

June 21, 2006

Tom Crawford, Project Manager
ADNR/Office of Project Management & Permitting
5550 West 7th Avenue, Suite 900D
Anchorage, AK 99501

RECEIVED
2006 JUN 26 AM 9:12
C5SD-MDC

RE: Alaska Gold Company Rock Creek & Big Hurrah Projects

Dear Mr. Crawford,

I own a little over 3 acres at mile 18 of the Nome Council Highway and am a bit concerned over the amount of dust that will blow as the ore trucks come by on their way to the Rock Creek Mine from Big Hurrah. There are many families (mine included) that fish near Safety Sound and we all make dry fish for winter use. The amount of dust should be controlled by watering the roads or other measures. I think the state of Alaska should also require a bond to repair damage to the coastal road that may result with the increased loads. This road has been blown out twice in recent years from fall storms and the base is pretty much gone.

I would also like to see a limit on the use of haul trucks on the Nome By Pass road during the school year months so that the trucks do not haul late at night (midnight to six am).

Thank you for the opportunity to comment.

Sincerely,



Thomas S. Sparks
P.O.Box 1343
Nome, AK 99762

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JUN 27 2006

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June 23, 2006

Jim Wolfe <james.wolfe@poa02.usace.army.mil>
U.S. Army Corps of Engineers
Regulatory Branch CEPOA-CO-R
P.O. Box 6898
Elmendorf AFB, AK 99506-0898

Re: Comments on POA-2006-742-4 (Rock Creek and Big Hurrah mines)

Dear Mr. Wolfe:

Growth material from beneath the waste rock storage areas should be recovered before placing waste rock. Present plans are to bury this material under the waste:

“The overburden soils will not be recovered from beneath the main part of development rock stockpile, however since they are anticipated to be benign they will not constitute fill of a wetlands with a pollutant.” (Rock Creek Mine Plan Of Operations Volume 1, Project Description, Section 3.4.1 Rock Creek Mine/Mill Complex, Alaska Gold Company, May, 2006)

All reasonably available growth material should be applied to the reclaimed waste rock to promote post-mining revegetation. Utilizing this valuable resource would enhance long term physical and geochemical stability of the waste rock. To not utilize stockpiled growth material would waste a valuable resource, and would be a poor land management practice.

It is stated in the Reclamation Plan that:

“Organic soils over the Project site are thin and, in some places, non-existent. As described above, organic soils, where present and practicable within the area of the plant site, rock stockpile subcuts, tailings dam footprint, tailings storage facility area, and pit area, will be stripped and stockpiled.” (Rock Creek Mine Plan of Operations, Volume 4, Reclamation Plan, Section 5.5.3.1 Organic Soils, Alaska Gold Company, May, 2006)

and in volume 2 of the Plan of Operations;

“Topsoil depth throughout the Rock Creek site ranged from 0.5 to 14 inches (1.3 to 36 cm). Of the 17 wetland sites, depths ranged from 0.5 to 14.0 inches (1.3 to 36 cm) with a mean value of 5.9 inches (15 cm).” (Rock Creek Mine Plan Of Operations Volume 2, Environmental Information Document, Section 7.4.1.1 Topsoil, Alaska Gold Company, May, 2006)

Since the organic layer is thin, removing the organic layer before waste rock application should be relatively easy, and will provide a significant reclamation resource. Removal could amount to no more than blading and collecting the organic layer in advance of the front of the waste dump. This should not impose a economic hardship on the operator, and would provide significantly more growth material to assist final revegetation.

June 23, 2006

Page #2

While the Corps probably does not have any mine reclamation requirements that would authorize it to require the collection of organic material below the waste rock dump as a part of its 404 permit requirements, the Corps should be able to make this a requirement as a part of the mitigation required for the loss of wetlands. Revegetation will help protect water quality in Rock Creek and the Snake River, as the present wetlands presently do. Failure to adequately revegetate the waste dumps could lead to increased sedimentation in these waters, and to the degradation of long term water quality.

Thank you for the opportunity to comment.

Sincerely;

A handwritten signature in black ink, appearing to read "David M. Chambers".

David M. Chambers, Ph.D.

CC: Jim Renkert
Project Review Coordinator
Alaska Coastal Management Program
Office of Project Management and Permitting
Alaska Department of Natural Resources
550 W. 7th Ave., Suite 1660
Anchorage, AK 99501
Email: jim_renkert@dnr.state.ak.us

Jan 26th -

Town Meeting -

Rock Creek / Big Horn

TO: NOAA GOLD

~~QUEST~~ GREAT



QUESTION CONCERN:

1. How will increased TRUCK TRAFFIC
(I was told 2 per hour between
Big Horn and Processing plant
at Rock Creek)

A. Affect the ROAD!!

B. I'm afraid of a negative
effect on bird migrations - in
our area. Note, Birding is a
large part of our tourism.

* OF LESS CONCERN IS CONTAINMENT AND
FUTURE WATER QUALITY ISSUES.

I AM VERY POSITIVE FOR THIS DEVELOPMENT.
I ALSO KNOW THAT IN THIS WONDERFUL
AGE OF TECHNOLOGY WE ARE ABLE TO
HARVEST RESOURCES MUCH MORE EFFECTIVELY
AND ENVIRONMENTALLY FRIENDLY ~~WAYS~~ WAYS.
(IE THE ~~NEW~~ TRANS ALASKAN PIPE LINE -)
DOING THIS SORT OF DEVELOPMENT THOUGH
IS VERY EXPENSIVE. I HOPE THE
PRELIMINARY WORK HAS BEEN THROUGH AN
EXACTING AND THAT NO "CORNERS WILL BE
CUT" THAT WILL HAVE AN ADVERSE EFFECT
ON FUTURE GENERATIONS -

You should
come on my
show, Hello,
443-2814
CENTRAL
RB.

Richard Beneville
PO2024,
NOMIA -



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WALES
WHITE MOUNTAIN

June 27, 2006

Tom Crafford, Project Manager
Office of Project Management & Permitting
550 W. 7th Avenue, Suite 900D
Anchorage, AK 99501

RE: Nome Rock Creek and Big Hurrah Mine Project

Dear Mr. Crafford,

Thank you for the opportunity to provide comments regarding the proposed Rock Creek and Big Hurrah mine project. We recognize the potential for this mine to provide economic growth to the Nome area. However, we also recognize that development, if not properly planned, implemented and monitored, can be detrimental to the surrounding natural resources of this area. We offer the following comments and recommendations to ensure that the environment and resources upon which we depend are not negatively impacted due to mining activities. We seek to ensure that the proposed project is consistent with 11 AAC 112.270, Subsistence Uses; 11 AAC 112.280, Transportation Routes and Facilities; 11 AAC 112.300, Habitats and 11 AAC 112.900 Sequencing Processes to Avoid, Minimize or Mitigate. We have outlined our concerns for each of the Rock Creek and Big Hurrah portions of this project, and have provided suggested solutions to ameliorate our concerns below.

11 AAC 112.270, Subsistence Uses by Nome and other State Residents:

Big Hurrah, Subsistence Uses

The Solomon River watershed provides subsistence opportunity to local users who fish that system or the adjacent marine waters for salmonids and other non-salmon species such as cod that mingle within the Safety Sound and Solomon Riverine Estuary. Although we appreciate that some mitigation effort will take place through the construction of fish pools, those pools will only be useful for over wintering habitat, which is a critical limiting factor for salmonids, if the ponds are sufficiently deep that they do not freeze to the bottom in winter. Also, it is essential to provide cover in the ponds, in the form of structures sunk to the bottom and/or willows or other vegetation planted on the sides. Therefore, we recommend that the fish ponds proposed are built sufficiently deep enough, be supplied by a year-round spring, and have adequate cover to allow for their use by juvenile salmon.

Rock Creek, Subsistence Uses

The Snake River watershed is important to Nome subsistence users for all endemic species of fish, game and for various berries and greens, which are all regularly harvested as part

of the traditional subsistence lifestyle. Anadromous and non-anadromous salmonids utilize the Snake River watershed for juvenile rearing and adult life stages. Burbot, an important subsistence resource, exist in only limited systems within the Nome area. These fish are at the top of the aquatic food chain, and therefore have the potential to bio-accumulate pollutants in these systems. Similarly, saffron cod, arctic cod, and rainbow smelt are also top predators within the Snake River, and are important subsistence resources, and may also bio-accumulate pollutants. The Snake River watershed provides critical habitat to many important species of fish and game, as well as vegetation that is necessary to support a subsistence lifestyle. Therefore, it is important that this Rock Creek mine development does not threaten the delicate balance of natural resources in this system.

Specifically, we are concerned about the use of cyanide, the effects of acid, the release of arsenic, and the threat of sedimentation from the mine. Aquatic resources are not well suited to handle exposure to free cyanide, even in relatively small concentrations, and they may also not be able to handle converted cyanide once it enters the river system. Therefore, the possibility exists that aquatic life may be impacted from the acute effects of cyanide exposure. Although the ferrocyanide that may discharge into the Snake River watershed because of possible paste tailing failure is relatively non-toxic, this could easily become more toxic based upon the chemistry of cyanide. Ferricyanides can decompose to release free cyanide when exposed to direct ultraviolet light in aqueous solutions, although the extent of this reaction can vary depending on the pH of the system. Also, we are concerned about the effects of acid mine drainage to be of potentially greater impact to subsistence resources because of its ability to persist in the food web for many years. We suggest limiting the time differential between sampling and testing for acid levels, in order to obtain the most accurate measurements possible. Arsenic has been a challenge in past mining efforts, as some local ponds and wells in the Nome area currently are laced with arsenic. We strongly recommend that arsenic levels are closely monitored, and efforts are put into place to reduce the potential for arsenic accumulation in ground water and surface runoff. Finally, sedimentation resulting from the mine may have detrimental impacts on aquatic habitat. The Snake River watershed will be exposed to fine sediments that have been encased in bedrock and would not have normally entered the Snake River except by natural forces. The project plan does not detail how fine sediments will be controlled.

Recommendation: Subsistence Uses

We believe that effective monitoring of the Snake River and Solomon River watersheds will address our concerns and quickly detect any changes in water chemistry, and ensure that those levels are brought under control. It is essential to ensure that this monitoring program tests the water chemistry at regular intervals (several times daily in key areas), as well as immediately following large rainfall events, and following any unexpected deviations from mine protocol. We also suggest implementing an extensive monitoring program that tests the pH of the watershed, as well as monitors the level of cyanide and arsenic in the system, to ensure that the natural resources are not inadvertently exposed to high levels of these contaminants. We also suggest extensive turbidity monitoring to ensure that the levels of fine sediments remain consistently low enough so that they do not harm the spawning sites of salmon and other fish. Coupled with this monitoring, we recommend that the mine have steps in place to quickly and effectively mitigate any changes in water chemistry detected by this extensive monitoring effort. We also suggest regular visits from the permitting enforcement officers because of the potential for

environmental harm and the use of these areas as important subsistence harvest areas. Finally, we respectfully request that the data derived from the monitoring efforts are provided to the public and other interested parties regularly so that subsistence users are assured the mine is continuing to ensure the sustainability of natural resources in the Snake River and Solomon River watersheds.

11 AAC 112.280 Transportation Routes and Facilities:

The proposed activities at Rock Creek are consistent with 11 AAC 112.280, Transportation Routes and Facilities, however we are concerned with the side effects of transporting ore from the Big Hurrah site to the Rock Creek site. Safety Sound, or "Nuuk" as the area is locally known, is the most important subsistence area in the Nome area because more subsistence activity occurs there than anywhere else in the Nome area. Large trucks carrying heavy loads, traveling at high speeds will cause roads to become degraded, increase dust for subsistence campsites, and also pose a safety concern in this busy area. We suggest implementing a speed limit on these ore transporting trucks to minimize environmental impacts, and to increase safety around the very popular Nuuk area. We also suggest reconsidering the use of calcium chloride for dust control because of the likelihood that this chemical will settle on berries and greens, which can be picked for subsistence purposes, and fish or meats, which are hung on the many subsistence drying racks in this area. Alternative, non-toxic, dust control measures could be implemented. Finally, we suggest requiring the ore transportation trucks to cover their loads to minimize the potential for ore dust (which may include heavy metals) to blow onto the tundra and coat the greens and berries, which are then picked for subsistence purposes.

11 AAC 112.300 Habitats:

The proposed activities at Rock Creek and Big Hurrah may not be consistent with 11 AAC 112.300, Habitats. The biggest factor affecting consistency is sedimentation that will be caused from mine operations. Planned stream crossings in Big Hurrah Creek will embed large cobbles in fine sediment at the stream crossings and, as operations continue throughout the year, the fine sediments will migrate downstream of the crossings. As most of that site has been impacted from prior mining activity, road improvements to the access road to the Big Hurrah site actually provides an opportunity to improve on past effects by constructing the road so that it actually builds habitat for fish by increasing the sinuosity of the river, and provides cover through planted vegetation. We again recommend an extensive monitoring program, which would ensure that the habitat of the Solomon River watershed is not being negatively impacted by the mining.

As there is no detailed program plan to assess whether or not the proposed mine is consistent with 11 AAC 112.300, we recommend that the proposed plan address the following biotic and habitat integrities, and discuss how each will be monitored throughout the life of the mine:

1. Water quality impacts – the extent to which the watershed strays from its natural chemical makeup.
2. Energy Source impacts – the source of biotic nutrients for the watershed's food chain.
3. Biotic interaction impacts – The links between species in the food chain
4. Flow regime impacts – the volume of water flowing through the watersheds over time.

5. Habitat structure impacts – the types and amounts of natural features that provide fish and wildlife habitat.

11 AAC 112.900 Sequencing processes to avoid, minimize or mitigate:

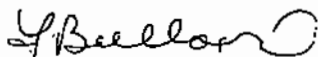
Section 11 AAC 112.900 describes the maximum extent for minimization, mitigation, and avoidance measures, however, the proposed plan meets only the minimum standards and does not address the topic of avoiding impacts. For instance, the plan does not sufficiently address habitat impacts and mitigation measures for habitats as per the five factors of biotic and habitat integrity discussed above, and the geochemical characterization of mine tailings is not adequately planned. We agree that the ore characteristics are generally known and the planned cyanide complexation will likely degrade most of the cyanide to a relatively stable non-toxic form. However, the possibility exists for other cyanide complexes to be formed that are less stable or other metal and organic cyanide complexes to be formed that will not be monitored for and may therefore pose risks to the environment. We believe that refined testing measures are needed to assess the impacts of site-specific characteristics that may be encountered while mining, and plans should detail those site-specific measures within an increased monitoring schedule.

Finally, we recently learned that an environmental impact statement has not yet been completed for this proposed project. While we find this surprising given the scope of the potential environmental impact to the natural resources of this region, we are confident that one will be completed by the Army Corps of Engineers, per the National Environmental Policy Act standards, prior to the implementation of this mine project.

Thank you for your time and consideration. If you require any additional information, please contact Austin Ahmasuk, Subsistence Director (907) 443-4265, sub.rec@kawerak.org, Timothy Kroeker, Wildlife Biologist, (907) 443-4273, wild.bio@kawerak.org, Karen Dunmall, Fisheries Biologist (907) 443-4384, fish.bio@kawerak.org.

Sincerely,

KAWERAK, INCORPORATED



Loretta Bullard
President

cc: Nova Gold- Doug Nicholson

AR

Resources Staff

Comment on the Rock Creek Mine Plan of Operations

Submitted by

Glenn C. Miller, Ph.D. Consulting Environmental Chemist

June 29, 2006

These comments are submitted following a review of the Rock Creek Mine Plan of Operations- Project Description. This mine is a large, open pit gold mine that contains acid generating rock that also is highly elevated in arsenic, and will utilize cyanide in a mill circuit as one of the methods for recovery of gold. As I review the Plan, the greatest risks are from acid generation and the subsequent release of contaminated water, non-acidic (but still contaminated) water draining from the site, pit lake water quality, nitrate from residual cyanide and cyanide complexes, reclamation and other closures issues, and mercury release.

I am presently a professor at the University of Nevada, Reno (28 years) and teach courses in environmental chemistry and toxicology. I have conducted research on remediation of acid mine drainage, as well as closure of precious metals mines. Much of work on acid mine drainage has been as a result of a long term project on biological treatment of acidic drainage at the Leviathan Mine, in Alpine County, Calif. That work has been funded initially by the Lahontan Regional Water Quality Control Board, and more recently by Atlantic Richfield Company. For the record, I am a member of the boards of environmental organizations concerned about the impacts of mining on communities and the environment, including Earthworks, Great Basin Mine Watch and the Center for Science in Public Participation.

Since this is not an EIS, the detail in the Plan of Operations for the Rock Creek Mine is insufficient to determine the environmental impacts of the mine. However, during the preparation for the EIS, the following points should be considered.

1. **Acid Mine Drainage:** There are clearly significant amounts of acid generating rock in this mine. Acid mine drainage is created when sulfide-containing rock (primarily pyrite) is brought to the surface and exposed to oxygen and water. The sulfur in the pyrite is oxidized to sulfuric acid, often by bacterial action, and the sulfuric acid, in turn, dissolves a variety of toxic metals. Acid mine drainage from hard rock mines is often considered the most serious water quality problem in the mountainous areas of the western United States, since once it begins, it is very difficult to halt acid production. Release of acid can continue for decades and centuries. Unless there is strong evidence to the contrary, we should assume that the water quality from the acid generating portions of the mine will be permanent, with increases in flow during high water years, and decreases during dry years. The acidic component, including all of the toxic metals, will not cease until the acid generating rock dissolves.

This may well be the greatest single long-term concern. Although it is recognized as an issue in the Plan, isolating the acid generating rock is rarely a complete solution, and the regulators need to continually focus on how this rock is being managed, and require frequent and well-considered monitoring during mining, as well as post-mining. A long-term remediation fund should be established for management of water quality impacts from the mine.

2. Other contaminated drainage: Other rock at the mine is also likely to release contaminants, and surface and subsurface discharge of this water should be monitored for signs of sulfate and other constituents (e.g. arsenic, antimony, selenium) that can degrade water quality. A standard of 250 mg/L should be used for discharge of sulfate from the waste rock dumps, and if this amount is exceeded, the water should be treated. This mine has some of the largest concentrations of arsenic (and probably antimony) that I have observed, and management of arsenic should be a high priority.

3. Pit lake water quality: Although it was not discussed in any detail, a pit lake will form, and probably have contaminated water. A detailed discussion of water quality in the pit should be provided, as well as water quality standards that will be required. A discussion was presented in a related document that requests a stream reclassification of the Rock Creek and Lindblom Creek. It appears that this is a de facto admission that water quality will be degraded. This is serious problem with the entire proposal, and requires additional discussion and analysis. While arsenic in the basin is clearly elevated, any change in classification of the stream should be accompanied by water quality criteria that do not allow any degradation beyond the existing water quality, including sulfate.

4. Nitrate and other contaminants from the tailings: How will water draining from the tailings facility be managed? At closure, cyanide is oxidized to nitrate, and many closed tailings facilities have drainage that contains up to 500 mg/L nitrate in the drainage water. Because the cyanide removal process utilizes iron to consume the excess cyanide (producing iron cyanide complexes), a large amount of nitrate may be formed following closure. This is in addition to the large array of contaminants that are commonly present in cyanidization fluids. Arsenic will be a major concern. Drainage from cyanidization facilities is now a large water quality problem at many closed mines. How will the water that rinses the tailings be managed to protect surface and groundwater? An injection system is indicated. How deep will the injection system be? Will that system have the potential to contaminate groundwater that could be utilized in the future, and will it potentially interact with waters that serve as wildlife habitat? What are the “applicable water quality standards” (page 27) that will be used to evaluate whether water can be discharged to the Rock Creek watershed?

5. Mercury: Mercury is a major problem at many mines in Nevada. No mention of mercury was made in the Plan. Is mercury present in the ore at a concentration greater than 0.1 mg/kg. If it is, how will mercury be managed in the gold recovery facility. What controls will be placed on mercury release from the carbon kilns, furnaces and other thermal units at the mine. How much mercury will evaporate from the exposed

and mineralized ore? How frequently will monitoring be required of each of the mercury emitting units at the mine?

6. **Reclamation:** Few details were provided with the Plan on closure of the mine. What type of vegetation will be required. How large will the bond be? Will this bond cover costs of long term water treatment, or will there be a long term fund for water management/treatment/monitoring?

Finally, the rock being excavated from this mine is highly contaminated, and substantial closure problems are likely. An underground mine should be considered at this site, rather than an open pit, due to the contamination issues. As presently proposed, it is likely that environmental problems will be created which will threaten water quality around the mine for a very long time.

June 29, 2006

Austin Ahmasuk
P.O. Box 693
Nome, AK 99762

Tom Crafford, Project Manager
Office of Project Management & Permitting
550 W. 7th Avenue, Suite 900D
Anchorage, AK 99501

RE: Nome Rock Creek Mine Project

Dear Mr. Crafford,

My name is Austin Ahmasuk, I have three daughters, I work for Kawerak as their Subsistence Director, I am a duly elected Nome Eskimo Community Tribal Council member, a duly elected member of the State of Alaska, Northern Norton Sound Fish and Game Advisory Committee, a duly elected member of the Bering Strait / Norton Sound Migratory Bird Council, vice-Chair of the US Fish and Wildlife Service, Alaska Migratory Bird Co-Management Council, duly elected member of the Alaska Ice Seal Committee, & duly elected board member of Norton Sound Health Corporation. I am lifelong subsistence user, dog musher, I was born and raised in Nome have lived here all of my life and intend to live here the rest of my life. I have reviewed the Nome Rock Creek Mine Project, and other applicable permit applications and I wish to oppose the Rock Creek mine on the grounds of its impacts to the environment, consistency with applicable law, and the subsistence lifestyle as I see it. I am providing personal comments about the Rock Creek mine.

Subsistence Uses

The project will negatively impact the Nome area and adjacent streams and may not be consistent with 11 AAC 112.270, Subsistence Uses by Nome and other State residents. All of the Nome area including Nome is a subsistence use area. The principal impact to subsistence will be from impacts that will primarily affect aquatic but may affect terrestrial resources in Rock Creek, Lindblom Creek, and the Snake River.

The project will also negatively impact the Solomon area and adjacent streams and may not be consistent with 11 AAC 112.270, Subsistence Uses for Solomon by Nome and other State residents. It is not clear whether the detailed fish mitigation measures for Big Hurrah and impacts to that portion of Solomon River below Big Hurrah Creek are consistent with 11 AAC 112.270, Subsistence Uses, but I do not preclude that it may be inconsistent with that policy. The fish mitigation measures may not be adequate to address impacts to subsistence.

I believe that it is held by the preponderance of (*perhaps not a majority*) very vocal Nome persons that the Nome area can withstand mining and the Rock Creek Project. Not everyone in Nome is of the same attitude and is not connected to mining activities or mining jobs, or wish to

see additional gold mining. For some Nome persons subsistence is a very important aspect of living in Nome, and potential impacts to Nome subsistence uses must not be abridged.

The Rock Creek EID, page 43 under consequences indicates that subsistence uses have co-existed with mining for the last one hundred years. It may be largely true that distinct cultural uses can co-exist, however, it must be recognized that some subsistence uses have remained completely separate from the influence of mining and it may not hold that co-existence occurred between mining and subsistence under such a broad and general statement. Alaska Department of Fish and Game, Technical Paper # 148, page 17 by Magdanz, J. & Olanna, A. indicated that of the 250 Nome Eskimos living in Nome in 1918 200 of them died as a result of the 1918 influenza epidemic. Co-existence of mining and subsistence is dependent upon the respect shown by each influence toward people and not necessarily the influence of one activity on another resource. Historically, Natives could not own land, vote, or obtain some benefits such as education, and that prohibited equal co-existence for many years until civil reform. Laws placed upon the resources are dependent upon the number of users and the way in which those users or regulators propose or make laws. Traditional Native subsistence values are largely ignored under modern rules and regulations. Additional, commercial and sport uses from outside influences may bare upon the resources of Nome if the workforce were to be of non-local origin.

Big Hurrah, Subsistence Uses

The Solomon River watershed provides subsistence opportunity to subsistence users who fish that system or the adjacent marine waters, for salmonids and other non-salmon species such as cod that mingle within the Safety Sound and Solomon Riverine Estuary. I believe the detailed fish pools for Big Hurrah Creek provide minimal habitat improvement and would be no improvement over what already exists. The potentially acid generating rock pile in the Big Hurrah mine may expose aquatic life to acid mine drainage effects and may become unfit for human consumption. In turn marine mammals that may feed upon fish that migrate in and out of the Solomon River system may too become exposed to the effects of acid mine drainage and thereupon those effects may bio-accumulate.

I also believe that sedimentation will be a significant factor in reducing aquatic life habitat. The Solomon River watershed will be exposed to fine sediments that have been encased in bedrock and would not have normally entered the Solomon River except by natural geologic forces. Sedimentation of the river substrate is a major factor in survival of aquatic life. The project plan does not detail how fine sediments will be controlled.

Rock Creek, Subsistence Uses

The Snake River watershed is important to Nome subsistence users for all endemic species of salmonids and non-salmon species, as well as all State or Federally managed game, furbearers and migratory birds. The Snake River watershed is vastly important for various berries and greens which could become impacted from the Rock Creek mine. Anadromous and non-anadromous salmonids utilize the Snake River watershed for juvenile rearing and adult life stages. Burbot exist within the project area; they exist in the Snake River and the Eldorado & Flambeau River. Their place at the top of the aquatic food chain in those systems mean that pollutants or other heavy metals will bio-accumulate in their flesh and may render them unsafe

for human consumption or worse to become destroyed in their natural environment. Saffron Cod, Arctic Cod, and Rainbow Smelt are also top predators within the Snake River which seasonally use the Snake River watershed and are an important subsistence resource and they could bio-accumulate toxins or other heavy metals and render them unsafe for subsistence use or worse to become destroyed in their natural environment. **Beaver are not included as one of the resources that are hunted for and as such needs refinement (Rock Creek EID, page 43).**

The Rock Creek mine complex also maintains the possibility of exposing cyanide in its free form as well as its converted form to all animal life including humans. Aquatic life are not well situated to handle exposure to free cyanide even in relatively small concentrations. They may also not be able to handle converted cyanide once it enters the river system. I believe that the possibility exists that aquatic life may be impacted from the acute effects of cyanide exposure. I believe that relatively non-toxic ferrocyanide discharges into the Snake River watershed because of paste tailing failure could easily become fatal discharges based upon the chemistry of cyanide. I believe that ferricyanides can decompose to release free cyanide when exposed to direct ultraviolet light in aqueous solutions, because the stability of cyanide salts and complexes is pH dependent, and therefore, their potential environmental impacts and interactions (i.e. their acute or chronic effects, attenuation and re-release) can vary. However, even in the neutral pH range of most surface water, metal-cyanide complexes can dissociate sufficiently to be environmentally harmful if in high enough concentrations. Cyanide bearing solutions used in Rock Creek may react with other metals such as Cu, Zn, Co and Hg. Those reactions can form weak cyanide complexes, which may dissociate in solution to produce environmentally significant concentrations of free cyanide. Background pH and ultraviolet degradation could expose all life to various WAD cyanide complexes. All cyanide complexes must be monitored for. Free or WAD cyanide complexes in surface water can also disturb the balance of trace elements that are available in a natural situation. The Snake River estuary or "jetty" as it is locally called is within Nome and many persons fish it during the fall and winter months to catch various cod fish. All forms of life would become impacted if cyanide levels became lethal.

While the use of cyanide may pose a high acute risk it is not the only threat to subsistence resources. Acid generating rock piles will likely exist at both locations and I believe that acid mine drainage effects will pose an additional risk to subsistence and the environment, and will impact aquatic life first but may persist for many years. Effective monitoring will enable spillage events to be documented but I believe that agency monitoring should be increased and without effective monitoring the mine may be inconsistent with ACMP enforceable policy. I also believe that mine operators should have less involvement in the monitoring. As this mine is the first modern mine of its type in the Nome area and poses the greatest risk, the most effective monitoring should be put in place. I also recommend that if the mine is to be approved that all required sampling results be courtesy copied to the heads of all Nome agencies and other interested persons so that they may have that information to review for possible water quality violations or other permit violations.

I believe that sedimentation will also be a significant factor in reducing aquatic life habitat. The Snake River watershed will be exposed to fine sediments that have been encased in bedrock and would not have normally entered the Snake River except by natural forces. Sedimentation of the

river substrate is a major factor in survival of aquatic life. The project plan does not detail how fine sediments will be controlled.

Transportation

The proposed activities at Rock Creek and Big Hurrah may be consistent with 11 AAC 112.280, Transportation routes and facilities. However, much community sentiment will involve the transport of ore, and the manner in which ore is shipped from Big Hurrah to Rock Creek. Safety Sound or “Nuuk” as it is locally called is the most important subsistence area in the Nome area as more subsistence activity occurs there than anywhere else in the Nome area. Large trucks traveling at more than 45 MPH will cause roads to become degraded, and dust to become a problem for subsistence and recreational campsites. I believe that requiring truck drivers to drive at moderate speeds and mitigating road damage from haul trucks will go a long way to decreasing negative sentiment but it must be detailed and currently it is not. The planned calcium chloride dust control should be reconsidered and alternative non toxic forms should be required, as Nuuk is heavily used for subsistence purposes and dust control measures should be mitigated for in consideration of the increased traffic potential posed by year round trucking of Big Hurrah ore. Dust, if not controlled from the higher traffic flow from Big Hurrah may contaminate subsistence foods by depositing dust onto drying subsistence foods.

Habitats

The proposed activities at Rock Creek and Big Hurrah may not be consistent with 11 AAC 112.300, Habitats. Factors affecting consistency are sedimentation, potential and likely cyanide releases from spills or the waste tailings pile, acidification of surface water, geochemical changes to surface water, & aquatic life biodiversity impacts. Planned stream crossings in Big Hurrah Creek will embed large cobbles in fine sediment at the stream crossings and as operations continue throughout the year the fine sediments will migrate downstream of the crossings and reduce the habitat potential for aquatic life. Planned improvements to the access road to the Big Hurrah site will recover historic tailings within the creek bed and will have the greatest impact to habitats in Big Hurrah Creek. Removing the historic tailings will likely channelize the stream and reduce its sinuosity. The vegetative banks which have recolonized Big Hurrah within the historic tailings are minimal but provide the only cover and best habitat within Big Hurrah Creek for aquatic life. The potentially acid generating rock piles may decrease pH and should be carefully and systematically monitored throughout the year on a frequent basis. Considering that the chemical parameters are easy to measure there needs to be an effective monitoring schedule put in place during mine operations and years thereafter at the Big Hurrah site.

There is no detailed program plan to assess whether or not the proposed mine is consistent with 11 AAC 112.300. The proposed operational and closure plan do not address enough factors of water quality. The plan should address the following biotic and habitat integrities:

1. Water quality – the extent to which the watershed strays from its natural chemical makeup.
2. Energy Sources – the source of biotic nutrients for the watershed’s food chain.
3. Biotic interactions – The links between species in the food chain
4. Flow regimes – the volume of water flowing through the watersheds over time.
5. Habitat structures – the types and amounts of natural features that provide fish and wildlife habitat.

Sampling schemes for Big Hurrah are not frequent enough to address potential acid releases. Sampling framework is not characterized very well within the project documents and so the precision of Acid Generating Potential (AGP) studies can not be determined from plan documents. Elemental mobility was indicated for Arsenic and Antimony on the first flush however Humidity Cell Testing (HCT) testing is not complete and results may show that other metal releases will occur. Iron carbonate minerals were reported as observed within the Big Hurrah samples however siderite effervesces slightly in contact with strong acids or with warm acids, and likely does not have much Neutralizing Potential (NP). It does not appear that iron carbonate is available in enough quantities to be a buffer for acid generating material. It is indicated that short and mid term kinetic tests show alkaline leachate, HCT's for Big Hurrah are very limited and represent only 3 in 332 samples (0.904%) and are not complete. Long term tests must be conducted and must become the primary tool to predict NP and AGP. Potentially acid generating (PAG) material is to be stockpiled for later combination with non-acid generating (NAG) material but there is a lack of information as to how the combination will take place in the field. No information is given as to the time in which the stockpiling is to take place and whether oxidation of the stockpiles will occur. Stockpiling unless strictly controlled will result in oxidation of PAG. The likelihood of oxidation at Big Hurrah Creek until backfill will pose risk. Based upon the lack of information as to the handling of Big Hurrah materials it is very likely that Big Hurrah operations are inconsistent with 11 AAC 112.300.

Biological Resources, Land mammals

I believe all land mammals are characterized properly however impacts from acid mine drainage and cyanide complexation are not characterized.

Biological Resources, Migratory birds

The projects single rather short avian study may under represent the presence of important, threatened, endangered, and key migratory birds. June 7 to June 11 is a rather early and short time period in which to assess migratory bird use of the area and the study could benefit from more than one year's sightings. Birds may still be mingling and positioning themselves for nesting and territory development. Page 231 of the EID indicates that no known use of migratory birds occurs in the project area. Significant subsistence use of birds occurs by Nome residents in Rock Creek and Big Hurrah either for adult or egg harvest; the EID wrongly characterizes migratory bird uses and as such must not bear upon the subsistence use determinations for this mine and on that grounds are inconsistent.

Biological Resources, Fish

Fish resources are severely under estimated as are potential and likely impacts to Rock Creek, Snake River, Big Hurrah Creek, and Solomon River.

Lower Snake River supports five species of salmon, pink, coho, chinook, chum, and sockeye. Sockeye presence may be due to straying, but the presence of a few small ponds suitable for sockeye life history may have supported their presence until their formal discovery as a result of the Kawerak fish counting tower which began counting salmon in Snake River in 1995 and were first formally discovered in 2002. Solomon River supports at least the four species of salmon indicated in the fish resources section.

The following fish species are NOT characterized in the Rock Creek EID:

At least three species of cod use the lower Snake River and lower Solomon River. They are Burbot, Saffron Cod, and Arctic Cod. Burbot exist in the Nome area, and are present in the Snake River and the Eldorado and Flambeau Rivers. They may also inhabit the lower portions of Solomon River.

Dolly Varden and Arctic Grayling also inhabit the Snake River and Solomon River watershed. Dolly Varden may exist in their anadromous and non-anadromous variety. Solomon River is closed to any harvest of Arctic Grayling due to their low numbers.

Rainbow smelt like the species of cod seasonally inhabit the lower Snake and Solomon Rivers.

Slimy Sculpin inhabit most streams and rivers and are present in both watersheds and would be impacted within the projects sites as they would inhabit the upper portions more so than any other endemic species.

Stickleback in nine spine variety inhabit the Snake and Solomon River watershed, three spine variety may exist in both systems and would also be directly impacted by both mines within the footprint of the project.

Benthic macro invertebrates (BMI) are important for most of the fish species and since no inventory was conducted by Alaska Gold or Novagold an immediate assessment of the entire watershed potentially impacted by the project should be conducted to assess the BMI population as they are excellent indicators of water quality health and are food sources for fish and migratory birds.

Red king crab an important subsistence resources is a species potentially within the influence of mining related impacts as their near shore presence could result in contact of toxic material.

Several top predator fish species used heavily for subsistence such as the cod species pose the greatest potential to bio-accumulate toxic material. Their place in the food chain and habitat is an important factor in both watersheds.

Based upon the lack of attention to the all the fish species within the project area that could be affected by the project it is impossible to conclude consistency with ACMP enforceable policy.

Archeological Resources

The description of archeological resources is largely correct. The recent find of archeological remains as a result of the Nome harbor improvements in the summer of 2005 maintains the possibility of re-writing the archeological record and local history of Nome.

Socioeconomics

The importance of mining to the current community of Nome may not be unanimous throughout the community I know that I represent some tribal and non-tribal members who feel that mining has negatively impacted the Native culture and environment.

General applicability of provisions

In general it appears that the proposed plan is not consistent with 11 AAC 112.900, Sequencing processes to avoid, minimize or mitigate. It appears that the plan addresses key points of applicability such as chemical water quality standards but falls short in respect to habitat impacts and mitigation measures for habitats as per my 5 factors of biotic & habitat integrity. 11 AAC 112.900 describes maximum extent mitigation measures; the plan does not appear to meet that criteria and is inconsistent. The proposed plan appears to meet only minimum standards of applicability and does not avoid impacts.

1. Big Hurrah mine tailings are proposed for use to improve the access road. Such usage will impact stream flow and sinuosity. Vegetative cover will be destroyed without stockpiling for later usage as vegetative bank for bank stabilization. Two fish ponds are detailed for Big Hurrah Creek. The access road to the mine site at Big Hurrah may be as long as two miles yet only two fish ponds are detailed for mitigation. Such a mitigation measure is not of the maximum extent possible nor avoids impacts to the maximum extent possible as described by 11 AAC 112.900.
2. Stream crossings in Big Hurrah creek are not bridged or otherwise protected from direct vehicle traffic, simple and/or crude bridges will suffice to protect and mitigate from stream sedimentation but they are not detailed.
3. Adequate geochemical characterization of mine tailings will be important if an accident were to occur to the tailings dam. Ore characteristics are generally known and the planned cyanide complexation will likely degrade much cyanide to a relatively stable non-toxic form. However, the possibility exists for other cyanide complexes to be formed that are less stable. The generally acidic nature of cyanide complexes may mean that acid drainage effects associated with heavy metals or trace elements could effect the environment. Adequate characterization of tailings needs to be detailed and it is not.
4. Page 157 of the Rock Creek EID indicates that Big Hurrah groundwater and surface water are circum neutral, calcium bicarbonate waters with alkalinity values of 62.7 ug/L and 229 ug/L in Little Hurrah Creek. Those alkalinity values indicate that the water is very soft and may not be able to neutralize any acid generated from Big Hurrah mine. The characterization of Big Hurrah Creek waters as calcium-bicarbonate waters seems to conflict with page 46 of the Rock Creek EID which indicated that CaCO_3 may not be present. Bicarbonate (HCO_3^-), carbonate (CO_3^{2-}), and hydroxide (OH^-) if confirmed as present would have proven effective alternative buffering compounds. The lack of buffering compounds as indicated by the extremely low alkalinity values means that the ability of Big Hurrah material to be an acid buffer is very limited. The plan's combination of neutralizing material with acid generating material at Big Hurrah Creek must be altered to reflect the inability of Big Hurrah Creek material to act as a buffer and the plan can not be approved as designed for it lacks sufficient planning and computation of neutralizing material.
5. Tailings dam height is projected to be of minimum size. General applicability standards require maximum mitigation. Considering tailings dam failure is the number one

- negative impact from a mine of this type it is peculiar that such a proposed feature could be allowed for permittal and thus may not be consistent with 11 AAC 112.900.
6. The possibility exists for migratory birds to become attracted to the mill recycle pond or other ponds and become exposed to contaminants. That possibility must be mitigated for under the general applicability standards of 11 AAC 112.900.
 7. All cyanide complexes need to be monitored for as they pose risks to the environment and may persist for many years. I wish to reference *MPC Issue Paper No. 1, Cyanide Uncertainties, Observations on the Chemistry, Toxicity, and Analysis of Cyanide in Mining-Related Waters*, Moran, R., Mineral Policy Center, 1998, and by reference wish to propose its recommendations for testing of all cyanide complexes. In so doing will allow for mitigation of potentially harmful cyanide compounds that may be released into the environment.
 8. USGS, Alaska Resource Data File, SO23, indicated that cyanide may have been used as late as the 1950's to extract gold in Little Hurrah and Big Hurrah Creek. Sainsbury, C.L., 1975, Geology, ore deposits and mineral potential of the Seward Peninsula, Alaska: U.S. Bureau of Mines Open-File Report 73-75, p. 72, 95-96, indicated the following:

"The first lode gold mine on the Seward Peninsula, and the only one to date successfully operated for a period of years, is the Big Hurrah gold mine on Big Hurrah Creek, a tributary of the Solomon River in the western Solomon quadrangle. This mine operated for several years between 1906 and 1911; in later years the tailings were treated by cyanidation and yielded considerable gold. The mine is developed along a strong vein of banded quartz striking northwesterly in the York Slate (formerly known as the Hurrah Slate in this area). The vein is complex; at the surface it is a continuous vein of banded white quartz as much as six feet wide. At a depth of less than 200 feet, the vein is intersected by at least two thinner veins dipping less steeply to the southwest. All the veins are auriferous, and were mined. Scheelite occurs in notable amounts in the 95 quartz (personal observation). During the 1950's, some additional mining was done on the vein, but fire destroyed the shaft timber and the headframe, and the mine has not been reopened. Reserves of unmined ore unquestionably remain in the mine."

Rock Creek, EID, page 113 indicated that WAD cyanide was found in surface water samples of Lower Little Hurrah Creek. I believe that cyanide may not break down so readily or rapidly in our sub-arctic environment. I believe that WAD cyanide found in Little Hurrah Creek is remnant cyanide from gold mining in Big Hurrah Creek and it has persisted in the environment for almost one hundred years. As such the monitoring program as evidenced by what I postulate are remnant cyanide concentrations at Little Hurrah Creek dictates a stringent monitoring program that reflects our sub-arctic conditions and such a monitoring program must not be short lived. I believe that at least one hundred may be required in order to monitor for the presence of cyanide complexes. Our sub-arctic environment likely inhibits the movement and breakdown of cyanide and site specific criteria must be detailed in order to address the long term nature of cyanide presence in our environment.

9. It does not appear that the plan adequately determined the neutralizing potential of rock materials and mentioned the alternative methods but it is unclear how the different testing methods were coordinated. Additionally, the method of testing did NOT verify the

presence of neutralizing material (Rock Creek EID, pg 46) it only theorized NP presence, and thus can not be consistent with 11AAC 112.900 because it is impossible to determine if avoidance of acid mine drainage will be effectuated or may naturally occur.

Considering the vast history of modifications to mine plans for the detection of acid mine drainage and treatment there must be only one determination of consistency for Rock Creek and that determination must be **inconsistency** with 11 AAC 112.900 in consideration of likely deficiencies in determination of NP of Big Hurrah and Rock Creek. I wish to reference *Technical Document, Acid Mine Drainage Prediction, EPA530-R-94-036, NTIS PB94-201829, December 1994, US EPA*, and propose via my reference its recommendations for NP prediction. The characterization by Novagold of the preponderance of NP compared to Acid Potential (AP) for Big Hurrah in all lithologies may not be supported.

10. It appears the project plan's acid generating potential (AGP) tests may be deficient in predicting the AGP of Big Hurrah Creek and Rock Creek and thus must be found inconsistent with ACMP enforceable policy and may have underestimated the AGP of each site. The above referenced EPA Technical Document recommends site specific criteria for AGP of mines. The Rock Creek mine mentioned numerous AGP tests, such as Meteoric Water Mobility Procedure, X-ray Diffraction, Ion-coupled Plasma/Mass Spectrometry, Detailed Mineralogy, & Humidity Cell Testing (HCT) and appeared to have applied general testing protocols. The time differential between Phase 1 and Phase 2 testing is likely a principle source of error in all AGP tests because oxidation products may have built up within the sample which according to EPA530-R-94-036, page 19, may result in flushing of oxidants in early water flushing, but likely also applies to the other AGP tests. It appears the time differential from sample collection to sample testing may have been over one year, i.e. Phase 1 to Phase 2. I believe the AGP of Rock Creek Mine must incorporate the addition of Big Hurrah material which may contribute to the AGP of the Rock Creek site.
11. Arsenic and Antimony which were shown to have released immediately from the HCT's is also a cause of concern as both are toxic and the poisonous response in biological life is similar. What is of most concern is that both elements released as elemental concentrations immediately. I concur with Novagold that groundwater influences Rock Creek water chemistry. Surface water concentrations of As are lower than ground water levels for some reason and all tests show As levels in surface water are decreased, but, the tests fail to show how the flow regime behaves to decrease As in surface water. Big Hurrah and Rock Creek tailings though may immediately release elemental concentrations of Arsenic and Antimony. It is not clear how those releases will be handled. I do not believe that quarterly testing is adequate. Daily testing with an approved multi-meter of little cost can assess problems if they occur and must be required and take very little time to perform. I wish to reference the Agency for Toxic Substances and Disease Registry, Public Health Statements for Arsenic & Antimony.
12. It does not appear that Big Hurrah post closure tests will be performed frequently enough and operational tests will be emphasized over post operational tests. Based upon EPA530-R-94-036, which suggests refinements on a site specific basis there needs to be in place some measure for characterization and monitoring of potentially acid generating material after closure that is more frequent than quarterly. Thus the Rock Creek project is not consistent with ACMP enforceable policy.

National Environmental Policy Act (NEPA)

In accordance with NEPA and the Army Corps of Engineers (ACOE) 404 permit pursuant to the Clean Water Act an Environmental Impact Statement (EIS) must be conducted now for the Rock Creek and Big Hurrah project. According to 40 CFR 1502 the ACOE 404 permit may be a common federal action but act upon a **MAJOR** project which will affect the human and natural environment. I believe the ACOE 404 permit application will be a unique and precedent setting action for the Nome area and other large hard rock mines. I believe the Rock Creek and Big Hurrah project has the potential to affect riverine, avian, marine, and terrestrial life including humans who utilize many subsistence resources within the project area. I also believe as I have stated in my arguments above that the project may have mis-characterized AGP, NP, cyanide and heavy metal releases. I will summarize additional specific and analytic details that warrant an EIS. I feel it is peculiar that an immediate environmental assessment or statement as required by 40 CFR 1502 was not done at the time the ACOE 404 permit application was received.

Cyanide destruction

The project's statements about cyanide destruction are broad and demand backup on a site specific basis. The ability to dispose of cyanide is highly dependent on there not being any other metals or organic materials that would affect destruction to ferrocyanide. Studies and references for cyanide destruction for Rock Creek were apparently predicted with purified material. A fair question to ask is how efficient the process is and based upon the current uncertainty of cyanide destruction an EIS should evaluate and analyze impacts as well as identify alternatives. A very optimistic estimate on the efficiency of cyanide destruction would analyze water's ability to percolate through a tailings pond full of the treated material, and determining if cyanide can be leached out of the remaining non-reactive material. Even at 99.99% efficiency, there will be an amount of un-destructed cyanide present that could be near or above effluent limits for clean and safe water.

Acid Generating Potential

I have discussed the uncertainty of the AGP and NP of both sites, even if the certainty were well known an EIS must be undertaken to analyze real and expected impacts, conduct or require the proper testing methods, and identify or refine proper avoidance, minimization, and mitigation measures. The HCT's were not conducted properly and may have sat for one year or more before first flush and as a result the ACOE 404 permit will have utilized information that may be incorrect. The fact that AGP and NP tests are not complete is **STRONG** indication that the ACOE 404 permit lacks all necessary information. If ACOE were to approve the permit on that basis it may comprise a significant Federal Action which must require an EIS.

Endangered Species / Species of Concern

A few federally listed endangered and threatened species utilize the Nome area, they are listed below and may be affected by possible discharges into waters of the US.

MAMMALS

Bowhead Whale	Endangered
Right Whale	Endangered
Steller Sea-lion, western population	Threatened

BIRDS

Spectacled Eider
Steller's Eider

Threatened
Threatened

Effective November 27, 1998 Alaska Species of Special Concern within influence of the Rock Creek project area are listed below.

- **American peregrine falcon** (*Falco peregrinus anatum*)
- **Arctic peregrine falcon** (*Falco peregrinus tundrius*)
- **Spectacled eider** (*Somateria fischeri*)
- **Steller's eider** (*Polysticta stelleri*)
- **Gray-cheeked thrush** (*Catharus minimus*)
- **Blackpoll warbler** (*Dendroica striata*)
- **Steller sea lion** (*Eumetopias jubatus*)
- **Harbor seal** (*Phoca vitulina*)
- **Bowhead whale** (*Balaena mysticetus*)

During the June 7-11, 2004 avian study conducted by Alaska Gold both the Gray-cheeked thrush and Blackpoll warbler were observed. I have personally seen the Steller's and Spectacled eider near Nome and within potential influence of the Rock Creek and Big Hurrah mine and am concerned as to the impacts to those eider species and other marine resources should the impacts from the mine also migrate to the Norton Sound.

FISH

Nome sub-district salmon have generally been in decline since the mid 1980's and chum salmon have been deemed a stock of concern by the Alaska Board of Fisheries (2006 Norton Sound Fisheries Management Plan, May 2006, ADF&G). Prime chum salmon spawning habitat on the Snake River was identified near the confluence of Glacier Creek and upstream from there (Chum Salmon Spawning Habitat on the Snake River: A Feasibility Study, Kawerak, Inc., May 2006). Solomon River fish species have been severely impacted and have not responded as other streams have to recent improvements. Much of Solomon River was dredged for gold historically and transportation routes utilized the river substrate for road improvements. All of those factors have reduced water quality and need remediation regardless of the development of the Big Hurrah mine. Grayling harvest is permanently closed in the Solomon River and additional negative pressure because of reduced water quality potential from Big Hurrah mining influences may impact grayling. I believe Arctic grayling are unusually susceptible to over harvest and habitat loss and very sensitive to water quality impacts.

Conclusion

I propose that the mine fails a consistency determination with 11 AAC 112 on the grounds that avoidance, minimizing and mitigating impacts are not adequately detailed. Effective monitoring is not adequately described and is needed to ensure that water quality is maintained throughout the year. Important aquatic life stages may potentially become exposed to acid mine drainage effects or free cyanide from metal cyanide complexes which may become weak acid dissociable and would pose a problem if the minimal height tailings dam were to fail.

The Bering Straits Coastal Resource Service Area (CRSA), Coastal Management Plan (CMP), Final Draft Plan Amendment, March 2006 indicated many issues and goals and proposed a number of specific protections and designations that were more stringent than much of 11 AAC 112. The Bering Straits CRSA, CMP indicated issues that relate to many of my comments on subsistence and the environment as they relate to Rock Creek and Big Hurrah Creek. OPMP may approve portions of the Bering Straits CRSA CMP if they were to make changes and provide additional references. I believe the CRSA CMP corroborates my concerns about the environment and the importance of protecting subsistence resources. The CRSA CMP proposed some measures that may have been outside the scope of OPMP enforceable policies. Those proposed CRSA CMP measures fit well with many of my comments and reflect the importance of the subsistence life and the environment to the residents of the Bering Strait region. The proposed CRSA CMP also tried diligently to establish stringent and specific enforceable policies that would apply to all of the region and is evidence of the greater region wide concern for the environment and subsistence.

I wish to reference EPA Technical Report, EPA530-R-94-037, NTISPB94-201837, Treatment of Cyanide Heap Leaches and Tailings, September 1994. I also wish to reference the International Cyanide Management Code. Both make references and suggestions for disposal and treatment that should guide monitoring and reclamation of the Rock Creek mine.

I wish to reference “Comment on the Rock Creek Mine Plan of Operations, Submitted by Glenn C. Miller, Ph.D. Consulting Environmental Chemist, June 29, 2006”. By reference I wish to submit them as a technical addendum from a recognized expert in the field of environmental chemistry and toxicology.

The lack of an immediate environmental assessment or statement by ACOE as may be required by NEPA adds a difficulty for the public. ACOE is apparently using this current open comment period to internally review an assessment or statement in regards to an EIS and is depending on the public to establish those arguments. I believe an internal review should have been immediate and already distributed for public comment. ACOE may have abridged its responsibility to make the initial assessment / statement and has placed a tremendous burden on the public within a very short time frame to comment upon this very complicated project.

I will maintain a vigilant review of all documents and permits for this mine.

Please feel free to contact me if you have any questions at the above address. Thank you for your time and consideration.

Sincerely,



Austin Ahmasuk

REFERENCES

1. EPA Technical Report EPA530-R-94-037

2. International Cyanide Management Code
3. EPA Technical Document EPA530-R-94-036
4. Mineral Policy Center, Issue Paper No. 1, Cyanide Uncertainties, Observations on the Chemistry, Toxicity, and Analysis of Cyanide in Mining-Related Waters, Moran, R., Ph.D., Brackett, S., 1998
5. 2006 Norton Sound Fisheries Management Plan, May 2006, ADF&G
6. Chum Salmon Spawning Habitat on the Snake River: A Feasibility Study, Kawerak, Inc., May 2006
7. Agency for Toxic Substances and Disease Registry, Public Health Statement for Arsenic
8. Agency for Toxic Substances and Disease Registry, Public Health Statement for Antimony
9. USGS, Alaska Resource Data File, SO23, Big Hurrah
10. Sainsbury, C.L., 1975, Geology, ore deposits and mineral potential of the Seward Peninsula, Alaska: U.S. Bureau of Mines Open-File Report 73-75, p. 72, 95-96
11. Bering Straits CRSA Coastal Management Plan: Designated Area Analysis Table for OPMP and Agency Reviewers
12. Subsistence Land Use in Nome, A Northwest Alaska Regional Center, Technical Paper #148, Alaska Department of Fish and Game, Division of Subsistence, Magdanz, J., Olanna A., 1986

ADDENDUM

13. Comment on the Rock Creek Mine Plan of Operations, Submitted by, Glenn C. Miller, Ph.D. Consulting Environmental Chemist, June 29, 2006

Date: Thu, 29 Jun 2006 15:13:44 -0700 (PDT)
From: Chris Rowe <roweclr@yahoo.com>
Subject: Rock Creek, Nome, Alaska, Nova Gold
To: william_ashton@dec.state.ak.us, luke_boles@dec.state.ak.us,
tom_crafford@dnr.state.ak.us, james.wolfe@poa02.usace.army.mil
DomainKey-Signature: a=rsa-sha1; q=dns; c=noaws; s=s1024; d=yahoo.com;
h=Message-ID:Received:Date:From:Subject:To:MIME-Version:Content-Type:Content-Transfer-
Encoding;
b=6iGgCq00tKsIS6+0g9HLhf6UALBnecwO8+gl6XpzzEDm9T7TyUcUXMilpxSoN/hom/rlSvME/rJ
UI3DJxLFPA7SBAHuD6CjIMTCU8k78/U91ymuC7S0sZUP9foY5P2sov76XY5ZJSOzqiz/RfBhW0
7zBDy90r7Lk9413DgdPr0= ;
X-pstn-levels: (S:99.90000/99.90000 R:95.9108 P:95.9108 M:86.7147 C:99.7951)
X-pstn-settings: 3 (1.0000:1.0000) s gt3 gt2 gt1 r p m c
X-pstn-addresses: from <roweclr@yahoo.com> [100/5]
Original-recipient: rfc822;tom_crafford@dnr.state.ak.us

June 29th, 2007

From: Christine Rowe
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DEPARTMENT OF THE ARMY SECTION 404 PERMIT
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STATE OF ALASKA DEC WASTE MANAGEMENT PERMIT
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Dear Sirs, Ms., or whom it may concern,

Thank you for extending the public comment period from June 30, 2006 to July 7th, 2006 to give time for a few more comments about the Rock Creek permits that you are issuing. I have been reading the information on the web.

My family owns property in the Snake River valley north of the Nova Gold claims. As a resident of Nome since 1974 I am very familiar with the Glacier Creek Road. It is perfect for wildlife viewing for those people who like to drive out a road to view animals and birds. However I have hiked every ridge of the valley and spent many nights in the center of the valley at our property located where Divining Creek flows into the Snake River, just south of Bangor Creek. We have walked, biked, snowmachined and many dog team trips up and down the valley.

I am concerned about the following impact on the Snake River valley:

Noise pollution

Test drilling for the road was audible up and down the valley when they had a single machine doing core samples for the road. It was possible to hear this for a long distance. I understand there will be blasting daily to dig the pit mine. Will there be restrictions on blasting on holidays or weekends?

Water pollution

The river has a great grayling population. It is my understanding that a single grayling can live to be 30 years old. They are an indication of clean water. My son is building a cabin for guests who come to fly fish. They practice catch and release fly fishing.

Air pollution

The dust from the trucks hauling 7000 tons a day, running 24/7 will create a blanket of dust over the tundra for miles that will change that area. The arctic tundra with it's flora and fauna will be covered with dirt. This valley has been one of the best berry picking areas accessible by road to Nome inhabitants.

Local Hire

The idea that Nova Gold will provide jobs for locals seems misleading. My understanding is "local" can mean "Alaskan". The employees do not have to be from Nome if there is no one here qualified.

Destruction of Habitat

Daily blasting, dust, noise from trucks and rock crushing will push wildlife away from the valley. Mt. Brynteson is home to nesting eagles. Musk oxen often grace the slopes and ridges and are visible from the road. Also there are large groups of moose that congregate in the valley in winter in the flats. Granted, none of these particular animals are endangered species. It is still a good habitat for them and they will have to move from the Mt. Brynteson area. The weather in the valley is often less windy in winter and provides good food and protection for wildlife.

The old mining remnants are visible from the early 1900 gold rush here. The old cabins, the ditches, are quaint reminders of our history. The large open pit mine will change the landscape for many years. An open pit mine will be different from the mining that was done here 100 years ago. There is an open pit mine now between Anvil and Newton which has closed the main snowmachine / dog team winter trail from Nome to the direct north. The pit makes traveling in that area dangerous. It is a 2 - 300 foot hole that was never filled back in. There was no enforcement for the clean up or reclamation of that mining area. What will be different when the Rock Creek pit mining is finished?

Good neighbors

Nova Gold has come into our community . What are they really offering us?the destruction of

a beautiful scenic valley that is accessible to everyone currently? Even if you are unable to hike and backpack you can go to this area in a car with binoculars and see wildlife.
How does Nova Gold help our community? a vague promise for local hire?
....to dirty our river with erosion and possible cyanide or other chemical contamination, dust in the air with the continuous trucking to their mill, continuous noise where there was once a peaceful valley where you could view all kinds of birds and animals.

Suggestions:

I think there should be frequent appraisals of all the concerns I listed above and any other concerns that may arise. There should not be trucks on the city roads during school bus pick up and drop off times. There should be restrictions on noise for weekends and holidays. There should be times when blasting and trucking are not allowed.

Nova Gold should graciously provide land access across their "claims" that have been traditionally used for the 32 years I have been here....that is the Osborn Road, the snowmachine and dog trails in and out of Nome. They should protect their property from vandalism - restore the number 5 gold dredge or perhaps the the number 6 dredge by the airport and make it into a mining museum for our visitors to explore safely. These old dredges should not be made targets for people out hunting. The number 5 dredge is like a grand old ship of the tundra. It's an amazing piece of architecture. Protect it for posterity.

Put up a ski resort on Newton Peak. We could use a chairlift and a groomer. This could employ local people and provide good entertainment for our young people.

Many mining operations have come and gone. Many have left a mess. Nova Gold seems to be a profitable corporation. They have the money or will be making money from the gold and gravel of the land surrounding Nome.

Show some respect for the beauty of the land they are about to blast and dig into and for the life around ground zero that is gradually being changed. I don't "own" the land but I care about it and I and my family do "own" adjacent property that could be affected negatively by Nova Golds activities.

Sincerely,
Chris Rowe



TEL: (907) 443-5231 • FAX: (907) 443-4452

ERVING THE
 ILLAGES OF:
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 EBINS
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 ALAKLEET
 LES
 ITE MOUNTAIN

June 30, 2006

State of Alaska DNR Permits and ACMP Consistency Review
 ATTN: Tom Crafford, Project Manager
 ADNR/Office of Project Management and Permitting
 550 West Seventh Avenue, Suite 900D
 Anchorage, Alaska 99501

Dear Mr. Crafford:

Thank you for the opportunity to provide comments regarding consistency and permitting requirements for Rock Creek and Big Hurrah mining operations. Please accept these comments submitted on behalf of the Kawerak Reindeer Herders Association. Kawerak Reindeer Herders Association members own or manage reindeer on the Seward Peninsula. Members reside in the communities of Nome, Stebbins, St. Michael, Shaktoolik, Koyuk, White Mountain, Teller, Brevig Mission, Wales, Shishmaref, and Savoonga.

There are over 10,000 manageable reindeer on the Seward Peninsula. There are two main products from reindeer, both of them consumable by humans: red meat and antler.

11 AAC 112.300 HABITATS

We are concerned about whether the project will meet consistency requirements to protect special habitats for reindeer. Reindeer herders rely on the natural habitat of the wetlands, coastal areas, mountains and forested areas to provide natural feed for their herds. Reindeer are free ranging animals which forage on green plants, shrubs and flowers in the summer and lichen in the winter. Lichens are fungi and algae, living together in a symbiotic relationship as one organism and take years to grow. Not having a root system they obtain moisture from the atmosphere. Both plants and lichens accumulate elements, including toxins, from the ground water or atmosphere.

Reindeer do bioaccumulate contaminants found in plants and lichens. Samples of reindeer meat from our region were tested for mercury, cadmium, lead and cesium and found to have lower levels than those found in other circumpolar reindeer and caribou populations. Herders will continue to work with researchers at the University of Alaska Fairbanks to monitor for heavy metals.

We are aware that hard rock mining operations release lead, mercury, zinc, copper and heavy metals into the environment. We don't want our environment and reindeer habitat to be negatively affected by releases of toxins by mining operations. Of great concern is the impact of contamination by fugitive dust which affects the vegetation in the transportation corridor and we do not want to experience similar problems as those produced by Red Dog Mine.

Reindeer meat is a preferred traditional meat in our communities and herders have consistently provided a healthy product which is low in fat, high in protein and not contaminated by heavy metals. We want to continue to offer healthy red meat that is free of toxins. The reindeer herders would be negatively impacted, economically, if reindeer were found to be contaminated as a result of mining operations and people refused the meat.

We encourage you to ensure the protection of the environment and reindeer habitat by:

- Controlling the dust problem caused by increased traffic and heavy trucks.
- Placing covers over the rock and ore being transported.
- Continually testing to identify the presence of cadmium, heavy metals and other toxins and having a plan in place to stop the contamination.

Thank you for your consideration and opportunity to comment.

Sincerely,
KAWERAK, INC.



Rose A. Fosdick
Program Director, Reindeer Herders Association

CC: RHA

TRUSTEES FOR ALASKA

A Nonprofit Public Interest Law Firm Providing Counsel to Protect and Sustain Alaska's Environment

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Web address: www.trustees.org

June 30, 2006

Via Email: james.wolfe@poa02.usace.army.mil

Mr. Jim Wolfe

U.S. Army Corps of Engineers, Alaska District
Regulatory Branch (1145)

P.O. Box 6898

Elmendorf AFB, Alaska 99506-0898

Via Email: William_Ashton@dec.state.ak.us

Mr. William Ashton

Department of Environmental Conservation

WQM/401 Certification

555 Cordova Street

Anchorage, AK 99501-2617

Re: Public Notice of Application for 404 Permit and State Water Quality Certification for Rock Creek/Big Hurrah Mine: POA-2006-742-4, Rock Creek

Dear Mr. Wolfe and Mr. Ashton:

This letter provides comments on the June 1, 2006 Public Notice of Application for 404 Permit and State Water Quality Certification for Rock Creek/Big Hurrah Mine: POA-2006-742-4, Rock Creek ("Notice"). The comments are submitted on behalf of Northern Alaska Environmental Center, Alaska Center for the Environment, and Austin Ahmasuk, organizations and a Nome resident that are concerned about the impacts to human health and the environment (including impacts to water quality) posed by the construction and operation of Rock Creek/Big Hurrah Mine.

Public notice and a comment period are required for any draft EA.

The Notice of Application for Permit solicits comments on the fact that an application for a permit has been received. It then quotes from an Army Corps of Engineers ("Corps") regulation governing permit decisions. This regulation requires the Corps to review "the probable impacts including cumulative impacts" of the project

and take into account a multitude of factors in doing so. *See* Public Notice, p. 5. While the Public Notice seeks comments on all of these issue areas to assist the Corps in preparing a draft environmental assessment (“EA”) or environmental impact statement (“EIS”), the Corps apparently does not intend to solicit comments on a draft permit, draft EA, or draft Finding of No Significant Impact (“FONSI”) before issuing any of the above in final form. If the Corps does not issue a draft EA and draft FONSI (if a FONSI is anticipated) and solicit public comment on them, then it will violate the National Environmental Policy Act (“NEPA”).

If an EIS is not required, the Corps must prepare an EA, and “shall involve environmental agencies, applicants, and the public to the extent practicable, in preparing assessments.” 40 CFR § 1501.4(b). Section 1506.6(b) requires the Corps to involve the public in preparing and implementing its NEPA procedures, including “[p]rovid[ing] public notice of NEPA-related hearings, public meetings, and the availability of environmental documents so as to inform those persons and agencies who may be interested or affected.” 40 CFR 1506.6(b) (emphasis added). In addition, the Corps-specific NEPA regulations state, “The district commander is responsible for making [the determination of whether to prepare an EIS or FONSI] and for keeping the public informed of the availability of the EA and FONSI.” 33 CFR § 230.10(a) [Environmental Assessments]. The Corps also must make a FONSI “available to the affected public as specified in section 1506.6.” 40 CFR § 1501.4(e)(1).

The NEPA process is intended to “help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.” 40 CFR § 1500.1(c). To that end, “NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. . . . Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA.” 40 CFR § 1500.1(b) (emphasis added). If there is no opportunity for the public and others to comment on draft EAs and draft FONSI, then there is no opportunity to comment that a project may have a significant impact on human health or the environment and the purpose of NEPA is frustrated. *See* 40 CFR § 1501.4(c). *See also Anderson v. Evans*, 371 F.3d 475, 487 (9th Cir. 2004) (stating “The public must be given an opportunity to comment on draft EAs and EISs, and public hearings are encouraged to facilitate input on the evaluation of proposed actions.”) (citing 40 CFR §§ 1503.1, 1506.6); *Citizens for Better Forestry v. U.S. Dep’t of Agriculture*, 341 F.3d 961, 970 (9th Cir. 2003) (stating “Citizens were deprived of the opportunity to comment on the USDA’s EA and FONSI at all points in the rulemaking process. This deprivation violated their rights under the regulations implementing NEPA.”) (citing 40 CFR §§ 1501.4(b), 1506.6); and *Western Watersheds Project v. Bennett*, 392 F.Supp. 2d 1217, 1222 (D. Idaho, 2005) (finding that BLM had not obtained public input on the draft EAs

before issuing the Final Grazing Decisions based on those EAs, which violated NEPA under the Ninth Circuit case law of *Anderson* and *Citizens for Better Forestry*).¹

Thus, the Corps is required to circulate a draft EA and draft FONSI, or a draft EIS if that is what the Corps elects to pursue, for public comment before a final decision is made on the permit applied for in this Notice.

The Corps should not grant a permit in this case.

Alaska Gold Company promulgated an “environmental information document,” which includes less than one page of discussion about wetlands. According to that document, the Rock Creek Mine/Mill Complex site contains 681 acres of wetlands, which is over half of the 1,298-acre project area. Rock Creek Plan of Operations, Vol. 2 (Environmental Information Document) (May 2006) p. 218. Of the 681 acres of wetlands on the project site, 401 acres will be “disturbed” by the project. *Id.* Thus, 58% of the wetlands on site will be “disturbed,” or 31% of the project area. The environmental information document does not define what “disturbed” means, but presumably it means the destruction or significant alteration of the wetlands. On its face, the proposed “disturbance” of 401 acres of wetlands is a significant environmental effect, which requires the preparation of an EIS.

Under Corps regulations for evaluating permit applications, the effect of a project on wetlands is an important consideration. “Most wetlands constitute a productive and valuable public resource, the unnecessary alteration or destruction of which should be discouraged as contrary to the public interest.” 33 CFR § 320.4(b)(1).

Wetlands considered to perform functions important to the public interest include:

(i) Wetlands which serve significant natural biological functions, including food chain production, general habitat and nesting, spawning, rearing and resting sites for aquatic or land species; . . .

¹ While two cases, one in the First Circuit and one in the Second Circuit, have found that draft permits and EAs issued by the Corps were not required to be circulated for public comment, those cases are not precedent in the Ninth Circuit. See *Pogliani v. United States Army Corps of Eng'rs*, 306 F.3d 1235, 1239 (2d Cir. 2002) (denying a preliminary injunction on the grounds that plaintiffs were not likely to succeed on the merits because a draft permit is not a “continuing authority” report requiring 30-day review of a draft FONSI under 33 CFR § 230.11); *Alliance to Protect Nantucket Sound, Inc. v. United State Dep't of the Army*, 398 F.3d 105, 115 (1st Cir. 2005) (finding that CEQ regulation 40 CFR § 1501.4(e)(2) does not require circulation of draft EAs for public comment except under “limited circumstances”). It should be noted that those cases were decided based upon regulations applicable to FONSI, not EAs, and therefore are not inconsistent with Ninth Circuit case law on EAs.

(iii) Wetlands the destruction or alteration of which would affect detrimentally natural drainage characteristics, sedimentation patterns, salinity distribution, flushing characteristics, current patterns, or other environmental characteristics; . . .

(vi) Wetlands which are ground water discharge areas that maintain minimum baseflows important to aquatic resources and those which are prime natural recharge areas;

(vii) Wetlands which serve significant waste purification functions. . . .

33 CFR § 320.4(b)(2)(i), (iii), (vi), (vii).

No permit will be granted which involves the alteration of wetlands identified as important by paragraph (b)(2) of this section . . . unless the district engineer concludes . . . that the benefits of the proposed alteration outweigh the damage to the wetlands resource.

33 U.S.C. § 320.4(b)(4).

In this case, the project is within 2.5 miles of the local drinking water source, and the wetlands that will be “disturbed” likely provide recharge for the groundwater feeding that drinking water source. The Snake River watershed is also a biologically productive watershed with many creeks that are served by the wetlands that will be “disturbed” for “food chain production, general habitat and nesting, spawning, rearing and resting sites for aquatic or land species.” The “disturbance” of these wetlands will also likely detrimentally affect “natural drainage characteristics, sedimentation patterns, salinity distribution, flushing characteristics, or other environmental characteristics.” The damage to these wetlands resources far outweighs any benefits of a four-to-five-year mining project that, while it may provide an economic benefit to the applicant, will significantly and detrimentally affect water quality and subsistence resources for the local population. Thus, on its face the project, as skimpy as the environmental information document is in describing its impacts, provides no basis upon which to issue the proposed 404 permit.

State water quality certification is not warranted in this case.

Section 401 of the Clean Water Act requires that the State of Alaska certify that the discharge of dredged or fill material authorized by a Section 404 permit from the Corps will comply with the Clean Water Act and Alaska water quality standards. *See* 33 U.S.C. § 1341(a)(1). The State cannot certify that a 404 permit in this case will comply with the Clean Water Act or Alaska water quality standards because (1) significant

wetlands will be “disturbed” and ultimately destroyed, and (2) the elimination of those wetlands will not comply with antidegradation requirements.

First, the destruction of significant wetlands violates the Clean Water Act, as discussed in the previous section. In addition, the destruction of these wetlands likely will result in the exceedance of water quality standards for the water supply for drinking, culinary, and food processing use, and likely will result in the exceedance of water quality standards for the growth and propagation of fish, shellfish, other aquatic life, and wildlife, in the waters that benefit from the wetlands’ “food chain production, general habitat and nesting, spawning, rearing and resting sites for aquatic or land species.” 33 CFR 320.4(b)(2)(i). On that basis, the State of Alaska cannot certify that the proposed discharge of dredged or fill material for the proposed project will comply with the Clean Water Act or Alaska water quality standards.

Second, the activities under the proposed 404 permit will violate antidegradation requirements, which are part of Alaska’s water quality standards. When the Corps issues 404 permits, the permit must be consistent with the state’s antidegradation policy (“ADP”). 33 U.S.C. § 1313(d)(4)(B). Antidegradation is not defined in federal statute or regulation, but is a procedure, and substantive requirement, to be followed when evaluating activities that may impact water quality. The implementation of the antidegradation policy is meant to protect water quality by maintaining or improving water quality and not allowing water quality to be degraded.

EPA’s antidegradation regulation requires that states promulgate an ADP that is no less stringent than the federal ADP. *See* 40 C.F.R. §131.12. The federal ADP delineates different levels of protection for three different “tiers” of water quality. Tier 1 sets the minimum level of water quality to protect all existing uses of a waterbody: water quality may be lowered only if “existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.” 40 C.F.R. §131.12(a)(1). Tier 2 provides the protection “necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water” to waters whose quality already exceeds the Tier 1 level and allows for reduction in quality only if, after a full public process and intergovernmental coordination, it is “necessary to accommodate important economic and social development.” 40 C.F.R. § 131.12(a)(2). “In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully.” *Id.* (emphasis added). Tier 3 waters are those waters that have been designated as Outstanding Natural Resource Waters (“ONRW”). These waters include waters in National Parks, National Wildlife Refuges, and waters of “exceptional recreational or ecological significance.” 40 C.F.R. § 131.12(a)(3).

EPA's antidegradation regulation also requires that the State "identify the methods for implementing such policy. . . ." 40 C.F.R. § 131.12(a). For enforcement purposes, this is the most important part of the antidegradation requirement. The procedures developed to implement the ADP must be designed to: (1) prohibit any degradation in some waters; (2) minimize the impacts of degrading activities in others; and (3) assure that in every case, existing uses are protected.

Although EPA guidance indicates that some type of review process is required for all three tiers of antidegradation policy, the review process is especially important in the context of waters protected by Tier 2. Whenever any lowering of water quality occurs under Tier 2, the antidegradation regulation requires a state to: (1) determine whether the degradation is "necessary to accommodate important economic or social development in the area in which the waters are located;" (2) consider less degrading alternatives; (3) ensure that the best available pollution control measures are used to limit degradation; and (4) guarantee that, if water quality is lowered, existing uses will be fully protected. 40 C.F.R. § 131.12(a)(2); Water Quality Standards Handbook, 2nd Ed. (August 1994) p. 4-7.

Alaska, like many states, has adopted the federal ADP "3-tier" requirements:

It is the state's antidegradation policy that

- (1) existing uses and the level of water quality necessary to protect existing uses must be maintained and protected;
- (2) if the quality of a water exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality must be maintained and protected unless the department, in its discretion, upon application, and after compliance with (b) of this section, allows the reduction of water quality for a short-term variance under 18 AAC 70.200, a zone of deposit under 18 AAC 70.210, a mixing zone under 18 AAC 70.240, or another purpose as authorized in a department permit, certification, or approval; . . .
- (3) if a high quality water constitutes an outstanding national resource, such as a water of national or state park or wildlife refuge or a water of exceptional recreational or ecological significance, the quality of that water must be maintained and protected

18 AAC 70.015(a). The Department of Environmental Conservation ("DEC") has not, however, established implementation procedures² for its ADP as required by the

² A public records request was submitted to DEC under Alaska's Public Records Act in order to obtain DEC's implementation plan for the ADP. DEC denied the request, asserting the deliberative

applicable EPA regulation. Consequently, DEC cannot perform an antidegradation analysis for the proposed 404 permit.³ Thus, the State cannot find that the proposed 404 permit will comply with antidegradation requirements.

Further, the application of federal antidegradation requirements in the wetlands dredged and fill context would not allow the “disturbance” of these wetlands. Section 404(b)(1) guidelines prohibit the discharge of dredged or fill material that “will cause or contribute to significant degradation of the waters of the United States.” 40 CFR § 230.10(c).

[E]ffects contributing to significant degradation considered individually or collectively include: (1) Significantly adverse effects of the discharge of pollutants on human health or welfare, including but not limited to effects on municipal water supplies, plankton, fish, shellfish, wildlife, and special aquatic sites; (2) Significantly adverse effects of the discharge of pollutants on life stages of aquatic life and other wildlife dependent on aquatic ecosystems, including the transfer, concentration, and spread of pollutants or their byproducts outside of the disposal site through biological, physical, and chemical processes; (3) Significantly adverse effects of the discharge of pollutants on aquatic ecosystem diversity, productivity, and stability. Such effects may include, but are not limited to, loss of fish and wildlife habitat or loss of the capacity of a wetland to assimilate nutrients, purify water, or reduce wave energy; or (4) Significantly adverse effects of discharge of pollutants on recreational, aesthetic, and economic values.

Id.

As discussed above, water supplies; fish, including various life stages; and wildlife will be significantly adversely affected by the “disturbance” of these wetlands. The “disturbance” of almost 60% of the wetlands on the project site will also significantly adversely affect aquatic ecosystem diversity, productivity, and stability.

process privilege; this means that an implementation plan has not been adopted by DEC and approved by EPA, and therefore there was nothing that could be produced in response to the public record request

³ An implementation plan would provide the standards for DEC to evaluate whether water quality may be degraded due to a proposed project or regulation change. Alaska has numerous waterbodies that meet Tier 3 criteria, but no way to implement their designation and protection. There are also even more Tier 2 waterbodies, yet DEC has not developed the 4-part antidegradation analysis, or a similar implementation plan, for those waterbodies. Further, DEC has not adopted any guidance regarding an antidegradation analysis for wetlands. Thus, there are no standards or analyses for DEC to apply to determine whether issuing a 404 permit in this instance complies with Alaska water quality standards.

These significant adverse effects will also be felt by the Alaska Native people that use the area for recreation and subsistence; the area has significant economic value to them.

Because the project will cause or contribute to significant degradation of waters of the United States, and the State cannot certify that the proposed 404 permit complies with federal antidegradation requirements.

We appreciate this opportunity to comment on the proposed project described in the Notice. We look forward to reviewing a draft EA and draft FONSI, or draft EIS. Should the Corps believe a FONSI may be appropriate, we also request that it make a draft permit available for public review and comment at the same time as the draft FONSI.

If you have any questions, please do not hesitate to call me at (907) 276-4244, ext. 113.

Sincerely,



Victoria Clark
Interim Legal Director

cc: Northern Alaska Environmental Center
Alaska Center for the Environment
Austin Ahmasuk

Division of Water
Anchorage

JUN 30 2006

RECEIVED

To: Members of the Rock Creek Committee

From: Jack Omelak, Nome Resident

Date: June 30, 2006

Subject: Public Comment on Rock Creek Mine

Firstly, I am generally opposed to mining/development projects because mitigation efforts of past and current mining operations, around and near Nome have been half-hearted or non-existent. I understand there are significant measures in place to ensure future mitigation efforts outlined in the current Rock Creek plan. However, I am concerned with the unforeseen side effects of mining operations and their negative effects on the local environment and nutrient cycles. The Red Dog mine, and its unforeseen effects on subsistence practices along the areas near the shipping routes, has created concentrated levels of mining bi-products rendering the immediate areas toxic.

Sincerely,
Jack Omelak

To Whom It May Concern:

July 3, 2006

I would like to comment on the proposed Rock Creek Mine Project. I attended the meeting in Nome last week. After listening to and thinking about the proposal, I have concerns about the trucking of material from Big Hurrah to Rock Creek.

I think that the operators of the mine at Big Hurrah should pay for all necessary road clearing and maintenance above the normal provided by DOT. The State of Alaska DOT should incur NO additional expenses. Those who plan to profit by the mining operation should pay for the road upkeep and maintenance needs that their operation creates.

I object to the trucking from Big Hurrah to Rock Creek being a year round operation. I think that trucking should only be allowed from Sept. 16 to the Thursday before Memorial Day, but not during the summer. I have several reasons for this suggestion:

1. Dust kicked up by those big trucks will contaminate the fish and meat on drying racks along the route, of which I am one. It will also contaminate the greens and berries in the vicinity of the route, which are used for subsistence food. Big trucks kick up more dust, which travels further.
2. The constant truck traffic will tear up the roads at an accelerated rate. DOT has a hard enough time as it is providing necessary maintenance. If the trucks run only when the roads are frozen, they would cause less damage, and the truck traffic and its effects would be less of a nuisance to the local residents whom use the roads most between the end of May and the middle of September.
3. The most immediate issue is one of safety. I live along the proposed truck route, 2 miles east of Nome, just east of Beam Road but west of the Nome River. In the summer, many people, *especially children*, are biking back and forth between the Nome River and town at all times of the day and night. I myself often bicycle into town and back. In the past two years, I have experienced large trucks hauling rock for the harbor project passing me on several occasions. It is scary and the wind from those trucks is enough to upset my balance. I know it is worse for children. My seven-year old granddaughter is terrified of those trucks, and we have to try to find a safe place to pull over when we see (or hear) one of those trucks coming. It is **TOO DANGEROUS** to allow the proposed trucking between the Nome River and the Bypass Road in Nome during the summer months. Some child biking with a fishing pole in hand and balancing another kid on the back is going to get knocked over by the wind from the truck and fall under its wheels. Someone riding in the frequent fog or dusk at 2am is not going to be seen. With 54 trucks passing by each day (3 each 90 minutes per the presentation at the public meeting), the probability multiplies. I don't want anyone to die or get hurt because of this project, and I am sure neither does Alaska Gold.

The dates I suggest for the trucking operation (Sept 16 to the Thursday before Memorial Day) would avoid most the problems I outline above. I would appreciate my comments being seriously considered. Thank you for giving me the opportunity to comment.

Margaret (Megs) Testarmata, PO Box 2135, Nome, AK 99762

CENTER for SCIENCE in PUBLIC PARTICIPATION

224 North Church Avenue, Bozeman, MT 59715
Phone (406) 585-9854 / Fax (406) 585-2260 / web: www.csp2.org / e-mail: csp2@csp2.org
"Technical Support for Grassroots Public Interest Groups"



July 5, 2006

State of Alaska DNR Permits

ATTN: Tom Crafford, Project Manager
ADNR / Office of Project Management & Permitting
550 West Seventh Ave., Suite 900D
Anchorage, AK 99501
Email: tom_crafford@dnr.state.ak.us

Luke Boles
Department of Environmental Conservation
610 University Avenue
Fairbanks, AK 99709
luke_boles@dec.state.ak.us

Re: Comments on Reclamation Plan and Waste Management Permit (Rock Creek and Big Hurrah mines)

While the Project documents are generally informative and attempt to disclose the potential impacts and mitigation measures for the proposed project, there are still several areas where there is a notable lack of significant information. Two of these areas where significant information is lacking are on the design and function of the cyanide destruct system and the water treatment system.

Also, as is common with many operator-proposed reclamation surety cost estimates, the indirect costs are underestimated.

A summary of the concerns with the Project Application is:

- (1) *There is no discussion in any of the Project literature of the Ferric Chloride water treatment system.*
- (2) *There is no significant discussion of the Ferrous Sulfate cyanide destruction system – its potential effectiveness or monitoring.*
- (3) *The Maximum Credible Earthquake should have been used as the design event for the Tailings Storage Facility and the waste rock dumps since they will have to withstand seismic events in perpetuity.*
- (4) *Overburden soils will not be recovered from beneath the main part of development rock stockpile, since they are anticipated to be benign and "... will not constitute fill of a wetlands with a pollutant." Salvage of this material could improve long term revegetation/reclamation stability.*

Reclamation Surety Calculations:

- (5) *Until there is a firm commitment to actually construct and test the treatment plant, these costs must be factored into the reclamation surety calculations.*
- (6) *Approval of a reclamation plan that “excludes complete reclamation of the development rock dumps” at the Rock Creek and Big Hurrah sites could lead to an unstable and potentially unsafe closure.*
- (7) *The indirect cost estimates for the Rock Creek financial surety in the Project Application are underestimated by 20% to 30%.*
- (8) *A more rigorous long term monitoring schedule should be required. The costs of the better long term monitoring would not add significantly to the overall reclamation surety.*
- (9) *Some level of provision in the financial surety should be made for long term maintenance of the tailings storage facility and the waste rock dumps.*

Monitoring Plan:

- (10) *Since water in the Recycle Water Pond contains cyanide, monitoring for cyanide levels needs to be included in the Monitoring Plan.*
- (11) *At Rock Creek monitoring wells should be located downgradient of the injection wells, and these monitoring wells would also serve as long term monitoring wells for the north waste rock dump after mine closure.*
- (12) *At Big Hurrah there are no apparent proposed locations for monitoring wells downgradient of the injection wells, most of the waste rock dump, or the pit.*

Geochemistry:

- (13) *The conclusion that acid rock drainage will not be a problem at the sites is an oversimplification related to the conclusion that the waste dump material is "... overall non acid-generating ..."*

This conclusion is carried forward through many of the Project Application documents, and could be misleading to readers who have not reviewed the ABA data in detail. Overall non-acid generating material does not mean that neutral drainage metalloids (As, Sb), or even that acid generation at specific locations within the waste dumps will not pose potential problems at the site.

More caution should be taken in making this assertion, especially in the Project Application summaries of this information.

- (14) *Assuming all of the neutralizing potential of the rock samples, especially the non-carbonate NP, is not appropriate in considering bulk rock AP:NP ratios. This statement/assumption is carried through to the conclusions in many of the Project Application documents, and can be misleading to readers who have not reviewed the ABA data in detail.*

SECTION-SPECIFIC COMMENTS

1. Rock Creek Mine, Plan of Operations Volume 1, Project Description, Alaska Gold Company, May, 2006

a. Section 3.5 Water Management

For both the Rock Creek and Big Hurrah sites it is noted in the Project Description that an NPDES Stormwater Multi-sector General Permit will be required. For both sites it is also noted that re-injection to the local groundwater system via injection wells will be in accordance with a Class V injection well permit. However, it is not stated whether this will be an individual permit or, like the Stormwater Permit, a general permit.

Will the Class V Injection Permit be a general or a site-specific permit?

b. Section 4.8 Tailings

There is no discussion in any of the Project literature of the Ferric Chloride water treatment system.

Why was this system chosen?

How effective will it be in treating the contaminants?

2. Rock Creek Mine, Plan of Operations Volume 2, Environmental Information Document, Alaska Gold Company, May, 2006

a. Section 5.3 Milling

It is noted that a cyanide destruct system will be used to control levels of cyanide in the tailings (and it is assumed the water collection pond):

“Leached ore from the cyanidation process will be subjected to treatment for destruction of free cyanide and combined with the tailings from the flotation circuit.”

However, there is no detailed discussion in any of the Project Application documents of the cyanide destruct system.

Why was Ferrous Sulfate chosen over other methods for cyanide destruction?

How will it be applied?

How effective will it be in reducing cyanide?

How will the effectiveness of the cyanide destruct system be monitored?

b. Section 7.3.3 Seismic Hazard

Although this area of Alaska does not pose the same extreme level of seismicity that areas along the Aleutians and coastal Alaska to the south, and the Alaska Range further to the east do, the potential for a destructive seismic event on the Seward Peninsula is still greater than in most areas of the US.

It is noted that the mine facilities have been designed for:

“A seismic event with a 475-year return period is considered appropriate for design of a facility with a 6- to 9-year operational life. This event has a 10% probability of exceedance in 50 years and a 2% probability in 9 years. For the TSF and the waste rock dump sites, a post-closure life of 200 years is assumed. Valera Geoconsultant (2005) recommends designing the TFS for post-closure of 2,500 years and a probability of exceedance of 8%. The acceptable level of seismic risk for designing major structures is typically prescribed by the regulatory agencies or is the responsibility of the owner.”

“Acceptable levels of risk are based on the consequences of ground failure or damage to the facility. Valera Geoconsultant (2005) concluded the level of risk considered in their study is reasonably conservative. Rock Creek project engineers have incorporated these guidelines into all construction design.” (Section 7.3.3.2 Consequences)

Using the 475-year event for design of non-critical seismically vulnerable mine facilities is appropriate, but is not acceptable for critically vulnerable facilities like the tailings storage facility and the water rock dumps, which will be required to maintain their structural integrity in perpetuity in order to protect public safety and the environment in the long term.

From the wording in the paragraph quoted above, it appears that the tailings storage facility (TSF) has been designed for the one-in-2500 year event. This yields a probability of exceedance of 8% for the 200 year planned life of the TSF. However, it is highly likely that the tailings in the TSF will require containment for far greater than 200 year planned life of the TSF. Why 200 years is appropriate for the planned life of the TSF is not apparent.

The tailings storage facility and the waste rock dumps both contain waste material that is either potentially acid generating, or contains neutral drainage metals (arsenic and antimony) that could cause surface and groundwater contamination if allowed to drain freely. For this reason drainage from the tailings and waste rock should be controlled both during and after mine closure. 200 years is not an appropriate choice for a “life” for these facilities.

The more conservative, and most commonly used seismic design event for facilities like tailings dams and waste rock dumps is the Maximum Credible Earthquake. This is roughly equivalent to the one-in-10,000 year event, or four times longer than the one-in-2,500 year event chosen by the project consultants. Choice of the MCE event would make the design event horizontal acceleration slightly larger than that cited in the Valera Geoconsultant (September 26, 2005) seismic report, but should not have a significant economic impact on either the TSF or waste rock dump designs, since the slopes proposed for each of these facilities are relatively low.

There is no additional documentation in the Project documents about any engineering design calculations for the TSF or the waste rock dumps that were performed by the Project consultants. This information is generally included in the Project Application documents.

Has the Tailings Storage Facility been designed for the 2500 year seismic event?

Why wasn't the Maximum Credible Earthquake used as the design event for the Tailings Storage Facility, since this is the conservative design seismic event for a structure that will likely have to stand in perpetuity?

Was there any seismic design work done for the waste rock dumps, which will also have to withstand seismic events in perpetuity? What is the design event for the waste rock dumps, and what rationale was used in choosing this design event?

3. Rock Creek Mine, Plan of Operations Volume 4, Reclamation Plan, Alaska Gold Company, May, 2006

a. Section 5.5.3 Revegetation

Growth material from beneath the waste rock storage areas should be recovered before placing waste rock. Present plans are to bury this material under the waste:

“The overburden soils will not be recovered from beneath the main part of development rock stockpile, however since they are anticipated to be benign they will not constitute fill of a wetlands

with a pollutant.” (Rock Creek Mine Plan of Operations Volume 1, Project Description, Section 3.4.1 Rock Creek Mine/Mill Complex)

All reasonably available growth material should be applied to the reclaimed waste rock to promote post-mining revegetation. Utilizing this valuable resource would enhance long term physical and geochemical stability of the waste rock. To not utilize stockpiled growth material would waste a valuable resource, and would be a poor land management practice.

It is stated in the Reclamation Plan that:

“Organic soils over the Project site are thin and, in some places, non-existent. As described above, organic soils, where present and practicable within the area of the plant site, rock stockpile subcuts, tailings dam footprint, tailings storage facility area, and pit area, will be stripped and stockpiled.” (Rock Creek Mine Plan of Operations, Volume 4, Reclamation Plan, Section 5.5.3.1 Organic Soils)

and in Volume 2 of the Plan of Operations:

“Topsoil depth throughout the Rock Creek site ranged from 0.5 to 14 inches (1.3 to 36 cm). Of the 17 wetland sites, depths ranged from 0.5 to 14.0 inches (1.3 to 36 cm) with a mean value of 5.9 inches (15 cm).” (Rock Creek Mine Plan of Operations Volume 2, Environmental Information Document, Section 7.4.1.1 Topsoil)

Since the organic layer is thin, removing the organic layer before waste rock application should be relatively easy, and will provide a significant reclamation resource. Removal could amount to no more than dozing and collecting the organic layer in advance of the front of the waste dump. This should not impose an economic hardship on the operator, and would provide significantly more growth material to assist final revegetation.

While there is no requirement under Alaska reclamation law to require the collection of organic material below the waste rock dumps, the project operator should make this a voluntary part of the reclamation effort. Revegetation will help protect water quality in Rock Creek and the Snake River, as the present wetlands presently do. Failure to adequately revegetate the waste dumps could lead to increased sedimentation in these waters, and to the degradation of long term water quality.

b. Section 5.4.3 Re-Grading of Tailings Area and Tailings Dams

It is noted in this section, as well as in the Project Description that a Ferric Chloride water treatment system will be used to treat water to be discharged into groundwater:

“Ferric chloride water treatment will be provided, as required, to ensure that the groundwater meets all applicable state and federal groundwater quality standards. Ferric chloride is particularly effective in the removal of arsenic, as well as the removal of antimony and manganese.” (Rock Creek Mine Plan of Operations Volume 1, Project Description, Section 3.5.1 Rock Creek Mine/Mill Complex)

This statement implies that the treatment plant will be built only “as required” to meet groundwater quality standards. However, in the financial calculations for the reclamation surety it is assumed that the treatment plant will already have been constructed, and therefore there is no need to build this calculation into the closure surety.

“Treatment Cost is operational cost of treatment system already at the site.” (Plan of Operations Volume 4, Reclamation Plan – Appendix C, Table 10 - Rock Creek Project Reclamation Cost Estimate Process Solution Management, footnote 5)

Until there is a firm commitment to actually construct and test the treatment plant, these costs must be factored into the reclamation surety calculations.

4. Rock Creek Mine, Plan of Operations Volume 4, Reclamation Plan – Appendix C, End of Mine Life Reclaimed Cost Estimates, Maps, and Volumes of Material

a. 5.2.2 Alternate Post-Mining Land Use

The mines are located on private, Bering Straits Native Corporation and Sitnasuak Native Corporation lands. The applicant, with the concurrence of the native corporation, has proposed the following post-mining land use:

“The designated post-mining land use on Alaska Gold lands would be for ongoing use as a storage site for material source sales, including the potential sale of stockpiled placer tailings removed from surrounding streams. The BSNC and Sitnasuak Native Corporation lands would have post-mining land use designations that included wildlife habitat, subsistence, and recreation.

Alaska Gold will determine its continued use for the site infrastructure, or its plans for removal, at the close of the mines. As a private land owner, there are no post-mining requirements for infrastructure removal.”

In its Draft Reclamation Plan Approval Letter, ADNR has tentatively approved a plan that “excludes complete reclamation of the development rock dumps ...”

“AGC has proposed and the ADNR has accepted an alternate post-mining land use that excludes complete reclamation of the development rock dumps at the Rock Creek and Big Hurrah sites located on private land.” (Rock Creek & Big Hurrah Project DRAFT Reclamation Plan Approval, Reclamation Plan Approval F20069578, ADNR, no date, Page 9 of 13)

The post-mining use as a storage site for material source sales that is proposed by AGC does not appear to involve the use of the waste dumps themselves or the waste material itself. The use of waste dump material for “material source sales” would not only be imprudent, but would also be potentially illegal (i.e. against conditions in the ADEC Solid Waste Permit). The waste rock is not an appropriate source for “material sales.”

In its approval of the reclamation plan, ADNR should require closure of the waste dumps and tailings pond that would provide long term stability of these waste storage facilities. Approval of a reclamation plan that “excludes complete reclamation of the development rock dumps” at the Rock Creek and Big Hurrah sites could lead to an unstable and potentially unsafe closure.

b. Table 1 Rock Creek Project Reclamation Cost Estimate Summary

It is common for the reclamation financial surety cost estimates made by project operators to be significantly lower than the costs a regulatory agency would encounter if it had to conduct the actual reclamation in the event of the bankruptcy of a mine operator. This is due to several factors – mine operators can conduct reclamation operations more efficiently than agency contractors, and operators often do not calculate the agency-related costs in their reclamation estimates; and there is often pressure on agency personnel reviewing mine surety cost estimates to lean toward the lower cost estimate figure because these sureties are a significant operating cost to a mine operator.

The Center for Science in Public Participation has conducted a series of detailed analyses of the reclamation bonds required of Alaska’s large mines by state and federal regulators.¹ The results show the total amount the Center for Science in Public Participation estimated Alaska regulatory agencies should be holding to fully protect the public is significantly larger than the actual amounts held.

¹ **Alaska Large Mine Reclamation Bonding – 2005**, David M Chambers, Center for Science in Public Participation, August 2005, available at www.csp2.org/reports

INDIRECT COST RECOMMENDATIONS							
<u>CSP2¹</u> <u>Recommended</u> <u>Percentage of contract costs</u>		<u>USFS²</u> <u>Recommended</u> <u>Percentage of contract costs</u>			<u>Rock Creek³</u> <u>Proposed</u> <u>Percentage of contract costs</u>		
		Minimum	Maximum				
Contingency	10%	6%	20%	- Scope Contingency	Contingency	10%	
		10%	20%	- Bid Contingency			
Mobilization / Demobilization	10%	0%	10%		Mobilization / Demobilization	10%	
Engineering Redesign	3%	2%	10%		Engineering Redesign	3%	
Engineering, Procurement, Construction Management	5%	--					
Contractor Overhead	15%	3%	3%	- Performance & Payment Bonds:	Contractor Overhead and Contractor Profit	10%	
		0%	5%	- Estimated Sales Tax:			
Contractor Profit	10%	15%	30%	- Profit & Overhead:			
Agency Administration	10%	2%	7%		Agency Administration	3%	
Inflation	3% /yr	0%	3%		Inflation	0%	
TOTAL	66%	38%	108%		TOTAL	36%	

References:
¹ Hardrock Reclamation Bonding Practices in the Western United States, James R. Kuipers, PE, Center for Science in Public Participation, February 2000.
² Training Guide for Reclamation Bond Estimation and Administration, For Mineral Plans of Operation Authorized and Administered Under 36 CFR 228A, USDA Forest Service, Minerals and Geology Management, April 2004.
³ Rock Creek Mine, Plan of Operations Volume 4, Reclamation Plan – Appendix C, End of Mine Life Reclaimed Cost Estimates, Maps, and Volumes of Material, Section 2.2.9 Other Costs

As can be seen from the table above, the estimated Rock Creek indirect expenses are lower percentage wise than the US Forest Service lowest recommended indirect cost percentages. However, in considering the individual categories:

- (1) The Engineering Redesign costs for Rock Creek (3%) are at the low end of the US Forest Service estimates (2% - 10%), and well below the CSP2 estimate of 8% (combined with Procurement & Construction Management). The smaller the project, the higher the cost percentage should be – Rock Creek is a relatively small project.
- (2) Contractor Overhead and Profit for Rock Creek (10%) is significantly lower than that recommended by both CSP2 (25%) and the US Forest Service (18% - 38%).
- (3) Agency Administration for Rock Creek (3%) is lower than that recommended by both CSP2 (10%) and the US Forest Service (2% - 7%). The smaller the project, the higher the cost percentage should be.
- (4) No inflation factor is built in to the Rock Creek cost estimate. Unless the financial surety is to be reviewed annually, CSP2 recommends including an inflation factor of 3%/yr, and the US Forest Service recommends 0% - 3%/yr. Inflation is currently increasing in the US.

The indirect cost estimates for the Rock Creek financial surety in the Project Application are underestimated by 20% to 30%.

c. Tables 2A & 2B - Rock Creek Project Reclamation Cost Estimate - Labor and Equipment Hourly Costs,

The only obvious direct cost assumption that appears to be suspect is the assumption for fuel costs. In this table the assumed fuel cost is \$3.19/gallon.

Given today's escalating fuel costs, and the transportation costs of moving fuel to the minesites, a higher base fuel cost is warranted.

d. TABLE 10 Rock Creek Project Reclamation Cost Estimate, Process Solution Management

As mentioned previously for Section 5.4.3, the assumption that the financial surety need not include the cost the water treatment plant is not valid if there is not a firm plan/commitment to construct the water treatment plant during mine operation.

e. TABLE 11 Rock Creek Project Reclamation Cost Estimate, Long Term Monitoring

The proposed schedule for long term monitoring in the Project Application is for monitoring to take place during years 1, 2, 5, 10, 20 and 30 after reclamation activity have commenced. This would not provide frequent enough monitoring to provide for the continuation of baseline monitoring that was conducted during mine operation, or to detect worsening conditions that could lead to water quality problems.

A more appropriate long term monitoring schedule would be:

(1) Yearly for years 1-5 years:	\$211,150
(2) Biannually for years 7,9,11:	\$126,690
(3) Every 5 years for years 15-30:	\$168,920
	=====
Total Long Term Monitoring Cost:	\$506,760

A more rigorous long term monitoring schedule should be required. The costs of the monitoring proposed above do not add significantly to the overall reclamation surety.

It must also be noted that there is no provision in the reclamation surety or long term monitoring for any routine repair of the tailings storage facility or the waste dumps. Minor erosion on the face of the dam is likely to occur, and provision should be made to set aside some funding to bring heavy equipment to the sites in order to occasionally patch erosional features on the tailings dam or the waste dumps that, if neglected, could lead to releases of waste material or partial failure of a structure.

Some level of provision in the financial surety should be made for long term maintenance of the tailings storage facility and the waste rock dumps.

5. Rock Creek Mine Plan Of Operations Volume 7, Monitoring Plan

a. Table 1.1 Rock Creek Mine Project Monitoring Activity Summary

There is no mention in this table about monitoring water in the Recycle Water Pond. It appears from drawing of this pond that water in the pond is accessible to birds.

Since water in the Recycle Water Pond contains cyanide, monitoring for cyanide levels needs to be included in the Monitoring Plan.

b. Figure 4.1 – Dewatering, Injection and Monitoring Well Layouts

Rock Creek

While monitoring wells are proposed at strategic locations below the tailings storage facility and the infiltration gallery, there are apparently no monitoring wells proposed for the waste rock dumps or the reinjection wells.

Monitoring wells should be located downgradient of the injection wells, and these monitoring wells would also serve as long term monitoring wells for the north waste rock dump after mine closure.

Big Hurrah

For Big Hurrah, there are no apparent proposed locations for monitoring wells downgradient of the injection wells, most of the waste rock dump, or the pit.

Since there will be potentially acid generating material and/or neutral pH generating material located at these sites, long term groundwater monitoring well locations should be selected/required as well.

6. Rock Creek Mine Plan Of Operations Volume 8, Geochemistry & Groundwater Reports for Rock Creek & Big Hurrah

a. Rock Creek Project – Preliminary Materials Geochemical Testing Update, Water Management Consultants, May 26, 2006

(1) Table 6a ICP/MS (whole rock) elemental data summary – development rock;

Data for elements alphabetically above N (Pb, Sb, Se, Tl, Zn) appear to be missing from both Tables 6a and 6b.

(2) Section 5 – Confirmatory ABA Testing Results Using Alternate NP Determinations

In this section there is a discussion of the corrections for siderite and total inorganic carbon that were applied to the basic NP-AP data samples determined by the Sobek method.

Why do the Siderite-corrected and TIC-corrected values show less potentially acid generating material than for the uncorrected Sobek method? I would expect the Siderite and TIC corrected data to show equal or more PAG material than the uncorrected Sobek predictions.

(3) Section 6 – Summary

It is stated in this section that:

“There is no evidence either from test data or long-term estimates that suggest acidic conditions will develop from the Rock Creek development rock. This indicates that acid rock drainage from development rock and pit walls is not a short- or long-term issue at Rock Creek.” (p. 22)

The conclusion that acid rock drainage will not be a problem at the sites is an oversimplification related to the conclusion that the waste dump material is "... overall non acid-generating ..."

This conclusion is carried forward through many of the Project Application documents, and could be misleading to readers who have not reviewed the ABA data in detail. Overall non-acid generating material does not mean that neutral drainage metalloids (As, Sb), or even that acid generation at specific locations within the waste dumps will not pose potential problems at the site.

More caution should be taken in making this assertion, especially in the Project Application summaries of this information.

It is also stated that:

“Development rock at the Rock Creek project will be placed using run-of-mine blending,” (p. 23)

Why is blending preferable to isolation as a waste management technique? A more focused discussion of this issue is necessary.

b. Tailings and Development Rock Storage Facilities Geochemical Modeling, Water Management Consultants, March 27, 2006

(1) Table 6 – Tailings facility hydrologic modeling results

This table shows the modelling results for runoff-infiltration-evaporation for the different closure scenarios for the Rock Creek tailings storage facility. In the model a rainfall of 554 gpm is assumed. However, for the development rock model run for this effort a rainfall of 438 gpm was used (Table 8).

Why is there a difference? Is the difference due to run-on from drainage around the TSF?

(2) Table 8 – Development rock facility hydrologic modeling results

This table shows the modelling results for runoff-infiltration-evaporation for the different closure scenarios for the Rock Creek waste rock facility. The closure scenarios are fundamentally: (1) an infiltration barrier cover, (2) vegetation on top of a cover, (3) a combination of both, and (4) no cover or vegetation (base case). Normally revegetation on top of a reclaimed waste facility would be expected to decrease infiltration because the plants use some of the water that infiltrates the surface. In this model case, infiltration with vegetation actually increases, which is counterintuitive to normal situations.

Why is infiltration higher with Light Vegetation than with No Vegetation for the Cover alternative? Note that the same relative prediction is made for the waste rock at Big Hurrah.

c. Big Hurrah Project – Preliminary Materials Geochemical Testing Results , Water Management Consultants, May 8, 2006

(1) Section 4 – Confirmatory ABA Testing Results Using Alternate NP Determinations

For the test described in this report, thirty-four drill samples were reanalyzed using the standard Sobek method for determining NP, as well as methods to correct for siderite and total inorganic carbon that may be contained in the samples. A summary of the results of these tests is contained in Section 4, and describes:

- Of the 34 samples, the Sobek method predicted 6 had a NP:AP ratio of less than 1.0
- Of the 34 samples, the siderite-corrected Sobek method predicted 4 had a NP:AP ratio of less than 1.0
- Of the 34 samples, NP values based on total inorganic carbon predicted 5 which had a NP:AP ratio of less than 1.0

Why do the Siderite-corrected and TIC-corrected values show less potentially acid generating material than for the uncorrected Sobek method? It would be expected that the Siderite and TIC corrected data to show equal or more PAG material than the uncorrected Sobek predictions.

(2) Section 5 – PAG Development Rock Estimate Based On Site-Specific NP:AP Ratio

On the basis of the corrective testing summarized in this report, it is concluded that:

“For the purpose of planning and development rock handling, the siderite-corrected NP values are used to estimate PAG material quantity.”

July 5, 2006

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The most conservative approach to determining the most correct NP value would be to apply both the siderite and total inorganic carbon corrections.

Why was the siderite-corrected NP chosen over the more conservative combined siderite-TIC corrected NP?

(3) Section 6 – Summary

One of the concluding statements in this section is that:

“Assuming all of the neutralizing potential (NP) of the rock samples is available for reaction, the ABA results suggest that the development rock and ore material will not pose a risk of acid generation in the short or long term.”

Assuming all of the neutralizing potential of the rock samples, especially the non-carbonate NP, is not appropriate in considering bulk rock AP:NP ratios. This statement/assumption is carried through to the conclusions in many of the Project Application documents, and can be misleading to readers who have not reviewed the ABA data in detail.

(4) Figure 1 – Spatial distribution and depth of ABA samples

A significant number of the ABA samples depicted in this figure appear to be outside the pit and wall rock area. If this is correct, there could be bias in the data. Given the locations in this figure, any bias would likely be toward the non-acid generating end of the data spectrum.

Is the drill hole location information presented in this figure correct?

Thank you for the opportunity to comment on this proposal.

Sincerely;



David M. Chambers, Ph.D.

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Re: Draft Waste Management Permit for Rock Creek and Big Hurrah Mines: 2003-DB0051

Dear Mssrs. Boles and Crafford:

This letter provides comments on the June 1, 2006, Public Notice of Draft Waste Management Permit for Alaska Gold Company's (AGC) Rock Creek and Big Hurrah Mines: 2003-DB0051 ("Draft Permit"). The comments are submitted on behalf of the Northern Alaska Environmental Center and Alaska Center for the Environment, organizations that are concerned about the impacts of these mines on human health and the environment, and who seek adequate permit conditions for the operation of the Rock Creek and Big Hurrah Mines.

There are two significant overarching problems with the Draft Permit. First, it provides for inadequate public review of any future permit modifications. For example, adoption or modification of plans regarding the management of potentially acid generating (PAG) development rock at Big Hurrah is allowed under the Draft Permit, after agency approval, as are major changes to other aspects of solid waste disposal and storage. These are significant modifications that could lead to significant environmental impacts and therefore require modification of the permit along with public notice and comment.

Second, the Department of Environmental Conservation (DEC) must issue a waste management permit that complies with Alaska solid waste management regulations (Regulations). As will be discussed in this letter, the Draft Permit does not meet these regulatory requirements.

I. Conditions Contained in Operational Plans Must be Explicitly Stated in the Draft Permit and Any Permit Modifications Must be Made Available for Public Notice and Comment.

The Waste Management Permit will create enforceable duties relating to the disposal, storage, and handling of solid waste at Rock Creek and Big Hurrah Mines. Several portions of the Draft Permit allow for modification of AGC's operational plans, which are incorporated by reference into the Draft Permit, upon approval by DEC. Although the Draft Permit states that approved changes "become part of this permit," there would be no corresponding opportunity for public notice and comment on the plan changes. Without notice of changes to the permit, requirements may be significantly weakened without public review. To counter this problem, conditions that have been incorporated by reference into the Draft Permit must be included in the Draft Permit where they are explicit and enforceable.

Alaska permitting regulations provide that "[a]ny expansion, modification, or other change in a facility process or operation which might result in an increase in emissions or discharges, or might cause other detrimental environmental impacts from the permittee's facility, requires a new permit or variance." Because the solid waste management regulations of 18 AAC 60 do not specifically provide for variances from the requirements of that chapter, any "expansion, modification, or other change" would require the issuance of a new permit.

Approval of plans allowing changes to any of the operations at Rock Creek or Big Hurrah Mines clearly could cause "detrimental environmental impacts," thus triggering the issuance of a new permit or modification of the permit with the corresponding public notice and comment under 18 AAC 15.100.

For example, AGC's proposals for handling the PAG development rock at the Big Hurrah Mine have not been incorporated into the Draft Permit (Section 1.7.1: "The temporary storage [of] PAG development rock at the Big Hurrah Mine is prohibited unless specific written approval from ADEC has been received"). In fact, mining is suspended at Big Hurrah pending DEC approval of an "operational development rock characterization and handling plan." Draft Permit, Section 1.7.1.2.3. This approval of temporary storage of PAG development rock may result in "detrimental environmental

impacts,” and a modification of the permit to include conditions for this storage must be subject to public notice and comment.¹

II. The Draft Permit Does Not Comply with Regulatory Requirements.

Prior to issuing or denying a permit under 18 AAC 60.200, DEC is required to review “information contained in the application and the public record” and reach a decision based upon enumerated considerations. 18 AAC 60.215(a). The first of these considerations requires DEC to evaluate the project’s ability to comply with Alaska’s solid waste management regulations, codified at 18 AAC 60, and state water quality standards found in 18 AAC 70. *Id.* Specifically, the Draft Permit contains inadequate conditions and performance standards regarding the storage of accumulated solid waste, the removal of ponded water from storage facilities, the effects of permafrost and other natural events, and visual, surface water, and ground water monitoring.

A. The Draft Permit Does Not Provide for Satisfactory Storage of Accumulated Solid Waste.

The Regulations provide that a “person may not store accumulated solid waste in a manner that causes,” among other things, “the attraction or access of domestic animals, wildlife or disease vectors” or “polluted run-off water.” 18 AAC 60.010. The Draft Permit does not contain any permit conditions that explain how wildlife will be deterred from accessing solid waste disposal areas at the Rock Creek or Big Hurrah Mines. Similarly, the Draft Permit does not adequately provide for how “polluted run-off water” will be controlled or mitigated at the Rock Creek Mine. This is especially

¹ In addition, other changes in operations will require permit modifications because they may lead to “detrimental environmental impacts.” These include, but are not limited to, Section 1.2.9 (“[a]ctivities which will cause a greater amount of waste material to be treated and disposed of, above that contemplated in this section of the permit, are prohibited without prior approval by the Department”); Section 1.3.1 (“Information on engineering changes to the mill, new waste treatment processes, changes to solid waste or wastewater disposal facilities, changes to the groundwater monitoring well system, change of the PAG development rock cutoff NP/AP (neutralizing potential/acid generating potential) ratio and the addition of new waste streams that discharge into the TSF must be submitted to the Department and approval must be obtained prior to any such changes or discharges. This includes the introduction of tailings generated from ore, other than from currently permitted Rock Pit and Big Hurrah Pit.”); Section 1.4.10 (allows, upon approval of DEC, for “the introduction of a new chemical in the process or waste treatment streams”); Section 1.4.11 (allows for changes that would “significantly modify the operation of a waste treatment component, or significantly modify the disposal facilities”); Section 1.6.2 (allows for the construction of a new “wastewater treatment plant” to bring wastewater disposed of through injection wells into compliance with state water quality standards); and Section 1.11.4 (“Once a temporary closure plan has been approved, full implementation of the approved specific plan is required. The plan can be amended by submitting a revised plan to the Department for approval”).

concerning for the proposal to temporarily store PAG development rock at the Big Hurrah Mine. Run-off water will generate acid and will be “polluted.” Conditions for controlling this environmental hazard must be included in the Draft Permit.

1. *The Design of Storage Facilities Does Not Provide Protection for Wildlife Species.*

18 AAC 60.010 mimics the waste management statute, which requires that “wildlife and domestic animals do not . . . become harmed by contact with the waste” stored at a facility operating under a waste management permit. AS 46.03.100. The Draft Permit states, in section 1.4.17, that “[a]ny area of open water in the mine area must not become an attractive area for waterfowl or shorebirds. Any wildlife casualties shall be reported to the Department and to the appropriate state and federal agencies.” This condition provides no standard regarding what an “attractive area” is, and therefore fails to ensure compliance with the regulatory requirement. The Draft Permit should instead require actions to prevent contact with *any* animal species, such as fencing or other specific deterrent measures.

In addition, while Sections 9.0 - 9.2 of AGC’s Monitoring Plan discuss the appropriate employee response to incidents involving birds and wildlife at the Rock Creek site, none of those requirements is included as a condition of the Draft Permit. Given the potential toxicity of waste in the tailings storage facility (TSF) and the PAG development rock at Big Hurrah, specific precautions must be taken to prevent access of animals to storage facilities. Without these provisions, the Draft Permit does not meet the wildlife protection requirements of 18 AAC 60.010 or AS 43.03.100.

2. *The Draft Permit Does Not Adequately Protect Against the Production of Polluted Run-Off from Waste Storage Facilities.*

Pursuant to 18 AAC 60.010, “polluted run-off water” from solid waste storage areas is prohibited. “Polluted run-off water” means “water that violates a criterion of 40 C.F.R. 257.3-3 . . . , the water quality standards of 18 AAC 70, or the drinking water standards of 18 AAC 80.” 18 AAC 60.990(96). In relevant part, 40 C.F.R. § 257.3-3(b) requires that a facility shall not cause a discharge of dredged material or fill material to waters of the United States that is in violation of the requirements under Section 404 of the Clean Water Act, as amended.”

In this case, this project violates Section 404 of the Clean Water Act because 58% of the wetlands on the Rock Creek site – 31 % of the project area – will be “disturbed,” which presumably means destroyed. The impacts of this wetland destruction will violate 33 CFR § 320.4, as detailed in the letter concerning this project submitted to the

Army Corps of Engineers on June 30, 2006, which is attached and incorporated herein by reference. In addition, the discharge of dredged and fill material in this case will violate antidegradation requirements, as described in that letter.

In addition, run-off from the waste facilities is likely to violate Alaska water quality standards. Rock Creek and Lindblom Creek are currently classified for drinking water use. Natural background levels of arsenic exceed water quality standards, and discharges from the sites will also exceed the arsenic water quality criterion. While a Stream Reclassification Permit Application has been submitted by AGC, the Draft Permit cannot assume an outcome to that process that resolves this problem.

The geochemical characterization and management of PAG development rock at the Big Hurrah Mine is also a concern for water quality. Improper storage and monitoring of this waste could lead to the generation of acid rock drainage (ARD), an environmental problem leaving receiving waters with a low pH level and an elevated content of metals such as lead, iron, arsenic, and selenium. This occurrence will likely result in a violation of water quality standards.

Currently, questions regarding AGC's plans for the blending and temporary storage of PAG development rock at Big Hurrah are unresolved and have not been incorporated into the Draft Permit. Section 1.7.1.1, for example, requires that, prior to agency approval, AGC must submit to DEC an "[a]dequate geochemical characterization of the development rock to determine the PAG NP/AP cutoff ratio that minimizes the risk of the blended 'non-PAG' development rock dump creating water quality exceedances" While AGC has prepared the Big Hurrah Mine Development Rock Handling Plan (Handling Plan), it does little to assure that PAG development rock is managed in a way that would prevent adverse impacts to surface and ground water quality.²

For example, Section 1 explains that the development rock segregated from the stockpile will have an NP/AP ratio of less than 1.0 (1:1). This ratio is not the industry standard, and a more conservative NP/AP ratio of 2:1 or 3:1 should be required instead. For the general stockpile, where mixing of PAG and non-PAG (NAG) development rock is proposed, an overall, site-specific NP/AP ratio of 1.9 is proposed. This ratio also is not the industry standard, and a more conservative ratio should be required. In both cases, DEC, prior to or concurrent with issuance of a Final Waste Management Permit, should state explicitly how the adopted NP/AP ratios will minimize the risk of the temporary storage area and blended development rock dump from producing ARD and thereby reduce the likelihood of downstream water quality violations.

² As discussed in Section I, the requirements of the Handling Plan must be made explicit conditions of the Draft Permit.

In addition, containment of drainage resulting from the temporarily stored PAG development rock may result in violations of water quality standards. For example, Section 3 of the Handling Plan states only that the “development rock stockpile area will be graded so that drainage from the PAG staging area will drain towards the pit. Seepage and/or drainage from the development rock stockpiles will be monitored in accordance with the Rock Creek Project Operational and Closure Monitoring Plan.” There is no indication of how this drainage path alone will avoid the production of polluted run-off.

Further, water quality issues are especially important because the drinking water source for Nome is approximately 2.5 miles from the Rock Creek site. Exceedances of drinking water standards and water quality standards could have disastrous impacts to that water source, and specific conditions and performance standards must be required in the Draft Permit to protect drinking water.

Because the waste storage provisions of the Draft Permit do not protect wildlife species and are likely to result in polluted run-off, the Draft Permit does not meet the requirements of 18 AAC 60.010.

B. The Draft Permit Does Not Meet the Requirements for Removal of Poned Water from Solid Waste Storage Facilities.

The Regulations require that water found in ponds on the surface of waste storage facilities be removed within a set amount of time. 18 AAC 60.225. For an inert waste landfill, the operator is required to “construct and operate the landfill so that seasonal flooding is temporary in duration and ponded water is removed within 30 days.” *Id.* at (d). For the owner of a landfill, not classified as inert, the time period for removal of ponded water is seven days. *Id.* at (b). Neither the TSF nor the development rock dumps at Rock Creek and Big Hurrah are classified as inert waste landfills, though the latter may be used to accommodate the storage of some inert waste.

The Draft Permit does not require that ponds found to exist on the development rock storage facilities or the TSF be removed within seven days. Section 3.6.2 of the Tailings Storage Facility Operations and Maintenance Manual (TSF Manual) states that “[d]uring snowmelt and perhaps in wet summer/fall months, there will be excess water that will pond in the tailings storage facility.” Thus, the Draft Permit must contain specific requirements for pond water removal consistent with 18 AAC 60.225.

C. The Draft Permit Does Not Comply with Regulations Governing Landfills Located on Permafrost.

The Regulations discourage construction of a “landfill on a site underlain by permafrost.” 18 AAC 60.227(a). In fact, “the department will not approve the construction . . . unless the owner or operator can demonstrate that a practical alternative to the chosen site does not exist. *Id.* Moreover, if a landfill is constructed on permafrost, it “must be designed and operated so that the permafrost remains frozen to the greatest extent practical, and water does not pool anywhere on the site.” *Id.* at (b).

According to the Environmental Information Document (EID) for the Rock Creek Project, both the Rock Creek and Big Hurrah sites are located near a boundary between continuous and discontinuous permafrost. Measurements of bore holes and test pits revealed the presence of permafrost at the TSF, with depths ranging between 2 feet to 19 feet below the ground surface. One, if not both, of Rock Creek’s development rock dumps shows the presence of shallow underlying permafrost. At the Big Hurrah site, permafrost at a depth ranging from 3.0 to 6.6 feet was identified in four out of fifteen test pits.

There is no explanation of whether alternative locations for the TSF or the PAG development rock stockpile were available, and if so, why they were not suitable as substitute facilities, as required by 18 AAC 60.227. DEC, prior to issuing a final Waste Management Permit, must perform this analysis. As part of that analysis, AGC is required under the regulations to demonstrate that thawing of the permafrost will be prevented to the “greatest extent practical.” 18 AAC 60.227(b).

D. Neither the Draft Permit nor AGC’s Own Plan of Operations Adequately Demonstrate that Facilities Will Be Safe from Damage Caused by Natural Events.

The Draft Permit does not contain conditions to ensure that the mine facilities will be safe from damage caused by natural hazards. The Regulations mandate that any “new monofill, or lateral expansion of a monofill, that is subject to 18 AAC 60.400 – 18 AAC 60.495 must be designed to protect its integrity from damage caused by natural events that could be reasonably anticipated to occur at the facility.” 18 AAC 60.410(c). Such natural events include “aufeis, floods, earthquakes, thawing of unstable permafrost, and the effects of freezing and thawing.” *Id.* A “monofill” is defined as “a landfill or drilling waste disposal facility that receives primarily one type of solid waste and that is not an inactive reserve pit.” 18 AAC 60.990(80). The TSF and development rock dumps at the Rock Creek and Big Hurrah mines meet the definition of “monofill”

and, because they are regulated under 18 AAC 60.455, are subject to these design requirements.

A seismic event is the most threatening natural hazard for the Rock Creek/Big Hurrah project. Section 6.0 of the Rock Creek Project Seismic Hazard Assessment, entitled *Acceptable Risk Level*, explains that “a post-closure life of 200 years has been assumed” for the TSF and development rock dumps. The recommended return period for this closure life, according to the study, is 2500 years, leading to a probability of 8% for a seismic event. This measure is not adequately conservative. The more protective analysis would be under the Maximum Credible Earthquake. This is equivalent to the 1-in-10,000-year event, which would provide a better estimate of potential damage from an earthquake in perpetuity since these facilities are supposedly designed for treatment in perpetuity.

Further, neither the Draft Permit nor AGC’s own Plan of Operations explains how a 200-year post-closure life was selected for the TSF and development rock dumps. The accuracy of this estimation is important in calculating both the probability that a seismic event could cause significant environmental damage at the facilities and the ability of the facility design and construction to accommodate such a risk. Thus, information regarding the methods used to reach the 200-year figure should be made available for public review.³

The other major natural hazard risk is the potential facility damage caused by thawing permafrost. As mentioned above, test borings and pit sampling at the TSF and development rock dumps indicated the presence of permafrost underneath the facilities. Nevertheless, no information is provided, nor analysis undertaken, by AGC or DEC to address potential problems caused by the thawing of permafrost. This information should be compiled, made publicly available, and corresponding conditions included in the permit.

E. The Draft Permit Omits Important Visual Monitoring Requirements.

As required by 18 AAC 60.800(a) for any facility operating under a Waste Management Permit, “the permittee shall design a visual monitoring program to detect and document,” among other things, “signs of damage or potential damage to any component of the facility from settlement, ponding, leakage, thermal instability, frost action, erosion, thawing of the waste or operations at the facility.” The Draft Permit, at

³ The agencies’ acceptance of such long-term maintenance of a mining site is ludicrous. There are no guarantees that mining companies will be accountable for the life of the project, let alone 200 years. As such, design and clean-up standards must be rigorous enough to protect the environment and taxpayers from the long-term harm from these operations.

Section 1.8.1.1, covers many of these requirements, but leaves out monitoring for damage or potential damage from thermal instability, frost action, or thawing of waste. These additional factors must be included in the permit because Section 1.3.5 of the TSF Manual states that “potentially naturally occurring hazards in the general area include earthquake, flood, and *frost action*” (emphasis added).

The Regulations also require visual monitoring of other materials and conditions at waste management sites, including but not limited to “above-grade portions of groundwater monitoring devices,” visible portions of liners, or any “containment structure, retaining wall, erosion control, or diversion structure.” 18 AAC 60.800(a). Monitoring is also necessary for evidence of “escape of waste or leachate or any unauthorized waste disposal,” as well as “slippage of a flexible liner or damage to its anchor.” *Id.* There is no such requirement in the Draft Permit. In addition, while individual components of the Plan of Operations address some of the visual monitoring regulations (i.e., Section 4.0 of the TSF Manual), explicit conditions with standards must be included in the Draft Permit for the reasons discussed in Section I.

F. The Draft Permit Fails to Ensure Compliance with Surface Water Monitoring Requirements.

Should DEC determine, for any location at the Rock Creek Project, that “surface water pollution is likely to endanger public health or cause a violation of the water quality standards in 18 AAC 70,” DEC will require the permittee to implement a “surface water monitoring system.” 18 AAC 60.810(a). As described in Section II.A.2, there is considerable uncertainty regarding the ability of the Rock Creek Project to comply with state water quality standards. Criteria for arsenic in Rock Creek and Lindblom Creek have yet to be finalized, but are currently being violated and are projected to be violated. Likewise, current plans for the temporary storage of PAG development rock cannot ensure that ARD will not be a problem at the Big Hurrah Mine, leading to downstream water quality violations. The close proximity of Nome’s drinking water supply is also an important water quality concern.

In light of the likelihood of violations of water quality standards, surface water monitoring should be required. When surface water monitoring is required, specific monitoring locations “must be chosen so that the highest concentrations of hazardous constituents migrating off the facility will be detected and so that interference from sources of pollution unrelated to the facility’s solid waste management operations will be minimized.” 18 AAC 60.810(b). The monitoring locations, referred to in the Regulations as “points of compliance” will “normally be located no more than 50 feet outside a waste management area.” *Id.*

18 AAC 60.810 requires that AGC explain with sufficient detail how selected points of compliance will maximize detection of hazardous constituent and minimize the infiltration of outside sources of pollution. AGC's Monitoring Plan proposes six monitoring locations beneath the Rock Creek Mine and mill. None of these locations was chosen because the spot is likely to have the highest concentration of hazardous constituents, and none of the chosen sites appear to be within fifty feet of a waste management area. The same is true for the three surface water monitoring locations at the Big Hurrah Mine.

In addition to the above conditions, the Regulations provide that permittees required to develop a surface water monitoring system must "submit the results of surface water monitoring to the department after each sampling collection." 18 AAC 60.810(f). The Draft Permit, however, contains no requirement to report surface water quality monitoring results, outside of the quarterly and annual reports the permittee must submit to DEC. Likewise, no such procedure for submission of surface water monitoring reports is found in the Monitoring Plan. This reporting requirement as well as the specific conditions of the monitoring requirements must be included in the final Waste Management Permit for the Rock Creek Project.

G. Groundwater Monitoring Requirements are Inadequate for the Big Hurrah Mine Site.

With limited exceptions, all solid waste disposal facilities covered under the Regulations must comply with the groundwater monitoring requirements of 18 AAC 60.820-860. 18 AAC 60.820(a). This compliance must be demonstrated prior to disposal of waste into any newly constructed landfill. *Id.* at (d). For each landfill developed or expanded, DEC must design a schedule of compliance based upon a number of factors, including potential environmental pollution, the design and age of the landfill, "the potential for pollution of any nearby aquifer," and the "types and amounts of waste disposed of in the landfill." *Id.*

Similar to the monitoring of surface water quality, points of compliance where groundwater quality will be measured must be proposed by the facility owner or operator and approved by DEC. 18 AAC 60.825(c). Factors used to determine the location of points of compliance include:

- (A) the hydrogeologic characteristics of the facility and surrounding land;
- (B) the volume and physical and chemical characteristics of the leachate;
- (C) the quantity, quality, and direction of the flow of groundwater;
- (D) the proximity to, and groundwater withdrawal rate of, groundwater uses

Id. After a mine owner or operator has proposed the “number, spacing, and depths of monitoring wells,” such proposal must be “certified by a groundwater scientist or otherwise approved by the department . . . ; the scientist shall certify that to the best of the scientist’s knowledge that the wells are designed and placed where they are most likely to detect contamination from each waste management area.” 18 AAC 60.825(e).

These requirements are not met at the Big Hurrah Mine. There, additional monitoring is necessary to ensure that the temporary storage of PAG development rock does not contribute to a violation of down-gradient groundwater quality standards. Section 5.2 of the Monitoring Plan provides that “[t]he primary potential impacts to ground water at the Big Hurrah mine are the disposal of the potentially acid generating development rock and injection pit dewatering water.” While monitoring wells have been approved for the injection pit water in the Draft Permit, no monitoring is proposed for the PAG development rock dump. Monitoring should be conducted for the PAG development rock dump as well.

Section 5.2.1.1 of the Monitoring Plan describes that groundwater monitoring will take place at the toe of the development rock stockpile at the Big Hurrah mine, but nowhere is it suggested that the well would measure infiltration of acid rock drainage from the segregated PAG rock, which itself is designed to drain toward the pit area. In fact, a discussion of seep monitoring in Section 5.2.1.2 states that “[n]o direct groundwater sampling is planned at this time specifically associated with the development rock stockpile using traditional monitoring wells.” The only plan to directly monitor for adverse impacts to water resources from the development rock stockpile includes quarterly visual monitoring of the hillsides below for the presence of seeps, followed by analysis of a sample of any seeps detected.

The failure to directly establish a point of compliance down-gradient from the proposed temporary storage area for PAG development rock at Big Hurrah violates 18 AAC 60.820-.825. The PAG rock is a waste source with potential to cause environmental pollution, including contamination of an aquifer resource. AGC has not analyzed leachate characteristics, conditions of the surrounding land, and the impacts of the potential pollution to groundwater uses when selecting its points of compliance for the Big Hurrah Mine, as required under 18 AAC 60.825. Thus, scientist certification that well locations and design are sufficient to “detect contamination from each waste management area,” under 18 AAC 60.825(e) cannot be supported or accepted by DEC.

III. Fugitive Dust Issues for the Project Must be Addressed.

During the life of the project, 1,600 tons of ore a day will be transported from Big Hurrah Mine to Rock Creek Mine during the “mining season.” At the Red Dog Mine, fugitive dust from trucks transporting ore is dispersed tens of miles in each direction from the road. The impact of that metal-laden fugitive dust, among others, is that plants take up the metals—plants that are gathered for subsistence purposes. DEC must address this issue either in the Draft Permit or in a separate air quality permit.

IV. The Draft Permit Conditions Are Inconsistent and Do Not Provide Adequate Standards.

The conditions in the Draft Permit contain inconsistencies and inadequate standards by which to gauge AGC’s compliance. These problems must be corrected in the final permit.

Section 1.2.2.2 states that “PAG development rock at Big Hurrah meeting the definition of PAG in section 1.1.4 of this permit” shall not be disposed into surface landfills. Section 1.1.4 contains no definition of PAG. This inconsistency must be corrected.

Section 1.2.6 provides for the storage and sampling of PAG development rock. This section contains no standards for those activities, however. It states, “During operations the permittee shall sample, characterize, segregate and store the PAG development rock in a location and manner approved by ADEC.” The sampling, characterization, segregation, and location and manner of storage of PAG development rock must be specifically described, including the standards for those activities, in the Draft Permit. Without specific explanation and standards, the permit is unenforceable.

Further, section 1.2.6 states, “At closure the PAG development [*sic*] shall be submerged below the water table in the pit at Big Hurrah in accordance with the ADEC approved Closure and Reclamation Plan.” As discussed in Section I, plans are easily changed. To comply with administrative law requirements, the permit must contain all substantive provisions, and modifications must be subject to public notice and comment. Without these safeguards, the permit is not adequately explicit and enforceable. Sections 1.4.1, 1.4.2, 1.4.10, 1.4.11, 1.4.12, 1.4.13, 1.5.1, 1.6.1, 1.6.2, 1.6.7, 1.7.1, 1.7.2, 1.8.1,⁴ 1.8.2, 1.8.3, 1.8.6, 1.8.7, and all their subparts, suffer from similar references to plans and have inadequate standards because they are not explicit and enforceable.

⁴ Section 1.8.1 specifically states that modification to the monitoring plan does not require reissuance or modification of the permit. As discussed in Section I, modifications to the monitoring requirements may cause “detrimental environmental impacts,” if monitoring requirements are

Section 1.2.9 provides, "Activities at the site which will cause a greater amount of waste material to be treated and disposed of, above that contemplated in this section of the permit, are prohibited without the prior approval by the Department." There is no provision for the amount of waste material to be treated and disposed of in this section. This inconsistency must be corrected. In addition, the provision should state that the activities are prohibited "without the prior approval and permit modification by the Department."

Section 1.2.11 contains a catchall provision for the disposal of non-hazardous incidental wastes such as "(xi) such other material as would otherwise be disposed of in a surface landfill without special handling." This section provides no explicit standard for this "other material." Thus, citation to the types of material that do not require special handling at a surface landfill must be included.

Section 1.3.5 states, "The permittee shall develop the site in accordance with the plans submitted by the applicant as required by this permit and approved by the Department, and approved amendments to those plans. Pollution prevention concepts shall be incorporated into operations plans for the project." This provision contains no standards for the "pollution prevention concepts," nor is there any reference to the types of plans this provision is meant to address. In addition, as stated above, plans are easily changed. Reference to the plans that are approved should be included in the permit, and changes should be approved by modification of the permit.

Section 1.4.4 states, "The permittee shall take reasonable measures to control dust and/or particulates that may occur from TSE, roads or other mine components by wetting or other effective measures." This provision provides no standards for dust control; "reasonable measures" and "other effective measures" provide no guidance as to what is required by the permit. Specific requirements must be added to the permit to make it explicit and enforceable.

Section 1.4.7 provides, "The permittee shall place development rock in a manner to ensure adequate blending to prevent acid production at the Rock Creek Mine/Mill Complex." This provision provides no standards for placement of development rock; "adequate blending" and "prevent acid production" provide no guidance as to what is required by the permit. Specific requirements must be added to the permit to make it explicit and enforceable.

inadequate to detect issues with the facilities. Thus, monitoring requirements should be explicitly set forth in the permit, and modifications should be subject to public notice and comment. Section 1.8.8 also should provide that modifications of the monitoring requirements may require modification of the permit.

Section 1.4.8 states, "The permittee shall minimize run-on water from entering the TSF and the surface landfills from upgradient sources of surface and groundwater." This provision provides no standards for "minimizing" run-on water. Specific requirements must be added to the permit to make it explicit and enforceable.

Section 1.4.9 states, "The permittee shall control and treat surface water, groundwater and seepage as necessary to prevent off-site water quality exceedances." This provision provides no standards to prevent off-site water quality exceedances; "control and treat" various waters provides no guidance as to what is required by the permit. Specific requirements must be added to the permit to make it explicit and enforceable. Section 1.5.4 contains the same language and suffers from the same inadequacies.

Section 1.8.1.7 provides, "Geochemical monitoring of development rock produced at Big Hurrah designed to detect and segregate PAG development rock in accordance with section 1.2.6 and 1.7.1.2." Neither of those sections provides for any standards regarding geochemical monitoring of development rock. This inconsistency must be corrected, and explicit and enforceable standards stated in the permit.

Section 1.8.1.10 states, "Wildlife monitoring as required in section 1.4.17." As discussed in Section II.A.1, "attractive area" is not defined and does not provide an explicit and enforceable standard for the permit.

Section 1.10 details the requirements for corrective actions. Any specific requirements for those corrective actions should be included within the permit to make them explicit and enforceable.

Section 1.11 provides requirements for temporary closure. As with section 1.10, any specific requirements for temporary closure should be included within the permit to make them explicit and enforceable.

Section 2.5 states:

The permittee shall take all necessary means to minimize any adverse impacts to the receiving waters or lands resulting from noncompliance with any limitation specified in this permit, including any additional monitoring needed to determine the nature and impact of the noncomplying activity. The permittee shall cleanup and restore all areas adversely impacted by the noncompliance.

This provision contains no standards to guide compliance and is itself nonsensical. This provision must be made explicit and enforceable.

V. Miscellaneous Requirements

Section 1.8.9 states that the permittee only is required to provide copies of monitoring results in addition to those required by the permit to DEC upon request. DEC should receive all monitoring results as they are available so that it can quickly work with AGC to remedy problems at the mines as well as undertake any enforcement that may be necessary.

Section 1.9.1 provides that quarterly reports must be submitted no later than 60 days after the last day of the quarter. Sixty days is an excessive amount of time to meet reporting requirements. If there are issues with exceedances during the first month of the quarter, DEC will not be aware of it until up to five months later. This lag time is unacceptable. Ten days is sufficient time to submit quarterly reports.

Section 1.9.2 references section 1.8.1, which should be 1.9.1.

We appreciate this opportunity to comment on the Draft Permit for the Rock Creek/Big Hurrah project. We look forward to reviewing a Draft Permit that is enforceable, subject to public review for all significant modifications, and meets the requirements of the Regulations. If you have any questions, please do not hesitate to call me at (907) 276-4244, ext. 113.

Sincerely,



Victoria Clark
Interim Legal Director

Attachment

cc: Northern Alaska Environmental Center
Alaska Center for the Environment

July 6, 2006

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**RE: Title 41 Fish Habitat Permit Big Hurrah Creek Mine
Draft Reclamation Plan Approval F20069578
Draft Waste Management Permit, 2003-DB0051**

Dear Mr. Fredericksen
Mr. McLean

My name is Austin Ahmasuk, I have three daughters, I work for Kawerak as their Subsistence Director, I am a duly elected Nome Eskimo Community Tribal Council member, a duly elected member of the State of Alaska, Northern Norton Sound Fish and Game Advisory Committee, a duly elected member of the Bering Strait / Norton Sound Migratory Bird Council, vice-Chair of the US Fish and Wildlife Service, Alaska Migratory Bird Co-Management Council, duly elected member of the Alaska Ice Seal Committee, & duly elected board member of Norton Sound Health Corporation. I am a lifelong subsistence user, dog musher, I was born and raised in Nome have lived here all of my life and intend to live here the rest of my life. I have reviewed the Nome Rock Creek Mine Project, and applicable permit applications and I wish to oppose the Rock Creek mine permits on the grounds of its impacts to the environment. I conduct water quality testing near Nome on a personal basis and have a great interest in doing what I can to protect the valuable resources of the Nome area. **I am providing personal comments regarding the Rock Creek mine DNR and DEC permits per the public comment period extension indicated on the internet at:**
<http://www.dnr.state.ak.us/mlw/mining/largemine/rockcreek/>.

I first wish to convey to DNR and DEC that the additional time for comment on the DNR and DEC permits is welcome but woefully inadequate to address environmental impacts from the Rock Creek project and places a high burden on the public that goes beyond the ACMP open comment period and requires extremely detailed review. I spent nearly the entire open ACMP comment period trying to make comment to ACMP enforceable policies and have had only an additional week to comment on DNR and DEC permits that encompass thousands of pages of Alaskan and Federal Law.

The Rock Creek mine is the first modern hard rock mine in the Nome area and will be different from all other mines in its impact to the environment. Massive mineralized bed rock that may have taken millions of years to reach modern stasis will affect for many years the water quality of Rock Creek, and Big Hurrah Creek.

FISH HABITAT PERMIT

I agree with the AGC assessment that Big Hurrah Creek has been impacted from historic mining activity. AGC's planned improvements to Big Hurrah Creek will do very little to increase fish habitat within Big Hurrah Creek and may decrease fish habitat and decrease stream sinuosity. Big Hurrah Creek has slowly improved since mining began in the early 1900's. Vegetative banks are minimal but are a result of natural re-vegetation. If reclamation were to have been performed historically there would likely be much better habitat than exists now. Much of Big Hurrah Creek is actively eroding and the construction of two fish ponds less than 10 feet deep will not be any improvement over what currently exists. I believe that establishing one channel in Big Hurrah Creek can improve fish habitat, but if the channel is not constructed with an adequate amount of pools, bends, glides, riffles, and debris fields such as large rocks, aquatic life habitat will be decreased when the tailings are removed. Alaska Gold is given the opportunity to improve habitat at Big Hurrah Creek but their planned improvements lack sufficient detail. They have indicated that they will use historic tailings but fail to show how the creek channel will be placed after tailings removal. They have indicated that they will widen the flood plain from 71 feet to 81 feet and the stream width from 32 feet to 37 feet. Widening the flood plain and stream channel creates an unhealthy riparian zone. A healthy riparian habitat would have a diversity of zones from the upland environment to the aquatic environment, with a relatively narrow aquatic environment, and healthy vegetative banks. There is absolutely no detail within the fish habitat permit as to how the two pools will function. Streams maintain pools by scouring the bank and creating scour pools or are maintained as plunge pools, which is the most common type of pool in this area. In Big Hurrah Creek where there is a complete lack of large woody debris, large rocks act as debris and maintain micro refuges where gradients cause stream velocity increases. There is no indication within the permit as to how the two pools will be constructed other than they will be constructed to avoid fish entrapment. It does not seem logical to indicate that entrapment will be avoided since pools would not naturally entrap fish unless they exist as remnant channels with no flow or act as detention ponds. The two pools require some sort of geotechnical engineering in order to maintain themselves, simply digging a hole in the aquatic zone may not maintain the pool or the flow necessary to keep it from freezing solid and glaciating, and providing healthy pool

refuge for fish. The fish habitat permit lacks much of the detail in order to make any comment on its ability to restore or protect fish habitat. The fish habitat permit application should show how stream velocity will be maintained as most fish cruise at approximately 0.4 to 1.0 meter/second, and require resting places such as pools, glides, or debris to rest in or behind. It should show how stream sinuosity will be maintained or increased if it is to enhance habitat for aquatic life.

There are no specific dates indicated on the fish habitat permit as to when construction will take place. Many salmonids have moved into Nome area rivers by mid June and are spawning soon thereafter and continue at least until mid September. Construction during sensitive time periods may smother eggs and kill other aquatic lives that support salmonids.

AGC has concluded that the Rock Creek facility will not require the Title 41 permit and indicated the fish habitat terminates at the intersection of Rock Creek and the Glacier Creek road. There is no evidence to show that fish habitat terminates at the Glacier Creek road intersection. *AS 41.14.870 - Protection of Fish and Game (a) The deputy commissioner shall, in accordance with AS 44.62 (Administrative Procedure Act), specify the various rivers, lakes, and streams or parts of them that are important for the spawning, rearing, or migration of anadromous fish.* AS 41.14.870 makes it very clear that OHMP must make the determination of fish habitat and it is peculiar how AGC has made that determination without submitting a Title 41 permit application. Despite the termination it is still very likely that a permit will be required since the receiving waters are adjacent to the project area and can readily receive polluted waters.

The pit lake which will be formed will be highly polluted. At least four fish species listed in 18 AAC 70.240 inhabit the waters that inhabit the waters of the project or could be affected by the project, i.e. Arctic grayling, Burbot, whitefish, and dolly varden. 18 AAC 70 also contains numerous other criteria for requiring a fish habitat permit and I believe one is required even if the stream reclassification becomes permitted.

RECLAMATION

Page 6 of the Draft reclamation plan indicates that development rock stockpiles will be blended to prevent acid generation. Page 157 of the Rock Creek EID indicates that Big Hurrah has an alkalinity value of 62.7 ug/L and Little Hurrah Creek a value of 229 ug/L in. Those very low alkalinity values indicate that the ability of Big Hurrah material to act as a buffer may be limited if surface water is affected by groundwater influences or bedrock geology. There is no information characterizing the flow regime of Big Hurrah Creek and it must be determined if blending will ensure buffering of acid mine drainage. The plan to address potential acid generation at Big Hurrah may be highly flawed. Big Hurrah material may not contain much neutralizing potential. The general statement within the draft reclamation plan about blending is not specific enough and there will need to be much coordination between a geologist and the heavy equipment operator to ensure that material of both types will be properly blended. Acid generating tests are **NOT** complete for both sites and likely have been done improperly. Samples may have sat for over one year before first flush.

Page 7 of the draft reclamation plan indicates that the NP/AP cutoff ratio shall not be less than 1:1. Under general circumstances the ratio may be adequate. However, the NP of both sites is NOT characterized very well. The presence CaCO_3 was not verified and it appears that only minor occurrences of FeCO_3 were found. FeCO_3 may not be an effective buffering compound. Big Hurrah Creek waters are already contaminated with WAD cyanide. There should be some mention as to how the influence of WAD cyanide may affect water quality when combined with potential tailings run off, rock stockpiles that may be sitting waiting blending, and operational activities.

Page 7 also indicates that ADNR may approve PAG development rock to be stockpiled or to be used as backfill of the satellite pit if approved. There should not be any possibility of PAG rock to be stockpiled in a manner that may allow acid generation.

No mention is made to Arsenic, Antimony or Molybdenum. As, Sb, & Mo were shown to have released elementally from acid tests. As & Sb are toxic materials they are likely to be released at Big Hurrah and the mill site. DNR and Alaska Gold have not planned for the release of As, Sb, & Mo. Those elements will affect chemical water quality and degrade water quality for aquatic, avian and terrestrial life.

I believe the likelihood of encountering an artesian within the project area is highly probable. That likelihood speaks to the affect the Rock Creek project may have on Nome's water source. The Rock Creek project is approximately 2.5 miles to the Nome springs recharge area and there needs to be some mention of Nome water quality. Frequent and responsible monitoring should be timely enough to observe artesian discoveries and how those artesian discoveries will be handled.

WASTE MANAGEMENT

Section 1.2.4 of the draft waste management permit indicates that 90% of recycled water shall not contain more than 10mg/L of WAD cyanide and that no samples shall contain more than 25mg/L of WAD cyanide. In my comment letter dated June 29, 2006 during the ACMP open comment period I indicated that total cyanide effluents should also be of concern. Currently the draft waste management plan does not detail how total cyanide will be controlled. It is highly likely that other cyanide complexes will be formed that pose risk. Cyanide is listed in *18 AAC 70.990 (62) toxic substances*, that legal reference does not segregate WAD cyanide; it merely lists cyanide presumably in all of its forms. From that legal reference it seems paramount to monitor all forms of cyanide, and the permit must require monitoring of all forms and an adequate and publicly reviewed sampling scheme must be detailed. The sampling scheme for WAD cyanide in recycled water is not characterized and appears to favor pollution over treatment and proper disposal. I believe there are efficient industry processes and practices that can maintain lower WAD cyanide levels in the recycled water and they must be detailed and incorporated within the permit; Alaska Gold should not be permitted until appropriate monitoring is detailed. *18 AAC 75.341 clean up level table C*, lists maximum concentrations of various hazardous substances, cyanide is listed at 0.2 mg/L if the potential use is for drinking water. If the potential use is not for drinking water then the

concentration level is to be ten times the drinking standard. That concentration level would then be 2.0 mg/L if DEC would deem future uses to be non-drinkable. Rock Creek and the Snake River watershed are occasionally used by various persons for drinking water. It is likely that most drinking uses will be for limited subsistence type uses but it is commonly held that various streams in the Nome area are clean and good for drinking purposes. DEC may permit up to 5 times the allowable standard in 90% of the samples but has NOT described a sampling scheme and drafted a very generous threshold for all samples i.e. 25 mg/L. 18 AAC 75.341 describes various scoring mechanisms for soil clean up, soil will also receive cyanide and other pollutants and there are no measures to monitor or control the receiptment of cyanide and other pollutants to the soil. 18 AAC 75.341 (d) 10 lists cyanide or physiologically available cyanide. That separate listing or description appears to be inclusive of all forms of cyanide as a hazardous substance and not exclusive to WAD cyanide.

Free cyanide the most deadly form is only mentioned in section 1.2.2.12 and presumably will be allowed to be disposed of in unspecified concentrations.

Section 1.2.10 does not describe “statistically significant” when it describes exceedances of State water quality standards at the monitoring wells or the toe of the TSF. It also mentions a “standard” but does not describe the standard. Without describing how the statistically significant increase will be characterized it could favor pollution events.

CONCLUSION

I believe the permits lack sufficient detail and Alaska Gold should **NOT** be permitted to conduct operations. There are numerous deficiencies in the planning and control of pollutants; metals, metalloids, and transition metals. There are deficiencies in how fish habitat will be maintained or enhanced, and there are deficiencies in how reclamation will take place. I believe that the agencies have not incorporated the best available information to manage the environmental impacts from the proposed Rock Creek and Big Hurrah mine.

I have tried very diligently to provide these comments and must again note the tremendous burden this has caused as my comments have meant many hours researching the issues of hard rock mining, waste disposal and water quality, as a result of this very short comment period I may have not addressed all of issues related to the DNR and DEC permits as there are thousands of pages of Alaskan and Federal law governing water quality that I have left not reviewed. The comment period should have been much longer and the plans should have had much more detail and should have referenced its assumptions.

Thank you for your time and consideration.

Sincerely,

Austin Ahmasuk