50
6/4				9.21	8.12	8.71
6/5				8.99	7.82	8.28
6/6				8.34	7.19	7.83
6/7				10.76	7.29	8.76
6/8				11.64	9.19	10.44
6/9				12.36	10.20	11.15
6/10				13.04	10.00	11.55
6/11				13.98	11.01	12.44
6/12				14.12	11.44	12.66
6/13				13.06	11.42	12.24
6/14				12.22	10.71	11.23
6/15				11.88	9.61	10.68
6/16				13.14	10.61	11.79
6/17				13.86	11.54	12.62
6/18				13.64	11.18	12.34
6/19				13.35	11.25	12.27
6/20				12.68	11.05	11.74
6/21				11.93	9.76	10.78
6/22						
6/23				10.66	9.36	9.70
6/24				10.08	8.49	9.29
6/25				10.03	8.67	9.31
6/26				11.13	8.69	9.70
6/27				10.64	9.51	9.89
6/28				9.73	8.52	9.03
6/29				12.00	8.17	9.93
6/30				12.70	9.90	11.18
7/1				14.12	10.81	12.38
7/2				15.56	12.15	13.79
7/3				16.49	13.40	14.95
7/4				16.84	13.83	15.33
7/5				17.03	14.07	15.68
7/6				18.58	15.13	16.72
7/7				19.58	15.96	17.73
7/8				18.72	15.22	16.32

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
George River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
7/9				15.94	13.31	14.49
7/10				17.13	12.99	15.00
7/11				18.49	14.58	16.44
7/12				18.63	15.72	17.24
7/13				18.15	16.34	17.37
7/14				17.84	16.15	17.08
7/15				17.37	15.20	16.32
7/16	9.85	9.31	9.62	17.61	14.60	16.27
7/17	10.47	8.94	9.63	17.23	15.06	15.86
7/18	10.96	8.92	9.79	14.98	13.76	14.31
7/20	10.52	9.49	9.79	15.15	13.35	14.23
7/21	10.42	8.79	9.52	16.84	13.55	14.96
7/22	10.15	8.57	9.45	16.03	14.34	15.00
7/23	10.08	8.99	9.56	15.32	13.50	14.55
7/24	12.05	8.49	10.12	15.25	13.16	14.29
7/25	13.35	9.81	11.50	14.79	12.97	13.46
7/26	12.61	11.01	11.70	13.28	12.41	12.93
7/27	12.05	10.49	11.23	13.09	12.22	12.56
7/28	12.90	9.95	11.37	13.09	11.86	12.30
7/29	12.17	10.64	11.32	13.35	11.93	12.57
7/30	11.22	9.83	10.23	15.08	13.04	13.87
7/31	12.58	8.67	10.44	15.37	12.32	13.78
8/1	12.92	10.61	11.62	14.29	12.44	13.14
8/2	12.63	11.37	11.84	13.02	11.35	12.17
8/3	13.02	9.51	11.25	12.51	11.57	12.15
8/4	12.53	11.03	11.64	15.15	11.39	13.06
8/5	13.52	10.15	11.62	14.91	13.74	14.29
8/6	12.61	10.12	10.87	14.79	13.57	14.16
8/7	11.95	9.44	10.57	16.68	13.47	14.72
8/8	12.68	9.83	11.26	15.94	14.15	15.07
8/9	12.41	10.00	11.35	15.49	13.79	14.26
8/10	13.09	10.52	11.56	16.13	13.26	14.53
8/11	13.28	10.59	11.94	16.27	13.04	14.67
8/12	12.75	10.61	11.82	15.99	12.61	14.41
8/13	12.65	10.96	11.87	15.10	12.58	13.82
8/14	13.35	11.18	12.21	13.67	12.07	12.79
8/15	13.91	11.49	12.55	13.59	11.44	12.38
8/16	14.24	11.81	12.93	13.98	12.61	13.29
8/17	14.03	12.17	12.99	15.49	12.63	13.83
8/18	13.33	11.30	12.44	14.96	12.10	13.67
8/19	13.11	11.54	12.44	14.05	12.03	12.74

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
George River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
8/20	13.02	11.10	12.12	14.07	10.74	12.25
8/21	13.45	10.39	11.97	13.04	10.79	11.89
8/22	13.28	11.42	12.37	12.94	11.54	12.19
8/23	13.93	10.93	12.40	12.36	11.10	11.78
8/24	13.52	10.71	12.20	11.64	9.68	10.69
8/25	12.46	9.71	11.14	11.59	9.34	10.48
8/26	11.71	9.98	10.93	11.01	8.39	9.75
8/27	11.25	10.54	10.90	11.05	7.72	9.41
8/28	11.52	9.39	10.55	10.05	8.42	9.28
8/29	11.25	8.99	10.27	11.54	8.25	9.73
8/30	10.61	8.94	9.87	11.76	8.59	10.20
8/31	10.57	9.41	9.97	11.42	10.49	10.97
9/1	11.25	8.69	10.03	10.83	9.88	10.18
9/2	10.93	9.19	10.12	10.69	9.19	9.94
9/3	11.25	9.68	10.40	11.05	9.81	10.41
9/4	11.81	10.00	10.72	12.32	9.83	10.92
9/5	10.79	8.87	9.85	12.90	9.81	11.33
9/6	9.98	8.10	9.18	13.02	10.17	11.60
9/7	10.10	8.97	9.55	12.85	10.05	11.45
9/8	11.47	9.24	10.14	11.98	9.83	11.07
9/9	10.52	9.36	10.03	11.42	10.08	10.78
9/10	11.01	9.63	10.29	11.30	9.61	10.47
9/11	10.91	9.29	10.12	11.59	9.11	10.34
9/12	10.61	9.34	9.99	10.81	9.36	9.94
9/13	10.25	9.63	9.92	10.17	9.24	9.72
9/14	10.35	8.99	9.64	10.66	8.42	9.41
9/15	9.73	8.49	9.16	10.79	8.42	9.47
9/16	9.19	8.32	8.80	10.17	8.89	9.51
9/17	8.92	7.80	8.40	9.29	7.75	8.39
9/18	8.52	7.85	8.07	9.24	7.59	8.33
9/19	8.47	7.37	7.81	9.19	6.64	7.95
9/20	7.85	6.81	7.33	8.84	6.91	7.81
9/21	7.27	6.08	6.58	8.72	6.97	7.78
9/22	6.41	5.02	5.52	7.57	6.46	7.04
9/23	6.05	5.26	5.54	6.36	5.21	5.62
9/24	6.54	5.49	5.95	5.64	4.48	5.04
9/25	6.36	5.31	5.87	4.92	3.41	4.20
9/26	5.54	4.06	4.79	4.56	3.33	3.88
9/27	4.56	2.77	3.61	4.19	3.30	3.75
9/28	3.43	2.02	2.84	4.27	3.30	3.76
9/29	3.20	2.16	2.69			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
George River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>9/30</b>	3.43	2.34	2.83			
<b>10/1</b>	2.80	1.83	2.33			
<b>10/2</b>	3.49	2.80	3.12			
<b>10/3</b>	3.14	2.21	2.58			
<b>10/4</b>	2.69	1.91	2.31			
<b>10/5</b>	2.42	1.72	2.02			
<b>10/6</b>	1.91	1.21	1.58			
<b>10/7</b>	1.62	0.66	1.16			
<b>10/8</b>	1.02	-0.03	0.40			
<b>10/9</b>	0.41	-0.03	0.02			
<b>10/10</b>	0.25	0.00	0.06			
<b>10/11</b>	0.08	-0.03	0.01			
<b>10/12</b>	0.05	0.00	0.01			
<b>10/13</b>	0.05	-0.03	0.01			
<b>10/14</b>	0.05	-0.03	0.00			
<b>10/15</b>	0.08	-0.03	0.01			
<b>10/16</b>	0.08	0.00	0.01			
<b>10/17</b>	0.08	0.00	0.01			
<b>10/18</b>	0.08	-0.03	0.01			
<b>10/19</b>	0.05	0.00	0.01			
<b>10/20</b>	0.02	0.00	0.00			
<b>10/21</b>	0.02	0.00	0.00			
<b>10/22</b>	0.02	0.00	0.00			
<b>10/23</b>	0.02	0.00	0.00			
<b>10/24</b>	0.00	0.00	0.00			
<b>10/25</b>	0.02	0.00	0.00			
<b>10/26</b>	0.00	0.00	0.00			
<b>10/27</b>	0.00	0.00	0.00			
<b>10/28</b>	0.00	0.00	0.00			
<b>10/29</b>	0.00	0.00	0.00			
<b>10/30</b>	0.00	0.00	0.00			
<b>10/31</b>	0.00	0.00	0.00			
<b>11/1</b>	0.00	-0.03	-0.01			
<b>11/2</b>	0.00	-0.03	-0.01			
<b>11/3</b>	0.00	-0.03	-0.02			
<b>11/4</b>	0.00	-0.03	0.00			
<b>11/5</b>	0.00	0.00	0.00			
<b>11/6</b>	0.00	0.00	0.00			
<b>11/7</b>	0.00	0.00	0.00			
<b>11/8</b>	0.00	0.00	0.00			
<b>11/9</b>	0.00	0.00	0.00			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
George River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>11/10</b>	0.00	0.00	0.00			
<b>11/11</b>	0.00	0.00	0.00			
<b>11/12</b>	0.00	0.00	0.00			
<b>11/13</b>	0.00	0.00	0.00			
<b>11/14</b>	0.00	0.00	0.00			
<b>11/15</b>	0.00	0.00	0.00			
<b>11/16</b>	0.00	0.00	0.00			
<b>11/17</b>	0.00	0.00	0.00			
<b>11/18</b>	0.00	0.00	0.00			
<b>11/19</b>	0.00	0.00	0.00			
<b>11/20</b>	0.00	0.00	0.00			
<b>11/21</b>	0.00	0.00	0.00			
<b>11/22</b>	0.00	0.00	0.00			
<b>11/23</b>	0.00	0.00	0.00			
<b>11/24</b>	0.00	0.00	0.00			
<b>11/25</b>	0.00	0.00	0.00			
<b>11/26</b>	0.00	0.00	0.00			
<b>11/27</b>	0.00	0.00	0.00			
<b>11/28</b>	0.00	0.00	0.00			
<b>11/29</b>	0.00	0.00	0.00			
<b>11/30</b>	0.00	0.00	0.00			
<b>12/1</b>	0.00	0.00	0.00			
<b>12/2</b>	0.00	0.00	0.00			
<b>12/3</b>	0.00	0.00	0.00			
<b>12/4</b>	0.00	0.00	0.00			
<b>12/5</b>	0.00	0.00	0.00			
<b>12/6</b>	0.00	0.00	0.00			
<b>12/7</b>	0.02	0.00	0.00			
<b>12/8</b>	0.00	0.00	0.00			
<b>12/9</b>	0.00	0.00	0.00			
<b>12/10</b>	0.00	0.00	0.00			
<b>12/11</b>	0.00	0.00	0.00			
<b>12/12</b>	0.00	0.00	0.00			
<b>12/13</b>	0.02	0.00	0.00			
<b>12/14</b>	0.02	0.00	0.00			
<b>12/15</b>	0.02	0.00	0.00			
<b>12/16</b>	0.02	0.00	0.00			
<b>12/17</b>	0.02	0.00	0.00			
<b>12/18</b>	0.02	0.00	0.00			
<b>12/19</b>	0.02	0.00	0.00			
<b>12/20</b>	0.02	0.00	0.00			
<b>12/21</b>	0.02	0.00	0.00			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
George River**

**February 20, 2011**

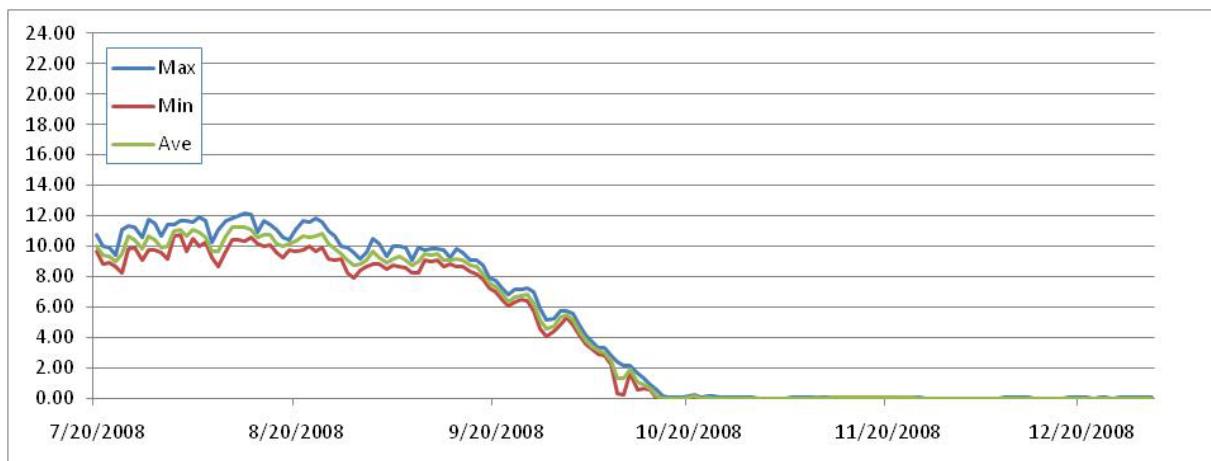
Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
12/22	0.02	0.00	0.00			
12/23	0.02	0.00	0.00			
12/24	0.02	0.00	0.01			
12/25	0.02	0.00	0.01			
12/26	0.02	0.00	0.01			
12/27	0.02	0.00	0.01			
12/28	0.02	0.00	0.01			
12/30	0.02	0.00	0.00			
12/31	0.02	0.00	0.00			

Aniak River

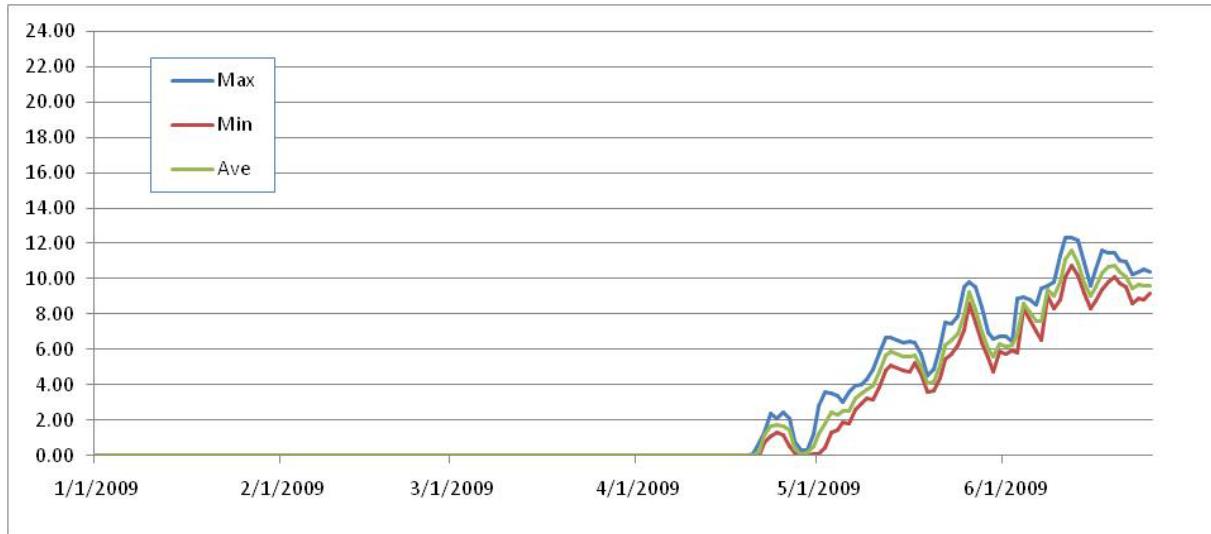
<b>Stream Name</b>	Aniak River	
<b>Principal Investigator</b>	Malcom McEwen, ADFG	
<b>Drainage Name</b>	Aniak River	
<b>Latitude:</b>	61.5027	
<b>Longitude:</b>	159.3742	
<b>Start:</b>	7/20/2008	1/1/2009
<b>End:</b>	12/31/2008	6/25/2009
<b>Season Maximum:</b>	12.17	12.34
<b>Max Range</b>	1.59	1.99
<b>Days Max &gt;13C</b>	0	0
<b>Day Max&gt;15C</b>	0	0
<b>Days Max&gt;20C</b>	0	0
<b>June Degree Days</b>	Not Available	232*
<b>July Degree Days</b>	Not Available	Not Available
<b>August Degree Days</b>	320.70	Not Available
<b>Sept Degree Days</b>	237.51	Not Available
<b>Regression Local Air</b>		
<b>Slope</b>	0.55	0.59
<b>Y Intercept</b>	4.26	1.57
<b>R Squared</b>	0.83	0.54
<b>Regression McGrath Air</b>		
<b>Slope</b>	0.40	0.43
<b>Y Intercept</b>	5.03	3.91
<b>R Squared</b>	0.78	0.45

\* Partial Month

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Aniak River**



**Figure 21.** Daily 2008 water temperature (C) for the Aniak River.



**Figure 22.** Daily 2009 water temperature for the Aniak River.

**Table 18.** Daily Aniak River water temperature (C) statistics.

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/1				0.00	0.00	0.00
1/2				0.00	0.00	0.00
1/3				0.00	0.00	0.00
1/4				0.02	0.00	0.00
1/5				0.02	0.00	0.00
1/6				0.02	0.00	0.00
1/7				0.02	0.00	0.00
1/8				0.02	0.00	0.01
1/9				0.02	0.00	0.02
1/10				0.02	0.00	0.02

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Aniak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/11				0.02	0.02	0.02
1/12				0.02	0.02	0.02
1/13				0.02	0.02	0.02
1/14				0.02	0.00	0.01
1/15				0.00	0.00	0.00
1/16				0.00	0.00	0.00
1/17				0.00	0.00	0.00
1/18				0.00	0.00	0.00
1/19				0.00	0.00	0.00
1/20				0.00	0.00	0.00
1/21				0.00	0.00	0.00
1/22				0.00	0.00	0.00
1/23				0.02	0.00	0.00
1/24				0.00	0.00	0.00
1/25				0.00	0.00	0.00
1/26				0.00	0.00	0.00
1/27				0.00	0.00	0.00
1/28				0.00	0.00	0.00
1/29				0.02	0.00	0.00
1/30				0.02	0.00	0.00
1/31				0.02	0.00	0.00
2/1				0.00	0.00	0.00
2/2				0.00	0.00	0.00
2/3				0.02	0.00	0.00
2/4				0.02	0.00	0.00
2/5				0.00	0.00	0.00
2/6				0.00	0.00	0.00
2/7				0.00	0.00	0.00
2/8				0.00	0.00	0.00
2/9				0.00	0.00	0.00
2/10				0.00	0.00	0.00
2/11				0.00	0.00	0.00
2/12				0.00	0.00	0.00
2/13				0.00	0.00	0.00
2/14				0.00	0.00	0.00
2/15				0.00	0.00	0.00
2/16				0.00	0.00	0.00
2/17				0.00	0.00	0.00
2/18				0.02	0.00	0.00
2/19				0.00	0.00	0.00
2/20				0.00	0.00	0.00

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Aniak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
2/21				0.00	0.00	0.00
2/22				0.00	0.00	0.00
2/23				0.02	0.00	0.00
2/24				0.00	0.00	0.00
2/25				0.00	0.00	0.00
2/26				0.00	0.00	0.00
2/27				0.02	0.00	0.00
2/28				0.00	0.00	0.00
3/1				0.00	0.00	0.00
3/2				0.02	0.00	0.00
3/3				0.00	0.00	0.00
3/4				0.00	0.00	0.00
3/5				0.00	0.00	0.00
3/6				0.00	0.00	0.00
3/7				0.00	0.00	0.00
3/8				0.00	0.00	0.00
3/9				0.00	0.00	0.00
3/10				0.00	0.00	0.00
3/11				0.00	0.00	0.00
3/12				0.00	0.00	0.00
3/13				0.00	0.00	0.00
3/14				0.02	0.00	0.00
3/15				0.02	0.00	0.00
3/16				0.02	0.00	0.01
3/17				0.02	0.00	0.01
3/18				0.02	0.00	0.00
3/19				0.02	0.00	0.01
3/20				0.02	0.00	0.01
3/21				0.02	0.00	0.02
3/22				0.02	0.00	0.02
3/23				0.02	0.00	0.02
3/24				0.02	0.02	0.02
3/25				0.02	0.02	0.02
3/26				0.02	0.02	0.02
3/27				0.02	0.02	0.02
3/28				0.02	0.02	0.02
3/29				0.02	0.00	0.02
3/30				0.02	0.00	0.02
3/31				0.02	0.00	0.02
4/1				0.02	0.00	0.02
4/2				0.02	0.00	0.00

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Aniak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
4/3				0.02	0.00	0.01
4/4				0.02	0.00	0.01
4/5				0.02	0.00	0.01
4/6				0.02	0.00	0.00
4/7				0.00	0.00	0.00
4/8				0.00	0.00	0.00
4/9				0.02	0.00	0.00
4/10				0.02	0.00	0.00
4/11				0.02	0.00	0.00
4/12				0.02	0.00	0.00
4/13				0.02	0.00	0.01
4/14				0.02	0.00	0.01
4/15				0.02	0.00	0.01
4/16				0.05	0.00	0.01
4/17				0.05	0.00	0.02
4/18				0.05	0.00	0.02
4/19				0.05	0.00	0.02
4/20				0.11	0.00	0.05
4/21				0.72	0.05	0.23
4/22				1.29	0.74	1.14
4/23				2.40	1.13	1.66
4/24				2.10	1.34	1.73
4/25				2.45	1.18	1.67
4/26				2.13	0.52	1.49
4/27				0.80	0.19	0.40
4/28				0.30	0.02	0.13
4/29				0.33	0.02	0.15
4/30				1.24	0.08	0.51
5/1				2.85	0.11	1.21
5/2				3.62	0.47	1.85
5/3				3.54	1.29	2.45
5/4				3.35	1.43	2.34
5/5				3.06	1.89	2.51
5/6				3.59	1.81	2.56
5/7				3.93	2.64	3.21
5/8				4.04	2.93	3.50
5/9				4.32	3.25	3.76
5/10				4.90	3.14	3.96
5/11				5.85	3.88	4.75
5/12				6.71	4.79	5.69
5/13				6.71	5.10	5.93

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Aniak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
5/14				6.56	4.95	5.77
5/15				6.41	4.79	5.61
5/16				6.46	4.77	5.62
5/17				6.38	5.28	5.69
5/18				5.72	4.58	5.00
5/19				4.56	3.59	4.12
5/20				4.90	3.67	4.20
5/21				6.18	4.38	5.14
5/22				7.54	5.46	6.23
5/23				7.44	5.75	6.53
5/24				7.87	6.26	6.92
5/25				9.53	7.09	7.96
5/26				9.81	8.62	9.23
5/27				9.53	7.52	8.27
5/28				8.37	6.41	7.06
5/29				6.97	5.57	6.06
5/30				6.61	4.74	5.61
5/31				6.79	5.92	6.32
6/1				6.79	5.77	6.17
6/2				6.48	6.00	6.25
6/3				8.89	5.80	6.90
6/4				8.94	8.30	8.61
6/5				8.82	7.70	8.11
6/6				8.54	7.07	7.63
6/7				9.46	6.54	7.59
6/8				9.58	9.06	9.39
6/9				9.85	8.34	9.07
6/10				11.32	8.84	9.84
6/11				12.32	10.10	11.10
6/12				12.34	10.79	11.65
6/13				12.20	10.22	10.88
6/14				10.88	9.19	9.76
6/15				9.63	8.34	9.02
6/16				10.52	8.77	9.57
6/17				11.59	9.44	10.32
6/18				11.49	9.85	10.68
6/19				11.49	10.12	10.79
6/20				11.05	9.73	10.38
6/21				10.98	9.53	10.11
6/22				10.30	8.62	9.45
6/23				10.39	8.89	9.69

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Aniak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
6/24				10.54	8.82	9.60
6/25				10.39	9.16	9.63
6/26						
6/27						
6/28						
6/29						
6/30						
7/1						
7/2						
7/3						
7/4						
7/5						
7/6						
7/7						
7/8						
7/9						
7/10						
7/11						
7/12						
7/13						
7/14						
7/15						
7/16						
7/17						
7/18						
7/19						
7/20	10.74	9.63	10.03			
7/21	10.03	8.82	9.37			
7/22	9.90	8.89	9.34			
7/23	9.41	8.64	8.99			
7/24	11.08	8.27	9.49			
7/25	11.35	9.81	10.65			
7/26	11.25	9.88	10.40			
7/27	10.61	9.06	9.83			
7/28	11.76	9.78	10.64			
7/29	11.52	9.78	10.45			
7/30	10.69	9.56	9.94			
7/31	11.39	9.16	10.02			
8/1	11.42	10.69	11.02			
8/2	11.66	10.74	11.11			
8/3	11.66	9.66	10.69			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Aniak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
8/4	11.57	10.52	11.10			
8/5	11.88	9.98	10.93			
8/6	11.64	10.22	10.58			
8/7	10.22	9.26	9.62			
8/8	11.08	8.64	9.63			
8/9	11.64	9.66	10.69			
8/10	11.81	10.37	11.23			
8/11	12.03	10.42	11.23			
8/12	12.17	10.35	11.25			
8/13	12.07	10.59	11.09			
8/14	10.91	10.15	10.60			
8/15	11.64	10.00	10.74			
8/16	11.37	10.05	10.76			
8/17	11.05	9.53	10.13			
8/18	10.61	9.21	9.98			
8/19	10.44	9.78	10.16			
8/20	11.10	9.63	10.33			
8/21	11.66	9.71	10.65			
8/22	11.54	9.98	10.58			
8/23	11.81	9.63	10.66			
8/24	11.57	9.88	10.80			
8/25	10.98	9.14	10.19			
8/26	10.69	9.04	9.85			
8/27	9.95	9.16	9.45			
8/28	9.93	8.22	9.06			
8/29	9.53	7.90	8.70			
8/30	9.14	8.37	8.79			
8/31	9.58	8.67	9.08			
9/1	10.49	8.79	9.63			
9/2	10.20	8.84	9.23			
9/3	9.29	8.47	8.89			
9/4	10.00	8.77	9.20			
9/5	9.98	8.62	9.36			
9/6	9.93	8.59	9.08			
9/7	9.09	8.27	8.71			
9/8	9.88	8.27	8.95			
9/9	9.73	9.09	9.47			
9/10	9.85	8.97	9.41			
9/11	9.81	9.09	9.50			
9/12	9.71	8.67	9.08			
9/13	9.21	8.84	9.04			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Aniak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
9/14	9.81	8.62	9.12			
9/15	9.53	8.64	9.08			
9/16	9.09	8.34	8.72			
9/17	9.04	8.15	8.62			
9/18	8.74	7.80	8.17			
9/19	7.90	7.27	7.59			
9/20	7.70	7.02	7.28			
9/21	7.22	6.51	6.86			
9/22	6.84	6.05	6.34			
9/23	7.17	6.33	6.65			
9/24	7.12	6.51	6.77			
9/25	7.22	6.43	6.80			
9/26	7.02	5.69	6.22			
9/27	5.92	4.58	5.14			
9/28	5.13	4.09	4.55			
9/29	5.26	4.38	4.75			
9/30	5.75	4.84	5.28			
10/1	5.72	5.33	5.52			
10/2	5.54	4.84	5.16			
10/3	4.82	4.17	4.36			
10/4	4.17	3.54	3.81			
10/5	3.75	3.22	3.43			
10/6	3.30	2.90	3.14			
10/7	3.27	2.77	2.96			
10/8	2.82	2.24	2.49			
10/9	2.37	0.27	1.32			
10/10	2.10	0.22	1.27			
10/11	2.10	1.62	1.86			
10/12	1.62	0.52	1.02			
10/13	1.29	0.66	0.88			
10/14	0.88	0.52	0.67			
10/15	0.58	-0.06	0.10			
10/16	0.11	-0.03	0.00			
10/17	0.08	-0.03	-0.01			
10/18	0.05	-0.03	0.00			
10/19	0.08	-0.03	0.00			
10/20	0.11	-0.03	0.02			
10/21	0.25	0.02	0.11			
10/22	0.02	-0.03	-0.01			
10/23	0.14	0.00	0.06			
10/24	0.11	-0.03	0.00			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Aniak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>10/25</b>	0.05	-0.03	0.01			
<b>10/26</b>	0.05	0.00	0.01			
<b>10/27</b>	0.08	0.00	0.00			
<b>10/28</b>	0.02	0.00	0.00			
<b>10/29</b>	0.02	0.00	0.00			
<b>10/30</b>	0.02	0.00	0.00			
<b>10/31</b>	0.00	0.00	0.00			
<b>11/1</b>	0.00	0.00	0.00			
<b>11/2</b>	0.00	0.00	0.00			
<b>11/3</b>	0.00	0.00	0.00			
<b>11/4</b>	0.00	0.00	0.00			
<b>11/5</b>	0.02	0.00	0.00			
<b>11/6</b>	0.02	0.00	0.00			
<b>11/7</b>	0.02	0.00	0.00			
<b>11/8</b>	0.02	0.00	0.01			
<b>11/9</b>	0.02	0.00	0.01			
<b>11/10</b>	0.02	0.00	0.01			
<b>11/11</b>	0.02	0.00	0.02			
<b>11/12</b>	0.02	0.02	0.02			
<b>11/13</b>	0.02	0.02	0.02			
<b>11/14</b>	0.02	0.02	0.02			
<b>11/15</b>	0.02	0.02	0.02			
<b>11/16</b>	0.02	0.02	0.02			
<b>11/17</b>	0.02	0.02	0.02			
<b>11/18</b>	0.02	0.00	0.02			
<b>11/19</b>	0.02	0.00	0.01			
<b>11/20</b>	0.02	0.00	0.02			
<b>11/21</b>	0.02	0.00	0.02			
<b>11/22</b>	0.02	0.02	0.02			
<b>11/23</b>	0.02	0.00	0.02			
<b>11/24</b>	0.02	0.00	0.01			
<b>11/25</b>	0.02	0.00	0.00			
<b>11/26</b>	0.00	0.00	0.00			
<b>11/27</b>	0.00	0.00	0.00			
<b>11/28</b>	0.00	0.00	0.00			
<b>11/29</b>	0.00	0.00	0.00			
<b>11/30</b>	0.00	0.00	0.00			
<b>12/1</b>	0.00	0.00	0.00			
<b>12/2</b>	0.00	0.00	0.00			
<b>12/3</b>	0.00	0.00	0.00			
<b>12/5</b>	0.00	0.00	0.00			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Aniak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
12/6	0.00	0.00	0.00			
12/7	0.00	0.00	0.00			
12/8	0.02	0.00	0.00			
12/9	0.02	0.00	0.00			
12/10	0.02	0.00	0.00			
12/11	0.02	0.00	0.00			
12/12	0.02	0.00	0.00			
12/13	0.00	0.00	0.00			
12/15	0.00	0.00	0.00			
12/16	0.00	0.00	0.00			
12/17	0.00	0.00	0.00			
12/18	0.02	0.00	0.00			
12/19	0.02	0.00	0.00			
12/20	0.02	0.00	0.00			
12/21	0.02	0.00	0.00			
12/22	0.00	0.00	0.00			
12/23	0.02	0.00	0.00			
12/24	0.02	0.00	0.00			
12/25	0.00	0.00	0.00			
12/26	0.02	0.00	0.00			
12/27	0.02	0.00	0.00			
12/28	0.02	0.00	0.00			
12/29	0.02	0.00	0.00			
12/30	0.02	0.00	0.00			
12/31	0.02	0.00	0.00			

### Kwethluk River

<b>Stream Name</b>	<b>Kwethluk River</b>	
<b>Principal Investigator</b>	Steve Miller, USFWS	
<b>Drainage Name</b>	Kuskokwim	
<b>Latitude:</b>	60.4952	
<b>Longitude:</b>	161.0991	
<b>Start:</b>	8/8/2008	6/29/2009
<b>End:</b>	9/10/2008	9/16/2009
<b>Season Maximum:</b>	14.34	18.11
<b>Max Range</b>	2.59	3.52
<b>Days Max &gt;13C</b>	6	33
<b>Day Max&gt;15C</b>	0	11
<b>Days Max&gt;20C</b>	0	0
<b>June Degree Days</b>	Not Available	Not Available
<b>July Degree Days</b>	Not Available	391
<b>August Degree Days</b>	Not Available	346
<b>Sept Degree Days</b>	Not Available	Not Available
<b>Regression Local Air</b>	Not Available	Not Available
<b>Slope</b>		
<b>Y Intercept</b>		
<b>R squared</b>		
<b>Regression Bethel Air</b>	Not Available	
<b>Slope</b>		0.47
<b>Y Intercept</b>		5.77
<b>R squared</b>		0.56

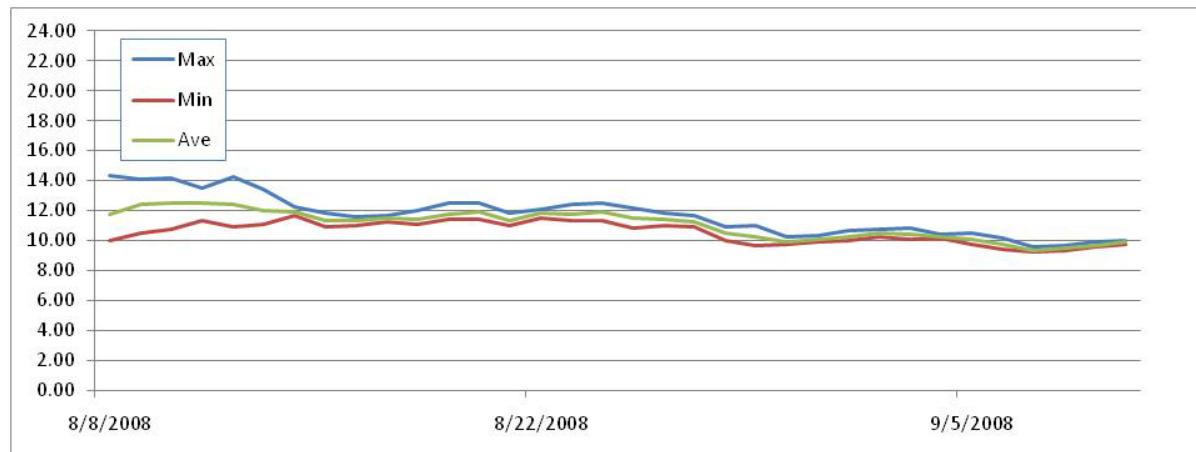
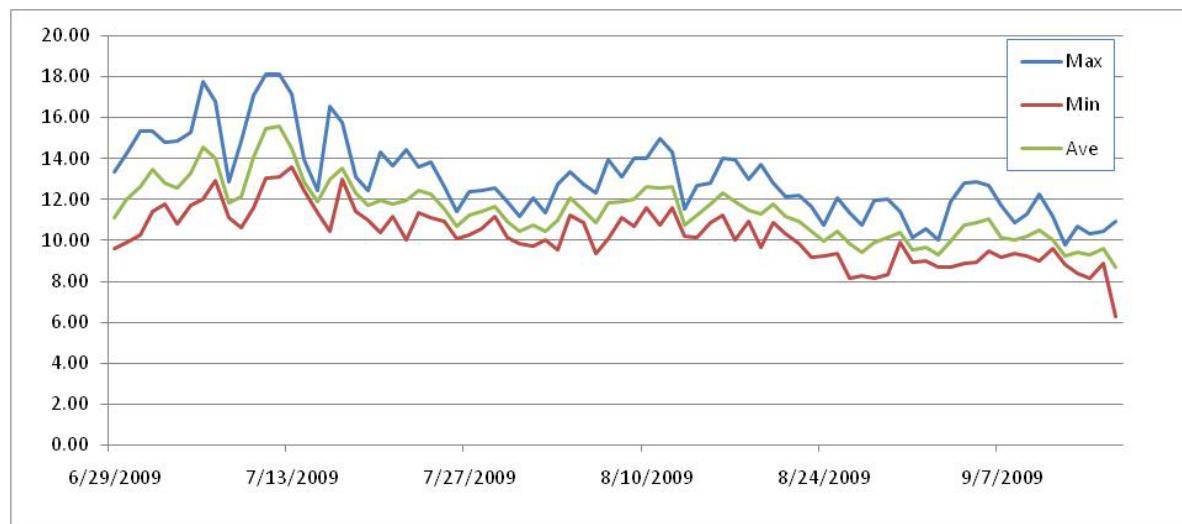


Figure 23. Daily 2008 water temperature (C) values for the Kwethluk River.

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Kwethluk River**



**Figure 24.** Daily 2009 water temperatures for the Kwethluk River.

**Table 19.** Daily Kwethluk River water temperature (C) statistics.

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
6/29				13.33	9.63	11.14
6/30				14.24	9.93	12.03
7/1				15.29	10.27	12.62
7/2				15.29	11.44	13.49
7/3				14.79	11.81	12.84
7/4				14.86	10.83	12.58
7/5				15.25	11.73	13.31
7/6				17.75	12.05	14.61
7/7				16.75	12.97	14.03
7/8				12.87	11.15	11.84
7/9				14.84	10.66	12.18
7/10				17.08	11.59	14.09
7/11				18.08	13.06	15.47
7/12				18.11	13.14	15.61
7/13				17.15	13.62	14.53
7/14				13.91	12.49	12.89
7/15				12.44	11.37	11.93
7/16				16.53	10.44	13.01
7/17				15.77	12.99	13.58
7/18				13.09	11.44	12.33
7/19				12.41	11.01	11.71
7/20				14.29	10.37	11.99
7/21				13.64	11.18	11.80
7/22				14.43	10.03	11.97

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kwethluk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
7/23				13.59	11.35	12.49
7/24				13.83	11.13	12.29
7/25				12.58	10.96	11.54
7/26				11.37	10.10	10.69
7/27				12.34	10.30	11.27
7/28				12.39	10.57	11.43
7/29				12.51	11.18	11.71
7/30				11.88	10.17	10.93
7/31				11.18	9.83	10.45
8/1				12.03	9.73	10.76
8/2				11.35	10.00	10.47
8/3				12.70	9.56	10.99
8/4				13.31	11.22	12.09
8/5				12.73	10.86	11.50
8/6				12.29	9.36	10.88
8/7				13.91	10.08	11.86
8/8	14.34	9.95	11.75	13.11	11.15	11.90
8/9	14.12	10.49	12.38	13.98	10.71	12.06
8/10	14.17	10.71	12.48	14.00	11.59	12.66
8/11	13.47	11.32	12.48	14.96	10.76	12.61
8/12	14.29	10.91	12.42	14.31	11.59	12.64
8/13	13.38	11.05	11.96	11.49	10.22	10.79
8/14	12.22	11.66	11.89	12.63	10.17	11.24
8/15	11.81	10.93	11.33	12.78	10.91	11.80
8/16	11.57	11.03	11.32	14.00	11.25	12.37
8/17	11.69	11.25	11.47	13.91	10.03	11.95
8/18	12.00	11.10	11.45	12.94	10.96	11.48
8/19	12.51	11.39	11.78	13.67	9.68	11.34
8/20	12.53	11.44	11.90	12.75	10.88	11.81
8/21	11.86	10.96	11.36	12.10	10.32	11.22
8/22	12.05	11.49	11.80	12.15	9.83	10.98
8/23	12.39	11.35	11.76	11.61	9.19	10.46
8/24	12.51	11.32	11.92	10.71	9.24	9.96
8/25	12.15	10.86	11.51	12.03	9.34	10.46
8/26	11.86	11.01	11.42	11.35	8.15	9.86
8/27	11.64	10.91	11.23	10.74	8.25	9.46
8/28	10.91	10.00	10.47	11.95	8.15	9.95
8/29	10.96	9.68	10.20	12.00	8.30	10.19
8/30	10.25	9.76	9.94	11.37	9.90	10.41
8/31	10.35	9.88	10.11	10.12	8.92	9.54
9/1	10.64	10.00	10.25	10.57	8.97	9.67

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kwethluk River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
9/2	10.71	10.25	10.48	9.98	8.67	9.35
9/3	10.86	10.08	10.40	11.86	8.69	9.98
9/4	10.42	10.12	10.27	12.80	8.89	10.80
9/5	10.47	9.71	10.07	12.85	8.94	10.91
9/6	10.12	9.44	9.75	12.63	9.46	11.07
9/7	9.53	9.21	9.36	11.69	9.19	10.16
9/8	9.63	9.34	9.49	10.83	9.39	10.08
9/9	9.88	9.53	9.66	11.25	9.24	10.25
9/10	10.00	9.78	9.89	12.22	8.99	10.54
9/11				11.15	9.63	10.08
9/12				9.76	8.82	9.29
9/13				10.64	8.39	9.46
9/14				10.27	8.17	9.32
9/15				10.42	8.87	9.60
9/16				10.91	6.26	8.72

**Newhalen River**

<b>Stream Name</b>	<b>Newhalen River</b>	
Principal Investigator	Dan Young, NPS	
Drainage Name	Newhalen River	
Latitude:	59.91904	
Longitude:	154.8859	
Start:	7/14/2008	1/1/2009
End:	12/31/2008	8/6/2009
Season Maximum:	14.36	12.80
Max Range	1.82	2.09
Days Max >13C	9	0
Day Max>15C	0	0
Days Max>20C	0	0
June Degree Days	Not Available	207
July Degree Days	Not Available	291
August Degree Days	365	Not Available
Sept Degree Days	312	Not Available
Regression Local Air		
Slope	0.13	0.32
Y Intercept	9.43	0.37
R Squared	0.09	0.28
Regression Iliamna Air		
Slope	0.16	0.48
Y Intercept	8.93	2.55
R Squared	0.12	0.36

**Table 20.** Cross-section water temperatures at monitoring location.

<b>Measurement</b>	1	2	3	4	5	6	7	8	9	10
<b>Water Temperature (C)</b>	12.4	12.3	12.2	12.0	11.9	11.9	11.8	11.8	11.9	12.2



Photograph 2. Nehalen River downstream from sampling location.

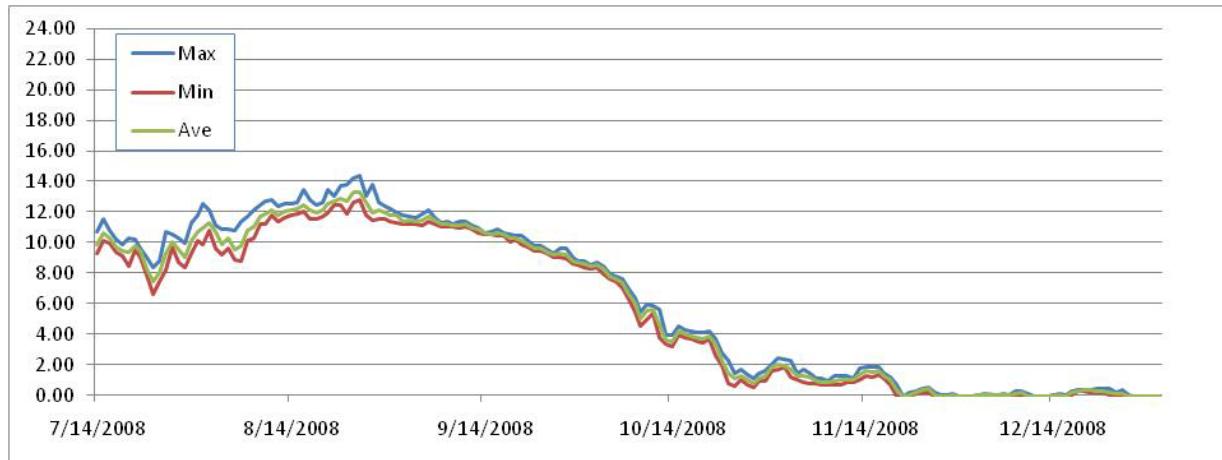
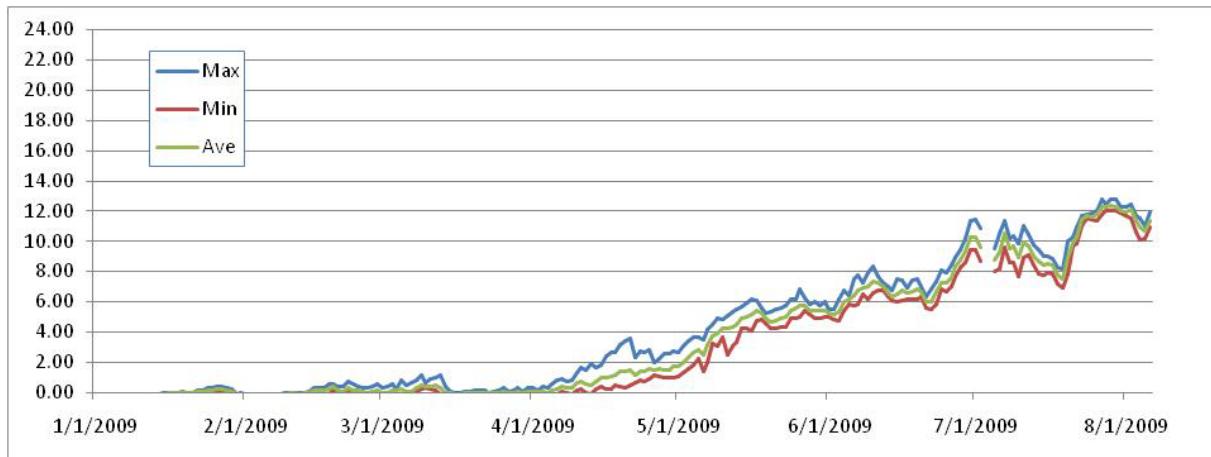


Figure 25. Daily 2008 water temperature (C) for the Newhalen River.

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Newhalen River**



**Figure 26.** Daily 2009 water temperature for the Newhalen River.

**Table 21.** Daily Newhalen River water temperature (C) statistics.

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/1				-0.06	-0.09	-0.06
1/2				-0.06	-0.09	-0.07
1/3				-0.06	-0.09	-0.07
1/4				-0.06	-0.09	-0.08
1/5				-0.06	-0.09	-0.08
1/6				-0.06	-0.09	-0.07
1/7				-0.06	-0.09	-0.08
1/8				-0.06	-0.09	-0.08
1/9				-0.06	-0.09	-0.08
1/10				-0.06	-0.09	-0.08
1/11				-0.06	-0.09	-0.08
1/12				-0.09	-0.09	-0.09
1/13				-0.09	-0.09	-0.09
1/14				-0.06	-0.09	-0.08
1/15				-0.03	-0.09	-0.07
1/16				0.02	-0.06	-0.04
1/17				0.00	-0.06	-0.03
1/18				0.00	-0.06	-0.04
1/19				0.05	-0.03	0.00
1/20				0.02	-0.06	-0.03
1/21				0.02	-0.06	-0.02
1/22				0.14	0.00	0.07
1/23				0.16	0.08	0.10
1/24				0.33	0.11	0.17
1/25				0.30	0.11	0.19

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Newhalen River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/26				0.38	0.16	0.25
1/27				0.38	0.14	0.25
1/28				0.30	0.11	0.17
1/29				0.22	-0.09	0.10
1/30				-0.06	-0.12	-0.08
1/31				-0.03	-0.09	-0.08
2/1				-0.06	-0.09	-0.09
2/2				-0.09	-0.09	-0.09
2/3				-0.06	-0.09	-0.08
2/4				-0.09	-0.09	-0.09
2/5				-0.09	-0.09	-0.09
2/6				-0.06	-0.09	-0.09
2/7				-0.06	-0.09	-0.08
2/8				-0.06	-0.09	-0.08
2/9				-0.03	-0.09	-0.06
2/10				-0.03	-0.06	-0.05
2/11				-0.03	-0.09	-0.05
2/12				-0.03	-0.09	-0.06
2/13				0.00	-0.06	-0.03
2/14				0.05	-0.03	-0.01
2/15				0.30	0.00	0.13
2/16				0.33	0.11	0.18
2/17				0.36	-0.06	0.13
2/18				0.58	-0.09	0.20
2/19				0.58	0.25	0.39
2/20				0.38	-0.06	0.14
2/21				0.44	-0.17	0.08
2/22				0.74	0.14	0.33
2/23				0.61	0.00	0.19
2/24				0.41	-0.09	0.12
2/25				0.36	-0.09	0.11
2/26				0.33	-0.12	0.03
2/27				0.41	-0.09	0.05
2/28				0.58	-0.06	0.19
3/1				0.33	-0.12	-0.02
3/2				0.38	-0.09	0.02
3/3				0.61	-0.09	0.13
3/4				0.27	-0.06	0.12
3/5				0.85	-0.12	0.23
3/6				0.52	-0.12	0.03
3/7				0.69	-0.12	0.11

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Newhalen River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
3/8				0.80	0.05	0.32
3/9				1.13	0.27	0.50
3/10				0.69	0.33	0.44
3/11				0.88	0.22	0.41
3/12				0.99	0.16	0.47
3/13				1.18	-0.06	0.30
3/14				0.41	-0.14	-0.01
3/15				0.11	-0.12	-0.05
3/16				0.00	-0.09	-0.07
3/17				0.00	-0.09	-0.07
3/18				0.08	-0.09	-0.04
3/19				0.11	-0.09	-0.03
3/20				0.14	-0.09	-0.03
3/21				0.14	-0.09	-0.02
3/22				0.14	-0.09	-0.02
3/23				0.02	-0.06	-0.04
3/24				0.05	-0.09	-0.03
3/25				0.14	-0.06	-0.01
3/26				0.30	-0.06	0.05
3/27				0.08	-0.06	-0.02
3/28				0.14	-0.06	0.00
3/29				0.30	-0.03	0.08
3/30				0.11	-0.06	-0.02
3/31				0.33	-0.09	0.05
4/1				0.30	-0.06	0.07
4/2				0.19	-0.03	0.04
4/3				0.38	-0.06	0.10
4/4				0.36	-0.09	0.02
4/5				0.61	-0.09	0.13
4/6				0.80	-0.09	0.24
4/7				0.93	0.11	0.38
4/8				0.77	0.00	0.32
4/9				0.80	-0.06	0.31
4/10				1.32	0.16	0.63
4/11				1.67	0.25	0.72
4/12				1.45	-0.03	0.57
4/13				1.89	-0.12	0.52
4/14				1.70	0.22	0.76
4/15				1.86	0.44	0.95
4/16				2.37	0.25	1.00
4/17				2.69	0.22	1.03

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Newhalen River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
4/18				2.69	0.52	1.18
4/19				3.20	0.44	1.39
4/20				3.41	0.33	1.37
4/21				3.56	0.47	1.47
4/22				2.29	0.63	1.20
4/23				2.74	0.85	1.43
4/24				2.69	0.77	1.42
4/25				2.82	0.91	1.57
4/26				1.99	1.18	1.48
4/27				2.26	1.07	1.54
4/28				2.61	0.96	1.48
4/29				2.56	0.99	1.52
4/30				2.72	0.99	1.75
5/1				2.69	1.04	1.72
5/2				3.09	1.29	2.01
5/3				3.38	1.62	2.34
5/4				3.67	1.83	2.63
5/5				3.70	2.21	2.84
5/6				3.49	1.37	2.46
5/7				4.19	1.99	3.14
5/8				4.51	3.25	3.72
5/9				4.95	3.12	3.90
5/10				4.84	3.64	4.22
5/11				5.05	2.48	4.23
5/12				5.31	3.06	4.32
5/13				5.46	3.35	4.46
5/14				5.69	4.25	4.88
5/15				5.90	4.22	5.02
5/16				6.13	4.12	5.15
5/17				6.10	4.74	5.39
5/18				5.57	4.84	5.22
5/19				5.23	4.58	4.91
5/20				5.36	4.25	4.67
5/21				5.49	4.25	4.78
5/22				5.57	4.30	4.93
5/23				5.75	4.32	5.02
5/24				6.13	4.90	5.40
5/25				6.15	4.95	5.55
5/26				6.84	5.00	5.72
5/27				6.28	5.41	5.75
5/28				5.80	5.18	5.40

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Newhalen River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
5/29				5.98	4.95	5.41
5/30				5.75	4.92	5.38
5/31				6.03	5.00	5.41
6/1				5.49	5.02	5.24
6/2				5.54	4.84	5.17
6/3				6.18	4.77	5.35
6/4				6.79	5.39	5.97
6/5				6.46	5.82	6.19
6/6				7.54	5.77	6.46
6/7				7.72	5.82	6.72
6/8				7.24	6.48	6.94
6/9				7.95	6.20	7.00
6/10				8.34	6.56	7.35
6/11				7.67	6.79	7.24
6/12				7.29	6.71	6.98
6/13				6.99	6.36	6.59
6/14				6.71	6.08	6.35
6/15				7.47	5.98	6.49
6/16				7.39	6.10	6.73
6/17				6.94	6.13	6.58
6/18				7.39	6.18	6.67
6/19				7.52	6.13	6.86
6/20				7.04	6.36	6.65
6/21				6.31	5.59	6.00
6/22				6.84	5.46	6.04
6/23				7.32	5.85	6.65
6/24				8.12	6.81	7.29
6/25				7.92	6.66	7.25
6/26				8.42	6.97	7.56
6/27				8.92	7.67	8.37
6/28				9.44	8.22	8.76
6/29				10.20	8.59	9.31
6/30				11.32	9.46	10.25
7/1				11.47	9.39	10.26
7/2				10.83	8.64	9.59
7/3						
7/4						
7/5				9.53	8.00	8.78
7/6				10.52	8.17	9.30
7/7				11.32	9.58	10.47
7/8				10.15	8.62	9.55

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Newhalen River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
7/9				10.37	8.62	9.67
7/10				9.85	7.67	8.94
7/11				11.03	8.97	9.94
7/12				10.39	9.09	9.64
7/13				9.73	8.44	9.01
7/14	10.66	9.29	9.89	9.41	7.82	8.67
7/15	11.54	10.10	10.60	9.04	7.80	8.42
7/16	10.81	9.93	10.31	8.99	7.95	8.47
7/17	10.20	9.34	9.73	8.87	7.82	8.40
7/18	9.83	9.09	9.41	8.22	7.19	7.75
7/19	10.25	8.47	9.34	8.17	6.94	7.50
7/20	10.20	9.56	9.82	10.05	7.85	8.93
7/21	9.58	9.02	9.41	10.27	9.66	9.95
7/22	9.04	7.82	8.31	10.96	9.81	10.30
7/23	8.39	6.64	7.42	11.66	11.01	11.43
7/24	8.77	7.42	8.01	11.78	11.54	11.70
7/25	10.69	8.20	9.27	11.81	11.39	11.60
7/26	10.57	9.66	10.05	11.98	11.37	11.73
7/27	10.30	8.72	9.57	12.78	11.73	12.23
7/28	9.95	8.37	9.06	12.44	12.05	12.24
7/29	11.27	9.26	10.10	12.78	12.00	12.32
7/30	11.76	10.10	10.74	12.80	11.98	12.28
7/31	12.56	9.83	10.96	12.27	11.88	12.05
8/1	12.10	10.81	11.25	12.27	11.71	11.92
8/2	11.13	9.58	10.74	12.41	11.49	12.09
8/3	10.91	9.19	9.86	11.69	10.59	11.35
8/4	10.91	9.58	10.30	11.54	10.12	10.92
8/5	10.76	8.84	9.56	11.03	10.17	10.64
8/6	11.35	8.74	9.82	11.90	10.96	11.31
8/7	11.66	10.08	10.77			
8/8	12.12	10.30	11.03			
8/9	12.44	11.22	11.72			
8/10	12.70	11.18	11.85			
8/11	12.80	11.76	12.15			
8/12	12.39	11.37	11.75			
8/13	12.53	11.59	12.08			
8/14	12.56	11.81	12.13			
8/15	12.63	11.90	12.23			
8/16	13.45	12.07	12.44			
8/17	12.80	11.52	12.15			
8/18	12.46	11.54	11.91			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Newhalen River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
8/19	12.61	11.71	12.10			
8/20	13.43	11.98	12.56			
8/21	13.04	12.49	12.69			
8/22	13.71	12.41	12.83			
8/23	13.81	11.90	12.69			
8/24	14.22	12.61	13.29			
8/25	14.36	12.78	13.31			
8/26	13.04	11.81	12.60			
8/27	13.76	11.47	11.94			
8/28	12.61	11.54	12.08			
8/29	12.36	11.52	11.93			
8/30	12.24	11.37	11.79			
8/31	11.98	11.32	11.76			
9/1	11.76	11.22	11.41			
9/2	11.69	11.22	11.47			
9/3	11.64	11.22	11.35			
9/4	11.83	11.10	11.44			
9/5	12.10	11.39	11.67			
9/6	11.64	11.22	11.44			
9/7	11.32	11.01	11.17			
9/8	11.35	11.05	11.18			
9/9	11.22	11.01	11.13			
9/10	11.35	10.96	11.12			
9/11	11.39	11.05	11.20			
9/12	11.08	10.88	10.98			
9/13	10.98	10.64	10.83			
9/14	10.64	10.54	10.59			
9/15	10.69	10.49	10.57			
9/16	10.88	10.47	10.64			
9/17	10.64	10.47	10.56			
9/18	10.54	10.00	10.28			
9/19	10.47	10.20	10.32			
9/20	10.42	9.90	10.11			
9/21	10.10	9.66	9.84			
9/22	9.81	9.44	9.62			
9/23	9.76	9.49	9.60			
9/24	9.53	9.29	9.40			
9/25	9.29	9.04	9.18			
9/26	9.63	9.06	9.29			
9/27	9.61	8.92	9.22			
9/28	9.04	8.64	8.81			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Newhalen River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
9/29	8.79	8.49	8.69			
9/30	8.82	8.39	8.59			
10/1	8.54	8.30	8.41			
10/2	8.72	8.37	8.49			
10/3	8.42	7.97	8.26			
10/4	7.97	7.57	7.75			
10/5	7.80	7.42	7.58			
10/6	7.57	6.99	7.33			
10/7	6.97	6.26	6.61			
10/8	6.38	5.46	6.00			
10/9	5.44	4.56	5.06			
10/10	5.95	4.92	5.48			
10/11	5.87	5.33	5.65			
10/12	5.59	3.80	4.57			
10/13	3.93	3.38	3.60			
10/14	3.96	3.20	3.54			
10/15	4.53	3.93	4.17			
10/16	4.30	3.78	3.99			
10/17	4.19	3.70	3.88			
10/18	4.14	3.51	3.79			
10/19	4.09	3.41	3.67			
10/20	4.19	3.64	3.87			
10/21	3.72	2.64	3.32			
10/22	2.74	1.94	2.28			
10/23	2.26	0.74	1.41			
10/24	1.40	0.58	1.09			
10/25	1.64	0.99	1.29			
10/26	1.37	0.72	1.04			
10/27	1.10	0.52	0.79			
10/28	1.43	0.93	1.10			
10/29	1.59	0.91	1.23			
10/30	2.02	1.59	1.86			
10/31	2.45	1.70	2.00			
11/1	2.37	1.83	1.97			
11/2	2.26	1.18	1.70			
11/3	1.43	0.99	1.23			
11/4	1.70	0.85	1.26			
11/5	1.45	0.80	1.18			
11/6	1.13	0.77	0.90			
11/7	1.10	0.69	0.87			
11/8	0.96	0.72	0.85			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Newhalen River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>11/9</b>	1.24	0.66	0.95			
<b>11/10</b>	1.24	0.72	1.03			
<b>11/11</b>	1.24	0.88	1.04			
<b>11/12</b>	1.13	0.85	0.98			
<b>11/13</b>	1.72	1.04	1.34			
<b>11/14</b>	1.83	1.29	1.57			
<b>11/15</b>	1.83	1.18	1.49			
<b>11/16</b>	1.83	1.34	1.62			
<b>11/17</b>	1.40	1.07	1.24			
<b>11/18</b>	1.21	0.69	1.01			
<b>11/19</b>	0.72	-0.12	0.36			
<b>11/20</b>	-0.06	-0.12	-0.08			
<b>11/21</b>	0.14	-0.09	-0.02			
<b>11/22</b>	0.30	0.08	0.20			
<b>11/23</b>	0.44	0.19	0.30			
<b>11/24</b>	0.50	0.22	0.40			
<b>11/25</b>	0.19	-0.12	0.00			
<b>11/26</b>	-0.03	-0.09	-0.08			
<b>11/27</b>	0.00	-0.09	-0.05			
<b>11/28</b>	0.08	-0.06	0.02			
<b>11/29</b>	-0.06	-0.09	-0.08			
<b>11/30</b>	-0.09	-0.09	-0.09			
<b>12/1</b>	-0.06	-0.09	-0.08			
<b>12/2</b>	0.02	-0.06	-0.01			
<b>12/3</b>	0.11	0.02	0.04			
<b>12/5</b>	0.05	0.02	0.04			
<b>12/6</b>	0.08	0.02	0.04			
<b>12/7</b>	0.05	0.00	0.01			
<b>12/8</b>	0.25	0.00	0.13			
<b>12/9</b>	0.27	0.02	0.19			
<b>12/10</b>	0.08	-0.14	-0.04			
<b>12/11</b>	-0.06	-0.09	-0.08			
<b>12/12</b>	-0.06	-0.09	-0.08			
<b>12/13</b>	-0.06	-0.12	-0.08			
<b>12/15</b>	0.11	-0.03	0.03			
<b>12/16</b>	0.02	-0.09	-0.04			
<b>12/17</b>	0.30	0.02	0.18			
<b>12/18</b>	0.38	0.25	0.30			
<b>12/19</b>	0.36	0.27	0.32			
<b>12/20</b>	0.38	0.22	0.33			
<b>12/21</b>	0.44	0.16	0.26			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Newhalen River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
12/22	0.41	0.16	0.29			
12/23	0.41	0.02	0.21			
12/24	0.16	-0.03	0.08			
12/25	0.33	-0.09	0.11			
12/26	0.02	-0.09	-0.08			
12/27	-0.09	-0.09	-0.09			
12/28	-0.09	-0.09	-0.09			
12/29	-0.09	-0.09	-0.09			
12/30	-0.09	-0.09	-0.09			
12/31	-0.06	-0.09	-0.08			

### Long Lake Creek

<b>Stream Name</b>	<b>Long Lake Creek</b>	
<b>Principal Investigator</b>	Molly McCormick, NPS	
<b>Drainage Name</b>	Copper River	
<b>Latitude:</b>	62.6142	
<b>Longitude:</b>	143.7785	
<b>Start:</b>	8/20/2008	1/1/2009
<b>End:</b>	12/31/2008	9/26/2009
<b>Season Maximum:</b>	15.22	21.99
<b>Max Range</b>	1.04	3.72
<b>Days Max &gt;13C</b>	19	90
<b>Day Max&gt;15C</b>	3	71
<b>Days Max&gt;20C</b>	0	12
<b>June Degree Days</b>	Not Available	469
<b>July Degree Days</b>	Not Available	525
<b>August Degree Days</b>	Not Available	260
<b>Sept Degree Days</b>	309	308
<b>Regression Local Air</b>		
<b>Slope</b>	0.49	0.74
<b>Y Intercept</b>	7.90	5.51
<b>R Squared</b>	0.92	0.54
<b>Regression Iliamna Air</b>		
<b>Slope</b>	0.69	0.73
<b>Y Intercept</b>	5.18	6.06
<b>R Squared</b>	0.73	0.34

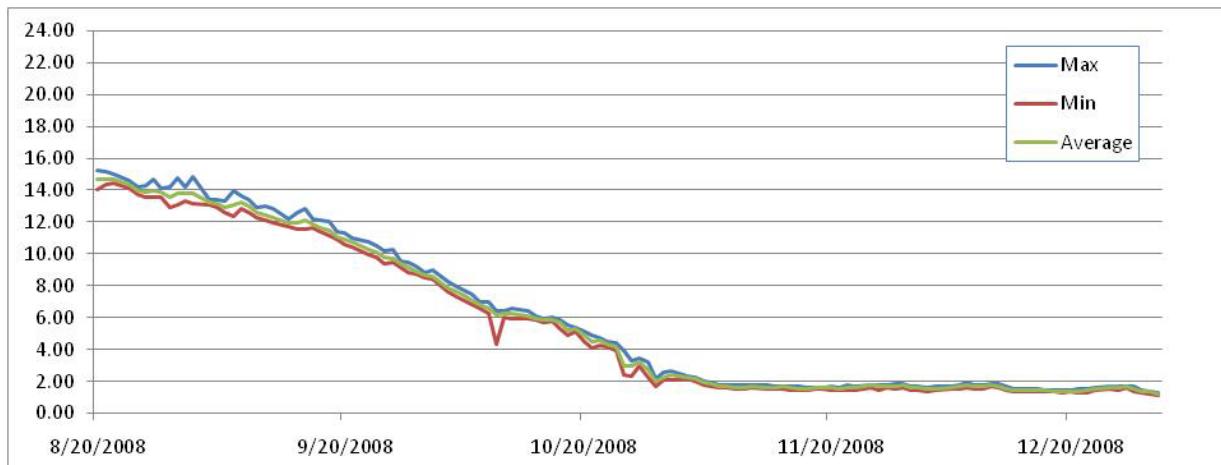
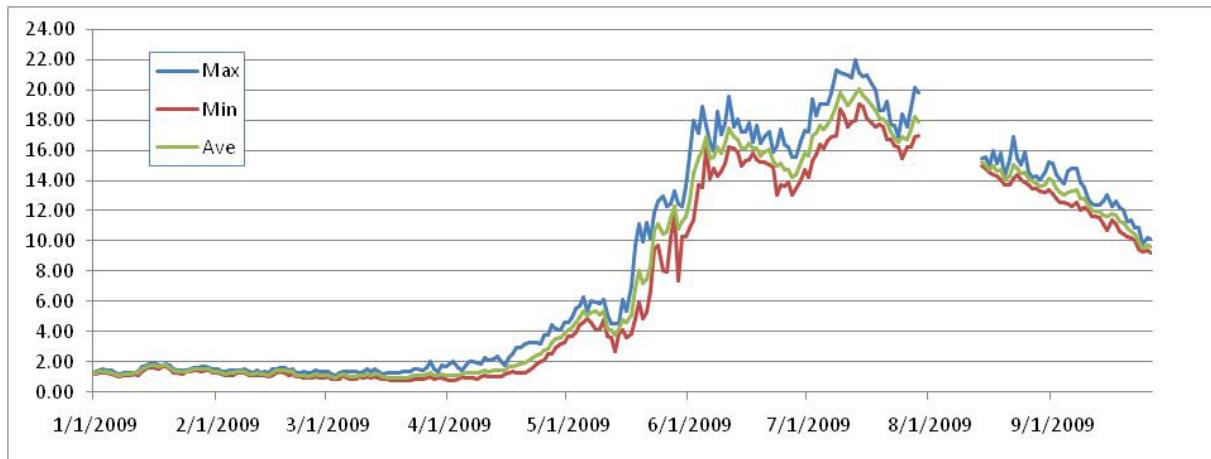


Figure 27. Daily 2008 water temperature (C) for Long Lake Creek.

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Long Lake Creek**



**Figure 28.** Daily 2009 water temperature for Long Lake Creek.

**Table 22.** Daily Long Lake Creek water temperature (C) statistics.

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/1				1.34	1.18	1.26
1/2				1.45	1.29	1.37
1/3				1.51	1.32	1.41
1/4				1.45	1.29	1.37
1/5				1.43	1.18	1.25
1/6				1.32	1.10	1.20
1/7				1.21	1.07	1.15
1/8				1.32	1.15	1.22
1/9				1.29	1.15	1.23
1/10				1.29	1.15	1.23
1/11				1.32	1.24	1.29
1/12				1.34	1.13	1.27
1/13				1.67	1.34	1.52
1/14				1.81	1.64	1.72
1/15				1.91	1.62	1.76
1/16				1.91	1.64	1.77
1/17				1.81	1.51	1.70
1/18				1.78	1.70	1.75
1/19				1.83	1.67	1.74
1/20				1.78	1.53	1.65
1/21				1.53	1.32	1.44
1/22				1.45	1.32	1.36
1/23				1.43	1.21	1.34
1/24				1.48	1.34	1.40
1/25				1.53	1.40	1.44

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Long Lake Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/26				1.62	1.43	1.50
1/27				1.64	1.45	1.54
1/28				1.70	1.37	1.53
1/29				1.70	1.48	1.57
1/30				1.64	1.43	1.49
1/31				1.53	1.29	1.35
2/1				1.51	1.26	1.38
2/2				1.40	1.18	1.27
2/3				1.37	1.13	1.23
2/4				1.45	1.15	1.30
2/5				1.45	1.15	1.30
2/6				1.43	1.26	1.35
2/7				1.43	1.32	1.35
2/8				1.51	1.29	1.37
2/9				1.40	1.13	1.24
2/10				1.29	1.13	1.22
2/11				1.43	1.13	1.27
2/12				1.32	1.13	1.23
2/13				1.34	1.13	1.20
2/14				1.29	1.07	1.15
2/15				1.53	1.13	1.32
2/16				1.56	1.32	1.43
2/17				1.64	1.40	1.46
2/18				1.64	1.26	1.42
2/19				1.45	1.15	1.33
2/20				1.51	1.24	1.37
2/21				1.29	1.04	1.16
2/22				1.29	1.02	1.12
2/23				1.34	0.99	1.12
2/24				1.29	0.96	1.07
2/25				1.32	0.99	1.12
2/26				1.43	1.07	1.21
2/27				1.34	0.96	1.10
2/28				1.34	0.96	1.13
3/1				1.34	1.02	1.14
3/2				1.24	0.88	1.01
3/3				1.15	0.85	0.99
3/4				1.32	0.91	1.10
3/5				1.34	1.10	1.21
3/6				1.34	0.96	1.15
3/7				1.34	0.91	1.04

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Long Lake Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
3/8				1.34	0.85	1.01
3/9				1.26	1.02	1.11
3/10				1.37	0.93	1.11
3/11				1.51	1.07	1.22
3/12				1.34	0.96	1.13
3/13				1.51	1.07	1.24
3/14				1.37	0.99	1.20
3/15				1.21	0.88	1.02
3/16				1.29	0.83	0.99
3/17				1.32	0.77	0.96
3/18				1.29	0.74	0.93
3/19				1.32	0.74	0.94
3/20				1.34	0.74	0.95
3/21				1.37	0.80	0.99
3/22				1.40	0.77	1.03
3/23				1.51	0.88	1.10
3/24				1.53	0.88	1.09
3/25				1.43	0.85	1.10
3/26				1.59	0.99	1.18
3/27				2.05	1.02	1.27
3/28				1.56	0.91	1.13
3/29				1.37	0.99	1.12
3/30				1.81	0.93	1.23
3/31				1.72	0.83	1.16
4/1				1.89	0.74	1.15
4/2				2.05	0.77	1.15
4/3				1.59	0.85	1.16
4/4				1.48	1.04	1.19
4/5				1.78	0.99	1.28
4/6				2.05	0.96	1.30
4/7				1.99	0.93	1.32
4/8				1.94	0.91	1.31
4/9				1.89	1.07	1.34
4/10				2.26	1.10	1.44
4/11				2.13	1.02	1.37
4/12				2.18	1.04	1.42
4/13				2.40	1.04	1.47
4/14				2.07	1.07	1.47
4/15				1.78	1.21	1.44
4/16				2.26	1.32	1.68
4/17				2.50	1.37	1.70

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Long Lake Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
4/18				2.98	1.29	1.80
4/19				2.96	1.26	1.85
4/20				3.20	1.32	1.99
4/21				3.25	1.45	2.12
4/22				3.30	1.59	2.27
4/23				3.33	1.86	2.43
4/24				3.17	2.05	2.50
4/25				3.83	2.10	2.76
4/26				3.78	2.50	2.90
4/27				4.45	2.50	3.29
4/28				4.25	2.96	3.52
4/29				4.09	3.17	3.62
4/30				4.66	3.33	3.91
5/1				4.64	3.67	4.14
5/2				5.00	3.70	4.31
5/3				5.51	3.96	4.62
5/4				5.72	4.43	4.96
5/5				6.28	4.66	5.37
5/6				5.33	4.84	5.07
5/7				6.08	4.66	5.27
5/8				5.98	4.12	5.37
5/9				5.87	4.17	5.16
5/10				6.15	4.77	5.37
5/11				5.15	3.72	4.24
5/12				4.56	3.59	4.09
5/13				4.51	2.72	3.83
5/14				4.53	3.85	4.22
5/15				6.10	4.09	4.83
5/16				5.41	3.59	4.66
5/17				7.07	3.88	5.16
5/18				9.76	4.87	6.89
5/19				11.13	5.95	8.04
5/20				9.98	4.90	7.25
5/21				11.20	5.31	7.48
5/22				10.17	6.74	8.39
5/23				11.90	9.46	10.75
5/24				12.63	9.73	11.16
5/25				12.99	8.05	10.47
5/26				12.29	7.97	10.66
5/27				12.46	10.20	11.58
5/28				13.33	11.73	12.34

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Long Lake Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
5/29				12.46	7.39	10.79
5/30				12.34	10.30	11.33
5/31				13.67	10.32	11.66
6/1				15.75	10.88	12.64
6/2				18.01	11.42	14.49
6/3				17.18	13.69	15.50
6/4				18.89	13.55	16.01
6/5				17.65	16.18	16.88
6/6				16.61	14.17	15.45
6/7				15.96	14.79	15.58
6/8				18.56	14.34	16.25
6/9				17.11	14.63	15.82
6/10				17.82	15.15	16.45
6/11				19.58	16.27	17.47
6/12				17.53	16.15	16.92
6/13				18.08	15.87	16.70
6/14				17.27	14.98	16.16
6/15				17.27	15.29	16.14
6/16				17.82	15.41	16.44
6/17				16.56	15.80	16.17
6/18				17.65	15.39	16.12
6/19				16.46	15.27	15.66
6/20				16.87	15.25	15.86
6/21				17.20	15.08	16.03
6/22				15.92	14.91	15.35
6/23				16.30	13.06	14.98
6/24				17.42	13.74	15.15
6/25				16.37	13.64	14.75
6/26				16.27	13.91	14.74
6/27				15.53	13.04	14.20
6/28				15.53	13.50	14.42
6/29				16.68	14.05	15.22
6/30				17.32	14.75	15.78
7/1				17.27	14.24	15.68
7/2				19.39	15.29	16.95
7/3				18.30	15.77	17.12
7/4				19.08	16.37	17.68
7/5				19.06	16.13	17.38
7/6				19.06	16.63	17.75
7/7				19.84	16.87	18.15
7/8				21.29	16.99	19.01

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Long Lake Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
7/9				21.15	18.72	19.82
7/10				21.08	18.34	19.45
7/11				20.96	17.61	18.95
7/12				20.82	17.92	19.28
7/13				21.99	18.01	19.72
7/14				21.13	19.10	20.06
7/15				20.89	18.87	19.67
7/16				20.98	18.13	19.37
7/17				20.39	17.84	18.97
7/18				20.01	17.61	18.68
7/19				18.68	17.70	18.14
7/20				18.68	17.58	18.04
7/21				19.25	16.73	17.86
7/22				17.75	16.70	17.23
7/23				17.65	16.32	16.81
7/24				16.94	16.25	16.57
7/25				18.37	15.51	16.89
7/26				17.56	16.23	16.72
7/27				18.79	16.20	17.39
7/28				20.13	16.92	18.20
7/29				19.84	16.96	17.89
7/30						
7/31						
8/1						
8/2						
8/3						
8/4						
8/5						
8/6						
8/7						
8/8						
8/9						
8/10						
8/11						
8/12						
8/13						
8/14				15.49	14.98	15.23
8/15				15.53	14.79	15.06
8/16				14.98	14.55	14.74
8/17				16.01	14.39	14.98
8/18				15.13	14.31	14.68

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Long Lake Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
8/19				15.82	14.05	14.73
8/20	15.22	14.03	14.65	14.31	13.76	14.08
8/21	15.15	14.36	14.68	15.39	13.74	14.34
8/22	15.01	14.41	14.65	16.89	14.15	15.09
8/24	14.63	14.15	14.35	15.46	14.39	14.82
8/25	14.22	13.69	13.92	15.08	14.03	14.47
8/26	14.29	13.59	13.85	15.87	13.86	14.53
8/27	14.67	13.59	13.92	14.58	13.71	14.14
8/28	14.15	13.52	13.84	14.27	13.47	13.95
8/29	14.19	12.94	13.59	14.31	13.50	13.83
8/30	14.79	13.09	13.78	14.05	13.28	13.62
8/31	14.22	13.28	13.76	14.60	13.23	13.77
9/1	14.86	13.14	13.82	15.27	13.40	14.14
9/3	13.38	13.06	13.23	15.13	13.16	13.97
9/4	13.43	12.90	13.15	14.39	12.80	13.46
9/5	13.33	12.63	12.88	14.07	12.58	13.19
9/6	13.98	12.32	13.09	13.79	12.58	13.09
9/7	13.62	12.85	13.23	14.63	12.51	13.26
9/8	13.38	12.63	12.96	14.82	12.34	13.27
9/9	12.92	12.27	12.58	14.79	12.53	13.41
9/10	12.99	12.07	12.43	13.93	12.10	12.83
9/11	12.82	11.98	12.26	13.59	12.20	12.84
9/13	12.22	11.73	11.95	12.80	12.10	12.41
9/14	12.56	11.52	11.93	12.49	11.61	12.07
9/15	12.85	11.54	12.07	12.41	11.64	11.96
9/16	12.17	11.61	11.89	12.39	11.57	11.94
9/17	12.07	11.39	11.64	12.68	11.13	11.76
9/18	12.03	11.15	11.46	13.06	10.76	11.63
9/19	11.39	10.88	11.08	12.32	11.42	11.77
9/20	11.35	10.59	10.91	12.68	11.13	11.75
9/21	11.01	10.47	10.73	12.22	10.66	11.27
9/23	10.79	9.95	10.25	12.07	10.44	11.19
9/24	10.54	9.78	10.11	11.35	10.35	10.92
9/25	10.22	9.41	9.79	11.42	10.25	10.68
9/26	10.27	9.44	9.72	10.91	10.05	10.49
9/27	9.51	9.16	9.40	10.91	9.49	9.98
9/28	9.49	8.84	9.13	9.83	9.31	9.54
9/29	9.24	8.72	8.90	10.20	9.36	9.68
9/30	8.82	8.47	8.66	10.15	9.19	9.63
10/1	9.02	8.42	8.61			
10/3	8.27	7.59	7.85			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Long Lake Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
10/4	7.97	7.29	7.61			
10/5	7.72	7.07	7.39			
10/6	7.47	6.81	7.07			
10/7	6.99	6.59	6.79			
10/8	6.97	6.28	6.55			
10/9	6.38	4.32	6.14			
10/10	6.46	6.03	6.24			
10/11	6.56	5.92	6.22			
10/13	6.46	5.92	6.09			
10/14	6.10	5.82	5.93			
10/15	5.98	5.72	5.84			
10/16	6.05	5.80	5.87			
10/17	5.90	5.33	5.73			
10/18	5.51	4.87	5.19			
10/19	5.41	5.10	5.32			
10/20	5.10	4.48	4.90			
10/21	4.87	4.12	4.48			
10/22	4.74	4.27	4.59			
10/23	4.48	4.17	4.37			
10/24	4.43	3.93	4.19			
10/25	3.91	2.45	2.97			
10/26	3.33	2.32	2.94			
10/27	3.43	2.96	3.25			
10/28	3.22	2.24	2.70			
10/29	2.18	1.70	1.98			
10/30	2.56	2.13	2.28			
10/31	2.64	2.13	2.39			
11/2	2.34	2.16	2.21			
11/3	2.24	2.05	2.15			
11/4	2.05	1.81	1.91			
11/5	1.91	1.72	1.82			
11/6	1.78	1.64	1.73			
11/7	1.78	1.62	1.71			
11/8	1.75	1.53	1.60			
11/9	1.75	1.51	1.63			
11/10	1.78	1.59	1.67			
11/12	1.75	1.53	1.62			
11/13	1.70	1.51	1.62			
11/14	1.72	1.56	1.66			
11/15	1.72	1.48	1.61			
11/16	1.67	1.45	1.56			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Long Lake Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
11/17	1.62	1.43	1.53			
11/18	1.62	1.51	1.57			
11/19	1.64	1.53	1.60			
11/20	1.67	1.48	1.59			
11/21	1.64	1.45	1.56			
11/22	1.75	1.48	1.61			
11/23	1.72	1.48	1.59			
11/25	1.81	1.64	1.73			
11/26	1.78	1.45	1.70			
11/27	1.78	1.59	1.70			
11/28	1.83	1.51	1.70			
11/29	1.89	1.62	1.74			
11/30	1.72	1.43	1.60			
12/1	1.67	1.48	1.59			
12/2	1.64	1.34	1.49			
12/3	1.67	1.45	1.56			
12/5	1.72	1.53	1.65			
12/6	1.75	1.56	1.67			
12/7	1.91	1.64	1.78			
12/8	1.78	1.56	1.68			
12/9	1.81	1.53	1.68			
12/10	1.89	1.67	1.79			
12/11	1.89	1.62	1.71			
12/12	1.70	1.45	1.55			
12/13	1.51	1.37	1.45			
12/15	1.56	1.40	1.48			
12/16	1.51	1.37	1.41			
12/17	1.48	1.37	1.43			
12/18	1.43	1.34	1.39			
12/19	1.43	1.32	1.38			
12/20	1.45	1.34	1.40			
12/21	1.51	1.32	1.41			
12/22	1.51	1.32	1.42			
12/23	1.64	1.43	1.55			
12/25	1.67	1.53	1.60			
12/26	1.72	1.43	1.63			
12/27	1.72	1.59	1.66			
12/28	1.67	1.40	1.53			
12/29	1.48	1.32	1.38			
12/30	1.40	1.24	1.33			
12/31	1.26	1.15	1.23			

Afognak River

<b>Stream Name</b>	Afognak River	
<b>Principal Investigator</b>	Rob Baer, ADFG	
<b>Drainage Name</b>	Afognak	
<b>Latitude:</b>	58.0800	
<b>Longitude:</b>	152.8283	
<b>Start:</b>	9/1/2008	1/1/2009
<b>End:</b>	12/31/2008	8/6/2009
<b>Season Maximum:</b>	14.07	22.27
<b>Max Range</b>	0.97	3.08
<b>Days Max &gt;13C</b>	11	57
<b>Day Max&gt;15C</b>	0	36
<b>Days Max&gt;20C</b>	0	9
<b>June Degree Days</b>	Not available	353
<b>July Degree Days</b>	Not available	493
<b>August Degree Days</b>	Not available	Not available
<b>Sept Degree Days</b>	361	Not available
<b>Regression Local Air</b>		
<b>Slope</b>	0.36	1.18
<b>Y Intercept</b>	8.97	0.95
<b>R Squared</b>	0.72	0.78
<b>Regression Kodiak Air</b>		
<b>Slope</b>	0.39	0.90
<b>Y Intercept</b>	8.49	3.22
<b>R Squared</b>	0.59	0.63

Table 23. Cross-section water temperature at monitoring location.

<b>Distance Across Channel (Portion of Channel Width)</b>	0.1	0.3	0.5	0.7	0.9
<b>Water Temperature May (C)</b>	9.5	9.5	9.5	9.5	9.5



Photograph 3. Afognak River with red arrow showing location of water temperature logger.

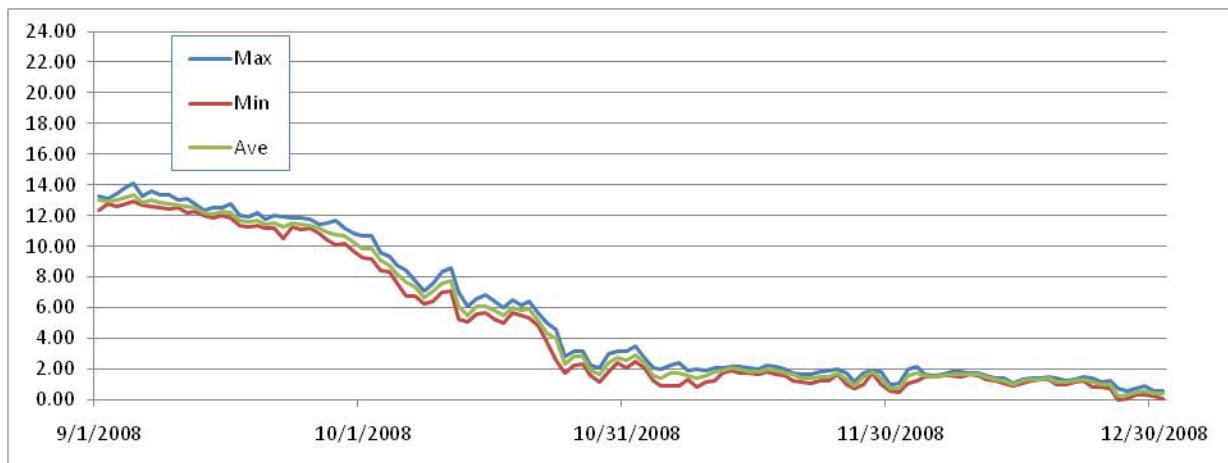
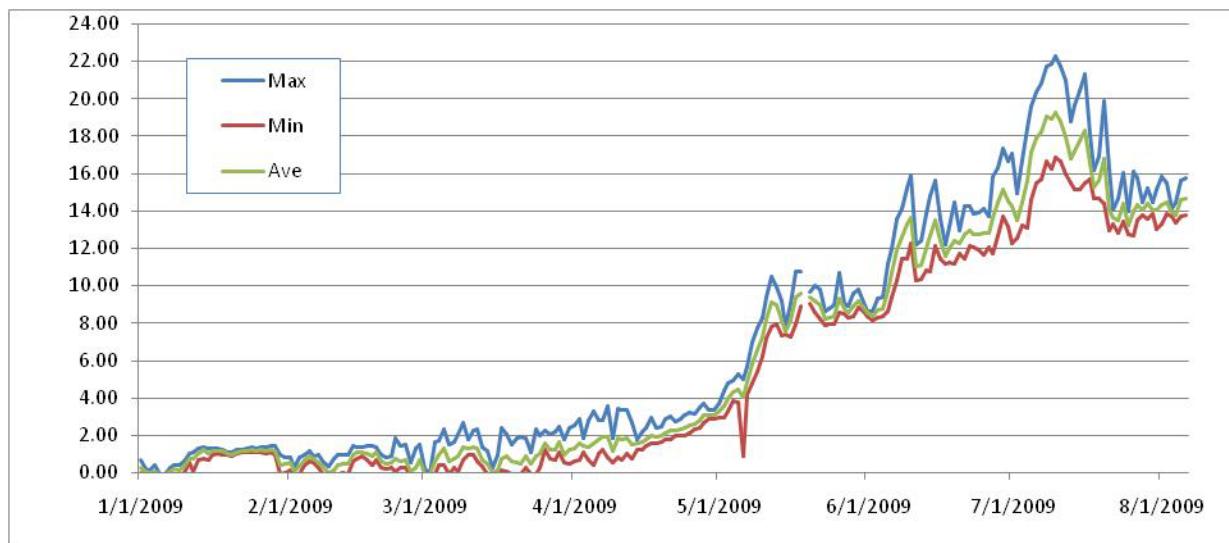


Figure 29. Daily 2008 water temperature (C) for the Afognak River.

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Afognak River**



**Figure 30.** Daily 2009 water temperatures for the Afognak River.

**Table 24.** Daily Afognak water temperature (Celsius) statistics including previous 7 day weekly average and cumulative degree days.

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/1				0.69	-0.03	0.27
1/2				0.19	-0.06	0.04
1/3				0.16	-0.12	-0.01
1/4				0.38	-0.09	0.10
1/5				-0.06	-0.09	-0.09
1/6				-0.06	-0.09	-0.09
1/7				0.30	-0.09	0.08
1/8				0.44	-0.12	0.18
1/9				0.41	-0.12	0.16
1/10				0.63	-0.03	0.33
1/11				1.02	0.58	0.78
1/12				1.13	0.08	0.73
1/13				1.29	0.72	1.02
1/14				1.37	0.77	1.20
1/15				1.29	0.72	1.05
1/16				1.32	0.96	1.19
1/17				1.29	1.04	1.16
1/18				1.26	0.99	1.18
1/19				1.13	0.96	1.05
1/20				1.13	0.88	0.98
1/21				1.21	1.02	1.10
1/22				1.26	1.13	1.18

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Afognak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/23				1.32	1.10	1.17
1/24				1.37	1.13	1.24
1/25				1.32	1.07	1.18
1/26				1.34	1.07	1.22
1/27				1.40	1.02	1.16
1/28				1.43	1.10	1.25
1/29				1.45	0.96	1.17
1/30				0.99	-0.09	0.42
1/31				0.83	0.02	0.46
2/1				0.80	0.14	0.54
2/2				0.25	-0.09	0.07
2/3				0.85	-0.09	0.34
2/4				0.96	0.41	0.71
2/5				1.18	0.63	0.91
2/6				0.88	0.52	0.72
2/7				0.93	0.30	0.54
2/8				0.52	-0.12	0.25
2/9				0.36	-0.09	-0.02
2/10				0.74	-0.12	0.13
2/11				0.96	-0.09	0.40
2/12				0.99	0.02	0.51
2/13				0.93	-0.09	0.46
2/14				1.45	0.63	0.94
2/15				1.37	0.77	1.08
2/16				1.40	0.88	1.06
2/17				1.45	0.69	1.01
2/18				1.45	0.44	0.87
2/19				1.37	0.72	1.07
2/20				0.96	0.25	0.63
2/21				0.85	0.22	0.47
2/22				0.91	0.25	0.54
2/23				1.86	0.08	0.74
2/24				1.43	0.27	0.64
2/25				1.51	0.25	0.70
2/26				0.52	-0.12	0.08
2/27				1.29	-0.09	0.27
2/28				1.53	-0.09	0.68
3/1				0.22	-0.09	-0.04
3/2				-0.03	-0.09	-0.08
3/3				1.64	-0.09	0.61
3/4				1.72	0.41	0.98

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Afognak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
3/5				2.32	0.38	1.27
3/6				1.51	-0.09	0.62
3/7				1.62	0.30	0.78
3/8				2.07	0.08	0.91
3/9				2.69	0.69	1.40
3/10				1.81	0.99	1.31
3/11				2.24	0.99	1.39
3/12				2.32	0.63	1.27
3/13				1.40	0.33	0.66
3/14				1.18	-0.09	0.49
3/15				0.30	-0.12	-0.04
3/16				0.93	-0.09	0.13
3/17				2.37	0.16	0.77
3/18				2.07	0.08	0.88
3/19				1.53	-0.09	0.60
3/20				1.83	-0.12	0.51
3/21				1.94	-0.09	0.51
3/22				1.86	0.25	0.92
3/23				1.13	-0.06	0.47
3/24				2.32	-0.06	0.89
3/25				1.97	0.30	1.01
3/26				2.24	1.21	1.59
3/27				2.07	0.77	1.23
3/28				2.21	0.66	1.24
3/29				2.48	1.10	1.65
3/30				1.78	0.52	0.95
3/31				2.37	0.47	1.23
4/1				2.56	0.63	1.29
4/2				2.90	0.72	1.60
4/3				1.83	1.10	1.42
4/4				2.82	0.66	1.39
4/5				3.27	0.44	1.58
4/6				2.80	1.04	1.75
4/7				2.82	1.21	1.89
4/8				3.54	0.80	1.89
4/9				1.86	0.58	1.15
4/10				3.41	0.83	1.82
4/11				3.35	0.69	1.76
4/12				3.38	1.02	1.88
4/13				2.66	0.77	1.51
4/14				1.81	1.26	1.57

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Afognak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
4/15				2.18	1.21	1.63
4/16				2.40	1.45	1.80
4/17				2.93	1.56	2.02
4/18				2.37	1.56	1.90
4/19				2.48	1.62	2.01
4/20				2.85	1.78	2.11
4/21				3.01	1.81	2.24
4/22				2.77	1.97	2.29
4/23				2.90	1.99	2.30
4/24				3.12	1.97	2.38
4/25				3.25	2.16	2.56
4/26				3.14	2.34	2.59
4/27				3.49	2.40	2.83
4/28				3.67	2.66	3.07
4/29				3.33	2.85	3.07
4/30				3.38	2.90	3.07
5/1				3.67	2.96	3.26
5/2				4.38	2.93	3.58
5/3				4.82	3.30	4.00
5/4				4.95	3.85	4.30
5/5				5.28	3.78	4.47
5/6				4.97	0.88	4.07
5/7				5.67	4.19	4.84
5/8				6.97	4.82	5.81
5/9				7.75	5.44	6.58
5/10				8.27	6.23	7.28
5/11				9.41	7.17	8.25
5/12				10.52	7.80	9.14
5/13				9.95	7.92	9.01
5/14				9.19	7.34	8.15
5/15				7.82	7.39	7.53
5/16				9.06	7.27	8.12
5/17				10.79	7.95	9.41
5/18				10.79	8.89	9.56
5/19						
5/20				9.68	9.02	9.36
5/21				9.98	8.59	9.17
5/22				9.78	8.22	8.96
5/23				8.64	7.87	8.23
5/24				8.74	7.95	8.27
5/25				8.99	7.92	8.37

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Afognak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
5/26				10.71	8.57	9.34
5/27				9.06	8.52	8.80
5/28				8.94	8.27	8.57
5/29				9.61	8.39	8.93
5/30				9.83	8.84	9.17
5/31				9.11	8.67	8.85
6/1				8.64	8.37	8.53
6/2				8.62	8.17	8.36
6/3				9.29	8.32	8.69
6/4				9.41	8.39	8.80
6/5				11.18	8.67	9.72
6/6				12.03	9.36	10.69
6/7				13.55	10.30	11.94
6/8				14.10	11.42	12.59
6/9				15.25	11.44	13.30
6/10				15.89	12.27	13.64
6/11				12.17	10.30	11.03
6/12				12.39	10.32	11.10
6/13				13.83	10.81	11.97
6/14				14.82	10.74	12.70
6/15				15.63	12.10	13.51
6/16				13.55	11.42	12.43
6/17				12.17	11.15	11.55
6/18				13.19	11.22	12.02
6/19				14.48	11.20	12.40
6/20				12.92	11.69	12.26
6/21				14.27	11.44	12.73
6/22				14.29	12.10	12.92
6/23				13.86	12.07	12.77
6/24				13.88	11.93	12.77
6/25				14.12	11.64	12.80
6/26				13.74	12.05	12.81
6/27				15.84	11.73	13.65
6/28				16.32	12.68	14.43
6/29				17.34	13.71	15.18
6/30				16.68	13.19	14.55
7/1				17.08	12.24	14.25
7/2				14.91	12.56	13.52
7/3				16.73	13.26	14.49
7/4				18.41	13.06	15.62
7/5				19.58	14.63	17.14

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Afognak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
7/6				20.37	15.49	17.92
7/7				20.84	15.68	18.22
7/8				21.70	16.65	19.06
7/9				21.89	16.27	18.89
7/10				22.27	16.89	19.28
7/11				21.72	16.68	18.81
7/12				20.98	15.96	17.99
7/13				18.77	15.46	16.80
7/14				19.65	15.18	17.18
7/15				20.41	15.18	17.75
7/16				21.29	15.49	18.31
7/17				18.08	15.68	16.49
7/18				16.20	14.65	15.32
7/19				16.92	14.65	15.61
7/20				19.89	14.39	16.80
7/21				16.23	12.92	14.03
7/22				14.07	13.33	13.63
7/23				14.67	12.80	13.53
7/24				16.06	13.40	14.37
7/25				14.00	12.78	13.20
7/26				16.11	12.68	14.00
7/27				15.77	13.47	14.30
7/28				14.46	13.81	14.07
7/29				15.20	13.59	14.38
7/30				14.43	13.86	14.03
7/31				15.13	12.99	14.08
8/1				15.82	13.28	14.30
8/2				15.49	13.86	14.43
8/3				14.10	13.74	13.90
8/4				14.43	13.38	13.80
8/5				15.63	13.71	14.59
8/6				15.75	13.76	14.64
8/7						
8/8						
8/9						
8/10						
8/11						
8/12						
8/13						
8/14						
8/15						

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Afognak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
8/16						
8/17						
8/18						
8/19						
8/20						
8/21						
8/22						
8/23						
8/24						
8/25						
8/26						
8/27						
8/28						
8/29						
8/30						
8/31						
9/1	13.31	12.32	12.99			
9/2	13.06	12.78	12.93			
9/3	13.47	12.61	13.00			
9/4	13.86	12.73	13.21			
9/5	14.07	12.90	13.35			
9/6	13.26	12.68	12.84			
9/7	13.64	12.58	13.03			
9/8	13.33	12.51	12.88			
9/9	13.35	12.46	12.80			
9/10	12.99	12.53	12.72			
9/11	13.11	12.20	12.64			
9/12	12.78	12.29	12.51			
9/13	12.39	12.05	12.19			
9/14	12.51	11.83	12.13			
9/15	12.53	12.05	12.24			
9/16	12.75	11.81	12.20			
9/17	12.00	11.32	11.65			
9/18	11.93	11.27	11.56			
9/19	12.17	11.35	11.67			
9/20	11.76	11.18	11.47			
9/21	12.03	11.18	11.51			
9/22	11.90	10.52	11.24			
9/23	11.86	11.22	11.47			
9/24	11.83	11.10	11.40			
9/25	11.73	11.15	11.36			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Afognak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
9/26	11.39	10.86	11.18			
9/27	11.49	10.39	10.91			
9/28	11.69	10.10	10.80			
9/29	11.18	10.20	10.68			
9/30	10.88	9.66	10.26			
10/1	10.64	9.24	9.88			
10/2	10.64	9.19	9.82			
10/3	9.56	8.39	9.06			
10/4	9.31	8.32	8.76			
10/5	8.72	7.62	8.21			
10/6	8.39	6.74	7.66			
10/7	7.75	6.79	7.37			
10/8	7.12	6.23	6.66			
10/9	7.62	6.43	7.08			
10/10	8.32	7.04	7.60			
10/11	8.62	7.07	7.76			
10/12	7.04	5.23	6.07			
10/13	6.08	5.05	5.54			
10/14	6.59	5.57	6.09			
10/15	6.84	5.67	6.09			
10/16	6.46	5.28	5.82			
10/17	5.98	5.00	5.50			
10/18	6.54	5.64	6.03			
10/19	6.15	5.46	5.83			
10/20	6.43	5.33	5.88			
10/21	5.67	4.84	5.20			
10/22	5.02	3.75	4.31			
10/23	4.58	2.58	3.97			
10/24	2.85	1.72	2.31			
10/25	3.17	2.26	2.80			
10/26	3.17	2.32	2.80			
10/27	2.26	1.53	1.92			
10/28	2.10	1.18	1.65			
10/29	2.98	1.83	2.38			
10/30	3.20	2.45	2.72			
10/31	3.20	2.10	2.55			
11/1	3.54	2.53	2.91			
11/2	2.72	2.10	2.39			
11/3	2.10	1.21	1.62			
11/4	2.02	0.93	1.43			
11/5	2.26	0.88	1.74			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Afognak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
11/6	2.42	0.91	1.75			
11/7	1.91	1.34	1.61			
11/8	1.97	0.80	1.38			
11/9	1.94	1.15	1.59			
11/10	2.05	1.26	1.79			
11/11	2.05	1.75	1.89			
11/12	2.16	1.94	2.05			
11/13	2.16	1.72	1.96			
11/14	2.07	1.75	1.86			
11/15	2.02	1.67	1.80			
11/16	2.21	1.86	2.02			
11/17	2.16	1.67	1.88			
11/18	1.99	1.56	1.72			
11/19	1.78	1.26	1.63			
11/20	1.67	1.13	1.42			
11/21	1.64	1.10	1.37			
11/22	1.81	1.21	1.48			
11/23	1.94	1.24	1.51			
11/24	1.97	1.64	1.76			
11/25	1.78	0.96	1.34			
11/26	1.18	0.72	0.91			
11/27	1.72	0.99	1.47			
11/28	1.94	1.72	1.84			
11/29	1.86	0.96	1.42			
11/30	0.99	0.55	0.71			
12/1	1.07	0.52	0.76			
12/2	2.02	1.04	1.55			
12/3	2.16	1.26	1.73			
12/4	1.70	1.51	1.59			
12/5	1.56	1.45	1.51			
12/6	1.64	1.53	1.61			
12/7	1.83	1.59	1.68			
12/8	1.86	1.45	1.67			
12/9	1.75	1.64	1.69			
12/10	1.72	1.56	1.66			
12/11	1.62	1.34	1.50			
12/12	1.40	1.24	1.30			
12/13	1.40	1.04	1.21			
12/14	1.10	0.91	1.01			
12/15	1.34	1.07	1.24			
12/16	1.37	1.24	1.29			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Afognak River**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>12/17</b>	1.43	1.29	1.34			
<b>12/18</b>	1.45	1.29	1.38			
<b>12/19</b>	1.37	0.99	1.17			
<b>12/20</b>	1.24	1.02	1.13			
<b>12/21</b>	1.34	1.13	1.20			
<b>12/22</b>	1.48	1.24	1.35			
<b>12/23</b>	1.37	0.85	1.16			
<b>12/24</b>	1.18	0.85	0.97			
<b>12/25</b>	1.21	0.77	1.00			
<b>12/26</b>	0.74	0.02	0.26			
<b>12/27</b>	0.61	0.08	0.30			
<b>12/28</b>	0.72	0.36	0.51			
<b>12/29</b>	0.88	0.36	0.61			
<b>12/30</b>	0.58	0.25	0.39			
<b>12/31</b>	0.58	0.05	0.41			

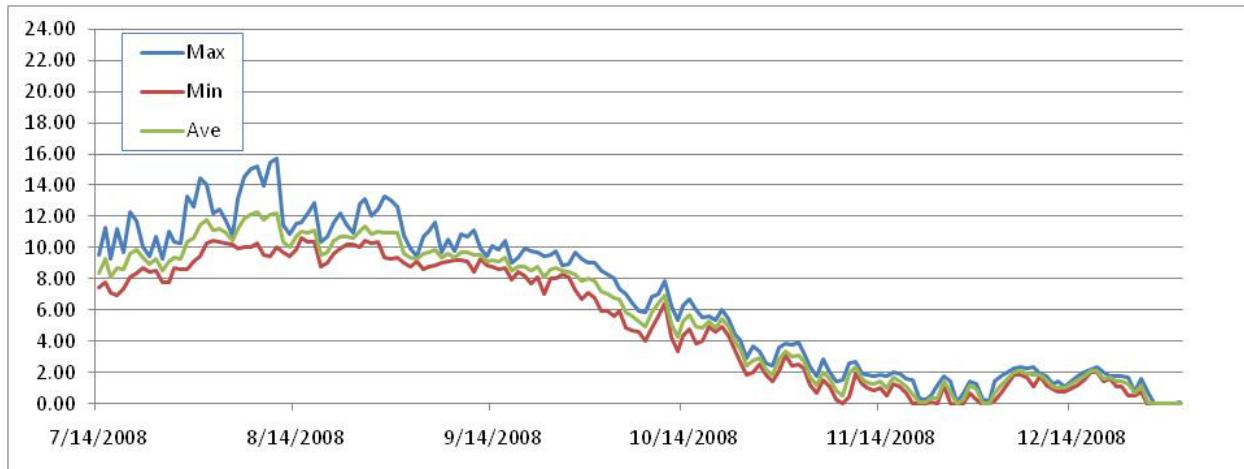
**Buskin River**

<b>Stream Name</b>	<b>Buskin River</b>	
<b>Principal Investigator</b>	Donn Tracy, ADFG	
<b>Drainage Name</b>	Buskin River	
<b>Latitude:</b>	57.75585	
<b>Longitude:</b>	152.5043	
<b>Start:</b>	7/14/2008	1/1/2009
<b>End:</b>	12/31/2008	12/12/2009
<b>Season Maximum:</b>	15.70	19.03
<b>Max Range</b>	3.46	3.69
<b>Days Max &gt;13C</b>	13.00	42
<b>Day Max&gt;15C</b>	4.00	17
<b>Days Max&gt;20C</b>	0.00	0
<b>June Degree Days</b>	Not Available	235
<b>July Degree Days</b>	Not Available	394
<b>August Degree Days</b>	340.04	367
<b>Sept Degree Days</b>	269.12	280
<b>Regression Local Air</b>		
<b>Slope</b>	0.39	0.24
<b>Y Intercept</b>	5.85	3.58
<b>R Squared</b>	0.43	0.19
<b>Regression Kodiak Air</b>		
<b>Slope</b>	0.31	0.81
<b>Y Intercept</b>	6.50	1.05
<b>R Squared</b>	0.36	0.58

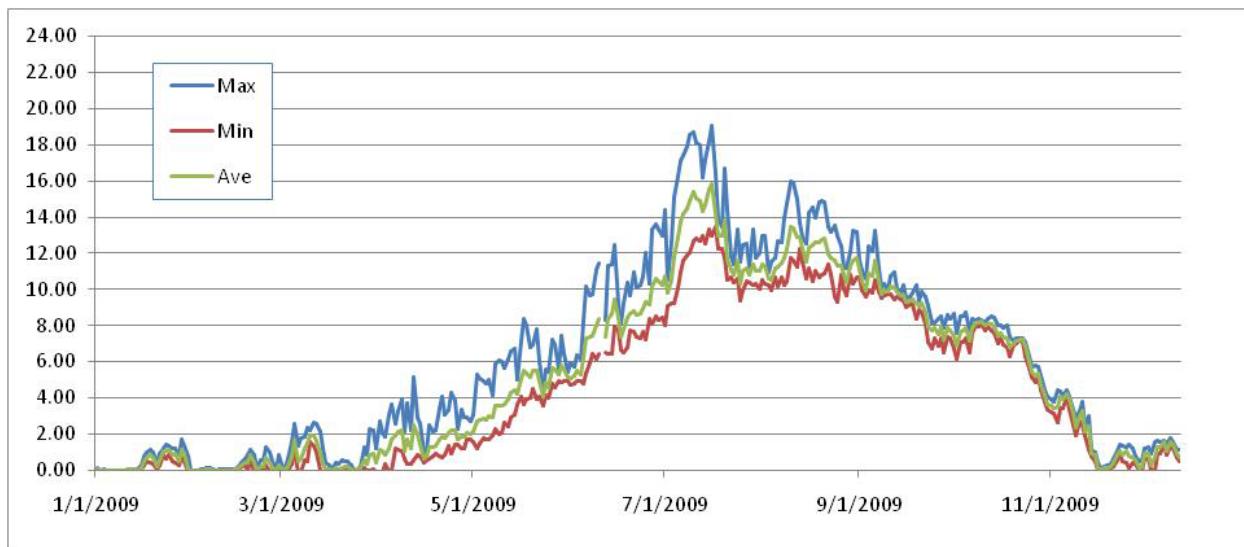
Table 25. Cross-section water temperatures at monitoring location.

Distance Across Channel (Portion of Channel Width)	0.1	0.3	0.5	0.7	0.9
Water Temperature (C)	8.5	8.0	8.0	8.5	8.0

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Buskin River**



**Figure 31.** Daily 2008 water temperature (C) for the Buskin River.



**Figure 32.** Daily 2009 water temperature for the Buskin River.

**Table 26.** Daily Buskin River water temperature (C) statistics.

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/1/2009				0.11	0.02	0.04
1/2/2009				0.02	0.00	0.01
1/3/2009				0.05	0.00	0.02
1/4/2009				0.02	0.00	0.00
1/5/2009				0.02	-0.03	-0.01
1/6/2009				0.02	0.00	0.00
1/7/2009				0.02	0.00	0.00
1/8/2009				0.02	0.00	0.02

**Temperatures in Waters Associated with Federal Subsistence Fisheries    February 20, 2011**  
**Buskin River**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/9/2009				0.02	0.00	0.02
1/10/2009				0.02	0.00	0.02
1/11/2009				0.08	0.02	0.05
1/12/2009				0.08	0.02	0.05
1/13/2009				0.08	0.05	0.07
1/14/2009				0.05	0.00	0.02
1/15/2009				0.25	0.05	0.15
1/16/2009				0.74	0.25	0.50
1/17/2009				0.96	0.50	0.72
1/18/2009				1.13	0.44	0.87
1/19/2009				0.99	0.36	0.71
1/20/2009				0.44	0.08	0.24
1/21/2009				0.91	0.25	0.53
1/22/2009				1.24	0.88	1.03
1/23/2009				1.43	0.63	1.03
1/24/2009				1.34	0.85	1.12
1/25/2009				1.21	0.52	0.87
1/26/2009				1.24	0.41	0.92
1/27/2009				0.83	0.27	0.51
1/28/2009				1.70	0.72	1.15
1/29/2009				1.37	0.50	0.93
1/30/2009				0.77	-0.06	0.09
1/31/2009				0.02	-0.03	-0.01
2/1/2009				0.02	0.00	0.00
2/2/2009				0.02	-0.03	-0.01
2/3/2009				0.05	-0.03	0.01
2/4/2009				0.05	0.00	0.02
2/5/2009				0.11	0.02	0.06
2/6/2009				0.11	0.00	0.04
2/7/2009				0.08	-0.03	0.02
2/8/2009				0.00	-0.03	-0.02
2/9/2009				0.08	-0.03	0.01
2/10/2009				0.05	-0.03	0.00
2/11/2009				0.08	-0.03	0.02
2/12/2009				0.05	0.00	0.02
2/13/2009				0.05	-0.03	0.02
2/14/2009				0.08	0.00	0.03
2/15/2009				0.19	0.02	0.12
2/16/2009				0.44	0.19	0.28
2/17/2009				0.61	0.25	0.39
2/18/2009				0.88	-0.03	0.40

**Temperatures in Waters Associated with Federal Subsistence Fisheries    February 20, 2011**  
**Buskin River**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
2/19/2009				1.15	0.58	0.81
2/20/2009				0.83	-0.06	0.40
2/21/2009				0.16	-0.12	0.02
2/22/2009				0.58	-0.03	0.21
2/23/2009				0.55	-0.03	0.24
2/24/2009				1.29	0.27	0.69
2/25/2009				0.99	-0.06	0.45
2/26/2009				0.52	-0.09	0.11
2/27/2009				0.05	-0.03	-0.01
2/28/2009				0.83	0.00	0.30
3/1/2009				0.14	-0.03	0.02
3/2/2009				0.19	-0.03	0.04
3/3/2009				0.63	0.00	0.24
3/4/2009				1.53	0.33	0.79
3/5/2009				2.56	1.04	1.62
3/6/2009				1.34	-0.14	0.49
3/7/2009				1.78	-0.12	0.66
3/8/2009				1.86	0.55	1.19
3/9/2009				2.32	0.52	1.49
3/10/2009				2.24	1.56	1.91
3/11/2009				2.61	1.34	1.89
3/12/2009				2.58	0.96	1.62
3/13/2009				2.16	0.00	0.91
3/14/2009				1.18	-0.17	0.38
3/15/2009				0.44	-0.06	0.08
3/16/2009				0.30	0.00	0.06
3/17/2009				0.05	0.00	0.01
3/18/2009				0.38	0.00	0.11
3/19/2009				0.33	0.00	0.08
3/20/2009				0.55	0.00	0.15
3/21/2009				0.52	-0.03	0.19
3/22/2009				0.50	0.05	0.22
3/23/2009				0.25	0.00	0.06
3/24/2009				0.02	0.00	0.00
3/25/2009				0.08	0.00	0.03
3/26/2009				0.22	0.02	0.11
3/27/2009				1.29	0.14	0.53
3/28/2009				0.88	-0.03	0.31
3/29/2009				2.29	0.00	0.88
3/30/2009				2.21	0.08	0.90
3/31/2009				1.24	-0.09	0.43

**Temperatures in Waters Associated with Federal Subsistence Fisheries    February 20, 2011**  
**Buskin River**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
4/1/2009				2.69	-0.09	1.17
4/2/2009				2.07	-0.06	1.09
4/3/2009				1.83	0.33	0.82
4/4/2009				3.06	-0.06	1.18
4/5/2009				3.64	0.00	1.70
4/6/2009				2.58	1.21	1.89
4/7/2009				3.27	1.10	2.10
4/8/2009				3.91	1.07	2.23
4/9/2009				2.13	0.63	1.05
4/10/2009				3.72	0.36	1.73
4/11/2009				2.24	0.33	1.17
4/12/2009				5.15	0.55	2.48
4/13/2009				2.90	0.85	1.96
4/14/2009				2.56	0.77	1.44
4/15/2009				0.96	0.41	0.66
4/16/2009				1.07	0.58	0.80
4/17/2009				2.48	0.63	1.27
4/18/2009				2.13	0.74	1.26
4/19/2009				2.24	0.91	1.38
4/20/2009				3.43	0.77	1.71
4/21/2009				4.09	0.72	1.87
4/22/2009				3.06	0.85	1.77
4/23/2009				3.35	1.37	2.05
4/24/2009				4.27	0.91	2.23
4/25/2009				3.85	1.43	2.20
4/26/2009				2.26	1.40	1.68
4/27/2009				3.35	1.21	1.84
4/28/2009				2.90	1.21	1.88
4/29/2009				2.90	1.70	2.06
4/30/2009				2.69	1.72	2.02
5/1/2009				3.06	1.56	2.15
5/2/2009				5.31	1.21	2.71
5/3/2009				5.10	1.51	2.79
5/4/2009				4.90	1.81	2.86
5/5/2009				4.82	1.72	2.81
5/6/2009				4.97	1.70	2.99
5/7/2009				4.17	1.89	2.90
5/8/2009				5.87	2.29	3.57
5/9/2009				6.08	1.99	3.55
5/10/2009				5.98	2.07	3.59
5/11/2009				5.64	2.61	3.61

**Temperatures in Waters Associated with Federal Subsistence Fisheries    February 20, 2011**  
**Buskin River**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
5/12/2009				6.18	2.45	3.90
5/13/2009				6.59	2.90	4.27
5/14/2009				6.71	3.06	4.44
5/15/2009				5.00	3.62	4.23
5/16/2009				7.12	4.06	5.09
5/17/2009				8.37	3.64	5.50
5/18/2009				8.00	3.91	5.34
5/19/2009				6.79	3.99	5.11
5/20/2009				6.97	4.48	5.51
5/21/2009				7.82	3.96	5.53
5/22/2009				6.03	4.09	4.94
5/23/2009				4.51	3.59	4.07
5/24/2009				5.54	4.12	4.89
5/25/2009				5.46	4.01	4.57
5/26/2009				7.24	4.77	5.66
5/27/2009				6.94	4.56	5.57
5/28/2009				5.59	4.92	5.28
5/29/2009				7.44	4.87	5.80
5/30/2009				6.41	4.95	5.59
5/31/2009				5.46	4.92	5.12
6/1/2009				5.95	4.71	5.09
6/2/2009				5.75	4.82	5.19
6/3/2009				6.38	4.90	5.49
6/4/2009				6.15	4.95	5.29
6/5/2009				8.22	4.82	6.21
6/6/2009				10.15	5.39	7.33
6/7/2009				9.66	5.90	7.36
6/8/2009				9.71	6.41	7.45
6/9/2009				11.10	6.18	8.03
6/10/2009				11.42	6.41	8.38
6/11/2009						
6/12/2009				8.32	6.54	7.38
6/13/2009				11.32	6.41	8.38
6/14/2009				11.37	6.46	8.66
6/15/2009				12.44	7.95	9.47
6/16/2009				9.24	7.70	8.41
6/17/2009				8.05	6.64	7.33
6/18/2009				9.24	6.51	7.78
6/19/2009				10.39	6.79	8.47
6/20/2009				9.68	7.75	8.64
6/21/2009				10.93	7.62	8.79

**Temperatures in Waters Associated with Federal Subsistence Fisheries    February 20, 2011**  
**Buskin River**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
6/22/2009				10.08	7.39	8.57
6/23/2009				10.25	7.27	8.67
6/24/2009				10.74	7.62	8.97
6/25/2009				12.00	7.24	9.33
6/26/2009				10.32	8.39	9.15
6/27/2009				13.28	8.05	10.16
6/28/2009				13.57	8.49	10.58
6/29/2009				13.31	8.32	10.46
6/30/2009				12.92	8.47	10.25
7/1/2009				14.36	8.00	10.74
7/2/2009				10.54	9.06	9.78
7/3/2009				12.65	9.24	10.54
7/4/2009				15.10	9.19	11.80
7/5/2009				16.27	10.05	12.85
7/6/2009				17.13	10.96	13.76
7/7/2009				17.39	11.57	14.17
7/8/2009				17.87	11.88	14.46
7/9/2009				18.53	12.03	14.85
7/10/2009				18.70	12.63	15.37
7/11/2009				18.11	12.82	15.03
7/12/2009				17.99	12.68	14.85
7/13/2009				16.20	12.92	14.34
7/14/2008	9.56	7.47	8.33	17.15	12.51	14.63
7/15/2008	11.30	7.75	9.29	18.20	13.28	15.49
7/16/2008	9.29	7.14	8.10	19.03	12.94	15.84
7/17/2008	11.18	6.91	8.73	16.37	13.43	14.19
7/18/2008	9.68	7.37	8.61	13.86	12.22	12.92
7/19/2008	12.29	8.15	9.64	13.47	12.22	12.93
7/20/2008	11.69	8.39	9.86	16.70	11.76	13.82
7/21/2008	10.03	8.72	9.33	14.39	10.54	11.63
7/22/2008	9.46	8.47	8.94	11.78	10.64	11.10
7/23/2008	10.66	8.54	9.31	11.39	10.37	10.78
7/24/2008	9.26	7.75	8.52	13.31	10.61	11.58
7/25/2008	11.03	7.75	9.09	11.52	9.34	10.30
7/26/2008	10.37	8.72	9.36	12.44	9.93	11.01
7/27/2008	10.32	8.62	9.24	12.53	10.42	11.14
7/28/2008	13.33	8.64	10.38	11.25	10.37	10.80
7/29/2008	12.61	9.14	10.63	13.31	10.22	11.40
7/30/2008	14.46	9.44	11.46	11.71	10.32	11.04
7/31/2008	14.07	10.25	11.80	12.05	9.98	10.98
8/1/2008	12.20	10.42	11.09	12.94	10.52	11.36

**Temperatures in Waters Associated with Federal Subsistence Fisheries    February 20, 2011**  
**Buskin River**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
8/2/2008	12.49	10.35	11.17	12.94	10.32	11.30
8/3/2008	11.69	10.25	10.91	10.96	10.22	10.56
8/4/2008	10.76	10.20	10.45	11.54	9.93	10.50
8/5/2008	13.11	9.93	11.22	11.71	10.69	11.15
8/6/2008	14.53	10.00	11.85	12.68	10.17	11.25
8/7/2008	15.06	10.03	12.12	12.56	10.66	11.46
8/8/2008	15.20	10.25	12.28	13.93	10.22	11.74
8/9/2008	13.93	9.53	11.77	14.77	10.42	12.22
8/10/2008	15.46	9.49	12.15	15.96	11.76	13.42
8/11/2008	15.70	10.05	12.24	15.87	11.59	13.38
8/12/2008	11.47	9.68	10.33	14.96	11.20	12.84
8/13/2008	10.86	9.49	10.04	13.67	12.20	12.89
8/14/2008	11.57	9.90	10.73	12.87	11.52	12.22
8/15/2008	11.64	10.64	11.03	12.49	10.57	11.53
8/16/2008	12.17	10.35	10.97	14.24	11.15	12.31
8/17/2008	12.90	10.35	11.15	14.51	10.47	12.45
8/18/2008	10.35	8.82	9.51	13.93	11.03	12.61
8/19/2008	10.74	9.04	9.69	14.84	10.69	12.58
8/20/2008	11.59	9.58	10.41	14.91	10.79	12.75
8/21/2008	12.22	9.93	10.73	14.82	10.86	12.80
8/22/2008	11.44	10.17	10.70	13.47	11.35	11.94
8/23/2008	10.96	10.22	10.62	13.19	10.81	11.71
8/24/2008	12.78	10.00	11.04	13.52	9.56	11.60
8/25/2008	13.14	10.42	11.40	12.94	9.31	11.31
8/26/2008	12.00	10.25	10.89	12.36	10.81	11.31
8/27/2008	12.44	10.39	11.07	11.25	10.03	10.80
8/28/2008	13.26	9.34	10.99	11.13	9.66	10.40
8/29/2008	13.06	9.29	10.96	12.12	10.83	11.28
8/30/2008	12.58	9.39	10.92	13.21	10.30	11.56
8/31/2008	10.79	8.99	9.60	13.19	10.66	11.70
9/1/2008	9.98	8.82	9.32	11.59	10.66	11.06
9/2/2008	9.49	9.09	9.31	11.03	9.93	10.45
9/3/2008	10.71	8.64	9.57	10.57	9.56	9.97
9/4/2008	11.05	8.74	9.67	12.34	9.95	10.84
9/5/2008	11.59	8.87	9.90	12.10	9.78	10.75
9/6/2008	9.68	9.04	9.33	13.23	10.54	11.56
9/7/2008	10.57	9.14	9.64	11.18	9.88	10.44
9/8/2008	9.81	9.16	9.34	10.05	9.53	9.76
9/9/2008	10.86	9.21	9.72	10.32	9.63	9.94
9/10/2008	10.71	9.14	9.66	9.98	9.71	9.87
9/11/2008	11.15	8.42	9.52	10.76	9.76	10.15

**Temperatures in Waters Associated with Federal Subsistence Fisheries    February 20, 2011**  
**Buskin River**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
9/12/2008	9.98	9.26	9.56	10.93	9.44	10.05
9/13/2008	9.49	8.89	9.10	10.03	9.56	9.88
9/14/2008	10.08	8.82	9.22	9.88	9.44	9.64
9/15/2008	9.83	8.59	9.10	10.20	9.34	9.68
9/16/2008	10.47	8.72	9.37	9.51	9.02	9.28
9/17/2008	8.99	7.95	8.53	9.58	9.14	9.39
9/18/2008	9.39	8.44	8.79	9.81	9.14	9.42
9/19/2008	9.95	8.17	8.77	10.20	8.39	9.21
9/20/2008	9.76	7.72	8.55	9.34	8.84	9.05
9/21/2008	9.73	8.12	8.77	9.88	8.74	9.26
9/22/2008	9.44	6.99	8.11	9.58	8.05	8.71
9/23/2008	9.56	8.02	8.64	9.09	7.07	7.95
9/24/2008	9.78	8.00	8.68	8.15	6.71	7.74
9/25/2008	8.84	8.30	8.54	8.15	7.32	7.89
9/26/2008	8.94	8.15	8.45	8.39	6.89	7.53
9/27/2008	9.66	7.29	8.28	8.52	7.27	7.94
9/28/2008	9.31	6.71	7.85	7.87	6.54	7.19
9/29/2008	9.06	7.14	7.99	8.59	7.39	7.84
9/30/2008	9.06	6.74	7.83	8.39	7.29	7.74
10/1/2008	8.57	5.98	7.19	8.64	6.74	7.45
10/2/2008	8.25	5.92	7.06	7.59	6.13	6.87
10/3/2008	8.02	5.59	6.81	8.54	7.09	7.67
10/4/2008	7.37	5.98	6.69	8.49	7.07	7.72
10/5/2008	7.02	4.87	5.86	8.72	7.27	7.84
10/6/2008	6.43	4.71	5.57	7.72	6.48	7.13
10/7/2008	5.98	4.64	5.23	8.37	7.57	7.87
10/8/2008	5.82	4.01	4.91	8.32	8.02	8.14
10/9/2008	6.84	4.84	5.83	8.39	7.97	8.16
10/10/2008	6.99	5.62	6.46	8.32	8.05	8.22
10/11/2008	7.82	6.41	6.94	8.17	7.70	7.97
10/12/2008	6.31	4.30	5.07	8.37	7.92	8.07
10/13/2008	5.36	3.38	4.29	8.49	7.75	8.05
10/14/2008	6.28	4.38	5.26	8.47	7.57	7.96
10/15/2008	6.66	4.77	5.68	8.00	6.99	7.43
10/16/2008	6.05	3.83	4.95	8.00	7.29	7.55
10/17/2008	5.54	4.04	4.89	7.90	6.97	7.39
10/18/2008	5.59	4.97	5.27	8.00	6.79	7.27
10/19/2008	5.33	4.58	4.88	7.34	6.26	6.79
10/20/2008	6.03	4.97	5.42	7.14	6.91	6.99
10/21/2008	5.41	4.38	4.94	7.27	6.99	7.12
10/22/2008	4.45	3.43	3.99	7.32	7.19	7.25

**Temperatures in Waters Associated with Federal Subsistence Fisheries    February 20, 2011**  
**Buskin River**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
10/23/2008	4.06	2.72	3.55	7.29	7.04	7.20
10/24/2008	2.93	1.86	2.42	7.04	6.31	6.85
10/25/2008	3.64	2.05	2.79	6.26	5.67	6.00
10/26/2008	3.33	2.53	2.93	5.72	5.13	5.43
10/27/2008	2.58	1.83	2.19	5.82	4.87	5.24
10/28/2008	2.42	1.45	1.87	5.72	5.23	5.39
10/29/2008	3.59	2.10	2.83	5.21	4.43	4.75
10/30/2008	3.88	3.06	3.36	4.40	3.80	4.13
10/31/2008	3.75	2.40	2.99	4.06	3.33	3.63
11/1/2008	3.93	2.50	3.09	3.91	3.22	3.53
11/2/2008	3.30	2.29	2.73	3.78	3.12	3.44
11/3/2008	2.32	1.15	1.68	4.40	2.66	3.51
11/4/2008	1.75	0.72	1.19	4.32	3.43	4.09
11/5/2008	2.88	1.48	2.05	4.12	3.41	3.90
11/6/2008	2.05	1.13	1.58	4.43	4.06	4.20
11/7/2008	1.45	0.30	0.85	4.09	3.35	3.90
11/8/2008	1.51	0.00	0.53	3.33	2.50	3.12
11/9/2008	2.56	0.47	1.89	2.96	1.89	2.36
11/10/2008	2.69	1.94	2.34	3.30	2.69	3.02
11/11/2008	1.94	1.24	1.57	3.75	2.53	3.31
11/12/2008	1.89	1.02	1.38	2.48	1.89	2.11
11/13/2008	1.81	0.85	1.24	2.98	1.13	2.42
11/14/2008	1.86	0.99	1.43	1.13	0.77	0.94
11/15/2008	1.72	0.50	1.05	1.02	0.50	0.84
11/16/2008	2.02	1.29	1.68	0.44	0.02	0.09
11/17/2008	1.94	1.07	1.43	0.14	0.02	0.06
11/18/2008	1.59	0.72	1.09	0.19	0.02	0.11
11/19/2008	1.53	-0.03	0.57	0.25	0.02	0.14
11/20/2008	0.36	-0.03	0.10	0.33	0.16	0.23
11/21/2008	0.30	-0.03	0.06	0.66	0.19	0.39
11/22/2008	0.52	0.08	0.32	1.07	0.58	0.85
11/23/2008	1.15	-0.03	0.33	1.40	0.85	1.06
11/24/2008	1.75	1.18	1.45	1.32	0.52	0.88
11/25/2008	1.43	-0.03	0.75	1.29	0.41	1.03
11/26/2008	0.08	-0.09	0.01	1.45	0.14	0.78
11/27/2008	0.66	-0.03	0.24	1.18	0.41	0.73
11/28/2008	1.40	0.66	1.18	0.77	0.36	0.53
11/29/2008	1.29	0.30	0.93	0.52	-0.03	0.11
11/30/2008	0.27	-0.12	0.01	0.58	0.02	0.23
12/1/2008	0.16	0.00	0.03	1.24	0.61	0.89
12/2/2008	1.40	0.16	0.70	1.26	0.63	0.92

**Temperatures in Waters Associated with Federal Subsistence Fisheries   February 20, 2011**  
**Buskin River**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
12/3/2008	1.72	0.66	1.15	0.91	0.02	0.28
12/5/2008	2.26	1.86	2.05	1.53	0.02	0.73
12/6/2008	2.34	1.86	2.13	1.67	0.91	1.25
12/7/2008	2.24	1.70	1.94	1.53	0.91	1.30
12/8/2008	2.37	1.07	1.86	1.67	1.45	1.55
12/9/2008	1.97	1.75	1.84	1.51	0.85	1.10
12/10/2008	1.78	1.18	1.53	1.81	1.32	1.55
12/11/2008	1.26	0.96	1.07	1.56	1.18	1.43
12/12/2008	1.40	0.80	1.05	1.15	0.69	0.89
12/13/2008	1.13	0.80	0.98	1.10	0.47	0.69
12/15/2008	1.78	1.18	1.50			
12/16/2008	1.99	1.51	1.80			
12/17/2008	2.18	1.99	2.10			
12/18/2008	2.32	2.02	2.12			
12/19/2008	1.99	1.45	1.58			
12/20/2008	1.72	1.56	1.65			
12/21/2008	1.75	1.07	1.44			
12/22/2008	1.72	1.07	1.45			
12/23/2008	1.70	0.52	1.26			
12/24/2008	0.80	0.52	0.65			
12/25/2008	1.62	0.80	1.19			
12/26/2008	0.77	-0.09	0.06			
12/27/2008	0.00	-0.03	-0.02			
12/28/2008	0.00	-0.03	-0.01			
12/29/2008	0.02	0.00	0.01			
12/30/2008	0.02	0.00	0.01			
12/31/2008	0.08	0.02	0.04			

**Tanada Creek**

<b>Stream Name</b>	<b>Tanada Creek</b>	
<b>Principal Investigator</b>	Molly McCormick, NPS	
<b>Drainage Name</b>	Copper River	
<b>Latitude:</b>	62.6141	
<b>Longitude:</b>	143.7785	
<b>Start:</b>	9/25/2008	1/2/2009
<b>End:</b>	12/31/2008	6/3/2009
<b>Season Maximum:</b>	5.62	14.75
<b>Max Range</b>	1.93	3.45
<b>Days Max &gt;13C</b>	0	3
<b>Day Max&gt;15C</b>	0	0
<b>Days Max&gt;20C</b>	0	0
<b>June Degree Days</b>	Not Available	Not Available
<b>July Degree Days</b>	Not Available	Not Available
<b>August Degree Days</b>	Not Available	Not Available
<b>Sept Degree Days</b>	Not Available	Not Available

Table 27

<b>Measurement</b>	1	2	3	4	5	6	7	8	9
<b>Water Temperature (F)</b>	57.0	57.0	57.0	57.0	57.0	57.0	57.0	57.5	57.5

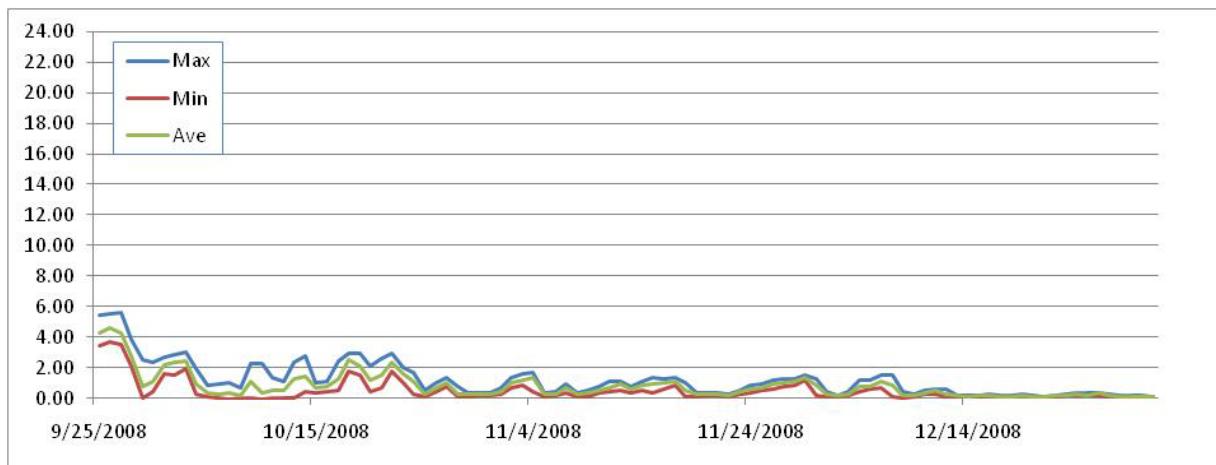
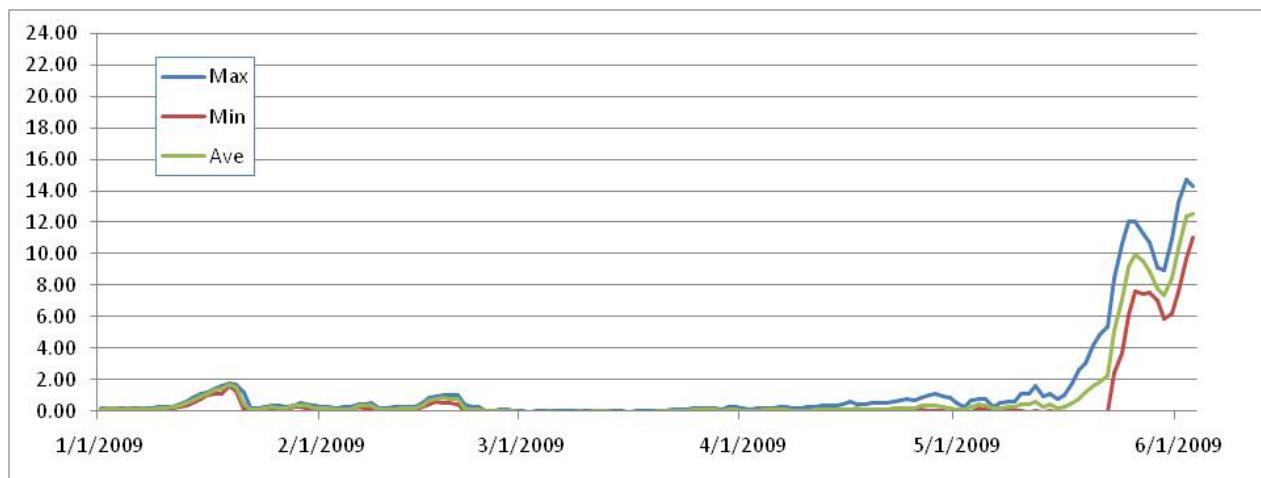


Figure 33. Daily 2008 water temperature (C) for Tanada Creek.

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Tanada Creek**



**Figure 34. Daily 2009 water temperature for Tanada Creek.**

**Table 28. Daily Tanada Creek water temperature (C) statistics.**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/1/2009				0.16	0.08	0.10
1/2/2009				0.19	0.14	0.18
1/3/2009				0.19	0.14	0.17
1/4/2009				0.16	0.11	0.14
1/5/2009				0.19	0.14	0.16
1/6/2009				0.16	0.11	0.13
1/7/2009				0.22	0.11	0.17
1/8/2009				0.19	0.11	0.14
1/9/2009				0.27	0.11	0.22
1/10/2009				0.25	0.16	0.20
1/11/2009				0.27	0.19	0.24
1/12/2009				0.47	0.25	0.36
1/13/2009				0.63	0.33	0.52
1/14/2009				0.85	0.52	0.70
1/15/2009				1.15	0.74	0.94
1/16/2009				1.18	1.02	1.09
1/17/2009				1.45	1.15	1.33
1/18/2009				1.59	1.10	1.41
1/19/2009				1.75	1.59	1.67
1/20/2009				1.70	1.26	1.51
1/21/2009				1.24	0.14	0.43
1/22/2009				0.19	0.08	0.13
1/23/2009				0.22	0.08	0.13
1/24/2009				0.25	0.11	0.20
1/25/2009				0.38	0.11	0.26

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Tanada Creek**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/26/2009				0.33	0.08	0.17
1/27/2009				0.30	0.08	0.16
1/28/2009				0.38	0.27	0.32
1/29/2009				0.55	0.25	0.40
1/30/2009				0.47	0.19	0.32
1/31/2009				0.33	0.14	0.23
2/1/2009				0.30	0.08	0.22
2/2/2009				0.30	0.11	0.18
2/3/2009				0.19	0.08	0.13
2/4/2009				0.25	0.08	0.14
2/5/2009				0.27	0.08	0.15
2/6/2009				0.47	0.27	0.35
2/7/2009				0.47	0.16	0.33
2/8/2009				0.50	0.14	0.35
2/9/2009				0.19	0.08	0.11
2/10/2009				0.16	0.08	0.10
2/11/2009				0.25	0.08	0.14
2/12/2009				0.27	0.14	0.20
2/13/2009				0.30	0.11	0.18
2/14/2009				0.30	0.11	0.20
2/15/2009				0.52	0.25	0.38
2/16/2009				0.85	0.44	0.66
2/17/2009				0.96	0.61	0.79
2/18/2009				1.07	0.55	0.85
2/19/2009				1.07	0.50	0.78
2/20/2009				1.07	0.47	0.80
2/21/2009				0.44	0.05	0.20
2/22/2009				0.25	0.02	0.11
2/23/2009				0.30	-0.06	0.08
2/24/2009				0.02	-0.03	-0.01
2/25/2009				0.02	0.00	0.01
2/26/2009				0.08	0.00	0.04
2/27/2009				0.08	0.00	0.02
2/28/2009				0.05	0.00	0.01
3/1/2009				0.02	-0.03	-0.01
3/2/2009				-0.03	-0.03	-0.03
3/3/2009				0.00	-0.03	-0.03
3/4/2009				0.00	-0.03	-0.02
3/5/2009				0.02	-0.03	0.00
3/6/2009				0.00	-0.03	-0.03
3/7/2009				0.00	-0.03	-0.03

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Tanada Creek**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
3/8/2009				0.00	-0.03	-0.02
3/9/2009				0.00	-0.03	-0.01
3/10/2009				0.00	-0.03	-0.02
3/11/2009				0.02	-0.03	0.00
3/12/2009				0.05	-0.03	-0.01
3/13/2009				0.05	-0.03	0.01
3/14/2009				0.00	-0.03	-0.02
3/15/2009				0.00	-0.03	-0.03
3/16/2009				-0.03	-0.03	-0.03
3/17/2009				0.00	-0.03	-0.02
3/18/2009				0.00	-0.03	-0.02
3/19/2009				0.02	-0.03	-0.02
3/20/2009				0.02	-0.03	0.00
3/21/2009				0.02	0.00	0.00
3/22/2009				0.08	0.00	0.02
3/23/2009				0.08	0.00	0.04
3/24/2009				0.11	0.02	0.06
3/25/2009				0.16	0.02	0.08
3/26/2009				0.22	0.05	0.11
3/27/2009				0.22	0.02	0.09
3/28/2009				0.22	0.02	0.08
3/29/2009				0.14	0.00	0.06
3/30/2009				0.25	0.02	0.09
3/31/2009				0.27	0.00	0.10
4/1/2009				0.22	-0.03	0.05
4/2/2009				0.11	-0.06	0.00
4/3/2009				0.16	-0.03	0.04
4/4/2009				0.22	0.02	0.09
4/5/2009				0.22	0.00	0.08
4/6/2009				0.25	-0.03	0.09
4/7/2009				0.27	0.00	0.08
4/8/2009				0.22	-0.03	0.05
4/9/2009				0.22	-0.03	0.07
4/10/2009				0.25	-0.03	0.06
4/11/2009				0.30	-0.03	0.09
4/12/2009				0.33	-0.03	0.10
4/13/2009				0.33	-0.03	0.10
4/14/2009				0.36	-0.06	0.11
4/15/2009				0.44	0.00	0.14
4/16/2009				0.61	-0.03	0.14
4/17/2009				0.47	0.02	0.16

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Tanada Creek**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
4/18/2009				0.47	-0.03	0.15
4/19/2009				0.52	-0.03	0.15
4/20/2009				0.52	-0.03	0.13
4/21/2009				0.52	-0.03	0.14
4/22/2009				0.58	-0.03	0.16
4/23/2009				0.66	-0.03	0.22
4/24/2009				0.74	-0.03	0.21
4/25/2009				0.66	0.00	0.23
4/26/2009				0.85	0.08	0.34
4/27/2009				1.04	0.00	0.33
4/28/2009				1.13	0.00	0.33
4/29/2009				0.96	0.00	0.26
4/30/2009				0.88	-0.03	0.19
5/1/2009				0.50	-0.03	0.09
5/2/2009				0.30	-0.03	0.12
5/3/2009				0.72	-0.03	0.31
5/4/2009				0.74	0.16	0.42
5/5/2009				0.74	0.14	0.39
5/6/2009				0.30	0.02	0.18
5/7/2009				0.52	0.05	0.23
5/8/2009				0.58	0.11	0.28
5/9/2009				0.61	0.05	0.29
5/10/2009				1.10	0.00	0.43
5/11/2009				1.10	-0.03	0.43
5/12/2009				1.59	0.05	0.58
5/13/2009				0.96	-0.06	0.30
5/14/2009				1.15	0.02	0.43
5/15/2009				0.77	-0.03	0.20
5/16/2009				1.02	-0.06	0.32
5/17/2009				1.81	-0.06	0.54
5/18/2009				2.61	-0.06	0.82
5/19/2009				3.04	-0.06	1.21
5/20/2009				4.19	-0.03	1.62
5/21/2009				4.87	-0.06	1.86
5/22/2009				5.36	-0.03	2.31
5/23/2009				8.49	2.45	5.16
5/24/2009				10.61	3.72	7.17
5/25/2009				12.10	6.13	9.18
5/26/2009				12.07	7.59	9.96
5/27/2009				11.27	7.44	9.57
5/28/2009				10.71	7.54	8.88

**Temperatures in Waters Associated with Federal Subsistence Fisheries    February 20, 2011**  
**Tanada Creek**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
5/29/2009				9.14	7.02	7.81
5/30/2009				8.99	5.87	7.40
5/31/2009				10.93	6.20	8.47
6/1/2009				13.28	7.59	10.36
6/2/2009				14.75	9.76	12.42
6/3/2009				14.29	11.03	12.55
6/4/2009						
6/5/2009						
6/6/2009						
6/7/2009						
6/8/2009						
6/9/2009						
6/10/2009						
6/11/2009						
6/12/2009						
6/13/2009						
6/14/2009						
6/15/2009						
6/16/2009						
6/17/2009						
6/18/2009						
6/19/2009						
6/20/2009						
6/21/2009						
6/22/2009						
6/23/2009						
6/24/2009						
6/25/2009						
6/26/2009						
6/27/2009						
6/28/2009						
6/29/2009						
6/30/2009						
7/1/2009						
7/2/2009						
7/3/2009						
7/4/2009						
7/5/2009						
7/6/2009						
7/7/2009						
7/8/2009						

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Tanada Creek**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
7/9/2009						
7/10/2009						
7/11/2009						
7/12/2009						
7/13/2009						
7/14/2009						
7/15/2009						
7/16/2009						
7/17/2009						
7/18/2009						
7/19/2009						
7/20/2009						
7/21/2009						
7/22/2009						
7/23/2009						
7/24/2009						
7/25/2009						
7/26/2009						
7/27/2009						
7/28/2009						
7/29/2009						
7/30/2009						
7/31/2009						
8/1/2009						
8/2/2009						
8/3/2009						
8/4/2009						
8/5/2009						
8/6/2009						
8/7/2009						
8/8/2009						
8/9/2009						
8/10/2009						
8/11/2009						
8/12/2009						
8/13/2009						
8/14/2009						
8/15/2009						
8/16/2009						
8/17/2009						
8/18/2009						

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Tanada Creek**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
8/19/2009						
8/20/2009						
8/21/2009						
8/22/2009						
8/23/2009						
8/24/2009						
8/25/2009						
8/26/2009						
8/27/2009						
8/28/2009						
8/29/2009						
8/30/2009						
8/31/2009						
9/1/2009						
9/2/2009						
9/3/2009						
9/4/2009						
9/5/2009						
9/6/2009						
9/7/2009						
9/8/2009						
9/9/2009						
9/10/2009						
9/11/2009						
9/12/2009						
9/13/2009						
9/14/2009						
9/15/2009						
9/16/2009						
9/17/2009						
9/18/2009						
9/19/2009						
9/20/2009						
9/21/2009						
9/22/2009						
9/23/2009						
9/24/2009						
9/25/2008	5.44	3.46	4.30			
9/26/2008	5.51	3.70	4.56			
9/27/2008	5.62	3.54	4.27			
9/28/2008	3.88	2.13	2.73			

**Temperatures in Waters Associated with Federal Subsistence Fisheries    February 20, 2011**  
**Tanada Creek**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
9/29/2008	2.48	0.05	0.77			
9/30/2008	2.32	0.41	1.13			
10/1/2008	2.69	1.59	2.14			
10/2/2008	2.82	1.53	2.31			
10/3/2008	3.04	1.97	2.41			
10/4/2008	1.97	0.30	0.93			
10/5/2008	0.85	0.08	0.38			
10/6/2008	0.93	-0.03	0.25			
10/7/2008	1.04	-0.06	0.33			
10/8/2008	0.69	-0.03	0.21			
10/9/2008	2.26	-0.03	1.11			
10/10/2008	2.29	-0.06	0.36			
10/11/2008	1.37	-0.03	0.49			
10/12/2008	1.10	-0.03	0.47			
10/13/2008	2.32	0.02	1.22			
10/14/2008	2.80	0.47	1.40			
10/15/2008	0.99	0.33	0.69			
10/16/2008	1.07	0.44	0.75			
10/17/2008	2.42	0.50	1.29			
10/18/2008	2.90	1.78	2.50			
10/19/2008	2.93	1.48	2.08			
10/20/2008	2.07	0.41	1.21			
10/21/2008	2.56	0.66	1.50			
10/22/2008	2.96	1.81	2.34			
10/23/2008	2.05	0.99	1.57			
10/24/2008	1.70	0.27	1.13			
10/25/2008	0.52	0.08	0.28			
10/26/2008	1.02	0.41	0.69			
10/27/2008	1.32	0.77	0.98			
10/28/2008	0.74	0.11	0.30			
10/29/2008	0.36	0.11	0.23			
10/30/2008	0.38	0.16	0.23			
10/31/2008	0.36	0.14	0.24			
11/1/2008	0.69	0.25	0.40			
11/2/2008	1.37	0.69	0.98			
11/3/2008	1.56	0.85	1.19			
11/4/2008	1.64	0.41	1.34			
11/5/2008	0.38	0.11	0.22			
11/6/2008	0.44	0.14	0.24			
11/7/2008	0.96	0.33	0.68			
11/8/2008	0.38	0.11	0.23			

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Tanada Creek**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
11/9/2008	0.50	0.11	0.30			
11/10/2008	0.80	0.36	0.54			
11/11/2008	1.10	0.41	0.71			
11/12/2008	1.10	0.55	0.90			
11/13/2008	0.80	0.38	0.59			
11/14/2008	1.10	0.52	0.88			
11/15/2008	1.34	0.33	0.90			
11/16/2008	1.24	0.63	1.04			
11/17/2008	1.37	0.85	1.10			
11/18/2008	1.04	0.11	0.52			
11/19/2008	0.36	0.11	0.23			
11/20/2008	0.33	0.19	0.25			
11/21/2008	0.38	0.14	0.26			
11/22/2008	0.30	0.11	0.21			
11/23/2008	0.55	0.30	0.40			
11/24/2008	0.83	0.33	0.55			
11/25/2008	0.96	0.50	0.72			
11/26/2008	1.21	0.58	0.90			
11/27/2008	1.24	0.77	1.05			
11/28/2008	1.29	0.85	1.09			
11/29/2008	1.48	1.21	1.34			
11/30/2008	1.26	0.16	0.87			
12/1/2008	0.41	0.08	0.25			
12/2/2008	0.22	0.08	0.14			
12/3/2008	0.47	0.19	0.28			
12/4/2008	1.18	0.47	0.78			
12/5/2008	1.15	0.58	0.78			
12/6/2008	1.48	0.72	1.09			
12/7/2008	1.53	0.11	0.89			
12/8/2008	0.41	0.05	0.16			
12/9/2008	0.30	0.11	0.20			
12/10/2008	0.55	0.30	0.37			
12/11/2008	0.61	0.30	0.50			
12/12/2008	0.58	0.08	0.22			
12/13/2008	0.22	0.08	0.14			
12/14/2008	0.16	0.11	0.13			
12/15/2008	0.22	0.08	0.14			
12/16/2008	0.27	0.14	0.20			
12/17/2008	0.16	0.11	0.13			
12/18/2008	0.14	0.11	0.13			
12/19/2008	0.25	0.14	0.19			

**Temperatures in Waters Associated with Federal Subsistence Fisheries    February 20, 2011**  
**Tanada Creek**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
12/20/2008	0.16	0.08	0.12			
12/21/2008	0.11	0.08	0.09			
12/22/2008	0.19	0.11	0.14			
12/23/2008	0.27	0.14	0.19			
12/24/2008	0.36	0.19	0.27			
12/25/2008	0.33	0.14	0.21			
12/26/2008	0.36	0.22	0.31			
12/27/2008	0.27	0.11	0.19			
12/28/2008	0.14	0.11	0.12			
12/29/2008	0.14	0.11	0.13			
12/30/2008	0.14	0.11	0.12			
12/31/2008	0.11	0.08	0.10			

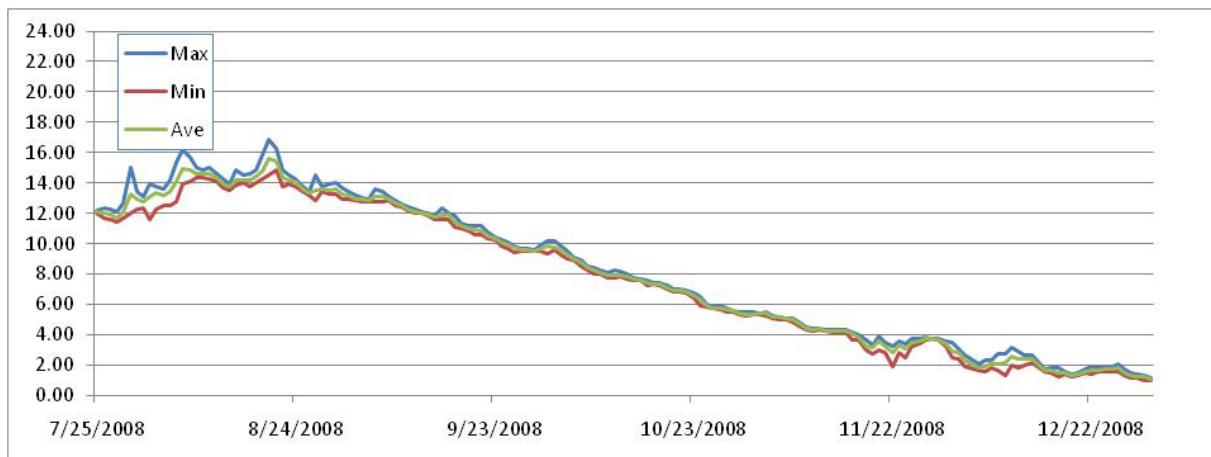
**Neva Creek**

<b>Stream Name</b>	<b>Neva Creek</b>	
<b>Principal Investigator</b>	Ben Van Alen, USFS	
<b>Drainage Name</b>	Neva Lake	
<b>Latitude:</b>	58.4064	
<b>Longitude:</b>	135.4116	
<b>Start:</b>	7/25/2008	1/1/2009
<b>End:</b>	12/31/2008	10/20/2009
<b>Season Maximum:</b>	16.82	20.75
<b>Max Range</b>	1.83	4.07
<b>Days Max &gt;13C</b>	39	112
<b>Day Max&gt;15C</b>	8	71
<b>Days Max&gt;20C</b>	0	6
<b>June Degree Days</b>	Not Available	430
<b>July Degree Days</b>	Not Available	543
<b>August Degree Days</b>	436	520
<b>Sept Degree Days</b>	345	371
<b>Regression Local Air</b>		
<b>Slope</b>	0.60	0.84
<b>Y Intercept</b>	6.53	5.18
<b>R Squared</b>	0.56	0.76
<b>Regression Juneau Air</b>		
<b>Slope</b>	0.48	0.77
<b>Y Intercept</b>	7.43	5.23
<b>R Squared</b>	0.42	0.75

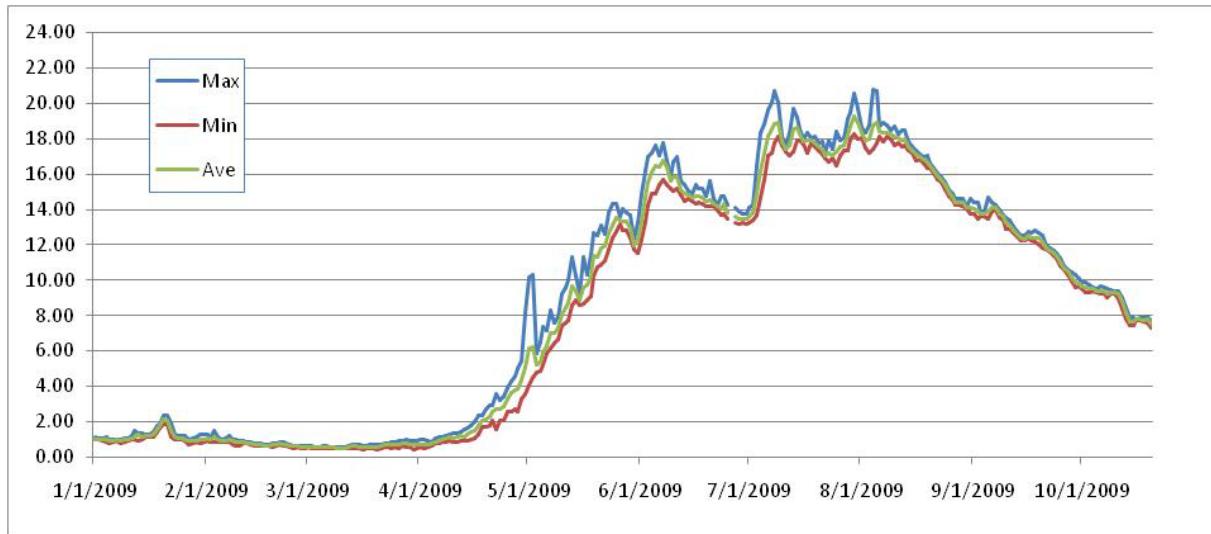
Table 29. Cross-section water temperatures at monitoring location.

<b>Distance From Left Bank (ft)</b>	3	6	9	12
<b>Water Temperature June (C)</b>	13	13	13	13
<b>Water Temperature October (C)</b>	8	8	8	8

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Neva Creek**



**Figure 35. Daily 2008 water temperature (C) for Neva Creek.**



**Figure 36. Daily 2009 water temperature for Neva Creek.**

**Table 30. Daily Neva Creek water temperature (C) statistics.**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/1				1.10	0.99	1.02
1/2				1.04	0.96	1.02
1/3				1.04	0.91	1.00
1/4				1.15	0.85	0.97
1/5				0.99	0.80	0.91
1/6				1.02	0.88	0.95
1/7				0.96	0.91	0.96
1/8				0.96	0.80	0.93
1/9				1.04	0.88	0.98
1/10				1.07	0.93	1.02

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Neva Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/11				1.18	0.99	1.09
1/12				1.48	0.96	1.16
1/13				1.37	0.91	1.24
1/14				1.34	0.99	1.13
1/15				1.29	1.15	1.23
1/16				1.29	1.10	1.24
1/17				1.45	1.10	1.27
1/18				1.75	1.40	1.57
1/19				1.86	1.64	1.77
1/20				2.34	1.86	2.11
1/21				2.32	1.86	2.06
1/22				1.91	1.13	1.48
1/23				1.29	0.99	1.13
1/24				1.18	0.96	1.04
1/25				1.18	0.99	1.07
1/26				1.21	0.91	1.02
1/27				1.02	0.72	0.92
1/28				1.07	0.80	0.89
1/29				1.13	0.85	0.94
1/30				1.29	0.80	1.02
1/31				1.29	0.85	1.00
2/1				1.29	0.91	1.06
2/2				1.07	0.85	1.00
2/3				1.48	0.83	1.10
2/4				1.13	0.85	0.98
2/5				1.02	0.88	0.94
2/6				1.04	0.85	0.95
2/7				1.21	0.83	0.98
2/8				0.99	0.72	0.89
2/9				1.02	0.61	0.87
2/10				0.93	0.61	0.85
2/11				0.91	0.77	0.85
2/12				0.88	0.77	0.81
2/13				0.83	0.69	0.76
2/14				0.74	0.63	0.69
2/15				0.77	0.66	0.71
2/16				0.74	0.63	0.68
2/17				0.72	0.61	0.66
2/18				0.69	0.61	0.64
2/19				0.77	0.58	0.68
2/20				0.74	0.63	0.70

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Neva Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
2/21				0.83	0.69	0.75
2/22				0.83	0.66	0.74
2/23				0.74	0.63	0.69
2/24				0.69	0.55	0.63
2/25				0.66	0.52	0.61
2/26				0.66	0.58	0.62
2/27				0.66	0.52	0.59
2/28				0.61	0.52	0.56
3/1				0.61	0.55	0.57
3/2				0.61	0.52	0.55
3/3				0.58	0.50	0.53
3/4				0.58	0.52	0.54
3/5				0.61	0.52	0.56
3/6				0.61	0.47	0.54
3/7				0.55	0.47	0.53
3/8				0.58	0.50	0.54
3/9				0.55	0.47	0.50
3/10				0.55	0.50	0.50
3/11				0.58	0.50	0.52
3/12				0.63	0.47	0.53
3/13				0.72	0.52	0.60
3/14				0.69	0.52	0.60
3/15				0.72	0.52	0.58
3/16				0.61	0.44	0.53
3/17				0.63	0.50	0.57
3/18				0.72	0.47	0.58
3/19				0.72	0.47	0.59
3/20				0.69	0.44	0.57
3/21				0.69	0.50	0.61
3/22				0.80	0.55	0.67
3/23				0.74	0.58	0.67
3/24				0.83	0.50	0.68
3/25				0.83	0.55	0.68
3/26				0.93	0.52	0.71
3/27				0.91	0.63	0.78
3/28				0.96	0.58	0.75
3/29				0.93	0.55	0.72
3/30				0.93	0.44	0.72
3/31				0.91	0.50	0.73
4/1				0.96	0.55	0.73
4/2				0.96	0.50	0.70

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Neva Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
4/3				0.91	0.55	0.73
4/4				0.85	0.66	0.75
4/5				1.04	0.74	0.87
4/6				1.13	0.77	0.91
4/7				1.15	0.88	1.00
4/8				1.24	0.85	1.06
4/9				1.26	0.91	1.11
4/10				1.32	0.83	1.05
4/11				1.34	0.88	1.10
4/12				1.45	0.91	1.18
4/13				1.59	0.91	1.16
4/14				1.62	0.91	1.29
4/15				1.75	1.02	1.39
4/16				1.97	1.04	1.52
4/17				2.37	1.29	1.80
4/18				2.37	1.70	2.09
4/19				2.69	1.72	2.11
4/20				2.90	1.78	2.31
4/21				2.96	2.05	2.54
4/22				3.59	1.56	2.68
4/23				3.22	2.05	2.74
4/24				3.43	2.05	2.87
4/25				3.91	2.56	3.26
4/26				4.27	2.58	3.62
4/27				4.56	2.74	3.75
4/28				4.97	2.58	3.85
4/29				5.44	3.30	4.36
4/30				8.15	3.56	5.04
5/1				10.17	4.06	6.18
5/2				10.27	4.53	6.20
5/3				5.87	4.79	5.21
5/4				6.51	4.87	5.34
5/5				7.34	5.18	5.96
5/6				7.12	5.85	6.30
5/7				8.27	6.18	7.02
5/8				7.59	6.41	7.03
5/9				7.95	6.66	7.28
5/10				9.21	7.42	8.07
5/11				9.58	7.57	8.43
5/12				10.03	7.75	8.72
5/13				11.30	8.57	9.64

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Neva Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
5/14				10.25	8.84	9.35
5/15				9.21	8.57	8.86
5/16				11.27	8.62	9.60
5/17				10.27	8.89	9.70
5/18				11.44	9.11	10.22
5/19				12.63	10.22	11.37
5/20				12.53	10.71	11.30
5/21				13.11	10.88	11.79
5/22				12.61	11.10	11.94
5/23				13.81	11.76	12.63
5/24				14.29	12.36	13.07
5/25				14.29	12.73	13.52
5/26				13.62	13.16	13.38
5/27				14.00	12.78	13.34
5/28				13.83	12.82	13.30
5/29				13.64	12.34	12.96
5/30				12.32	11.73	11.97
5/31				13.21	11.54	12.32
6/1				14.86	12.27	13.29
6/2				16.20	13.31	14.66
6/3				16.94	14.27	15.53
6/4				17.20	14.89	16.06
6/5				17.58	14.91	16.48
6/6				17.03	15.39	16.36
6/7				17.72	15.70	16.73
6/8				16.75	15.41	16.36
6/9				15.84	15.18	15.60
6/10				16.65	15.01	15.80
6/11				16.96	15.15	15.81
6/12				15.63	14.84	15.11
6/13				15.37	14.46	14.87
6/14				15.01	14.60	14.82
6/15				14.89	14.43	14.65
6/16				15.37	14.34	14.70
6/17				15.20	14.36	14.74
6/18				15.18	14.31	14.65
6/19				14.72	14.17	14.42
6/20				15.61	14.17	14.54
6/21				14.60	14.15	14.32
6/22				14.22	13.95	14.13
6/23				14.72	13.67	14.05

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Neva Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
6/24				14.77	13.71	14.33
6/25				14.24	13.47	13.82
6/26						
6/27				14.12	13.21	13.57
6/28				13.91	13.16	13.47
6/29				13.74	13.26	13.47
6/30				13.76	13.19	13.43
7/1				14.07	13.21	13.57
7/2				14.22	13.40	13.82
7/3				16.46	13.69	14.89
7/4				18.32	14.70	16.13
7/5				18.79	15.65	17.20
7/6				19.60	17.03	18.12
7/7				20.01	17.20	18.53
7/8				20.67	17.75	18.84
7/9				20.01	18.13	18.91
7/10				18.11	17.58	17.80
7/11				17.63	17.25	17.37
7/12				18.34	17.03	17.63
7/13				19.65	17.27	18.51
7/14				19.18	17.89	18.57
7/15				18.56	17.92	18.22
7/16				17.99	17.65	17.83
7/17				18.34	17.15	17.87
7/18				18.03	17.72	17.88
7/19				18.13	17.53	17.76
7/20				17.77	17.34	17.50
7/21				17.84	17.08	17.37
7/22				17.18	16.87	17.04
7/23				17.92	16.70	17.16
7/24				17.39	16.87	17.04
7/25	12.17	11.98	12.06	18.39	16.46	17.26
7/26	12.34	11.66	12.03	17.89	17.01	17.54
7/27	12.29	11.64	11.91	18.06	17.30	17.60
7/28	12.07	11.42	11.65	19.08	17.34	18.14
7/29	12.70	11.69	12.07	19.46	17.99	18.66
7/30	15.06	11.98	13.23	20.53	18.27	19.27
7/31	13.45	12.24	12.95	19.70	17.99	18.90
8/1	13.11	12.39	12.74	18.58	18.01	18.28
8/2	13.98	11.59	13.08	18.34	17.49	17.90
8/3	13.81	12.29	13.36	18.77	17.15	17.97

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Neva Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
8/4	13.57	12.49	13.21	20.75	17.42	18.71
8/5	14.19	12.56	13.41	20.67	17.77	18.87
8/6	15.37	12.75	14.11	18.68	18.11	18.42
8/7	16.18	13.98	14.93	18.87	17.84	18.29
8/8	15.72	14.07	14.88	18.72	18.08	18.33
8/9	14.98	14.34	14.63	18.49	17.96	18.26
8/10	14.82	14.31	14.61	18.70	17.63	18.12
8/11	15.06	14.29	14.60	18.27	17.75	18.03
8/12	14.58	14.10	14.39	18.44	17.53	17.90
8/13	14.29	13.71	13.94	18.49	17.63	17.98
8/14	13.98	13.55	13.76	17.82	17.34	17.54
8/15	14.86	13.83	14.23	17.53	17.20	17.32
8/16	14.55	14.00	14.17	17.34	16.77	17.09
8/17	14.58	13.81	14.15	17.08	16.80	16.93
8/18	14.89	14.03	14.44	16.96	16.61	16.78
8/19	15.82	14.27	14.78	17.06	16.34	16.66
8/20	16.82	14.51	15.60	16.61	16.34	16.48
8/21	16.25	14.89	15.46	16.34	16.01	16.17
8/22	14.89	13.81	14.39	16.01	15.70	15.85
8/23	14.51	13.95	14.22	15.80	15.53	15.66
8/24	14.29	13.81	14.07	15.56	15.13	15.37
8/25	13.81	13.43	13.58	15.13	14.72	14.97
8/26	13.45	13.19	13.35	14.86	14.51	14.67
8/27	14.53	12.87	13.52	14.58	14.24	14.38
8/28	13.81	13.47	13.61	14.63	14.22	14.37
8/29	13.91	13.23	13.52	14.63	14.19	14.37
8/30	14.03	13.23	13.60	14.19	14.03	14.09
8/31	13.69	12.94	13.24	14.60	13.71	14.10
9/1	13.45	12.97	13.17	14.39	13.76	14.01
9/2	13.19	12.82	12.97	14.41	13.43	13.89
9/3	12.99	12.78	12.92	13.83	13.62	13.72
9/4	12.97	12.75	12.85	13.91	13.57	13.71
9/5	13.57	12.78	13.07	14.67	13.43	13.91
9/6	13.43	12.80	13.08	14.39	13.88	14.10
9/7	13.11	12.87	12.97	14.24	13.93	14.06
9/8	12.87	12.53	12.70	13.98	13.55	13.75
9/9	12.61	12.41	12.49	13.69	13.40	13.56
9/10	12.41	12.22	12.30	13.52	12.90	13.20
9/11	12.27	12.00	12.13	13.35	12.85	13.08
9/12	12.10	11.98	12.02	13.02	12.65	12.81
9/13	12.05	11.86	11.93	12.70	12.46	12.61

**Temperatures in Waters Associated with Federal Subsistence Fisheries**  
**Neva Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
9/14	11.86	11.64	11.73	12.51	12.20	12.35
9/15	12.32	11.59	11.85	12.49	12.20	12.33
9/16	12.03	11.64	11.92	12.70	12.36	12.49
9/17	11.86	11.13	11.46	12.63	12.24	12.39
9/18	11.35	11.01	11.18	12.80	12.15	12.39
9/19	11.18	10.83	11.02	12.65	12.05	12.40
9/20	11.15	10.61	10.90	12.49	11.78	12.16
9/21	11.18	10.61	10.84	11.93	11.71	11.81
9/22	10.76	10.37	10.53	11.78	11.61	11.69
9/23	10.42	10.22	10.34	11.66	11.39	11.53
9/24	10.30	9.81	10.09	11.52	11.20	11.40
9/25	10.12	9.71	9.94	11.20	10.83	11.01
9/26	9.88	9.41	9.74	10.81	10.57	10.65
9/27	9.71	9.51	9.61	10.59	10.30	10.48
9/28	9.66	9.51	9.56	10.42	9.93	10.18
9/29	9.56	9.49	9.52	10.27	9.58	9.87
9/30	9.93	9.53	9.69	10.10	9.63	9.82
10/1	10.17	9.34	9.84	9.85	9.49	9.67
10/2	10.15	9.56	9.76	9.85	9.31	9.60
10/3	9.85	9.26	9.58	9.76	9.31	9.52
10/4	9.51	9.04	9.23	9.61	9.34	9.50
10/5	9.11	8.92	9.01	9.51	9.29	9.40
10/6	8.94	8.49	8.78	9.68	9.19	9.39
10/7	8.54	8.27	8.40	9.61	9.24	9.34
10/8	8.39	8.05	8.25	9.51	9.04	9.23
10/9	8.27	7.97	8.10	9.41	9.19	9.30
10/10	8.07	7.77	7.94	9.36	9.24	9.30
10/11	8.22	7.75	7.89	9.34	8.97	9.21
10/12	8.20	7.82	7.91	8.99	8.39	8.81
10/13	8.02	7.70	7.81	8.42	7.80	8.13
10/14	7.77	7.57	7.64	7.87	7.44	7.67
10/15	7.67	7.57	7.61	7.85	7.42	7.67
10/16	7.59	7.29	7.44	7.82	7.75	7.80
10/17	7.44	7.34	7.38	7.87	7.75	7.78
10/18	7.44	7.24	7.31	7.87	7.65	7.75
10/19	7.24	7.02	7.10	7.92	7.59	7.79
10/20	7.02	6.84	6.93	7.62	7.27	7.47
10/21	6.99	6.84	6.92			
10/22	6.89	6.71	6.84			
10/23	6.71	6.38	6.55			
10/24	6.48	5.90	6.30			

**Temperatures in Waters Associated with Federal Subsistence Fisheries**  
**Neva Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
<b>10/25</b>	6.03	5.80	5.91			
<b>10/26</b>	5.82	5.72	5.79			
<b>10/27</b>	5.90	5.67	5.72			
<b>10/28</b>	5.72	5.51	5.67			
<b>10/29</b>	5.62	5.51	5.56			
<b>10/30</b>	5.54	5.31	5.45			
<b>10/31</b>	5.49	5.23	5.36			
<b>11/1</b>	5.46	5.31	5.36			
<b>11/2</b>	5.44	5.31	5.38			
<b>11/3</b>	5.46	5.28	5.39			
<b>11/4</b>	5.28	5.08	5.18			
<b>11/5</b>	5.21	5.02	5.14			
<b>11/6</b>	5.10	5.00	5.06			
<b>11/7</b>	5.10	4.79	5.00			
<b>11/8</b>	4.87	4.56	4.73			
<b>11/9</b>	4.53	4.35	4.44			
<b>11/10</b>	4.43	4.27	4.35			
<b>11/11</b>	4.45	4.30	4.38			
<b>11/12</b>	4.32	4.22	4.29			
<b>11/13</b>	4.32	4.19	4.27			
<b>11/14</b>	4.32	4.17	4.27			
<b>11/15</b>	4.32	4.17	4.25			
<b>11/16</b>	4.17	3.67	4.04			
<b>11/17</b>	4.01	3.64	3.83			
<b>11/18</b>	3.67	2.98	3.23			
<b>11/19</b>	3.30	2.77	3.16			
<b>11/20</b>	3.88	2.96	3.57			
<b>11/21</b>	3.54	2.85	3.21			
<b>11/22</b>	3.27	1.94	2.86			
<b>11/23</b>	3.56	2.82	3.33			
<b>11/24</b>	3.38	2.50	3.06			
<b>11/25</b>	3.78	3.25	3.47			
<b>11/26</b>	3.72	3.41	3.61			
<b>11/27</b>	3.80	3.70	3.73			
<b>11/28</b>	3.78	3.72	3.74			
<b>11/29</b>	3.75	3.64	3.71			
<b>11/30</b>	3.59	3.22	3.42			
<b>12/1</b>	3.51	2.48	2.95			
<b>12/2</b>	3.12	2.42	2.82			
<b>12/3</b>	2.66	1.89	2.32			
<b>12/5</b>	2.10	1.70	1.85			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Neva Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
12/6	2.29	1.62	1.90			
12/7	2.34	1.83	2.13			
12/8	2.72	1.70	2.08			
12/9	2.77	1.32	2.18			
12/10	3.14	2.02	2.56			
12/11	2.90	1.83	2.45			
12/12	2.64	1.99	2.38			
12/13	2.66	2.16	2.42			
12/15	1.78	1.59	1.67			
12/16	1.83	1.51	1.69			
12/17	1.83	1.26	1.49			
12/18	1.59	1.40	1.46			
12/19	1.40	1.24	1.32			
12/20	1.51	1.29	1.39			
12/21	1.72	1.45	1.57			
12/22	1.91	1.43	1.67			
12/23	1.86	1.59	1.68			
12/24	1.83	1.56	1.70			
12/25	1.86	1.62	1.71			
12/26	2.05	1.62	1.79			
12/27	1.78	1.34	1.52			
12/28	1.51	1.18	1.34			
12/29	1.43	1.13	1.24			
12/30	1.34	0.99	1.21			
12/31	1.18	0.99	1.09			

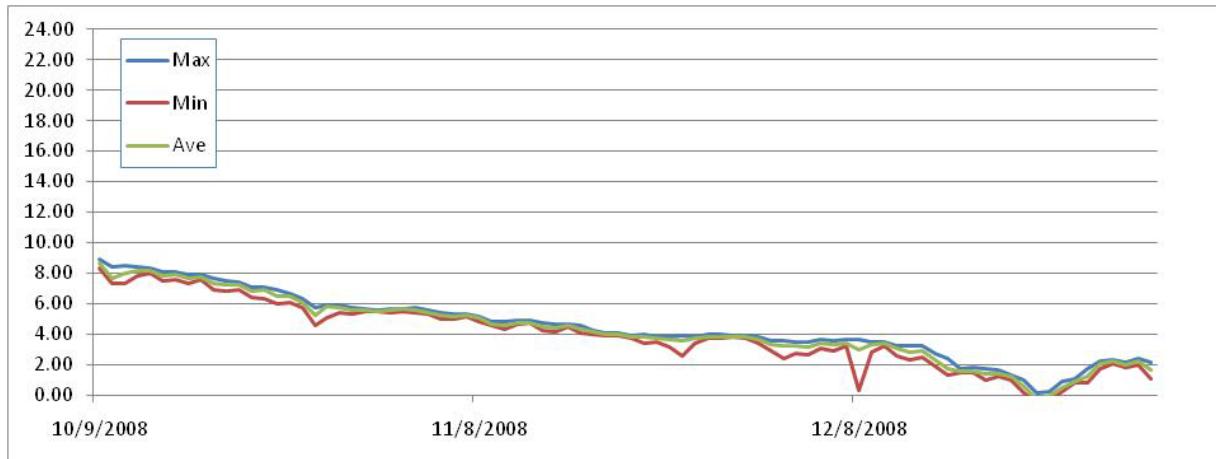
**Kanalku Creek**

<b>Stream Name</b>	<b>Kanalku Creek</b>	
<b>Principal Investigator</b>	Julie Bednarski, ADFG	
<b>Drainage Name</b>	Kanalku Creek	
<b>Latitude:</b>	57.4932	
<b>Longitude:</b>	134.3645	
<b>Start:</b>	10/9/2008	1/1/2009
<b>End:</b>	12/31/2008	9/25/2009
<b>Season Maximum:</b>	8.89	20.37
<b>Max Range</b>	0.73	4.06
<b>Days Max &gt;13C</b>	0	94
<b>Day Max&gt;15C</b>	0	49
<b>Days Max&gt;20C</b>	0	3
<b>June Degree Days</b>	Not Available	377
<b>July Degree Days</b>	Not Available	499
<b>August Degree Days</b>	Not Available	498
<b>Sept Degree Days</b>	Not Available	305
<b>Regression Local Air</b>	Not Available	
<b>Slope</b>		0.88
<b>Y Intercept</b>		2.71
<b>R Squared</b>		0.77
<b>Regression Juneau Air</b>	Not Available	
<b>Slope</b>		0.82
<b>Y Intercept</b>		0.31
<b>R Squared</b>		0.59

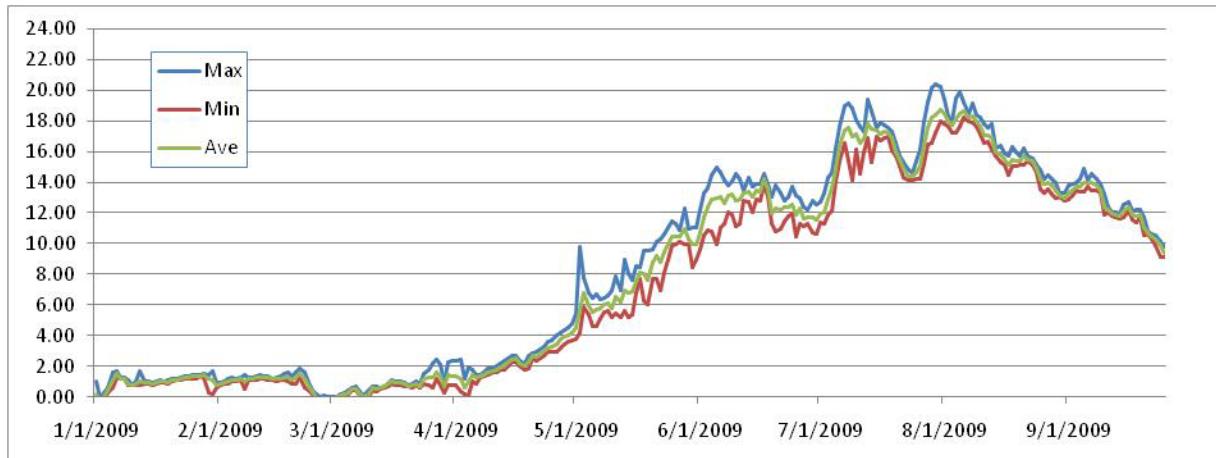
Table 31. Cross-section water temperatures measured at monitoring location.

<b>Distance Across Channel (Portion of Cross-Section)</b>	0.1	0.3	0.5	0.7	0.9
<b>Water Temperature (C)</b>	9.0	9.2	9.0	9.0	9.0

**Temperatures in Waters Associated with Federal Subsistence Fisheries February 20, 2011**  
**Kanalku Creek**



**Figure 37. Daily 2008 water temperature (C) for Kanalku Creek.**



**Figure 38. Daily 2009 water temperature for Kanalku Creek.**

**Table 32. Daily Kanalku Creek water temperature (C) statistics.**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/1				0.99	-0.31	0.21
1/2				-0.12	-0.37	-0.23
1/3				0.25	-0.14	-0.01
1/4				0.58	0.25	0.43
1/5				1.62	0.58	1.08
1/6				1.64	1.24	1.51
1/7				1.24	1.18	1.20
1/8				1.24	1.15	1.20
1/9				1.13	0.74	0.88
1/10				0.80	0.74	0.76
1/11				0.99	0.77	0.88
1/12				1.64	0.80	1.05

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kanalku Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
1/13				0.99	0.85	0.94
1/14				0.99	0.85	0.92
1/15				0.91	0.80	0.85
1/16				0.99	0.88	0.92
1/17				1.07	0.91	0.99
1/18				1.04	0.91	0.98
1/19				1.07	0.85	0.94
1/20				1.18	0.99	1.08
1/21				1.18	1.10	1.13
1/22				1.26	1.10	1.18
1/23				1.34	1.15	1.26
1/24				1.32	1.21	1.24
1/25				1.45	1.21	1.32
1/26				1.45	1.21	1.36
1/27				1.43	1.32	1.38
1/28				1.48	1.29	1.39
1/29				1.43	0.25	1.14
1/30				1.67	0.22	1.13
1/31				0.93	0.58	0.78
2/1				0.91	0.80	0.87
2/2				0.99	0.83	0.91
2/3				1.18	0.88	1.04
2/4				1.24	1.04	1.13
2/5				1.18	1.04	1.14
2/6				1.26	1.07	1.16
2/7				1.40	0.52	1.05
2/8				1.26	1.07	1.16
2/9				1.29	1.13	1.20
2/10				1.32	1.13	1.24
2/11				1.40	1.21	1.28
2/12				1.37	1.18	1.27
2/13				1.32	1.13	1.23
2/14				1.21	1.07	1.14
2/15				1.24	1.04	1.14
2/16				1.37	1.13	1.21
2/17				1.53	1.10	1.29
2/18				1.59	1.04	1.30
2/19				1.34	0.85	1.08
2/20				1.59	0.88	1.25
2/21				1.83	1.26	1.52
2/22				1.56	0.61	1.17

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kanalku Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
2/23				0.96	0.41	0.68
2/24				0.44	0.14	0.33
2/25				0.16	-0.37	-0.12
2/26				0.02	-0.42	-0.17
2/27				0.08	-0.23	-0.05
2/28				-0.03	-0.56	-0.27
3/1				0.02	-0.34	-0.13
3/2				0.05	-0.06	0.01
3/3				0.14	0.05	0.09
3/4				0.25	0.14	0.21
3/5				0.41	0.16	0.26
3/6				0.61	0.41	0.47
3/7				0.66	0.41	0.52
3/8				0.36	0.08	0.22
3/9				0.08	-0.12	-0.02
3/10				0.41	0.02	0.18
3/11				0.69	0.41	0.59
3/12				0.69	0.36	0.51
3/13				0.63	0.52	0.59
3/14				0.72	0.58	0.66
3/15				0.88	0.72	0.81
3/16				1.07	0.88	0.98
3/17				0.99	0.77	0.90
3/18				0.99	0.80	0.89
3/19				0.93	0.72	0.84
3/20				0.77	0.66	0.70
3/21				0.83	0.63	0.74
3/22				1.04	0.74	0.86
3/23				0.83	0.61	0.71
3/24				1.48	0.83	1.20
3/25				1.72	0.77	1.30
3/26				2.16	0.63	1.28
3/27				2.42	1.18	1.62
3/28				2.10	0.80	1.37
3/29				0.91	0.30	0.66
3/30				2.26	0.74	1.40
3/31				2.37	0.74	1.39
4/1				2.32	0.74	1.34
4/2				2.40	0.38	1.20
4/3				1.21	0.14	0.62
4/4				1.91	0.08	0.99

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kanalku Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
4/5				1.72	1.04	1.40
4/6				1.40	0.88	1.22
4/7				1.45	1.26	1.35
4/8				1.62	1.32	1.46
4/9				1.83	1.43	1.63
4/10				1.83	1.62	1.71
4/11				2.02	1.62	1.80
4/12				2.16	1.75	1.95
4/13				2.32	1.72	2.05
4/14				2.48	2.05	2.28
4/15				2.66	2.26	2.43
4/16				2.66	2.29	2.49
4/17				2.32	2.02	2.19
4/18				2.16	1.81	2.00
4/19				2.69	1.83	2.30
4/20				2.85	2.53	2.68
4/21				2.90	2.32	2.60
4/22				3.06	2.48	2.78
4/23				3.27	2.69	3.00
4/24				3.56	2.96	3.21
4/25				3.72	2.96	3.27
4/26				4.04	2.96	3.47
4/27				4.19	3.22	3.74
4/28				4.38	3.46	3.95
4/29				4.53	3.56	4.04
4/30				4.77	3.70	4.22
5/1				5.46	3.80	4.51
5/2				9.78	4.22	5.72
5/3				7.80	5.82	6.76
5/4				6.74	5.39	5.94
5/5				6.43	4.64	5.51
5/6				6.66	4.64	5.72
5/7				6.36	5.13	5.78
5/8				6.46	5.54	6.00
5/9				6.61	5.59	6.09
5/10				6.97	5.21	5.80
5/11				7.90	5.46	6.51
5/12				6.91	5.21	6.15
5/13				8.94	5.57	6.96
5/14				8.00	5.18	6.80
5/15				7.59	5.39	6.84

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kanalku Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
5/16				8.49	6.81	7.54
5/17				8.47	7.67	8.11
5/18				9.53	6.26	8.05
5/19				9.51	6.05	7.64
5/20				9.61	7.67	8.79
5/21				10.08	7.67	9.19
5/22				10.32	6.94	8.75
5/23				10.61	8.12	9.44
5/24				11.03	8.92	9.97
5/25				11.47	9.85	10.48
5/26				11.27	9.93	10.48
5/27				10.88	10.12	10.43
5/28				12.32	9.95	10.91
5/29				10.93	9.98	10.29
5/30				11.01	8.42	9.93
5/31				11.01	8.92	9.94
6/1				12.24	9.63	10.68
6/2				13.28	10.54	11.74
6/3				13.62	10.88	12.34
6/4				14.48	10.76	12.87
6/5				14.96	9.98	12.94
6/6				14.65	11.03	13.00
6/7				14.12	11.27	12.65
6/8				13.76	12.03	13.08
6/9				14.07	11.83	13.22
6/10				14.53	11.13	12.76
6/11				14.24	11.32	12.91
6/12				13.47	12.78	13.28
6/13				14.27	12.70	13.38
6/14				13.69	12.05	13.01
6/15				13.91	12.90	13.47
6/16				13.88	12.78	13.40
6/17				14.53	13.86	14.17
6/18				13.83	13.06	13.52
6/19				13.04	11.32	11.96
6/20				13.79	10.81	12.30
6/21				13.31	10.93	12.19
6/22				12.78	11.42	12.38
6/23				13.02	11.76	12.34
6/24				13.67	11.98	12.58
6/25				13.16	10.44	11.89

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kanalku Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
6/26				12.97	11.27	12.32
6/27				12.34	11.10	11.66
6/28				12.24	11.32	11.73
6/29				12.75	10.71	11.74
6/30				12.51	10.61	11.56
7/1				12.68	11.39	11.94
7/2				13.31	11.27	12.04
7/3				14.29	11.83	12.88
7/4				14.65	12.15	13.65
7/5				16.18	14.03	14.89
7/6				17.61	15.37	16.42
7/7				18.94	16.53	17.42
7/8				19.15	15.41	17.54
7/9				18.77	14.10	16.99
7/10				18.01	16.13	17.11
7/11				17.65	14.51	16.52
7/12				17.27	15.94	16.81
7/13				19.37	16.84	17.77
7/14				18.68	15.27	17.50
7/15				17.56	16.96	17.42
7/16				17.89	16.70	17.16
7/17				17.70	16.92	17.26
7/18				17.51	16.96	17.22
7/19				17.32	16.08	16.87
7/20				16.56	15.68	15.99
7/21				15.72	15.03	15.46
7/22				15.32	14.27	14.84
7/23				14.77	14.12	14.39
7/24				14.63	14.15	14.36
7/25				15.39	14.17	14.66
7/26				16.13	14.17	15.08
7/27				17.94	15.18	16.37
7/28				19.20	16.44	17.56
7/29				20.15	16.58	18.19
7/30				20.37	17.18	18.42
7/31				20.22	17.94	18.69
8/1				19.37	17.80	18.46
8/2				18.32	17.63	17.99
8/3				18.08	17.20	17.68
8/4				19.46	17.25	18.10
8/5				19.91	17.65	18.46

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kanalku Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
8/6				19.22	18.20	18.67
8/7				18.49	17.99	18.22
8/8				19.18	17.84	18.34
8/9				18.37	17.61	18.00
8/10				18.20	17.15	17.64
8/11				17.77	16.51	17.08
8/12				17.58	16.61	17.02
8/13				17.80	16.13	16.90
8/14				16.18	15.68	15.93
8/15				16.37	15.32	15.81
8/16				15.92	15.10	15.43
8/17				15.68	14.46	15.15
8/18				16.27	15.03	15.47
8/19				15.96	15.01	15.41
8/20				15.72	15.10	15.37
8/21				16.23	15.13	15.72
8/22				15.75	15.34	15.49
8/23				15.56	15.13	15.34
8/24				15.10	14.60	14.88
8/25				14.82	13.57	14.21
8/26				14.22	13.31	13.90
8/27				14.46	13.52	13.96
8/28				14.17	13.23	13.78
8/29				13.93	12.97	13.49
8/30				13.26	13.02	13.11
8/31				13.33	12.75	12.98
9/1				13.81	12.87	13.25
9/2				13.91	13.16	13.46
9/3				13.95	13.43	13.71
9/4				14.17	13.38	13.69
9/5				14.91	13.40	13.93
9/6				14.12	13.74	13.92
9/7				14.58	13.50	14.00
9/8				14.17	13.47	13.80
9/9				13.91	13.26	13.49
9/10				13.19	11.83	12.33
9/11				12.36	12.03	12.18
9/12				12.03	11.81	11.95
9/13				12.00	11.71	11.83
9/14				11.93	11.61	11.79
9/15				12.51	11.73	12.08

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kanalku Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
9/16				12.70	12.12	12.39
9/17				12.10	11.52	11.83
9/18				12.20	11.37	11.82
9/19				12.22	11.66	11.87
9/20				11.73	10.49	11.00
9/21				10.81	10.59	10.68
9/22				10.61	10.25	10.46
9/23				10.52	9.90	10.28
9/24				10.12	9.14	9.85
9/25				9.76	9.09	9.40
9/26						
9/27						
9/28						
9/29						
9/30						
10/1						
10/2						
10/3						
10/4						
10/5						
10/6						
10/7						
10/8						
10/9	8.89	8.34	8.68			
10/10	8.39	7.29	7.66			
10/11	8.49	7.29	7.95			
10/12	8.39	7.85	8.18			
10/13	8.30	7.97	8.14			
10/14	8.07	7.47	7.84			
10/15	8.10	7.57	7.87			
10/16	7.90	7.32	7.65			
10/17	7.90	7.59	7.77			
10/18	7.67	6.86	7.35			
10/19	7.49	6.84	7.20			
10/20	7.42	6.86	7.23			
10/21	7.04	6.38	6.86			
10/22	7.04	6.36	6.87			
10/23	6.89	6.00	6.45			
10/24	6.69	6.08	6.52			
10/25	6.33	5.75	6.03			
10/26	5.77	4.58	5.26			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kanalku Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
10/27	5.92	5.10	5.78			
10/28	5.92	5.36	5.74			
10/29	5.77	5.31	5.60			
10/30	5.64	5.49	5.59			
10/31	5.54	5.46	5.50			
11/1	5.67	5.44	5.56			
11/2	5.67	5.51	5.61			
11/3	5.69	5.39	5.55			
11/4	5.57	5.31	5.41			
11/5	5.36	4.97	5.21			
11/6	5.33	4.97	5.17			
11/7	5.31	5.18	5.23			
11/8	5.18	4.84	5.03			
11/9	4.84	4.53	4.69			
11/10	4.79	4.30	4.55			
11/11	4.90	4.64	4.75			
11/12	4.90	4.69	4.75			
11/13	4.69	4.19	4.49			
11/14	4.64	4.17	4.42			
11/15	4.66	4.51	4.59			
11/16	4.53	4.06	4.31			
11/17	4.22	3.96	4.12			
11/18	4.04	3.91	3.98			
11/19	4.06	3.85	3.98			
11/20	3.93	3.75	3.84			
11/21	4.01	3.41	3.77			
11/22	3.83	3.46	3.71			
11/23	3.80	3.12	3.62			
11/24	3.91	2.56	3.59			
11/25	3.78	3.43	3.69			
11/26	4.01	3.72	3.84			
11/27	3.96	3.75	3.82			
11/28	3.88	3.78	3.82			
11/29	3.85	3.75	3.78			
11/30	3.78	3.35	3.63			
12/1	3.56	2.90	3.34			
12/2	3.54	2.42	3.19			
12/3	3.49	2.69	3.25			
12/4	3.51	2.61	3.11			
12/5	3.64	3.04	3.39			
12/6	3.56	2.93	3.32			

**Temperatures in Waters Associated with Federal Subsistence Fisheries  
Kanalku Creek**

**February 20, 2011**

Date	2008 Max	2008 Min	2008 Ave	2009 Max	2009 Min	2009 Ave
12/7	3.62	3.25	3.42			
12/8	3.62	0.33	3.00			
12/9	3.49	2.80	3.30			
12/10	3.49	3.22	3.43			
12/11	3.22	2.58	3.07			
12/12	3.20	2.34	2.82			
12/13	3.25	2.50	2.89			
12/14	2.72	1.89	2.29			
12/15	2.37	1.29	1.71			
12/16	1.70	1.48	1.57			
12/17	1.83	1.45	1.57			
12/18	1.72	0.96	1.37			
12/19	1.64	1.26	1.37			
12/20	1.34	0.93	1.23			
12/21	0.96	0.14	0.54			
12/22	0.16	-0.51	-0.25			
12/23	0.25	-0.37	-0.07			
12/24	0.85	0.19	0.50			
12/25	1.07	0.83	0.91			
12/26	1.72	0.83	1.21			
12/27	2.21	1.70	2.06			
12/28	2.29	2.05	2.18			
12/29	2.16	1.83	1.93			
12/30	2.37	1.99	2.20			
12/31	2.13	1.02	1.67			

## **Appendix B. Field Instructions and Data Sheets**

**Stream Temperature Monitoring for Subsistence Fisheries Management  
Instructions for Field Crew 2008**

**Background**

Two air temperature (white loggers) and two water temperature (black loggers) loggers will be deployed at each site. Site information and logger information are recorded on field data sheets. At the end of the season one air temperature logger and one water temperature logger will be removed from the stream and one will remain on site. Data from the loggers that are to remain on site must be downloaded to the shuttle. The loggers that are removed from the site, the data shuttles, and field data forms are returned to the Principal Investigator (whoever is in charge of the specific project). The loggers and data are returned to the project contractor for data entry and accuracy checks and prepared for the deployment the following year.

**Prepare Equipment for Deployment**

Each field site should receive two packages, one contains a yellow pelican case, and the other contains a partially assembled solar radiation shield. Each yellow pelican case contains two water temperature data loggers, two air temperature data loggers (white), a waterproof shuttle, two couplers, cable, plastic quick ties, a field data sheet and these instructions. Remove the air temperature loggers, water temperature loggers, cable, quick ties, and field data sheet from the case. Record the air and water temperature logger serial numbers on the data sheet. The plastic-coated cable should have a loop at each end. Secure the water temperature loggers to one end of the cable and tighten the clamp. Complete assembly of the solar radiation shield as shown in the figure on the enclosed instructions. Place the two air temperature loggers in the space provided by the three open plates. Using a permanent marker, label the solar shield with agency contact name and number.

**Air and Water Temperature Logger Deployment**

Place water temperature loggers in a well mixed portion of the stream that will remain in flowing water throughout the year. Make sure the area is representative of the stream, water is flowing (not a stagnant pool), and that the logger will not be damaged by high flow. Avoid backwater areas or locations directly below tributary streams. Measure and record on data sheets the water temperature across the stream (where possible) and at multiple depths at the logger location.

To deploy the water temperature logger, find a stable tree along the streambank (that is not likely to be eaten by beavers or be eroded away by a high flow event). Wrap the cable around the tree and pass the loggers through the loop on the opposite end and pull the cable tight. Secure the cable on the tree low down on the trunk in a location that will not attract attention. Secure the cable in the water with one or more large rocks 4 to 6 inches from the logger to keep it at the

desired location (if possible). Record the time and GPS location of deployment. Take at least 3 photographs of deployment location: 1 looking downstream, 1 looking upstream, and 1 looking into the riparian vegetation. Give a detailed description of the logger deployment location, including directions from road or trail, which streambank it is on, and note any landmarks in the area. Keep in mind that you may not be the person that downloads the temperature data or collects the logger at the end of the season and that the vegetation may also appear different at different times of the season.

Secure the solar shield and air temperature loggers to a small tree or post at least 6 feet above the ground and 50 feet away from the stream. Make sure that the tree is sturdy enough to hold the weight of the solar shield even in windy weather. However, the logger should not be against a big trunk that may affect localized air temperatures. Instead, find a sturdy branch away from the main trunk or find a sapling that is about the thickness of an adult arm. Secure the solar shield to the tree or tree branch using zip ties or the supplied "U" bolts. Record the time of deployment, take photos depicting logger location, and describe in detail where the logger is placed on the data sheet. Record the GPS location of the logger and instantaneous air temperature.

Make sure that the data sheet is complete and return data sheet to pelican case.

### **Periodic Logger Checks**

At least every other week check to make sure the loggers are still deployed correctly. Storms, tree falls, animals, flowing debris, and sediment can all affect logger deployment. Make sure the water temperature loggers are still in the stream. Check the bank attachment and make sure that the loggers are not becoming buried in sediment. Make sure that the solar shied is still secure and upright. Make sure that the vents are still open removing any leaves or other debris.

### **Logger Removal and Downloading**

At the end of the season, one air temperature logger and one of the water temperature loggers are removed from the field. The data shuttle is used to download data from the remaining loggers. Lift the water temperature loggers out of the stream leaving the cable attached to the bank. Remove one logger by un-bolting the clamp and place in the pelican case, then re-bolt the clamp to secure remaining logger. To download data from the remaining logger, fit the appropriate coupler to the end of the water proof shuttle. Clean off the end of the logger and fit it into the coupler. (The arrow on the blue label on the water temperature logger must line up with the arrow on the coupler). Press the lever on the shuttle against the body of the instrument. Watch for the green light to start blinking that data transfer is "OK", indicating successful download. If you have problems make sure the end of the logger is clean and that the logger and coupler are lined up correctly. Return the one air logger, one water temperature logger, and waterproof shuttle to the pelican case.

Open the solar shield by removing the wing nuts from the bottom. Remove the two closed plates to access the loggers. Remove both air loggers. Return one logger to the pelican case. Using

**Temperatures in Waters Associated with Federal Subsistence Fisheries   February 20, 2011**  
**Appendix B**

the waterproof shuttle, download the second air temperature logger. After the download is complete, place the logger back into the solar shield, reassemble the shield, and secure the solar shield as before.

Return the pelican case and site photographs to the principal investigator.

**Stream Temperature Monitoring for Subsistence Fisheries Management**  
**Logger Deployment Data Sheet 2008**

Field Crew: \_\_\_\_\_

Date: \_\_\_\_\_ Organization: \_\_\_\_\_

Drainage Name: \_\_\_\_\_

Stream Name: \_\_\_\_\_

Site Name: \_\_\_\_\_

**Water Temperature Logger Deployment**

Serial # 1: \_\_\_\_\_ Serial # 2: \_\_\_\_\_ Time: \_\_\_\_\_

Location Deployed: \_\_\_\_\_ Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

Water Temps	1	2	3	4	5
Vertical:					
Horizontal:					

Channel Width (m)	Depth (m) at 0.25 Width	Depth (m) at 0.5 Width	Depth (m) at 0.75 Width

**Air Temperature Logger Deployment**

Serial # 1: \_\_\_\_\_ Serial # 2: \_\_\_\_\_

Time Deployed \_\_\_\_\_ Air Temperature: \_\_\_\_\_

Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

**Photographs: Description**



**Air and Water Logger Removal**

Date Removed: \_\_\_\_\_

Air Logger Serial # Removed: \_\_\_\_\_

Water Logger Serial # Removed: \_\_\_\_\_

**Description and illustration of temperature logger locations.**

**Field Checks.**

Date/Time	Water Temperature	Logger Condition (is logger under water, clear of debris or buried in sediment, etc.)

## **Stream Temperature Monitoring for Subsistence Fisheries Management Instructions for Field Crew 2009**

Each field site will receive one air and two water temperature loggers, a data shuttle, a field data sheet, along with these instructions within a yellow pelican case (if the case was returned last year). **The air and water temperature loggers are already recording and do not need to be turned on.** One air temperature (white) logger and two water temperature (black) loggers will be deployed at each site in the spring, downloaded in the fall, and replaced the following spring. Air and water temperature loggers currently on site, should be removed and returned to ARRI. At the end of the season, the air and water temperature loggers will need to be downloaded to the data shuttle, and the data shuttle, data sheet, and pelican case returned. The downloaded air and water temperature loggers are returned to the solar shield and stream where they will remain throughout the winter.

**Replace the air temperature logger and return the old air logger to ARRI.** All sites received a white solar shield last year that should already be assembled and installed. The solar shield should be secured to a small tree or post at least 6 feet above the ground and approximately 50 feet away from the stream. The solar shield should not be against a big trunk, but attached to a sturdy branch or a sapling (or post) that is about the thickness of an adult arm, and secured to the tree or tree branch using zip ties or "U" bolts. The vents should be free of debris. Remove the four wing-nuts on the bottom of the solar shield and slide off the two bottom plates. Remove the previously used air temperature logger and replace it with the new one. Record the serial number and date air logger was removed and the date and serial number of the air logger deployed on the data sheet. Take photographs and describe in detail logger location on the data sheet. Record the GPS location of the logger.

**Replace the previously used water temperature logger with the two new water temperature loggers and check the variability in stream temperatures. Return the old temperature loggers to ARRI.** The water temperature loggers should be in a well mixed portion of the stream that will remain in flowing water throughout the year. The location should be representative of the stream and well mixed. Avoid backwater areas or locations directly below tributary streams or lake outlets. The outside of meander bends where the predominant stream flow is near the bank is a good location for logger placement. To verify that the site is well-mixed horizontally and vertically you will need to take water temperature readings at multiple locations across the stream channel with a hand-held thermometer. Begin by field checking your thermometer precision. This is accomplished by comparing individual readings to the average of five consecutive measures. Tie the submersible thermometer at mid depth on a wading rod. Submerge the thermometer to mid water depth. After ten minutes, quickly remove the thermometer and record the temperature to the nearest 0.5°C. Wait ten minutes and then re-submerge the thermometer. After ten minute remove the thermometer and record a second water temperature. Repeat this process until you have 5 water temperature readings. Calculate the

average temperature and compare the average to the individual readings. Your temperature readings should all be within 0.5°C of the average temperature. Now proceed to take mid depth measurements at ten (approximately) equidistant locations along the cross section of the river. Use the same procedures you used during the precision check. Record the temperature measurements and related information on the data sheets provided. Compute the average cross sectional temperature. If your site is well mixed, the temperature at the depth and location you deploy the loggers should be within  $\pm 0.5^{\circ}\text{C}$  of the average cross channel temperature. The cross channel measurements should be taken at the beginning and end of the project.

A cable securing water temperature loggers should already be in place. Remove the loggers from the cable, record the logger serial numbers and removal date on the data sheet. Record the two new logger serial numbers and the date of deployment on the data sheet. Secure the two new loggers to the cable and return them to the stream.

The stream loggers are secured to the bank using a plastic coated cable. The cable is attached to a stable tree (that is not likely to be eaten by beavers or be eroded away by a high flow event), rock, or other secure object. Wrap the cable around the tree and pass the loggers through the loop on the opposite end and pull the cable tight. Secure the cable on the tree low down on the trunk in a location that will not attract attention. Secure the cable in the water with one or more large rocks 4 to 6 inches from the logger to keep it at the desired location (if possible). Record the time and GPS location of deployment. Take at least 3 photographs of deployment location: 1 looking downstream, 1 looking upstream, and 1 looking into the riparian vegetation. Give a detailed description of the logger deployment location, including directions from road or trail, which streambank it is on, and note any landmarks in the area. Make sure that the data sheet is complete and return the data sheet to pelican case.

**At least every other week check to make sure the loggers are still deployed correctly.**  
Storms, tree falls, animals, flowing debris, and sediment can all affect logger deployment. Make sure the water temperature loggers are still in the stream. Check the bank attachment and make sure that the loggers are not becoming buried in sediment. Make sure that the solar shied is still secure and upright. Make sure that the vents are still open; remove any leaves or other debris.

**At the end of the season, download the air and water temperature loggers onto the data shuttle and return the shuttle, pelican case, data sheet and electronic photographs to ARRI.**  
Lift the water temperature loggers out of the stream leaving the cable attached to the bank. Remove the clamp and the water temperature loggers from the cable. Remove the logger from the protective boot. To download data from the loggers, fit the appropriate coupler to the end of the water proof shuttle. Clean off the end of the temperature logger and fit it into the coupler. (The arrow on the blue label on the water temperature logger must line up with the arrow on the coupler). Press the lever on the shuttle against the body of the instrument and then release it. Watch for the green light to start blinking that data transfer is “OK”, indicating successful download. **If you do not see the blinking green light, the data has not been downloaded.** If

you have problems, make sure the end of the logger is clean and that the logger and coupler are lined up correctly. Place the loggers back into the protective boots. Pass the end of the cable through the loggers and secure the cable loop with the clamp. Return the water temperature loggers to the stream.

Remove the air temperature logger from the solar shield. Download the air logger to the shuttle using the same procedure as with the water temperature logger using the appropriate coupler. Place the air temperature logger back into the solar shield, where it will remain throughout the winter. Return the pelican case, shuttle, data sheet, and site photographs (on a CD) to ARRI.

**Stream Temperature Monitoring for Subsistence Fisheries Management**  
**Logger Deployment Data Sheet 2009**

Drainage Name: \_\_\_\_\_

Stream Name: \_\_\_\_\_ Site Name: \_\_\_\_\_

Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

**Water Temperature Logger**

Serial # of Loggers Removed from Site:

Serial # 1: \_\_\_\_\_ Serial # 2: \_\_\_\_\_

Date Loggers Removed from Site: \_\_\_\_\_

Serial # of Loggers Deployed:

Serial # 1: \_\_\_\_\_ Serial # 2: \_\_\_\_\_

Date Loggers Deployed: \_\_\_\_\_

Date Loggers Downloaded to Shuttle at End of Season: \_\_\_\_\_

**Cross-Section Water Temperatures**

Cross-Section Water Temperature at Beginning of Season				
Cross-Section Water Temperature at End of Season				

**Air Temperature Logger**

Date Air Loggers Removed from Site: \_\_\_\_\_

Serial # 1: \_\_\_\_\_ Serial # 2: \_\_\_\_\_

Date Loggers Deployed: \_\_\_\_\_

Serial # 1: \_\_\_\_\_ Serial # 2: \_\_\_\_\_

Date Loggers Downloaded to Shuttle at End of Season: \_\_\_\_\_

**Photographs: Description**

1.

2.

3.

4.

Describe and illustrate temperature logger locations on back