UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

October 29, 2007

Hahn Shaw
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Ms. Shaw:

The National Marine Fisheries Service (NMFS) offers the following comments regarding the effects of the proposed Chuitna Coal project on fish populations, habitat, and water quality in the Chuitna watershed. NMFS has been involved in the review of this project under the National Environmental Policy Act, Clean Water Act, and the Alaska Surface Coal Mining Control and Reclamation Act

The project as proposed would cause permanent impacts to the Chuitna watershed and associated salmon habitat. Further work is needed to document the resources at risk and assess the full scope of likely effects. Following such analysis, NMFS expects to recommend compensatory mitigation and performance based bonds be required to offset reasonably foreseeable losses to fish populations and habitat from this mining operation.

Project Description

Project descriptions are outlined in several documents including the Environmental Protection Agency's Scoping Document in 2006 and the Fresh Water Aquatic Biology Study Program in 2007. To summarize, "the applicant predicts a minimum 25 year mine life based on the proven reserves in one of three mining areas within the 20,571 acre coal lease area". The first of three mine areas discussed here encompasses just over 5,000 acres within the Chuitna River drainage containing tributaries numbered 2002, 2003, and 2004.

The Chuitna River and tributaries 2002 through 2004 historically support populations of all five species of Pacific salmon, though coho (*Oncorhynchus kitsutch*), chinook (*Oncorhynchus tshawytscha*), and pink (*Oncorhynchus gorbuscha)* salmon were most abundant species in recent surveys. Rainbow trout (*Oncorhynchus mykiss)* and Dolly Varden (*Salvelinus malma*) comprise other salmonid species identified as well as several other resident fish species.

A substantial portion (up to 40%) of tributary 2003 would be directly removed by mining. This portion comprises headwaters for the remaining (60%) downstream reach, and discharge of the entire tributary contributes to Chuitna River base flows. Hydrologic models indicate tributary 2002 may experience decreased instream flows as a result of ground and surface water removal or climate variability as mining operations move east. Hydrologic models also predict that tributary 2004 to the west (higher elevation) will

experience no effect from the mining operation and associated ground and surface water removal. Current charts submitted by the applicant suggest the mining operation and related ground and surface water removals would reach within 1000 feet of either tributary 2002 or 2004.

As a mitigating effort to maintain instream flows to the un-mined portion of tributary 2003, and to compensate for possible reductions in tributary 2002 and the associated mainstream Chuitna River, a water management plan has been devised by the applicant to store pumped groundwater reserves from pre-mined areas back into tributaries through a series of infiltration and/or sedimentation ponds.

An aquatic and terrestrial restoration plan has also been devised to return the mined portion of tributary 2003 to the original topography. To summarize, all topsoils and overburden would be excavated. Coal seams would be mined and overburden and top soils replaced. Final excavation would duplicate as closely as possible all pre-mine stream channels, meander, and pool/riffle sequences. In the final phase, stream banks and bottoms, and wetland, riparian and hyporeic ecological processes would be restored using current restoration techniques and examples referenced by the applicant.

Aquatic Ecosystem Process

In a natural state these are very diverse and complex aquatic ecosystems that are susceptible to hydrologic alteration. Ground and surface water saturation maintain equilibrium in complex hydrogeomophic processes influencing wetland, riparian, hyporeic and aquatic health and function. These functions support chemical exchange and transport of dissolved oxygen, nitrogen, and other dissolved gases, and further regulate water pH and temperature, especially interactions between wetland, riparian and hyporeic processes.

Decomposition of organic and detrital material (terrestrial and aquatic) and related byproducts support microbial decomposers such as bacteri and fungi, in turn supporting populations of macro and micro fauna, invertebrates, and in turn larval, juvenile and adult fish populations. The foundation of these nutrient flow paths and complex food chain dynamics are dependent on the connectivity of all these ecological functions.

Hydrologic Models and the Water Management Plan

The proposed water management plan may maintain in-stream water flows to the impacted tributaries during the course of mining operations, although the effects on water quality and anadromous fish populations remain uncertain. Furthermore, beyond simply replenishing headwaters to maintain instream flow, concerns arise regarding the effects of pumping groundwater aquifers in the immediate proximity of un-mined tributaries. Would these changes to local hydrology result in reduced stream flows?

Methods of hydrologic modeling have improved considerably in recent years, but a large degree of uncertainty and error still exists in model predictions. As the footprint of a

mine expands or depth increases (in this case 5000 acres at nearly 300 feet deep) the uncertainty of hydrologic predictions increases, and the impacts of groundwater reductions are often seen far beyond the initial mining area. We recommend that the environmental analysis for this project acknowledge such uncertainty.

Stream Restoration

The applicant's proposed stream restoration plan and supporting presentations highlight examples of successful stream restoration techniques widely recognized as the best available methods. However, the examples presented by the applicant represent restoration projects of far smaller scale stream realignments. These examples do not illustrate or represent stream restoration efforts at the size and scale of this mining operation where hydrogeomorphic processes are disrupted to a depth of 300 feet over several thousand acres. Stream restoration efforts at this scale would face many complications and impediments. We are aware of no example of successful salmon stream restoration at this scale.

Conclusions

With so many key components of the immediate and surrounding ecosystem compromised, an accurate cumulative prediction of restoration, recovery and reestablishment of resident and anadromous fish populations remains highly uncertain. As a result NMFS concludes the following:

1) The length of time needed to restore tributary 2003 to natural ecosystem function (ground and surface water recharge, saturation and associated instream flows and dependent wetland, riparian and hyporeic connectivity) and re-establish wild salmon populations at this scale remains highly uncertain, if possible at all.

2) The depletion of surface water and groundwater aquifers at this scale, over 5000 acres and nearly 300 feet deep, has a high probability to alter contiguous groundwater aquifers far beyond the proposed mine footprint in an unpredictable manner that could affect other streams.

3) Maintaining instream water levels by induction to headwater sources does not replicate natural micro scale processes (wetland, riparian and hyporeic) essential to salmon habitat and life cycle.

4) A high level of uncertainty exists in the quality and availability of water held in sediment and infiltration ponds exposed to extreme seasonal variability such as extended summer sunlight or freezing winter conditions. How those changes will influence salmon populations in associated tributaries remains a question.

For these reasons, NMFS expects to recommend to the EPA, the U.S. Army Corps of Engineers, and the Alaska Department of Natural Resources, that compensatory mitigation be required to offset losses to fish habitat and populations from direct impacts

to all of tributary 2003, and that a performance based bond be established to account for uncertainty and potential loss of tributaries 2002 and 2004 and any indirect effects to the Chuitna River and associated salmon populations.

To date, studies conducted by the applicant do not adequately characterize anadromous and resident fish populations in the watershed or define their range and seasonal habitat use. Scientifically defensible studies should be designed to establish baseline conditions against which all reasonably foreseeable mining impacts can be compared.

Studies suggested by the Alaska Department of Natural Resources and the Alaska Department of Fish and Game should be carried out to assess escapement, outmigration, and overwintering of anadromous and resident fish populations in streams 2002, 2003, and 2004 and the Chuit River. These studies necessitate establishing juvenile and adult weirs at the mouths of tributaries 2002, 2003, and 2004 to estimate fish production, and a sonar site established on the Chuit River to estimate salmon escapements to the system. These efforts should be conducted for a minimum of five years.

We look forward to working with you to address these issues and minimize the effects of this project on living marine resources. If you have any questions regarding our recommendations for this project, please contact Doug Limpinsel at 907-271-6379 or doug.limpinsel@noaa.gov.

Sincerely,

Robert D McCrea Acting

for James W. Balsiger
Administrator, Alaska Region

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