



MEMORANDUM

STATE OF ALASKA

Department of Natural Resources
Office of Habitat Management and Permitting

TO: Joe Donohue
Department of Natural Resources
Division of Coastal and Ocean Management

DATE: December 21, 2007

FILE: AK 0711-04J

THRU:

SUBJECT: Redfern Resources Ltd.
Tulsequah Chief Mine, B.C.
Taku River Transportation Plan
ACMP Review, RFAI

FROM: Jackie Timothy
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Habitat Biologists from the Department of Natural Resources Office of Habitat Management and Permitting (OHMP) coordinated with Area Management Biologists from the Alaska Department of Fish and Game (ADF&G) and reviewed Redfern Resources Ltd.'s (Redfern) proposal to use air cushioned barges (ACB), shallow-draft tugs and amphibious vessels (amphitrac) to transport ore concentrate and mine supplies up and down the Taku River. In 1998, Redfern proposed, and the British Columbia Environmental Assessment Office approved, a 160 kilometer road with approximately 69 fish stream crossings. It is our understanding that Redfern's proposal to use ACBs, if approved, would eliminate the need for the road.

Project Description

A shallow draft tug will move the ACBs through the river corridor when water conditions allow. Amphitracs will move the ACBs over the river during winter when the river is frozen. The amphitracs will move or assist in maneuvering the ACBs across the Taku River tidal flats during spring break-up and fall freeze-up and throughout the open water period as needed. During the spring, summer and fall when ADF&G is conducting research in the west channel, the amphitracs and ACBs will travel over the Canyon Island east side beach. If the west side of Canyon Island is impassable during the winter because of ice buildup, the vessels will continue to use the Canyon Island east side beach. The transport will occur throughout the year with an average of six round trips per week.

If the project is found consistent with the ACMP and the State of Alaska permits the proposed activity, vessel operators will be transiting the Taku River in accordance with an Operations Plan developed cooperatively with the State. The Operations Plan includes measures to protect fish and wildlife resources and habitats, and operation, communication, environmental monitoring, modification, and compliance protocols. The Operations Plan makes assumptions about the performance of the vessels which are based on the manufacturers' statements and specifications. Redfern will have a third-party contractor conduct field trials in Oregon to test the performance of the vessels. Redfern will only accept delivery of the vessels if they meet the manufacturers' statements about performance, and will provide the State with a copy of the third-party contractor's analysis.

If the State agrees the vessels meet or exceed the performance standards described in the Operations Plan, OHMP will issue a Title 41 Fish Habitat Permit to authorize transportation route trials for one year in the Taku River. A Title 41 Fish Habitat Permit requires Redfern to assure free fish passage, restore any obstruction to free fish passage to OHMP's satisfaction, and ensure the proper protection of anadromous fish and their habitat. In the Fish Habitat Permit, OHMP would reserve the right to require mitigation measures to remedy disruption to fish and fish habitat created by the project which was a direct result of failure to comply with the permit. State of Alaska Biologists will participate with Redfern's Environmental Compliance Monitor in the trials to monitor the activity and ensure compliance with the Fish Habitat Permit. If Redfern demonstrates that fish habitat and wildlife transit are not adversely affected by the vessels during the route trials, OHMP would extend the Title 41 Fish Habitat Permit for at least one more year or longer depending on results of monitoring during the first year.

Standard of Review

We are reviewing the project for consistency with the ACMP against the Habitats and Transportation standards. 11 AAC 112.300 Habitats identifies habitat types. The habitat types within the project area include: estuaries, wetlands, tideflats, rivers, streams, and lakes and their active floodplains and riparian management areas. These different habitat types must be managed to specific standards, including avoid, minimize or mitigate significant adverse impacts to competing uses, water flow, circulation, drainage patterns, and natural vegetation within the riparian management area. The riparian management area, for a braided portion of a river, is 500-feet on either side of the waterbody measured from the outermost extent of the ordinary high water mark. 11 AAC 112.280 Transportation Routes and Facilities states that transportation routes must avoid, minimize or mitigate alterations in surface and ground water drainage patterns and disruption to wildlife transit or traditional access. To avoid disruption to wildlife transit, it is necessary to consider wildlife habitats.

Request for Additional Information

To avoid, minimize and mitigate impacts to habitats and wildlife transit, Redfern must first have the best information available about uses and resources of the coastal zone. At this time, we find the information on the potential effects on habitats and wildlife transit incomplete. In order for the Operations Plan to be considered complete, we request Redfern provide the following additional information:

1. The manufacturer's specifications and engineered drawings for the ACB and the amphitrac.
2. The performance standards the third-party contractor will be evaluating and the methods the contractor will use for the field trials in Oregon. This must include, but is not limited to, measurements of amphitrac and ACB pressure on land and water, disturbance below the amphitrac and barge in the water column and on the substrates, the disturbance caused by the Archimedes screws and retractable metal wheels on both frozen and unfrozen substrates, the disturbance caused by anchoring the amphitrac to winch a fully loaded barge out of the water and onto land, the maneuverability of the barge using the amphitracs in high velocity currents such as those at the Canyon Island transition site, maneuverability in rough seas and a wake analysis.

3. Appendix B for Volume 2 of the Environmental Document (though Appendix B is referenced several times in relation to wildlife in Chapter 4, there is no Appendix B in the table of contents).
4. Cross sections that show wetted width, water surface elevation at MLLW and low flow, and streambed elevations in the preferred channel between Swede Point and the US/Canada border using methods prescribed by the US Geological Survey. Please correlate the cross sections with the gage at Canyon Island. Ed Neal is with the USGS in Juneau.¹
5. The qualifications, position description and employment term of the Environmental Monitor.
6. An explanation of the methods Redfern used to determine high value fish and wildlife habitat areas with all accompanying surveys with maps.
7. The species specific protocol the Environmental Monitor will follow when mapping fish and wildlife resources and habitats, both temporally and spatially.
8. The species specific protocol the Environmental Monitor will follow to monitor fish and wildlife resources and habitats both temporally and spatially. For instance, how will the Environmental Monitor observe and record juvenile fish that are entrained or stranded or spawning adults in the navigation route?
9. The reporting forms the Environmental Monitor will be using to document fish and wildlife sightings, foraging, movements, habitats, incidents, mortality, etc.
10. A definition of fish and wildlife incidents and how Redfern will report them.
11. A definition of "significant" as used to describe impacts to fish.
12. A description of Redfern's wildlife right-of-way policy for an animal on the travel route.
13. An explanation of how Redfern proposes to limit the effects of operations on terrestrial species (moose, bears, wolves, goats), aquatic species (fish, seals, sea lions, whales, amphibians) and avian species (waterfowl, raptors) during all seasons.
14. An explanation of the buffer distances described for each species.
15. An evaluation of the impacts to aquatic and avian species trying to escape the vessels but resurfacing under the ACB.
16. An explanation of how Redfern would avoid aggregations of marine mammals.
17. The protocol the Environmental Monitor will follow when monitoring ice stability during the transitional seasons, including the reporting forms the Environmental Monitor will use.
18. The protocol the Environmental Monitor will follow to measure channelization, siltation and sedimentation, wake height and bank erosion attributable to the ACB and amphitrac, including reporting forms.
19. The protocol that vessel operators will follow to circumnavigate woody debris in the navigation route, since woody debris cannot be removed from the Taku River.
20. The protocol Redfern will use to update the Operations Plan.
21. The protocol that Redfern will use to implement the proposed adaptive management measures. Please document a protocol for each strategy that may be used to minimize impacts to resources and habitats.

¹ Neal, E.G., 2007, Hydrology and glacier-lake-outburst floods (1987-2004) and water quality (1998-2003) of the Taku River near Juneau, Alaska: U.S. Geological Survey Scientific Investigations Report 2007-XXXX, 28 p.

Advisories

We are aware of additional information that Redfern should review and use to update the environmental documents and Operations Plan.

Steller sea lions

Steller sea lions may be affected from disturbance near haulouts or while aggregating in the Taku river channel. Redfern's review of available information on Steller sea lions did not include the most recent literature and data, without which it would be difficult to avoid conflicts and haulout locations. Chapter 4 failed to include any mention of marine mammals or proposed mitigation for potential effects. The information in section 5.7.2 fails to document all haulout locations and does not consider aggregations in the water. Steller seas lions are well documented as hauling out at two locations in the Taku area. The following counts of Steller seas lions were made at Dorothy point: 215 in April 2003, 236 in April 2004, 283 in April 2005, and 190 in April 2006 (Womble et al 2005, J. N. Womble, personal communication, 2007). Steller sea lions also haul out at Circle Point, south of the entrance into the Taku River: 286 in October 2001, 240 in October 2002, (Womble et al. 2005) and 270 in March 2005 (Alaska Department of Fish and Game, unpublished data 2005). While protocols may be established to minimize disturbance near haulouts, plans should also be developed to minimize disturbance to large aggregations of sea lions foraging on eulachon and other fish. The number of sea lions documented in the Taku varies from year to year depending on several factors including: fish distribution, density, and abundance as well as sampling interval. Foraging activity of sea lions may range throughout Taku Inlet; however, most of the foraging activity typically takes place between Jaw Point, Flat Point and up towards the river flats (J. N. Womble, National Park Service, personal communication, 2007). The applicant should consult NOAA and ADFG biologists as well as the most current literature in order to adequately map the locations of potential conflicts with Steller sea lions.

Womble, J.N., M. F. Willson, M. F. Sigler, B. P. Kelly, and G. R. Van Blaricom. 2005. Distribution of Steller sea lions *Eumetopias jubatus* in relation to spring-spawning fish in SE Alaska. *Marine Ecology Progress Series* 294: 271-282.

Harbor seals

The documents do not address the potential impacts to harbor seals in the project area. Harbor seals are not addressed in either Chapters 3 or 4 of the environmental document, and no mitigation measures are proposed specifically for this species. More than 700 harbor seals were counted by the National Marine Mammal Lab in the Taku River during August 2002 and there are a minimum of 5 harbor seal haulouts in the Taku River (L. Jemison, Alaska Department of Fish and Game, personal communication, 2007). In the lower section of the Taku River the vessels have the latitude to remain at a distance to avoid disturbing haulout sites. However, in the mid-section of the river where the river corridor is narrower, it may be more difficult. Seals haul out on sandbars adjacent to deeper channels where they have escape opportunities as well as access to foraging habitats.

Section 5.7.2 of the Environmental Document states that "harbor seals are known to habituate relatively easily to human activity and are not likely to be affected by the passage of the ACB...". Although this may be true in locations in the lower 48, this is not the case in Alaska, where harbor seals are very easily disturbed by human activity. During 13 field seasons (3 weeks to 5 months in duration) working with

harbor seals in the Bering Sea, Gulf of Alaska, and Southeast Alaska, harbor seals were consistently sensitive to nearby human activities including small and large boat traffic, airplanes, four-wheeler traffic, and hikers on nearby beaches (L. Jemison, Alaska Department of Fish and Game, personal communication, 2007). There have been several studies on harbor seal disturbances in Alaska that need to be reviewed and incorporated into this plan such as Jansen et al. (2006), Mathews (1999a), Mathews (1999b). Additional information is also available upon request (J. Jemison, Alaska Department of Fish and Game, unpublished data, 2007).

Jansen, J. J. Bengston, P. Boveng, S. Dahle, and J. Ver Hoef. 2006. Disturbance of harbor seal by cruise ships in Disenchantment Bay, Alaska: An investigation at three spatial and temporal scales. Alaska Fisheries Science Center Report 2006-2. National Marine Mammal Lab, NOAA, Seattle, WA.

Mathews, E. A. 1999. Progress Report: Measuring the effects of vessels on harbor seals at North Marble Island in Glacier Bay National Park. Draft Report. University of Alaska Southeast, Juneau, AK.

Mathews, E.A. 1999. Effects of vessel traffic on Steller sea lions at a haulout in Glacier Bay National Park. Draft Report. University of Alaska Southeast, Juneau, AK.

Whales

Potential effects on whales have not been adequately analyzed or addressed. If whales are located along the travel route, there is a potential for whale strikes or disturbance while feeding. While the environmental document indicates speed limits instituted in Glacier Bay to reduce impacts on whales will be implemented, the plan does not address what measures the company will take to avoid conflicts in areas of feeding activity, particularly within the mouth of the river where maneuverability may be more constrained. Whales are known to feed in the mouth of the Taku River and were monitored in Doty Cove in the 1980's (Jan Straley, University of Alaska Southeast-Sitka, personal communication, 2007). As many of 40 whales may use the area between Marmion Island, Pt. Arden, and the mouth of the Taku up to Cooper Point (John Moran, Auke Bay Lab, Juneau, personal communication, 2007). The disruption of foraging has not been addressed. More information should be gathered from appropriate agencies on humpback whales as well as other cetaceans in order to adequately assess and mitigate potential effects.

Goats

Though the environmental documents state goats were not found within two kilometers of the ACB route or below 400 meters elevation, goats have been documented at sea level in the lower Taku River (N. Barten, Alaska Department of Fish and Game, Douglas, AK, unpublished data, 2007). In some areas the deep part of the river channel cuts in close to cliffs (such as just north of Taku Lodge), and could be used by goats during winter. These areas should be inventoried for goat use and potential effects on goats should be monitored.

Moose, Bears, Wolves

We expect Redfern will elaborate on the best management practices that will be used to mitigate conflicts with moose, bear and wolves. Specifically, it would be helpful to have an explanation of the measures

proposed to limit foraging opportunities of wolves on moose, as stated in the table on page 4-30 in Volume 2.

Amphibians

Though the environmental documents show amphibians and breeding ponds occurring on the east side of Canyon Island, breeding areas are not mapped. These areas should be mapped so that they can be avoided, and the location of the ponds in relation to the proposed travel route should be provided for evaluation.

Fish

The State is concerned that adequate information on spawning and rearing locations of salmonids and eulachon is not available for the lower Taku. Gathering additional data would improve opportunities for the applicant to avoid, minimize and mitigate potential effects through timing or route relocation and to avoid potential effects on marine and terrestrial mammals that prey upon these species.

Cc: by email

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