

Cominco Alaska Incorporated / Red Dog Mine / P.O. Box 1230 / Kotzebue, Alaska 99752 / Tel. (907) 426-2170

June 8, 1994

John Phillips
U.S. Army Corps of Engineers
PO Box 898
Anchorage, Alaska 99506-0898



A Subsidiary of Cominco American Incorporated

RE: DA permit modification Z-830359

Dear Mr. Phillips,

The following information is in response to your letter of May 19, 1994.

Rationale for Request:

Prop-wash is being considered as a means of augmenting dredging activities at the Delong Mountain Regional Transportation System (DMRTS) Port Facility due to the necessity to reestablish sufficient draught to receive barge shipments this summer. Red Dog Mine is a large mining operation located in a remote area of northwestern Alaska. In order to operate throughout the year, several barges of supplies and fuel must be received during the ice free months. At present there is insufficient draught to dock these barges. Without the ability to receive these supplies, the mine would be shut down depriving approximately 350 people of their jobs. There would also be severe environmental impacts caused by the inability to fuel the generators which provide power for mine seepage diversion and water treatment. The local villages of Kivalina and Noatak also rely to some extent on these fuel shipments.

Cominco Alaska had expected to acquire a cutter-suction dredge from the city of Kotzebue. Had we been able to acquire this piece of machinery, prop wash may not have been necessary. However, with further investigation we discovered the dredge was not in working condition and could not be readily salvaged. Inquiries were made within the region, but another available dredge could not be found to meet our needs. See attached copy of an internal memorandum regarding this dredge search.

Cominco will use a clamshell dredge to accomplish as much dredging as possible. However, the extent of dredging by clamshell will be limited by the reach of the crane it is attached to. Prop wash will be implemented to provide the additional dredging needed to allow the barges to be docked. It is necessary for Cominco to proceed with this project in mid June, with prop wash occurring in late June to early July, to be prepared to receive the first supply barge.

Sediment Particle Size and Littoral Drift:

The prop wash and clam shell dredging will be expected to take place in the nearshore sediments, along the dock structure. The intent is to establish the 15 feet of draught required by the barges, with a margin of additional depth to allow for accretion between dredgings. The Red Dog Mine Baseline Study, prepared by Dames and Moore, 1993, characterized the nearshore surface sediments to consist of medium to coarse grain sand, with moderate amounts of shell debris. Sediments further offshore vary from muds to angular rock, and silt was only found in deeper water towards the far end of the dock structure. These deep water silts exhibited ripple marks which are indicative of a dynamic environment with at least periodic, if not continual, high wave or current energy.

The environment at this site is very dynamic with frequent winds and wind generated waves and current. In an analysis of conditions along the length of shoreline from Cape Thompson to Cape Krusenstern, Woodward -Clyde (1983) estimated the net longshore transport of sediments at the port site to be in excess of 100,000 cubic yards per year, all of which occurs during the 4 month open water season in a northerly direction. In fact this does occur; however, this pattern is overwhelmed by the major southerly movement of material that occurs during storms. ENSR Consulting (1991) in a recent study concluded that large quantities of beach sand can be deposited or removed during a single storm. Woodward-Clyde also anticipated that storms would ultimately determine the direction of net transport. This highly dynamic storm related movement, counter-current to the longshore transport, has been obstructed by the dock structure resulting in accretion along the dock structure which is proposed to be dredged and removed.

Storms with associated high turbulence would maintain silts in suspension and would not have resulted in their deposition within this area of high wave action; silts would be expected to settle out only in a low energy environment. These materials to be dredged would have been primarily transported during storms and laid down on top of the baseline sediments as their natural course was diverted by the dock structure. Even towards the end of the dock, sediment deposition would now be expected to consist primarily of the coarse sand that is diverted from its shoreline movement by the obstruction of the dock structure.

To verify this a sediment sample was collected approximately 10 feet seaward of the dock, water depth was less than 18 inches during high tide. A sieve analysis of this sample produced the following results:

Cominco Alaska

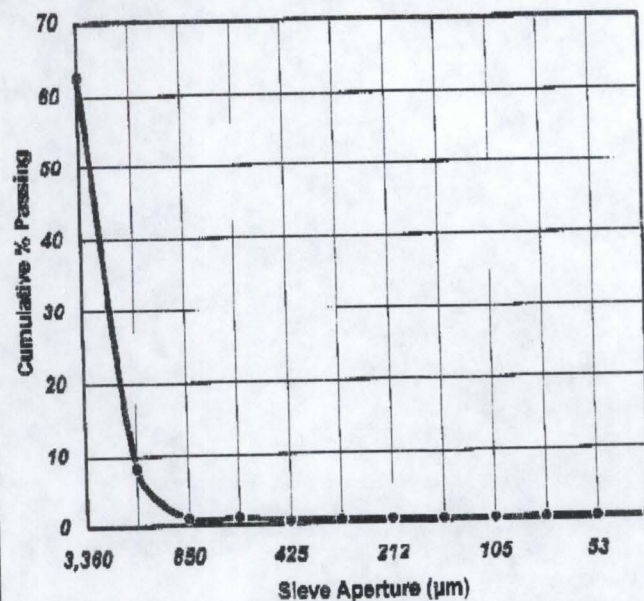
Screen Analysis Report

Red Dog Mine

Date: 29 May 1994
 Sample: Port Beach Aggregate
 Objective: Determine Fines Content

Test No.: ML-6916
 Technician: SJP
 Requested by: JAL

Size		Weight grams	% Retained		% Pass Cuml
Mesh	μm		Indiv.	Cuml.	
6	3,360	97.5	37.5	37.5	62.5
10	1,700	141.1	54.3	91.8	8.2
20	850	18.6	7.2	98.9	1.1
28	600	0.0	0.0	98.9	1.1
35	425	1.6	0.6	99.5	0.5
48	300	0.0	0.0	99.5	0.5
65	212	0.0	0.0	99.5	0.5
100	150	0.1	0.0	99.6	0.4
150	105	0.1	0.0	99.6	0.4
200	75	0.0	0.0	99.6	0.4
270	53	0.1	0.0	99.7	0.3
325	45	0.0	0.0	99.7	0.3
-325	45	0.9	0.3	100.0	0.0
Total		260.0	100.0		



Notes:

The sample was collected by J. Martinesko on 26 May 94, at a location 10 feet seaward of the dock.

Observations:

The fines content of the sample was negligible.
 More than 90% of the sample was coarser than 10 mesh (1.7 mm),
 and only about 1% of the sample was finer than 20 mesh (0.85 mm).

Anticipated Size and Duration of the Plume:

Prop washing will not generate silt plumes at this location since the prop-washed material will consist of pebbles with some coarse sand with little to no silt content.

Due to the coarse grain nature of the sediments, significant velocity is required to maintain them in suspension. Therefore, the gravels will settle out within a short distance of the dredging site as the velocity decreases.

Timing of Dredging in Relation to Fish and Marine Mammal Migration:

Unlike some other forms of mechanical dredging which could be accomplished with some ice present, prop wash by necessity must be conducted during open water periods. Therefore, the timing of the prop wash activity would be late June to October as necessary, with the majority of the activity to occur from late June to mid July.

Ringed and bearded seals increase in numbers after March, but are generally absent after the ice goes out (Dames and Moore, 1983). Kivalina residents state that their hunting season usually extends up to July 1. Prop wash activities would only occur after the ice had gone out in late June to early July. Therefore, the majority of these species would be absent from the area when the prop wash would take place. Furthermore if some of these species were still present in the area, they would not be significantly affected by the prop wash activity since it will not produce a silt plume.

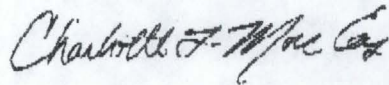
Bowhead whale surveys place little importance on this area, although the local people do hunt them until about mid July. Beluga and Bowhead whales migrate in open leads during late April-early May. Most Bowhead whales migrate far offshore (Dames and Moore, 1983). Gray whales have been sighted during July and August from Cape Krusenstern to Point Hope. Most research on gray whales was conducted south of the port where densities of gray whales are higher. Based on the number of gray whale sightings, it is suggested that they occur only in low densities north of 69 degrees latitude. Whales tend to use the Russian coast for fall migration. (Dames and Moore, 1983). Presumably, these large mammals would always be further offshore than the dredging site where there are adequate water depths to allow their movements. They would not be affected by nearshore prop washing since there will not be a silt plume generated and the gravels will settle relatively close to the dock site.

Anadromous fish do migrate through the area, but there are no studies which define the time periods. It is noted in the baseline studies however, that due to a

rather steep nearshore gradient and lack of offshore barrier islands there is not the distinct zone of warm, low salinity water along the shoreline that tends to attract anadromous fish to the shoreline (Dames and Moore, 1983). If fish are in the area during this activity, there will be no barriers, physical or chemical, to prevent their avoidance of the activity. Furthermore, since there will be no silt plume generated, the activity would be expected to have minimal to no impact upon any fish present.

If there are any further questions on the effects of this prop wash activity, please contact myself at 907/426-9143 or Jacki Lundberg at 907/426-9141.

Sincerely,



Charlotte L. MacCay
Manager, Environmental Affairs

cc: AIDEA J. Wood
WRH/MJM/JRG
file



(For use within the company only)

MEMORANDUM

TO: Manager, Environmental Affairs(CLM) **DATE:** June 8, 1994

FROM: Mine Engineer (KMD) **FILE:**

SUBJ: Portsite Dredging Project **REF:**

The dredge to which the Corps has referred as being located in Nome belongs to Mr. Dennis Josephson. This dredge is a "spud" dredge, which is held in operating position by a set of swing winches in conjunction with two vertical posts, which are dropped from the hull of the dredge into the sediments. This provides a positive, rigid connection between the dredge and the sea-floor. This connection is undesirable in offshore conditions where swell is prevalent. Offshore operating time is limited to those periods of time when the swell is less than two-and-a-half to three feet - this would be a severe constraint in the Chukchi Sea anytime after the ice has gone out.

The only time a "spud" dredge could operate effectively at Red Dog would be in the very early summer - when the ice is gone from around the dock, but the Chukchi Sea is still covered with sufficient ice to depress the swell. It was with this time-frame in mind that we evaluated spud dredges available in northwest Alaska (Kotzebue, Point Lay, and Nome), as well as the lower forty-eight. This window of opportunity has closed due to timing and logistics.

Also, the dredge in Nome is relatively heavy and would require the equivalent of a 4100 Manitowoc crane to transfer the unit on and off of a barge for transport to Red Dog. There are no cranes in Nome with this capacity, and none at Red Dog to unload the unit if it could somehow be loaded in Nome. Of course the fact remains that even if we did have a crane on-site which was large enough, the dock is sanded in - which would prevent us from getting the barge close enough to unload in any event. The only possible alternatives would be to contract a crane and barge exclusively for this job, or to tow the vessel from Nome. Neither of these options are practically or economically attractive.

As you are aware, unique and potentially paralyzing problems are posed by our situation. It is critical that the dock be open to a sufficient degree when the first tug arrives to allow them to tie up to the dock and transfer mooring equipment for the barges in tow. This task can hopefully be achieved by clam-shell dredging. If this is not successful, the tug cannot be freed to wheel-wash.

JUNE 8, 1994 CLM MEMO - PORTSITE DREDGING PROJECT

An operating area of sufficient depth must then be cleared by wheel-washing to get the barges to the dock for unloading. Although much of this excavation could have been accomplished by use of the clam-shell if we had been able to start earlier, due to delays in initiating the program there is now no alternative but to supplement the clam-shell work with wheel washing. If this cannot be done, then the barges will have to be towed elsewhere for unloading - possibly Nome, where the deck cargo will have to remain so the Kivalina and Noatak can return to Red Dog to begin handling concentrate.

This would not only jeopardize mine and mill operations and possibly bulk fuel transfer, but would also put all construction projects on hold until the dock was made usable. At that time an attempt would have to be made to schedule the construction material, along with all other Sealift freight, fuel, and concentrate load-out operations into the remaining season. All of this during the worst typical weather. Further, there would be no alternative dredging options - at any price - which could be implemented in less than four weeks. This would push general freight arrival at Red Dog back to early August at the soonest, which may not allow sufficient time to receive all materials necessary for operation through the upcoming winter.

If the proposed clam-shell dredging and wheel-washing campaigns work, and we do get the dock open for operation in a timely fashion this season, we still have a significant problem and will most likely need to mount a major marine dredging effort either later this summer or early next summer.

KMD

cc: JRG
TEZ
GSE
MLS
File

Signed: Kitt M. Dale