

# STATE OF ALASKA

**DEPARTMENT OF NATURAL RESOURCES**  
**DIVISION OF COASTAL AND OCEAN MANAGEMENT**  
<http://www.alaskacoast.state.ak.us>

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December 31, 2008

Mr. Tim Davies  
Redfern Resources, Ltd.  
800-1281 West Georgia Street  
Vancouver BC, Canada V6E 3J7

**Subject: Taku River (Tulsequah Mine Barging Project)**  
**State I.D. No. AK 0810-08J**  
**Request For Additional Information (RFAI)**

Dear Mr. Davies:

Pursuant to the State of Alaska's review of your proposed project for consistency with the Alaska Coastal Management Program (ACMP), on December 17, 2008, DCOM received RFAIs from the Alaska Departments of Environmental Conservation (ADEC), Fish and Game (ADF&G), and Natural Resources – Lands Section (ADNR). Per 11 AAC 110.240, these review participants require the following information to determine if your proposed project is consistent with the ACMP. I have organized this document by topic, under which I have identified the requestors and applicable ACMP enforceable policies.

## **Important Habitat**

1. ADF&G requested that DCOM identify the portion of the Taku River subject to the scope of this ACMP consistency review as "important habitat" under 11 AAC 112.300 (c)(B)(i)(ii). If this request for designation is approved, ADF&G requests you address how you will avoid, minimize, or mitigate significant adverse impacts to the special productivity of the habitat under 11 AAC 112.300(b)(9)(B).

## **Testing**

ADF&G & ADNR request the following information:

1. Your proposed project may disrupt wildlife transit and natural water flow, and may pose significant adverse impacts to existing competing uses. To determine these impacts and answer the questions below, you will have to provide a testing plan to be approved by the State and conduct tests. Testing your equipment outside of the Taku River with an

unloaded and loaded ACB should provide answers to the first set of questions (i –x).  
Note: this work may be conducted at an out-of-state site and documented via photography/videography and verified by a licensed professional engineer.

- i. Provide tracked articulated vehicle weight, the weight of the ACB on/off hover and unloaded/loaded and corresponding measurements of ground pressures for all vehicles.
  - ii. Provide recorded ground pressures for the ACB off-hover and fully loaded.
  - iii. Provide above water noise measurements for the ACB.
  - iv. Provide the bow wake distance and height in front of the ACB as it transfers from water-based operations to land-based operations using approach speeds on shore gradients expected in the east channel at Canyon Island.
  - v. Provide videography, including detailed views, of spray escaping the skirt of a fully loaded ACB.
  - vi. Provide videography demonstrating transferring the ACB from water-based operations to land-based operations using the shallow-draft tugs and all other equipment.
  - vii. Provide videography demonstrating anchoring the vehicles and winching an empty and fully-loaded ACB up and sideways on a range of shore gradients expected during both operating seasons.
  - viii. Provide videography of the ACB maneuvering through shallow water and on land using only the vehicles.
  - ix. Demonstrate operating the amphibious tractors between land and the deepest water operationally possible, with and without the ACB attached.
  - x. Provide the manufacturer’s specifications for sedimentation caused by the ACB.  
11 AAC 112.280(1)(2), 11 AAC 300(b)(4)(A)(B), 11 AAC 300(b)(8)(A)
2. Testing of your equipment on the Taku River with an unloaded and loaded ACB to provide answers to these questions (i – vii).
- i. Demonstrate maximum speeds of travel of towed ACB in open water, on land, and on ice.
  - ii. Demonstrate the equipment on a variety of ice depths on the Taku River and provide ice breaking thresholds.
  - iii. Demonstrate transfer of ACB between ice and marine environments (both ways) under anticipated operating conditions at the mouth of the Taku River.
  - iv. Demonstrate crossing open leads using the bridge technique on the Taku River with various levels of shelf height and lead widths.
  - v. Demonstrate hover reaction to variable substrates on the Taku River at variable heights.
  - vi. Demonstrate how the equipment performs with variable wind speeds, fast currents, and unequal terrain on the Taku River and in Taku Inlet.
  - vii. Demonstrate how long it takes the equipment to go off hover and be safely secured under heavy winds, fast current speeds, grounded tug, and unequal terrain on the Taku River.  
11 AAC 112.280(1)(2)(3), 11 AAC 300(b)(4)(A)(B),  
11 AAC 300(b)(8)(A)(B)(C)

## **Impacts to Natural Water Flow - Channelization**

ADF&G and ADNR request the following information:

1. Please provide the following natural water flow information from the Operations Plan using cubic feet per second (f<sup>3</sup>/s) units:
  - i. Figure 3. Bathymetry of Lower Taku River
  - ii. Figure 4. Taku River Hydrograph at Canyon Island
  - iii. Figure 6. Average, Low and High Flows on the Taku River (1986-2007)
  - iv. Table 1. Average Calendar Days by Flow Level (1986-2007)  
11 AAC 112.280(1), 11 AAC 300(b)(4)(A), 11 AAC 300(8)(A)
  
2. Your project may alter surface water drainage patterns in the east channel of Canyon Island. Please provide the following information regarding your proposed land-based operations around Canyon Island.
  - i. How will repeated use of the tracked and wheeled vehicles pulling the ACB avoid channelization that could alter surface water drainage patterns on the east and north side of Canyon Island?
  - ii. What is the depth of water required to avoid alterations in surface water drainage patterns when towing a loaded ACB thru the east channel of Canyon Island using shallow draft tugs?
  - iii. To what extent do wind and current change the required depth of water the shallow draft tug needs to pull the ACB?
  - iv. Under what conditions will the tow vehicles spin their tracks or wheels and dig into the gravel bars for traction?  
11 AAC 112.280(1)

## **Sedimentation & Turbidity**

ADEC requests the following information:

1. Changes to the river's turbidity and sedimentation in the tideflats could constitute a significant adverse impact to aquatic species adapted to existing conditions, and in turn, could significantly adversely affect competing uses that rely upon those species. Please provide baseline data (numeric values) regarding water turbidity and sediment load that supports aquatic species. What monitoring would you conduct to ensure that you maintain conditions that support aquatic life? 11 AAC 112.300(b)(4)(B)

ADNR & ADEC request the following information:

2. Operation of your proposed equipment could significantly alter sediments on the east channel of Canyon Island which could change surface drainage patterns. Please provide improved spatial data of the distribution of the various sediment types (clay, silt, sand, pebble, gravel, cobble, boulder, and bedrock). Please provide the bathymetry of the location of the various sediments at and near the navigation route, such as clay, gravel, cobble, and particularly silt because of the tendency for silt to liquefy.
  - i. What is the frictional coefficient of the fully loaded ACB? In other words, what lateral force is necessary to move the fully loaded ACB?

- ii. What is the shear strength of the different sediments the ATs will be navigating? Will the sediments support the frictional coefficient required to move the ACB by the ATs?
  - iii. How much torque can the various ATs create?
  - iv. What effect will the range of anticipated wakes from the transportation operation have on the different sediment types?
- 11 AAC 112.280(1)

### **Coastal Development**

ADNR requests the following information:

1. When evaluating projects, review participants must give priority to those users who are economically or physically dependent on a coastal location. These users are given higher priority when compared to users that do not economically or physically require a coastal location.
  - i. How and why is your proposed transportation system for mine support economically or physically dependent on the Taku River?
  - ii. What will your annual economic impact be locally?
  - iii. How much of this impact is contributed by the value goods that are shipped from areas outside of Alaska?
  - iv. How much is contributed by local wages?
  - v. How much is contributed by locally purchased goods and services?
  - vi. Why should your project take priority over existing water-dependent users of the river?
  - vii. Please provide any route analysis and feasibility determinations that you have performed to identify alternative upland routes that avoid using the river. Did the Forest Service, the major upland owner, provide any response to your analysis?

11 AAC 112.200(a)(b)

### **Coastal Access**

ADNR requests the following information:

1. Review participants must ensure your proposed project maintains access to, from, and along coastal locations. Your proposed project could restrict existing or traditional access.
  - i. How will the route captain monitor or manage public access along the river while ensuring safe operation of the entire transportation system?
  - ii. When would you use your anchored barge for tug exchanges?
  - iii. Where would you locate it (GPS coordinates)?
  - iv. Why would you move it two miles?
  - v. How would you demonstrate that you are moving according to your plan?
  - vi. Where would your alternate sites be (GPS coordinates)?
  - vii. How many days would your barge stay at the alternate location?
  - viii. How would the ACB proposed route avoid blocking boats from existing and traditional access?

11 AAC 112.220, 11 AAC 112.280(3)

2. In your November 2008 Plan of Operations you state that "...running aground is a standard operational risk and there are minimal environmental impacts associated with this type of mishap." Groundings may preclude existing public and traditional access.
  - i. How many times did your barging operations ground in the Taku River during your 2007 and 2008 navigational operations?
  - ii. Please provide copies of the logs of the two tugs RDV Gator and RDV Kid Commando for the 2008 conventional barging operations.
  - iii. How deep must the thalweg be to avoid your equipment grounding at full load?  
11 AAC 112.220, 11 AAC 112.280(3)
3. Your proposed transportation routes may restrict public or existing access on the east side of Canyon Island. Please provide river bathymetry on the east side of Canyon Island in 10-meter pixel resolution and 3 pixels for the width of the barge.  
11 AAC 112.220, 11 AAC 112.280(3)
4. Please provide a chart showing minimum tides necessary for transit at the range of anticipated flows so we may determine the periods when navigation can be accomplished without grounding.  
11 AAC 112.220, 11 AAC 112.280(3)
5. High winds may cause you to adjust your route which could block existing and traditional access:
  - i. At what wind speed will it be necessary to stop or reverse operations for safety purposes?
  - ii. What criteria have you used to determine that speed?  
11 AAC 112.220, 11 AAC 112.280(3)

### **Winter Travel**

ADF&G and ADNR request the following information:

1. Your proposed winter route includes travel over shallow areas, crossing open leads, and ice and snow transit which have the potential to alter natural water flow, disrupt wildlife transit, block existing or traditional access, and may pose significant adverse impacts to competing uses.

#### **Ice Breaking:**

- i. You provide conflicting information about minimum ice thickness required for your operation. What is the minimum ice thickness needed for landfast and shelf ice?
- ii. Does the minimum ice thickness account for varying ice composition features?
- iii. What is your definition of extensive ice breaking?
- iv. How will you avoid breaking ice?
- v. Provide operational evidence (such as video recording) that the tracked and wheeled vehicles can crawl onto the ice from the water without breaking through the ice.
- vi. What is your protocol for retrieving a vehicle sunken through the river ice?

Winter Transit:

- i. How will you avoid, minimize, or mitigate impacts from repeated transit and route grooming on ice and snow?

Open Leads:

- i. How will you prevent the barge from side-slipping?
- ii. Under what conditions will the tow vehicles spin their tracks or wheels, thus digging into the ice and snow?
- iii. Can these vehicles tow the fully loaded ACB on ice and snow without being chained up, when subject to conditions such as wind and sheet ice?
- iv. What procedures are planned if a tracked or wheeled vehicle is caught by a deep water current in an open lead, swept downstream and then under the ice?
- v. What angle/slope can the barge and tow vehicles climb and descend?
- vi. What is your protocol if the ACB system cannot navigate around or bridge a deep water open lead?
- vii. What is your protocol for de-icing tow vehicles after crossing open leads?
- viii. Please provide cross-section profiles of each proposed open lead crossing including an illustration of minimum depth during winter.
- ix. Describe the composition of riverbed substrate at each crossing location, and define “shallow” versus “deep” (in feet) as referred in each crossing description.
- x. Describe how wake caused by the ACB system could cause juvenile fish to be stranded on shore while crossing shallow open water leads near exposed gravel bars. 11 AAC 112.280(1)(2)(3), 11 AAC 112.300(b)(4)(B)

**Wildlife Transit**

ADF&G requests the following information:

1. Your project has the potential to disrupt existing and reasonably foreseeable wildlife transit and may pose significant adverse impacts to existing competing uses such as tourism, fishing, hunting, trapping, and recreational uses. Please provide the following:
  - i. The Wildlife Right-of-Way Policy is mentioned several times in your Operations Plan however the policy is not included in the September 2008 DRAFT Wildlife Management Plan as described. Please provide the policy document so ADF&G can evaluate potential impacts to wildlife transit, and list which animals are subject to the policy.
  - ii. Please provide Hatler’s unpublished report for Redfern Resource Ltd. cited in your Wildlife Monitoring Program document (Hatler, D.F. 2000). This information is requested to adequately assess your proposed study methods for monitoring project effects on grizzly bear habitat use.
  - iii. What is the ACB system’s ability to maintain a distance of 100m from seals in the river while remaining on the proposed ACB routes for both operating seasons?
  - iv. What mitigating operating procedures will you employ if seals appear to be disturbed by transportation activity at distances greater than 100m?
  - v. Due to limited daylight hours in winter, transportation activity will likely occur in the dark. Will winter transportation operations always use the daylight hours, or will you operate 24 hours a day regardless of available daylight?

- vi. How will operations in darkness influence the ability of the environmental monitor to record data or observe wildlife effects from the ACB system?
- vii. You propose to create pushouts that will allow for wildlife such as moose and wolves to transit. Please provide detailed information as to how you will create these pushouts on the ACB route (angle from route, length) and where (frequency, location in relation to open leads), or the process that you will use to make these determinations. 11 AAC 112.280(2)(3), 11 AAC 112.300(b)(4)(B)

### **Spill Prevention & Response**

ADNR & ADEC request the following information:

1. Please provide your Emergency Response Assistance Plan you reference in the November 2008 Operations Plan. A hazardous spill may constitute a significant adverse impact to existing competing uses. 11 AAC 112.300(b)(4)(B)
2. Vehicles you propose to use may have operational discharges of various types of oils, lubricants, and other potentially noxious liquids that can accumulate in the snow, ice and gravel. Such discharges would have a significant adverse impact to existing competing uses.
  - i. How will you ensure that operational discharges on the tideflats and on the east channel and uplands of Canyon Island do not occur?
  - ii. If there is a larger operational incident what is your plan for containment, removal and disposal of contaminated material from these areas?
  - iii. How and where would you refuel the equipment stored at Canyon Island?
  - iv. How will you prevent fuel and hazardous substances from floating away during Jokulhaups and flood events?
  - v. How will you protect the ATs from immersion and/or floating away?
  - vi. In the winter how will you clean up a hydrocarbon or toxic spill that has the potential to threaten existing competing uses on the ice, from under the ice, and from the water in the winter?  
11 AAC 112.300(b)(4)(B)
3. You propose to put fuel trucks on the ACB. If fuel is discharged it would have a significant adverse impact to existing competing uses. How will these fuel trucks be secured so that a fuel spill does not occur? 11 AAC 112.300(b)(4)(B)
4. You proposed to transport mine composite in containers on the ACB. There have been documented cases in the Juneau area of high winds causing containers to be lost off of the marine barges they were loaded onto. A container spill may constitute a significant adverse impact to existing competing uses. Please describe in detail how the containers that contain hazardous materials will be secured on the ACB.
  - i. How did you determine the limit of how high they will be stacked?
  - ii. How did you determine how strong a system was required to secure the containers?
  - iii. How do you plan to stabilize the containers when the ACB encounters different varying heights of the substrate mediums (shelf ice, water, etc)?  
11 AAC 112.300(b)(4)(B)

**Missing Information:**

1. Have you commissioned the manufacturer to conduct a feasibility analysis and route inspection? If so, please provide a copy.

ADF&G requests the following information to evaluate the significant adverse impacts your project may pose to existing competing uses:

2. Potential eulachon spawning habitat was not identified in the Lead Crossing Assessment Report. Please explain why eulachon spawning habitat was not included in the report.

I have stopped the consistency review clock on Day 13 of this review. When review participants determine your responses to be adequate, the review clock will re-start on Day 14 of this review.

If you have questions regarding this request for additional information, please contact me at (907)465-8790 or email [erin.allee@alaska.gov](mailto:erin.allee@alaska.gov)

Sincerely,



Erin Allee  
Project Review Manager

cc: Kenwyn George – ADEC, Juneau  
Fran Roche – ADEC, Juneau  
Kerry Howard – ADF&G/Habitat, Juneau  
Jackie Timothy – ADF&G/Habitat, Juneau  
Kate Kanouse – ADF&G/Habitat, Juneau  
Brian Frenette – ADF&G/Sport Fish, Juneau  
Brian Glynn – ADF&G/Sport Fish, Juneau  
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Dave Harris – ADF&G/Commercial Fisheries, Juneau  
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Karin McCoy – ADF&G/Wildlife Conservation, Douglas  
Gordy Williams – ADF&G/Commissioner’s Office, Juneau  
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Elizabeth Dubovsky - Trout Unlimited, Juneau  
Andy Ebona - Douglas Indian Assoc., Douglas  
Floyd Kookesh – Douglas Indian Assoc., Douglas  
Kathy Hansen – SE AK Fishermen’s Alliance, Douglas