

**Pebble Project Technical Working Groups  
Wildlife Meeting**

(Atwood Building, Kuparuk Conference Room)

**Final Minutes**

**September 20, 2007**

Attendees:

Charlotte MacCay (Bristol/PLP) - reviewed	Mandy Migura (NMFS) - reviewed
Earl Becker (ADF&G) - reviewed	Barbara Mahoney (NMFS)
Judy Putera (NPS)	Jean Zodrow (EPA) - reviewed
Steve Matsuoka (USFWS)	Terry Schick (ABR) - reviewed
Leroy Phillips (COE)	Phil Brna (USFWS)
Tom Crafford (DNR) - reviewed	Scott Maclean (OHMP/DNR) - reviewed
Mike Smith (PLP) - reviewed	Tom Brookover (ADF&G) - reviewed
Andrea Meyer (DNR) - reviewed	Dianne Soderlund (EPA) - reviewed

**STEERING COMMITTEE COMMENTS TO THE WILDLIFE TWG**

**(Tom Crafford)**

- TWGs purpose is to draw upon the technical expertise of the state and federal agencies to bring good science to the pre-permitting baseline study process.
- Unprecedented effort on behalf of a company to solicit agency input into baseline studies.
- If TWG determines it needs more project background information it may request additional information from the Pebble Limited Partnership..
- Relationship to Steering Committee:
  - Steering Committee is an enabling committee to provide resources and assistance.
  - If there is an issue or resource need that a TWG member feels needs to be brought to the attention of the Steering Committee, contact your agency's Steering Committee member.
- Public Process
  - Guidelines and protocols suggest that public be given a defined period at a meeting to ask questions or make statements so that their input can be incorporated in a manner that will not disrupt the flow of the TWG discussions. This may be at the end of the meeting; however, the group may wish to allow public comment earlier in the meeting. This is at the discretion of the TWG leader.
  - TWG leaders will be responsible for running and managing each meeting, including the manner of involvement of everyone in attendance.

- Public may send comments to TWG leader by e-mail. The leader will distribute comments to the TWG. Public can refer to the website for the meeting minutes to review TWG points on the issue.

## **TECHNICAL WORKING GROUP PROTOCOLS AND GUIDELINES**

**(Charlotte MacCay)**

- The Technical Working Group Protocols and Guidelines were read through.
- Guidelines and Protocols serve to provide some consistency among groups.
- Charlotte MacCay's role is to be scribe, but also to attend all TWG meetings, tracking information exchange to identify areas of study that are being redundantly reviewed in separate groups, and areas of study that are left uncovered amongst the groups.
- TWGs may split into subgroups or merge depending on the topic. TWG members are welcome to sit in on other TWG groups.
- Minutes from all TWGs will be on the website for member, and public, review.
- Accommodations should be made for out-of-Anchorage group members, including the use of videoconferencing.

## **PROJECT OVERVIEW**

**(Mike Smith)**

- A general overview of the location of the pebble deposit, potential road corridor and potential powerline corridor was provided.
- There is a commitment to hook up local communities to the powerline if it is constructed.
- It was noted that while there is a 77 square mile mining claims block, which gives the company exclusive mineral rights throughout that area, it does not imply the whole area will be developed.
- The west zone of the deposit was described as a prospect located very close to surface with a very low strip ratio of .23:1 compared to many mines that have strip ratios of up to 2:1 or 3:1, making the deposit suitable for surface mining methods.
- The east zone of the deposit was described as a much deeper deposit, with drill holes showing ore below 5000 feet deep. This zone is more suited to underground mining methods because it is overlain with nonmineralized rock over 2,000 ft thick. Block caving is a method of particular interest for this ore body.
- An exploration shaft would provide more data regarding the quantity and grade of ore and the mechanics of the rock. Present efforts are focused on planning for an exploration access road and shaft to further these exploration efforts. Exploration activity for the road and shaft will require various permits and likely trigger the NEPA process.
- Extensive exploration drilling has been underway to better define the potential of the east zone for the development of an integrated development plan (IDP) that strategizes how best to develop the combined zones. The development plan process will consider exclusively surface mining, exclusively underground

mining, a combination of surface and underground mining, and sequencing of mining methods and areas.

- With the discovery of substantial ore to the east and other site data, some aspects of previous preliminary mine designs may change. These include reconsideration of the mill site due to meteorological data showing high winds, and reconsideration of tailings disposal sites due to relative location to the east zone deposit and volume capacity limitations.
- Company is maintaining its commitment to not place tailings in the Upper Talarik drainage while reconsidering tailings disposal options.
- Tailings impoundment design incorporates concepts of inundation of tailings and potentially reactive waste rock to create an anoxic environment that will prevent acid rock drainage, a process that is dependent on oxygen availability. Most of the tailings will be benign, but there is a small percentage that will be pyritic and anticipated to be acid generating. It is these pyritic tailings that will be inundated to prevent oxidation.
- Tailings impoundment design is the creation of a new landform; it is not similar to a concrete dam with a large body of water creating a lot of head pressure. Most of the contents of the impoundment will be solids with a shallow pond on the surface. The pond does not interface with the dam structure directly, but is managed to keep it at a distance from the dam structure.
- Seepage collection will be an integral part of the tailings dam design, as all dams have seepage that must be collected and controlled.
- A water balance will be developed to address design concerns related to water availability, water excess, and climate change. Geochemistry work will foretell water quality.
- The feasibility of shipping out the pyritic tailings was raised and countered with concerns that there are no better solutions for disposal elsewhere, there is potential for spills and fugitive dust during shipment, and that economics likely would not support the option. This option likely will be addressed during the EIS process.
- A history of the project from discovery in the late 1980s to present was provided culminating with the recent creation of the Pebble Limited Partnership (PLP) which is a 50:50 partnership between Northern Dynasty and Anglo American. Northern Dynasty has assigned all its Pebble assets (claims, core, data) to the partnership. Anglo American has committed to spend \$1.425 billion during the next five years as its contribution to the partnership. The partnership's board of directors will consist of two personnel from Northern Dynasty and two personnel from Anglo American. The partnership's management team will be based in Anchorage.

## **WILDLIFE BASELINE STUDIES SUMMARY**

**(Terry Schick)**

- Wildlife studies to date have focused on characterizing the baseline conditions and providing input for use in project design, monitoring design, permitting, and NEPA requirements.

- Wetlands mapping products (vegetation data layers in GIS) produced by other consultants will be enhanced with landscape features to reflect use by wildlife. The final wildlife habitat map will be used with site-specific survey data to determine wildlife – habitat associations.
- The study area for habitat mapping at the mine site encompasses about 72,500 acres. Mapping also extends along the potential transportation corridor in a 2000-ft corridor surrounding the possible road alignment (a mapping area of about 24,500 acres)..
- Ground –truth surveys for the habitat –mapping work are complete and mapping should be completed in 2008.
- Surveys to determine seasonal distribution and relative abundance of large mammals in the mine study area and transportation corridor were conducted by fixed wing aircraft. Surveys were focused on caribou, moose, brown bears, and harbor seals in Iliamna Lake. Strip transects were used when possible and reconnaissance surveys along possible road alignments were conducted when terrain prohibited the use of strip transects. The occurrence of smaller mammals in the project area will be addressed through review of the literature.
- Helicopters were used for bear-den site surveys, beaver-colony surveys, and surveys for bear use of salmon-spawning streams.
- Marine wildlife surveys at the possible port site in Cook Inlet were conducted to identify the presence of T&E species and species of conservation concern via boat-based and helicopter surveys. The presence of Steller’s Eiders, sea otters, and Steller’s sea lions was confirmed. Beluga whales have been noted in the area in the past, and Kittlitz’s Murrelets are anticipated but have not recorded to date. Additional fixed-wing surveys for harbor seals and migrant waterbirds were conducted.
- Ground-based point-count surveys for breeding landbirds and shorebirds have been conducted in the mine study area and transportation corridor. These surveys were conducted at pre-determined fixed locations and most birds were identified by songs and calls. These surveys were focused on collecting habitat-association data to facilitate assessments of the amounts of breeding-bird habitat to be lost directly to development.
- Aerial fixed-wing surveys for waterbirds have been conducted the mine study area and transportation corridor. These surveys were conducted using lake-to-lake survey methods for migrants and molting waterbirds (including shoreline surveys of Iliamna Lake) and strip transects for breeding waterfowl and swans.
- A nesting gull survey in the mine study area was conducted by helicopter by surveying habitats in and adjacent to waterbodies. Harlequin Duck surveys were flown by helicopter along stream courses both in the mine study area and transportation corridor and surveys for brood-rearing waterbirds in the mine study area were conducted on foot in mid-summer.
- Surveys for tree-nesting and cliff-nesting raptors were conducted by helicopter both in the mine study area and transportation corridor. Surveys were focused on surveying for the rarer and uniquely protected species (e.g., eagles) and species sensitive to disturbance.

- Nest occupancy surveys (early summer) and productivity surveys (mid to late summer) for raptors were conducted.
- Several early winter and late winter surveys have been conducted for wintering raptors, focusing on use of the area by Bald Eagles.
- Guidelines for pilots were prepared in 2005 to reduce aircraft activity near known raptor nests and other sensitive wildlife.

**Wildlife Studies comments:**

- It was noted that with the discovery of the Pebble East deposit that there may need to be an adjustment to the wildlife-mapping study area to encompass more land to the east of the present mapping boundary.
- It was also noted that there should be a review of survey areas in relation to alternative transportation routes to ensure adequacy of baseline-data coverage.
- The methods for the fixed-wing transect-surveys for large mammals (transects spaced 1.6 km apart with 800-m survey bands on either side of the aircraft) indicate 100% survey coverage, but not 100% detectability of the mammals present.
- The large-mammal survey data yield an index of abundance not a population estimate. They are not designed to determine population size. To date, the data have not been corrected for detectability in the mine area.
- Aerial surveys in the forested areas have limited coverage (ABR says 12%). In the forested areas around Pedro Bay, detectability is poorer than in the mine area.
- A bear-travel route has been found at the head of the Y Valley, in the mountain pass where the current PLP access road alignment also occurs.
- Similar to the concerns regarding detectability of animals during the fixed-wing transect-surveys for large mammals (above), it was felt that the densities of waterbirds determined from fixed-wing transect-surveys may be underestimates (i.e., the density estimates are currently not corrected for detectability).
- To understand whether the wildlife studies to date have been adequate, and whether additional studies are needed, it is helpful to review the results of studies in report form, not just in an overview in a PowerPoint presentation.
- The potential for survey activities (aircraft activity) to affect wildlife was raised. It was noted that the low frequency and lack of predictability of the survey flights (irregular in occurrence and not on a daily basis) would limit the effects on wildlife in areas away from the mine site. The most likely effects would be temporary displacement of animals during survey flights. There has been greater concern that the daily helicopter-support for the drilling activity in the mine area (repeated visits to the same area) could negatively affect wildlife. Helicopter guidelines for pilots were implemented in 2005 to address some aspects of that concern.
- Areas where steep terrain occurs at the Cook Inlet coast can result in limited routes for bear passage. The occurrence of traditional bear trails in these areas are of particular interest. Some trails have been found and others likely are present.
- Mitigation for impacts on bear and other large-mammal movements can include realignment of road routes, but other measures such as crossing underpasses also

should be evaluated in areas considered to be movement corridors for large mammals.

- Concern was noted regarding the loss of bear-denning habitat in the mine study area. Has some den-abandonment already occurred and are more surveys needed to expand the study of bear-denning? Greater statistical rigor will be needed to determine an accurate assessment of the number of dens in the mine study area.
- The sampling of wildlife tissues for trace-element analysis will be addressed under a separate TWG. The wildlife TWG members are encouraged to interact with the Trace Element TWG on issues of concern.
- While the Wildlife TWG team members understand their area specialty, they do not necessarily understand all the intricacies involved in assessing the potential impacts of a project of the scope of the Pebble Mine. That is, they are uncertain that they know all the right questions to ask. It was pointed out that often other employees of a group member's agency may have relevant experience assessing impacts from other mining projects in Alaska.

## **BEAR COLLARING STUDIES**

- There have been suggestions to PLP to conduct bear-collaring and tracking studies to determine bear-movement corridors. A PLP budget for those studies was approved last March resulting in a proposal to ADF&G last spring. There was too little lead time for ADF&G to respond and it was mutually agreed to postpone the work until 2008.
- Concerns over manpower to conduct the bear-collaring work and potential mortality to bears from capture were expressed.
- A discussion of the merits of VHF versus GPS collars occurred. GPS collars result in more specific location data and a much greater number locations but they are more expensive. GPS collars are PLP's choice and are contained in the draft study.
- Substantial lead time in preparing a study plan for bear collaring is necessary to (1) determine what population of bears is of most interest, (2) design the field-study methods and data-analysis protocols, (3) determine the manpower needs and study-responsibilities of the parties involved, and (4) order GPS collars and radio frequencies, and secure satellite downloads of data.
- The bear-collaring study should be designed around what data ADF&G will need to adequately assess baseline conditions and to make decisions about potential impacts and possible mitigation measures.
- It is of interest to acquire information on anticipated road-traffic density (trucks/day) and vehicle types to determine if the level of traffic expected will create a "traffic fence" resulting in habitat fragmentation for mammals.
- It is of interest to consider possible cumulative impacts along the road, such as potential development of summer homes, increased local use, etc., in the post-mining phase.

## **NEXT MEETINGS**

- Itemized agendas will be emailed to the group prior to meetings to allow for and encourage email dialogue and development of the issues.
- TWG members have stressed interest in access to information associated with the Environmental Baseline Document for all years in which data was collected. The group emphasized that the additional data and sampling/analysis protocol will enhance the value of the TWGs result in more effective member participation. PLP will investigate the best means to accommodate this request.
- Discussion between TWG members in areas of mutual expertise or otherwise is also encouraged to better prepare for upcoming meetings.
- A meeting will be scheduled for the 2<sup>nd</sup> week of October to discuss the bear collaring study and to enable planning and collar ordering in a timely manner.
- A subsequent meeting will be scheduled for the 4<sup>th</sup> week of October to start the process of systematically reviewing the wildlife studies conducted to date for scope, methodology, and design.