LOCATION OF PROPOSED RESERVATION OF WATER:

Stream 2003, a tributary of the Chuitna River, is located approximately 7 miles northwest of Tyonek, AK. This reservation applies to stream flows within a reach of the main stem of Stream 2003, associated floodplain, side channels, spring systems and contributing wetlands between its confluence with tributary 200304 (approximately river mile 6.6) downstream to its confluence with tributary 200301 (approximately river mile 1.5). See Appendices A-1, A-2 and A-3 for maps and aerial photos of the instream flow reservation boundaries requested in this application. This reach of stream 2003 is important to anadromous fish, particularly coho salmon as shown on the Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes (Appendices A-4 and A-5) and as documented in fish spawning surveys conducted in the area (Appendices A-6, A-7 and A-8).

Location of proposed reservation reach:

Sections 3, 10, 11, 13, 14; Township 12 North; Range 12 West; Seward Meridian

Sections 35; Township 13 North; Range 12 West; Seward Meridian

U.S. Geological Survey, USGS 1:63,360 Topographic Map, Tyonek River A-4

Location of upstream point of proposed reservation reach:

The upstream point of the proposed reservation reach is located in section 35, Township 13 North, Range 12 West; Seward Meridian (U.S. Geological Survey, USGS 1:63,360 Topographic Map, Tyonek River A-4).

The latitude/longitude of the upstream point of the proposed reservation reach is N 61° 10’47.44"; W 151°21'55.71", approximately river mile 6.6 of Stream 2003.

Location of downstream point of proposed reservation reach:

The downstream point of the proposed reservation reach is located in section 13, Township 12 North, Range 12 West; Seward Meridian (U.S. Geological Survey, USGS 1:63,360 Topographic Map, Tyonek River A-4).

The latitude/longitude of the upstream point of the proposed reservation reach is N 61° 7'49.53"; W 151°19'50.29", approximately river mile 1.5 of Stream 2003.

Location of flow gauging sites within proposed reservation reach:

Gauging Station 140 is located in section 3, Township 12 North, Range 12 West; Seward Meridian (U.S. Geological Survey, USGS 1:63,360 Topographic Map, Tyonek River A-4). The latitude/longitude of Station 140 is N 61° 9'48.03"; W 151°22'44.33", approximately river mile 6.4 of Stream 2003. Gauging Station 140 is not currently active and has been replaced by Station 141.

Gauging Station 141 is located in section 35, Township 13 North, Range 12 West; Seward Meridian (U.S. Geological Survey, USGS 1:63,360 Topographic Map, Tyonek River A-4). The latitude/longitude of Station 141 is N 61°10'37.51"; W 151°22'11.19", approximately river mile 6.6 of Stream 2003.

Note: Latitude/Longitude and river mile locations are approximate and were calculated using Google Earth. Google Earth uses Simple Cylindrical projection with a WGS84 datum for its imagery base.

Maps:

(1) Sections, townships, range, and meridians: Appendices A-1, A-2 and A-3
(2) The stream body in which the reservation of water is proposed: Appendices A-1, A-2 and A-3
(3) Specific points defining the boundary of the proposed reservation of water: Appendices A-1, A-2 and A-3
(4) Permanent, temporary, or planned locations of water measurement devices: Appendices A-1, A-2 and A-3
(5) Permanent, temporary, or planned bench marks- N/A

WATER USE:

Describe in detail the purpose(s) of the proposed reservation, including, when appropriate, species and life stage, type of recreation, vehicle, or water quality parameter, or other relevant information.

The primary purpose of the proposed reservation is for protection of fish and wildlife habitat, migration, and propagation in Stream 2003 and its watershed. Stream 2003 produces a variety of important fish species in this region, including Dolly Varden (*Salvelinus malma*), Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon, (*Oncorhynchus kisutch*), rainbow trout (O*ncorhynchus mykiss*), threespine stickleback (*Gasterosteus arculeatus*), and Pacific lamprey (*Entosphenus tridentatus*) (Oasis, 2008). Low numbers of sockeye salmon (*Oncorhynchus nerka*) and pink salmon (*Oncorhynchus gorbuscha*) were also identified in stream 2003 during the 2008 sampling campaign (Nemeth et al., 2009). Many of these species utilize Stream 2003 for a portion of, or all of, their spawning, incubation, rearing, and passage life phases (Figure 1) (Oasis, 2008).

The Alaska Department of Fish and Game (ADF&G) has included Stream 2003 in its Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes (Appendices A-4 and A-5) and Stream 2003 is afforded protection under AS 16.05.871 (ADFG, 2007). The species present in Stream 2003 contribute to sport, commercial, and subsistence fishing in the area (Oasis, 2008). It has been estimated that Stream 2003 contributes 20.8% of the coho salmon population to the Chuitna River, which is included in the Cook Inlet Regional Salmon Enhancement Plan (developed to achieve optimal production of wild and enhanced salmon stocks) (Oasis, 2008). Within this plan, the Chuitna is designated a “wild stock sanctuary” under ADF&G Genetics Policy for Chinook and Coho salmon based on escapement numbers (Oasis, 2008).

Salmon spawning surveys were conducted in the Chuitna River and tributaries (including Stream 2003) in 1982, 1983, 1984 and 2006 (Oasis, 2008). Appendices A-6, A-7 and A-8 show the distribution of Coho, Chinook and Pink salmon spawning in the area of the requested instream flow reservation.

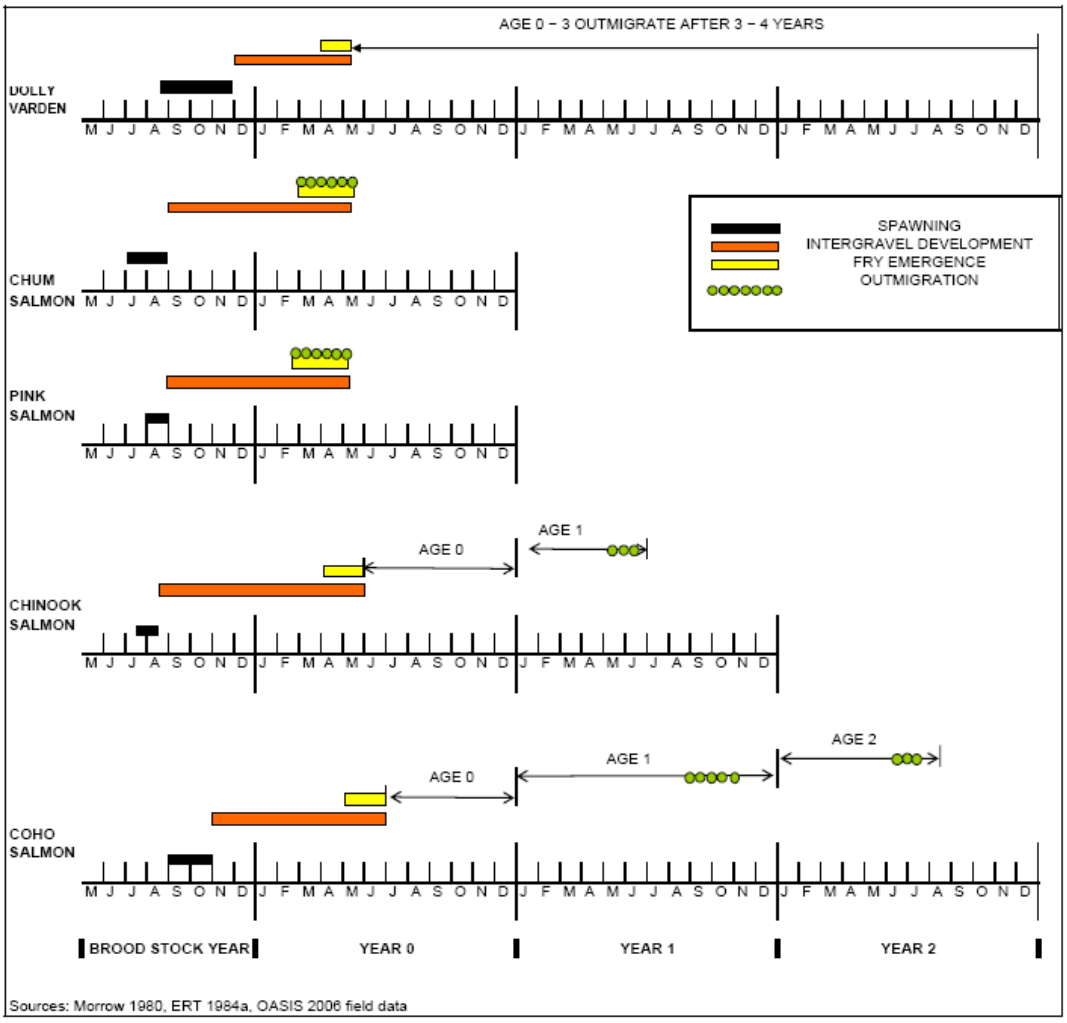

Figure 1. Life stage usage of salmonids in Stream 2003 (original reference Oasis, 2008).

Stream conditions such as temperature and flow are extremely important for migration, spawning and rearing of Pacific salmon. Each species of fish has a unique set of requirements which trigger their migration to spawning sites in nearby tributaries. If conditions are unsuitable, fish will often wait near the stream mouth for weeks to months until more favorable conditions prevail (Groot and Margolis, 1991). As temperatures decrease and stream flow increases (as a result of rainfall and/or storm events), adult salmon, particularly coho, will make short trips upstream until there is a large increase in flow (usually in combination with high tides), which will initiate their upstream migration to small headwater tributaries (Groot and Margolis, 1991). In Stream 2003, the catch per unit effort (CPUE) increased for coho salmon smolts and juveniles as discharge decreased and water temperatures increased (Oasis, 2008). Groundwater contribution to Stream 2003 is particularly important for both base flow discharge and maintaining favorable local water temperature conditions. The instream flow reservation should include the maintenance of historical temperature and flow ranges to protect the migratory patterns of both adult and juvenile fishes, as the optimal conditions vary by species and age.

Table 1. Water Parameter Requirements for Coho, Chinook, and Pink Salmon Spawning (original reference Oasis, 2008).

	Temperature (°C)	Depth (feet)	Velocity (ft/sec)	Substrate Size (cm)
Coho Salmon	4.4 - 9.4	≥ 0.6	0.98 - 2.99	1.3 - 10.2
Chinook Salmon	5.6 - 13.9	≥ 0.8	1.05 - 3.58	1.3 - 10.2
Pink Salmon	7.2 - 12.8	≥ 0.5	0.69 - 3.31	1.3 - 10.2

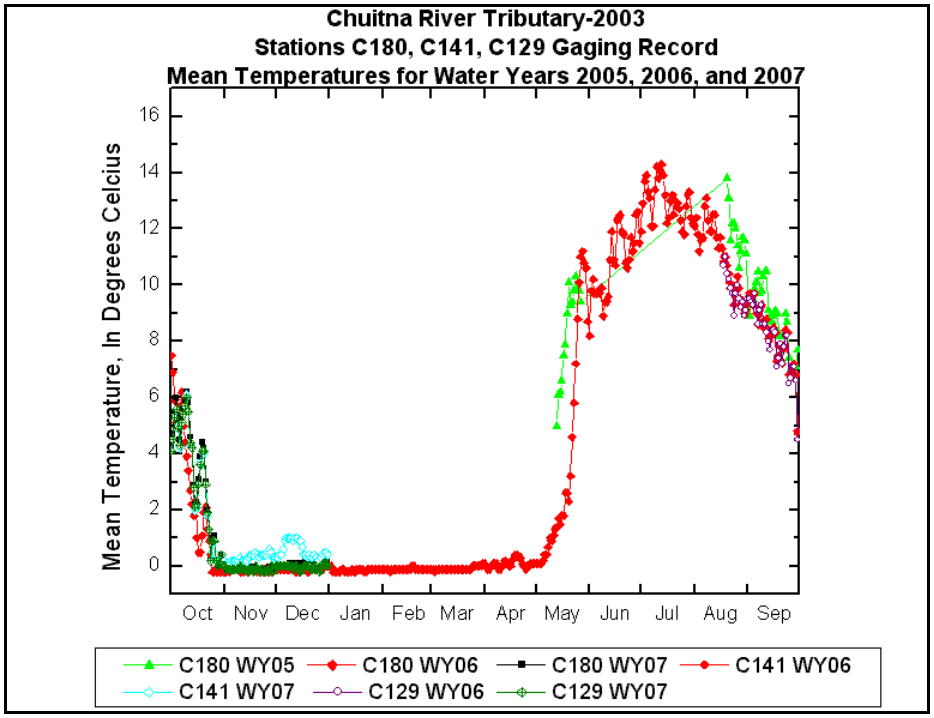

Figure 2. Mean Temperatures at Stations C180, C141, and C129 in Stream 2003 (Water Years 2005, 2006, and 2007).

WATER QUANTITY:

Quantify the specific amount of water requested to be reserved. Identify and quantify, as appropriate, flow rates, quantities, surface water elevations, depths, etc., as they relate to the requested time periods of the year during which the reservation is proposed. Include any flow release schedules from projects upstream of the proposed reservation that would be necessary.

The requested reservation flows were determined using a regional regression equation developed by the USGS (Parks and Madison, 1985) to determine an average annual flow for the basin. Information referenced in this application was assembled using information from reports submitted by PacRim, LP, to the Alaska Department of Natural Resources (ADNR) and U.S. Environmental Protection Agency (EPA) in support of National Pollutant Discharge Elimination System (NPDES) and Alaska Surface Coal Mining Control & Reclamation Act (ASCMCRA) permit applications for the Chuitna Coal Project. The data presented in the permit applications are adequate for this instream flow reservation. However, the applicant reserves the right to update this application in the event that relevant information or new data becomes available at a future date.

The quantity of flow requested in the Main Stem application is conservative when compared to the quantity of flow actually available throughout the entire length of Stream 2003. This is because the Main Stem application is based on flow data from the most upstream gauge—Station 128—and data from downstream gauges show that Stream 2003 is a gaining stream (i.e. Stream 2003 increases in flow as it passes downstream). Flow data from gauges located downstream of Station 128 (Stations 140, 141 and 180) show an increase in flow volume as Stream 2003 continues to its confluence with the Chuitna River.

Due to the gaining nature of Stream 2003 and the conservative nature of the Main Stem application, this application for an instream flow reservation requests additional quantities of flow, in addition to the quantities requested by the Main Stem application, and is to be maintained in the middle reach of Stream 2003 in order to more accurately reflect the amount of flow actually available in the middle reach of Stream 2003.

The flows requested by this application are conservative when compared to the flows actually available throughout the middle reach of Stream 2003. The flows requested by this application are based on flow data from Station 141 which is located near the upstream boundary of the middle reach of Stream 2003. Because Station 141 is near the upstream boundary and Stream 2003 is a gaining stream, this application does not request more flow than actually is available throughout the middle reach of Stream 2003. Additionally, there are two major surface water tributaries (200302 and 200303) within the middle reach of Stream 2003 that contribute flow to the middle reach beyond the quantities of flow measured at Station 141 and requested by this application. Because Stream 2003 is a gaining stream, the middle reach receives flow from two significant tributaries below Station 141, and this application is based on flow measurements taken near the upper end of the middle reach, this application is conservative in its estimates of flow available and the quantity of flow requested by this application is less than that actually available.

To ensure adequate protection for fish and wildlife habitat, migration and propagation, this application requests the following minimum average daily flows be maintained in the middle reach, including any appropriate side channels, of Stream 2003 during the calendar months indicated below.

Requested Flows for the Middle Reach of Stream 2003 by Calendar Month

Month	Main Stem Application Requested Flow (cfs)	Additional Flow Requested by this Application for the Middle Reach Stream 2003 (cfs)	Total Combined Requested Reservation for the Middle Reach Stream 2003 (cfs)
January	3.0	1.1	4.1
February	2.0	0.7	2.7
March	2.0	0.7	2.7
April	10.0	3.7	13.7
May	20.1	7.2	27.3
June	5.8	2.0	7.8
July	2.5	0.9	3.4
August	6.0	2.2	8.2
September	10.0	3.7	13.7
October	10.0	3.7	13.7
November	6.0	2.2	8.2
December	3.0	1.1	4.1

METHODOLOGY AND MONITORING:

Attach and submit with this application documentation or reports showing facts to support the following:

(a) The need for the proposed reservation of water, including reasons why the reservation is being requested.

This instream flow reservation is required for the protection of fish and wildlife habitat, migration, and propagation within Stream 2003. The ADF&G has included Stream 2003 in its Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes (Appendices A-4 and A-5) and Stream 2003 is afforded protection under AS 16.05.871. The species present in Stream 2003 contribute to sport, commercial, and subsistence fishing in the area (Oasis, 2008). It has been estimated that Stream 2003 contributes 20.8% of the coho salmon population to the Chuitna River, which is included in the Cook Inlet Regional Salmon Enhancement Plan (developed to achieve optimal production of wild and enhanced salmon stocks) (Oasis, 2008). Within this plan, the Chuitna is designated a "wild stock sanctuary" under ADF&G Genetics Policy for Chinook and Coho salmon based on escapement numbers (Oasis, 2008).

Appendices A-6, A-7 and A-8 show the extent of Chinook, coho and pink salmon spawning distribution within Stream 2003 (Oasis 2008) in the years 1982, 1983, 1984 and 2006.

(b) Identify and describe the methodology, data, and data analysis used to substantiate the need for and the quantity of water requested for the proposed reservation of water, including:

1. Name and description of method used

Procedures were selected that complied with instream flow application instructions and requirements established by state law (AS 46.15.145), state regulations (11 AAC 93.141-146), and the *"State of Alaska Instream Flow Handbook"* (DNR 1985).

USGS Regression Flow Estimation Method

Since there are limited flow records currently available for the middle reach of Stream 2003, average annual flow (QAA) in the middle reach was estimated using a regional regression equation described in the USGS Water Resources Investigation Report (84-4247) by Parks and Madison (1985). This method is an accepted means for estimating flow for an instream flow reservation (Lower Talarik Creek, Feb. 7, 2000), and the applicant reserves the right pursuant to Alaska State Law 11 AAC 93.142(b)(4) to supplement the flow estimates within this application as additional flow data becomes available. A summary of the flow analysis for this application is provided in Appendix C.

The estimated QAA (13.7 cfs) for the middle reach of Stream 2003 was applied within a version of the Tennant Method adapted for Alaskan streams (Estes, 1984; Estes and Orsborn, 1986) as described below.

Within three years of this application being accepted by DNR (as required in 11 AAC 93.142(b)(4)) a request to adjust the instream flow quantity recommendations will be filed with the Alaska Department of Natural Resources using the same general methods (duration analysis and Tennant Method) as applied to the Main Stem application and Lower Reach application of Stream 2003. The updated application may alter the hydrologic periods and flow requirements applied for in this instream flow reservation application.

Tennant Method

The Tennant Method (Tennant, 1975), also referred to as the Montana Method in earlier literature, was selected as an appropriate procedure for evaluating instream flow requirements for fish habitat in the main stem of Stream 2003 based upon the availability of hydrologic and biologic data and financial and personnel resources.

The Tennant Method is considered one of the simplest, yet most reliable, techniques for selecting and qualitatively evaluating instream flows for fish and wildlife habitat. This technique has been approved for use in court (*Tulkisarmute Native Community Council v. Heinze*, 898 P.2d 935 (Alaska 1995)), and has been successfully used to acquire instream flows for other water bodies in Alaska. It requires minimal expenditures of resources, and can be used with either limited or extensive hydrologic and fishery data bases. The selection of the Tennant Method to quantify instream flows for this and other Alaskan streams is also supported by the results of a research project conducted to evaluate and compare applications of different instream flow methods to the same stream reach (Estes, 1984a; Estes and Orsborn, 1986). The evaluation was sponsored by the U.S. Soil Conservation Service, ADF&G, ADNR, U.S. Geological Survey (USGS), and Washington State University. The results of that study indicated that the Tennant Method, and other instream flow techniques, can be applied to Alaskan streams to quantify instream flow requirements if adapted to local hydrologic and biologic characteristics and considerations.

Tennant established eight aquatic habitat categories by analyzing a series of field measurements and observations. Each category is assigned a percentage range of the QAA. QAA is the arithmetic mean of one year of mean daily flows as recorded at a gaging site and was estimated using the USGS regional regression equation for this instream flow analyses. Seven of the categories characterize habitat quality for fish and wildlife and the eighth provides for a short term flushing flow to maintain channel substrate characteristics for suitable fish spawning and

incubation and benthic invertebrate production. The percentages of QAA for habitat quality range from <10% (Severe Degradation) to 60-100% (Optimum Range). The flushing flow requirement equals 200% of the QAA for a duration of 24 hours once per year (Tennant 1975). The estimated QAA used for this analysis represented flow conditions for the middle reach of Stream 2003 where a flow reservation is being requested. Natural flushing flow events (in unregulated streams and rivers) occur on an irregular basis. Estes (1984a; Reiser, 1985; et al.) suggests the flushing value should be increased to 400% or more over a three- to seven-day period to better mimic flows associated with the 1 in 2-year peak flood flow (QF2P). The flushing flow requirement may be even higher for this portion of the state.

2. Who conducted the study and analysis

The study and analysis was conducted by Geo-Watersheds Scientific. Geo-Watersheds staff have worked on watershed-scale hydrology projects in many parts of Alaska over the last 15 years. This includes ground-water and surface-water interaction modeling and analysis projects, watershed modeling on the North Slope, and lake and reservoir water use associated with water use activities. Fisheries-related projects include evaluation of spawning zones in inter-tidal environments on beaches in Prince William Sound, dissolved oxygen studies on North Slope lakes, and fish habitat studies in Interior Alaska.

3. Schedule of when data collection and analysis occurred

Flow data and gauge site descriptions used for delineating reach boundaries were obtained from reports submitted by Riverside Technologies, Inc., to DNR and EPA in support of NPDES and ASCMCRA permit applications for the Chuitna Coal Project.

There is currently one continuous flow gauging station located on the middle reach of Stream 2003: Station 141. Available information from Station 141 was used in estimating flows for the middle reach of Stream 2003.

Station 141, located approximately 6.6 river miles upstream of the mouth of Stream 2003 (see location information on page 1), is currently active (according to the most recently available Chuitna Coal Project permit applications) and has an available historical record for the 2006 and 2007 water years. However, currently available daily flow records for the 2006 and 2007 water years are incomplete. Station 141 was installed to replace Station 140 in 2006. Station 140 is not currently active and has a period of record for water years 1982 to 1985. However, only the 1983 water year has a complete flow record.

Station descriptions below are **excerpted** from: Chuitna Coal Project - Hydrology Component Baseline Report - Historical Data Summary (Riverside Technologies, Inc., March 2007).

C140 – This site is found on Stream 2003 immediately downstream of the lease boundary. The purpose of this site is to help understand where most of the water drains into Stream 2003 and from which hydrogeologic unit. In addition, data from this site will be used to evaluate potential impacts from the mine operation. The station has periodically had problems with beaver dams and was abandoned in 2006.

C141 – This site is found on Stream 2003 immediately downstream of the confluence with 200304. The purpose of this site is to help understand where most of the water drains into Stream 2003 and from which hydrogeologic unit. The objective was to locate this station closer to the

permit boundary, but there are too many beaver dams for a viable gage. This site was installed in 2006 to replace C140.

Note: The terms Chuitna River and Chuit River are used interchangeably. The text was not altered from the original citation, but for clarity, the different terminology should be noted.

4. Type(s) of instrument(s) used to collect and analyze data

See Appendix B for data collection and analysis methods.

Appendix B consists of section 3.5.1 Chuitna Coal Project - Hydrology Component Baseline Report - Historical Data Summary (Riverside Technologies, Inc., March 2007).

5. Description of data and how the data were collected, including when applicable, (A) selection of stream reach, study site and transect selection, (B) flow, survey, elevation, and depth measurements, (C) pertinent physical, biological, water chemistry and socio-economic data supporting the request for reservation of water

Stream reach boundaries for this application were selected to insure that flow, habitat, and fish periodicity (seasonal use of habitat for passage, spawning, incubation, and rearing) characteristics within the reach remain unaffected. Reaches were defined on USGS topographic maps after review of reports submitted by Riverside Technologies, Inc., and Oasis Environmental to DNR and EPA in support of NPDES and ASCMRA permit applications for the Chuitna Coal Project. Topography, watershed, channel patterns, fish periodicity, stream gage site descriptions and mean daily flow data were collectively analyzed as described in this application.

After review of the information listed above, flow data collected/estimated at Station 141 (approximately 0.1 mile downstream of tributary 200304) were selected as being representative of the water flow in the middle reach of Stream 2003. The flows requested by this application are conservative for the reach boundaries. Station 141 is located near the upstream end of the requested reservation reach. As such, flow measurements at Station 141 do not include contributions from surface water tributaries, wetlands and/or groundwater downstream of Station 141. Because Stream 2003 is a gaining stream and the flows requested by this application are based on measurements taken at Station 141 above two significant surface tributaries, this application does not request a reservation of more flow than is available. The average baseflow at Stations 140/141 appears to be about 2.5 cfs, which correlates with the requested flows for the months of February and March.

6. Description of how data were analyzed

The Tennant Method requires that a QAA be calculated from an existing or synthesized data base. A monthly flow recommendation for the middle reach of Stream 2003 was established by selecting the desired qualitative habitat classification and multiplying the QAA by the corresponding percentage or percentage range assigned to that classification.

Average Annual Flow Procedures:
QAA for Station 141 was estimated using the regional regression equation developed by the USGS (Parks and Madison, 1985) to determine an average annual flow for the basin. The USGS regression equation requires inputs for basin area and for mean annual precipitation in calculating the estimated QAA. The drainage area listed in the daily flow records for Station 141 contained in Chuitna Coal Project - Hydrology Component Baseline Report - Historical Data Summary

(Riverside Technologies, Inc., March 2007) of 5.2 square miles was input into the regression equation. Since 10+ years of historical flow data was available for Stations 128 and 180, precipitation values were back-calculated using the actual QAA and the drainage basin areas of the Stations 128 and 180. This gives a more accurate precipitation value to input into the regression equation. An annual precipitation value of 40 inches was back-calculated for both Station 128 and Station 180. Using inputs of 5.2 square miles for the basin area and 40 inches for average annual precipitation the estimated QAA was estimated to be 13.7 cfs at Station 141.

USGS Regression Equation for South Central Alaska (Parks and Madison 1985):

Log QAA = -1.33 + 0.96log(drainage area) + 1.11log(annual precipitation)

QAA Calculations using the USGS Regression Equation

Station 128 QAA (10 years of record): 10.1
Station 128 Drainage Basin Area: 3.8 sq. miles
Annual Precipitation that gives QAA in USGS equation: 40 inches

Station 180 QAA (16 years of record): 36.1
Station 180 Drainage Basin Area: 14.3 sq. miles
Annual Precipitation that gives QAA in USGS equation: 40 inches

Station 141 estimated QAA: 13.7
Station 180 Drainage Basin Area: 5.2 sq. miles
Annual Precipitation: 40 inches

Mean Monthly Flow (QAM) Procedures:
The Station 141 QAM was estimated by calculating the ratio of QAM/QAA at Station 128 and multiplying by the Station 141 estimated QAA. Station 128 was determined to be a better analog than Station 180 as it is located further upstream in the drainage basin and has a similar drainage area.

Estimated QAM and ISFR request for the Middle Reach of Stream 2003

	Station 128			Middle Reach ISFR	
Month	**QAM (cfs)**	**Ratio of QAM/QAA**	**Main Stem ISFR request**	**Middle Reach Estimated QAM (cfs)**	**Middle Reach ISFR request (cfs)**
Jan	5.0	0.494	30% of QAA	6.7	4.1
Feb	2.0	0.195	20% of QAA	2.7	2.7
Mar	2.4	0.235	20% of QAA	3.2	2.7
Apr	16.5	1.630	QAA	22.3	13.7
May	37.4	3.707	2 x QAA	50.7	27.3
Jun	5.8	0.571	QAM	7.8	7.8
Jul	2.5	0.246	QAM	3.4	3.4
Aug	6.1	0.603	60% of QAA	8.2	8.2
Sep	13.1	1.298	QAA	17.7	13.7
Oct	17.9	1.769	QAA	24.2	13.7
Nov	7.4	0.735	60% of QAA	10.0	8.2
Dec	4.0	0.394	30% of QAA	5.4	4.1

Monthly instream flow requirements for individual life phases of fish for each stream reach were chosen by comparing the Tennant Method habitat flow percentages, fish periodicity data and estimated QAM. Excluding the flushing flows, monthly instream flow requirements were selected that corresponded to both fish presence during that time period and the highest of the Tennant Method habitat categories that did not exceed the estimated QAM for that month.

Using this approach to derive the requested instream flow reservation values provided a basis to prevent requesting more water than is typically available. Based on the accepted practices and methods for stream flow analysis using the Tennant Method, this analysis supports the existing recommendations.

Although important to the fishery, a QF2P flushing flow was not specified within this application because the natural flow regime in Stream 2003 has not been disrupted. However, if future applications for water withdrawals or diversions would prevent the occurrence of the QF2P and the three to seven days of flows associated with this event, provisions will be required to insure these flushing flows are not eliminated (Estes, 1984a).

Appendix C contains the results of the QAA estimation and Tennant flow analysis. A CD of the hydrologic data analysis (including daily flow data) is attached to this application for review.

7. Maps, photos, aerial photos, calculations, and any other documents supporting this application

See Appendix A, attached.

If there are provisions for monitoring this proposed reservation of water, include the following:

(a) Description of monitoring equipment (such as gaging stations, staff gages, weirs)

Continued monitoring of the current gauging stations along the main stem of Stream 2003 (Stations 129, 141 and 180) is expected during permit application and/or any potential future development activities. The primary purpose of this reservation is to ensure protection of fish and wildlife habitat, migration, and propagation within the Stream 2003 drainage. If activities that may affect fish habitat were to occur within the Stream 2003 drainage, it is assumed that these activities would require regulatory permits that ensure fish habitat protection and the permits would subsequently require adequate flow monitoring to assess compliance with the regulatory requirements.

(b) Location of monitoring equipment

See attached appendices.

(c) Provisions for payment for monitoring

It is expected that the current gauging stations along the main stem of Stream 2003 (Stations 129, 141 and 180) will continue to be monitored during permit application and/or any potential future development activities by the entity proposing to develop the coal resources in the area. If Stream 2003 remains in its natural condition (no disturbance within its drainage area), as it now is, it is assumed that flow monitoring is not necessary to ensure that adequate instream flows are being maintained.

(d) Reporting system

It is expected that the current gauging stations along the main stem of Stream 2003 (Stations 129, 141 and 180) will continue to be monitored during permit application and/or any potential future development activities. This data would be reported to the permitting agencies on a regular basis and should be made available to the public for review.

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