STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF PROJECT MANAGEMENT AND PERMITTING

SEAN PARNELL, GOVERNOR

3700 AIRPORT WAY
FAIRBANKS, AK 99709-4699
PHONE: (907) 374-3708
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EMAIL: jack.dimarchi@alaska.gov

November 28, 2009

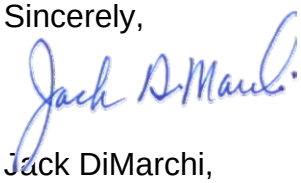
To: All Interested Parties

Subject: Consolidated Public Comments and State Responses to those Comments for the draft Waste Management Permit (No. 0132-BA002) and Reclamation Plan Approval (F20099958) for the Red Dog Mine.

This document was prepared as part of the State's action to issue the final Waste Management Permit (No. 0132-BA002) and Reclamation Plan Approval (F20099958) for the Red Dog Mine.

This document contains the public comments on the draft authorizations received by the State during the 70-day public comment period between June 3 and August 13, 2009 in Part A. Part B contains the state's formal responses to these comments. The State considered all public comments in the preparation of the final authorizations and made modifications to the authorizations, to reflect these comments, where appropriate.

Sincerely,



Jack DiMarchi,
Large Mine Coordinator

PART A

Part A contains the Public Comments received by the State during the Public Comment Period (June 3 – August 13th, 2009) for the draft Waste Management Permit (No. 0132-BA002) and Reclamation Plan Approval (F20099958) for the Red Dog Mine.

Each comment has been assigned a unique number (in red) in the left margin. The formal State response to each comment can be found under the corresponding comment number in part B.

State of Alaska
Large Mine Permitting Team

Draft State Decisions and the Red Dog Mine Closure and Reclamation Plan

Comment Form

What do you think? Please share your comments, concerns or ideas.
Feel free to use additional sheets if you need more space.

Name:	Walter Downey
Organization:	IRA Council
Address:	P.O Box 61
City, State Zip:	Noatak AK 99761
Email:	Walter.Downey@Yahoo.com

1.1 80 yrs ago my grandparents travelled over what is now Red.dog. What assurance do I have that 60 yrs from now, my grand children can do the same thing?

RECEIVED
JUL 07 2009

Comments must be received by 5pm August 10, 2009

You may also email comments to DNR / Jack DiMarchi, Mining Coordinator at: *jack.dimarchi@alaska.gov*

rec'd @ Noatak meeting July 7 '09

State of Alaska
Large Mine Permitting Team

Draft State Decisions and the Red Dog Mine Closure and Reclamation Plan

Comment Form

What do you think? **Please share your comments, concerns or ideas.**
Feel free to use additional sheets if you need more space.

Name:	N. Carol Wesley
Organization:	Noatak Resident / Noatak IRA Employee
Address:	PO Box
City, State Zip:	Noatak, AK 99761
Email:	tribe admin-asst@nautaaq.org

To have Noatak and Kivalina fully involved with the actual reclamation process:

2.1 1. reports on activities of closure

2.2 2. form land committees from the two communities as part of oversight of closure activities

2.3 3. LOCAL hire of personnel @ site during closure activities (local - Noatak AND Kivalina given employment priority) AND in writing.

Note: Noatak and Kivalina were ~~so~~ promised jobs @ the mine but it does not happen. ~~all the time~~ NO DOCUMENTATION on those promises made prior to opening of the mine.

Comments must be received by 5pm August 10, 2009

You may also email comments to DNR / Jack DiMarchi, Mining Coordinator at: *jack.dimarchi@alaska.gov*

RC rdc Noatak meeting July 7, 09
JJD

State of Alaska
Large Mine Permitting Team

Comment Form

Draft State Decisions and the Red Dog Mine Closure and Reclamation Plan

What do you think? **Please share your comments, concerns or ideas.**
Feel free to use additional sheets if you need more space.

Name:	Stella
Organization:	
Address:	Box 95
City, State Zip:	Noatak, AK 99761
Email:	

3.1 If the Mine is to reopen for an additional 20+ years, would like to have more ~~human~~ tests in regards to Cancer.

3.2 Jobs: Guarantee Noatak/Kivalina job(s) promised at more percentage. Supervisors should be trained by now ~~20+ years past from the region was promised~~, 20 years later, we rarely see region supervisor at the mine

Comments must be received by 5pm August 10, 2009

You may also email comments to DNR / Jack DiMarchi, Mining Coordinator at: *jack.dimarchi@alaska.gov*

Teck Alaska Incorporated Comments on Draft Waste Management Permit No. 0132-BA002, Red Dog Mine

1.8 MODIFIED LIMTS

Section 1.8.3

4.1 Values between the MDL and ML do not provide a margin of safety. By definition the values are non-quantifiable and cannot show trends. This section implies that results less than the ML are reliable and able to show a trend through time. If the results were reliable the ML would be lower. Corrective actions should not be initiated on non-quantifiable results.

Teck Alaska recommends that section 1.8.3 be removed or at a minimum modified so that only quantifiable results above the ML can be used to determine trends and triggers for corrective actions.

1.13 PROOF OF FINANCIAL RESPONSIBILTY

Section 1.13.6

4.2 "The language in Section 1.13.6 stating the permit will expire if the department does not approve an Offer of Proof within the designated timeframe is unnecessarily rigid. This requirement is not in the department's or DNR's regulations or the underlying statutes. It creates the potential that the permit could expire even if the department and Teck are engaged in good faith negotiations addressing unforeseen issues. We understand the department's concern and rationale for the approach, however, and suggest the following language which we believe protects the department while also ensuring that the permit, and the work to put the permit into effect, would not be lost because of the passage of time. New language in caps.

> ***"If the permittee is unable to provide proof of financial responsibility, which is acceptable to the department and is approved by the department in writing within the time period stated above, this permit will this permit will*** BE STAYED AND NOT IN EFFECT UNLESS IT IS REINSTATED BY THE DEPARTMENT, ***notwithstanding any other approvals to the contrary, unless the departments failure act ..."***

1.15 POLLUTION PREVENTION STRATEGY

4.3 No DEC regulatory justification for this section. How would an auditor of this permit determine compliance with this section since the permittee is only 'encouraged' to develop the plan? The section is unenforceable and does not belong in a permit.

Perhaps DEC is attempting to incorporate portions of 18 AAC 83. Alaska Pollutant Discharge Elimination System Program into this permit but knowing they have no authority under this permit for waste disposal, they have used the encouraged language?

4.3 cont Teck Alaska requests that the requirements of Section 1.15 be deleted from the permit.

Teck Alaska Incorporated (Teck)
Comments on Draft Reclamation Plan Approval F20099958

GENERAL STIPULATIONS

Terms of This Plan Approval

5.1 For future reference, the author and dates should be included for the reports cited.

Reporting

5.2 Under the first paragraph of the section on page 4, electronic and hardcopies of quarterly reports are requested and under the third paragraph of the section only electronic copies are requested. Please clarify what the intended submittal of quarterly reports should be.

5.3 Please revise the third paragraph of the section on page 5, to provide flexibility on the submittal of electronic documents. Due to the remote nature of the facility file size restrictions are in place and email submittals of the reports may not be possible.

Please provide addresses for the submittal of hard copy documents.

As-Built Maps

5.4 *Maps shall be 1"=200' (1:2400) or other appropriate scale necessary to review the development of individual facilities.*

This requirement is too prescriptive. To cover the entire permit area at 1"=200' would require 37 E-size map sheets.

Teck suggests the map scale requirement be limited to disturbed areas only.

Temporary Closure

5.5 In the first paragraph of this section on page 5, there is a reference to the "*Red Dog Mine Suspension Study*". Teck recommends it would be more accurate to state *"Basis of Estimate – Suspension Costs (Suspension Study)"*

5.6 The last bullet on page 6 references NPDES permit AK-003865 and in the last paragraph of this topic on page 6 there is reference to water treatment and discharge to Red Dog Creek shall be continued. If Teck obtains a new NPDES permit to discharge to the ocean these references may no longer be relevant. Therefore, Teck suggests the following stipulation language revision:

Procedures for maintaining containment of all water at the facility and providing continuing treatment of that water in accordance with NPDES Permit AK-003865-2 or subsequent discharge permit.

5.7 Teck is concerned that the last paragraph of the section is too vague in its reference to: *"water quality in Red Dog Creek is maintained at a level that protects downstream aquatic biota"*. The protection of aquatic biota is regulated under the federal NPDES permit program and contains specific limits and requirements, which can change from one permit to the next. Therefore, rather than the current nonspecific language in the Approval Teck suggests the following for the last sentence of the section.

> Water treatment and discharge from the facility shall be continued in any Temporary Closure to ensure that water levels are maintained at a safe elevation in the tailings facility and water quality is maintained in accordance with any applicable state or federal water discharge permits.

Environmental Audit

Environmental audits are required by both this Plan Approval and the Draft Waste Management Permit. It is understood that there will only be one audit. However, this section differs slightly from 1.14.1 in Draft Waste Management Permit.

5.8 Teck suggests either the language be identical in this plan and the ADEC permit or the ADEC audit be referenced in this document. At a minimum, a clarifying phrase such as:

> The audit required by this Plan Approval and that required by ADEC Waste Management Permit Number No. 0132-BA002 refer to the same audit, conducted to fulfill the requirements of both permits.

The language of last sentence of the second paragraph of this stipulation, on page 8, should be expanded to read:

> *"..., the agencies retain the final contractor selection and scope of audit decisions* within the context of their statutory authority".

PROJECT -SPECIFIC STIPULATIONS

5.9 The appearance of these special stipulations after years of study, discussions, and consensus building on the closure plan is disturbing to Teck. Some of the stipulations appear to have been hastily prepared with little consideration for other impacts.

Section 2.1.2 Pits - A geotechnical investigation report shall be provided to ADNR that demonstrates the static and dynamic stability and performance of the Aqqaluk Pit Wall located between the Aqqaluk and Main Pits where slope failure could result in disruption of the Red Dog Creek Diversion. This evaluation should consider both the long-term stability and stability during the time frame when the Main Pit is backfilled and saturated and the Aqqaluk Pit is dry. This report should be provided to ADNR no later than September 2011.

5.10

There will be no pit wall between the two pits until late 2014 as initial mining at Aqqaluk will occur on a hillside.

Teck requests that the geotechnical investigation report be provided to ADNR no later than September 2013 rather than September 2011.

Section 2.1.3 Waste Rock and Ore Stockpiles – Further waste characterization of the Qanaiyaq deposit is required.

Waste characterization using 28 Qanaiyaq samples was completed as part of Phase I and II of the Consolidation of Studies on Geochemical Characterization of Waste Rock and Tailings dated September, 2003. In addition, 192 samples from Qanaiyaq where characterized for inclusion in the Qanaiyaq ARD model. Nearly all the samples from Qanaiyaq indicated net acid generation potential. Teck believes that because Qanaiyaq is a faulted offset of Red Dog Main ore body there will be no new rock types encountered that have not been previously encountered and characterized. The need for additional waste characterization of the Qanaiyaq deposit is unnecessary.

5.11

Teck requests that the requirement of Section 2.1.3 be deleted from the Approval.

Section 3.1.2 Pits – Submit to ADNR final facility closure plans for review and approval prior to initiation of reclamation of the waste rock that would be exposed by the blasting back of the eastern limit of the Aqqaluk Pit to a 4:1 slope. The waste rock in the pit rim that would be exposed by the blasting shall be characterized to determine its ARD potential, the estimated increased contribution to the annual load balance, and the anticipated reduction to the increased load that would result from the placement of a cover over this area. The final facility closure plans shall specify final slopes, cover design (if applicable), growth medium replacement depths, erosion control measures, and surface flow diversion ditches.

5.12

This special condition would be best handled under Permanent Closure in the final Closure and Reclamation Plan which will be submitted at closure. Furthermore 11 AAC 97.200(c) exempts pit walls from revegetation or recontouring under 11 AAC 97.200(a) and (b).

Teck requests that the requirement of Section 3.1.2 be deleted from the Approval.

Section 3.1.3 Waste and Ore Stockpiles -…Future test covers should evaluate the difference in infiltration rates and runoff quality between covers constructed from Kivalina Shale vs. Okpikruak Shale vs. material removed from the overburden stockpile.

5.13 Teck has previously conducted permeability and chemical tests on the available covers in the vicinity of Red Dog. (SD F1: Mine Area Closure Options – Summary of the Cover Studies) All three cover materials have been found to be acceptable cover materials. The total quantity of acceptable cover material in the Red Dog area is limited and all types of the identified cover materials (Kivalina Shale, Okpikruak and overburden stockpile material) may be needed for reclamation. There is no basis or need to conduct further tests of covers constructed from the three cover materials.

Teck requests the specific language (last sentence in paragraph) contained in the requirement of Section 3.1.3 be removed.

Section 3.1.3 Waste and Ore Stockpiles – Unless changes are approved by ADNR, the fertilizer application rate shall be 500 lbs per acre of 20N-20P-10K and the seed application rate and species shall be as listed in Table 3.1 (Revegetation Species for Stockpile Covers). Erosion features which form in areas that have been regraded and covered with topsoil must be stabilized if they affect the long-term stability of the reclaimed area or may result in additional erosion and sedimentation. Actions to stabilize erosion features shall be conducted in a manner that minimizes disturbance to adjacent areas. Subsequent inspections shall be completed to verify that rills and gullies do not persist. If chronic or long-term erosion features are identified, then Teck Alaska Incorporated shall remediate site drainage contributing to the formation of the rills and gullies. A vegetative cover criteria of 40% shall be achieved a minimum of three years after the last application of cover material, seed or fertilizer before financial assurance will be released for reclaimed areas. The 40% cover criteria may be waived upon approval of ADNR for specific areas that are deemed stable, have minimal potential to adversely impact surface water quality, and are consistent with the post-mining land use.

5.14 The underlying statute requires a miner to reclaim the land to a "stable condition." [AS 27.19.020]. This means: "the rehabilitation, where feasible, of the physical environment of the site to a condition that allows for the reestablishment of renewal resources on the site within a reasonable period of time by natural processes." [AS 27.19.100(7)]. ADNR, through regulation, expanded on these statutory requirements in its performance standards in 11 AAC 97.200(a)(1). Specifically, stable condition means a condition that can reasonably be expected to (i) return waterborne soil erosion to pre-mining levels within 1 year after the reclamation is completed, and (ii) achieve revegetation, where feasible, within five years after the reclamation is completed, without the need for fertilization or reseeding. However, if reclamation to this standard is not feasible, the regulations contemplate (but do not require) that the miner fertilize and reseed or replant

the site with native vegetation. Lastly, achieving the above standards is not required if doing so would be inconsistent with the post-mining land use intended by the landowner on private land.

In light of these requirements, the first sentence of this section is too prescriptive and goes against the recommendations of our consultant botanist, who recommended 400-450 lbs pounds of fertilizer per acre. Furthermore, fertilizer requirements may differ depending on soil analysis. The requirement, as written, does not permit the addition of native plant seeds or transplants without authorization, which runs contrary to the regulation encouraging revegetation with native species. NANA, the land owner, supports these comments and under the regulations its view on the type of plants it wants on its land is controlling.

5.14 cont

The requirements to prevent rills and gullies are not specified in 11 AAC 97.200, only that the site be left in a stable condition. This requirement imposes an obligation outside the scope of the regulations and should be written to reflect the regulation.

The requirement for 40% cover in three years is not supported by any studies in the Red Dog area or by regulation. Furthermore, the regulations discussed above specifically address the timeframe for performance, which is that achievement of the reclamation standards must be reasonably expected to occur after 1 year and 5 years of the completion of reclamation. Nowhere is a three year period mentioned. The time at which reclamation is completed is assumed to be the time at which a bond release will be applied for. Imposing performance standards above and beyond the 1 and 5 year performance standards is inconsistent with the underlying regulation [11 AAC 97.200(a)(1)] and inappropriate in a situation, such as this, where the landowner has not endorsed this land use regime. NANA's intended post-mining land use is laid out in the proposed closure plan.

Teck recommends the following language for Section 3.1.3:

> Teck Alaska shall stabilize the reclaimed site so that disturbed areas can reasonably be expected to return waterborne soil erosion to pre-mining levels within one year after the reclamation is completed, and that can reasonably be expected to achieve revegetation, where feasible, within five years after the reclamation is completed, without the need for fertilization or reseeding. If rehabilitation of a mined site to this standard is not feasible because the surface materials on the mined site have low natural fertility or the site lacks a natural seed source, the department recommends that the miner fertilize and reseed or replant the site with native vegetation to protect against soil erosion.

5.15 ***3.2.4 Main Dam – Prior to the next five-year renewal of the Red Dog Mine Closure and Reclamation Plan, Teck Alaska Incorporated shall increase the width of the tailings beach from the current 300-feet to 600-feet (or as otherwise required by ADNR Dam***

Safety Authorizations) or provide financial assurance for the construction of this beach in the event of premature mine closure.

Construction of extensive beaches prior to final closure would be inconsistent with section 1.4.4 of the draft Waste Management Permit No. 0132-BA002 because it would not be a reasonable method of controlling dust from the tailings disposal area.

5.15 cont

Teck recommends the following language for Section 3.2.4:

> With the next five year renewal application for the Red Dog Mine Closure and Reclamation Plan, Teck Alaska Incorporated shall provide a plan, cost estimate and associated financial assurance for the construction of a 600-feet wide tailings beach in the event of premature mine closure.

Stipulations 4.2.2 and 5.1.4

5.16 In Stipulations 4.2.2 and 5.1.4 Teck recommends the opening sentence be revised as follows:

> ~~Prior to the next five-year renewal of the~~ With the next five year renewal application for the Red Dog Mine Closure and Reclamation Plan…

SD B1 – Red Dog Mine Development Plan:

5.17 This requirement is duplicative of the requirement to provide an updated Red Dog Mine Development Plan listed under the "Application For Renewal" section on page 12 and 13 of the Approval.

Teck requests that the clause (on page 9) be deleted.

SD B2 – Plan of Operations for Waste Rock Management Plan:

5.18 ***Prior to mining waste rock in the Aqqaluk Pit, Teck Alaska Incorporated shall develop and submit to ADNR for review and approval a Waste Rock Management QA/QC Plan that will demonstrate compliance with Waste Rock Management Plan and Segregation Criteria specified in Table 1. Monitoring results associated with the QA/QC Plan shall be reported in quarterly and annual reports.***

Waste Management is regulated by ADEC under 18 AAC 60 and the pending waste management permit, not by ADNR. Waste Rock Management and monitoring has been defined in the *Plan of Operations for Waste Rock Management* and in the *Waste Management, Reclamation and Closure Monitoring Plan*, (Section 2.4). Section 2.4.4 of

the monitoring plan describes visual quality assurance and quality control monitoring to ensure proper segregation and placement of waste rock. Additionally, chemical analysis of blast holes used in characterization of both ore and waste rock are analyzed following a specific QA/QC plan as provided in the Waste Management, Reclamation and Closure Monitoring Plan. Lastly, monitoring results of quantities, chemistry and placement of waste rock are required to be reported quarterly to the department.

5.18 cont

Teck does not believe an additional Waste Rock Management QA/QC plan is necessary and that the regulation and management of this activity is already addressed by other state permits and required plans. Therefore, the creation of an additional plan and the added burden to also seek approval of the plan from ADNR prior to mining is neither warranted nor required and Teck requests the entire condition be deleted from the Approval.

Standard Stipulations

Reclamation Stipulations

5.19 Although listed as Standard Stipulations not all of these stipulations appear in many of the Closure and Reclamation Plan Approvals for other operating mines in Alaska.

b. The area to be reclaimed shall be recontoured or reshaped to blend with surrounding topography using approved development rock or overburden and then be stabilized to a condition that shall retain sufficient moisture to allow for natural revegetation.

5.20 Teck assumes that "approved development rock" pertains to the cover materials recommended in its Closure and Reclamation Plan. Because Red Dog is on private land the property need only be restored to the post-mining land use intended by the landowner on private land [11 AAC 97.200(b)]. The landowner's post-mining uses have been laid out in the proposed closure plan.

Teck requests that stipulation b. be removed.

c. Stockpiled topsoil, overburden fines and brush or other organic material shall be spread over the recontoured areas to promote natural plant growth.

5.21 As with special condition Section 3.1.3, this section is too prescriptive. This activity was not in the recommendations of Teck's consulting botanist, nor is the stipulation a requirement of 11 AAC 97. The potential cost to implement this stipulation differently than that considered in the proposed plan has not been incorporated into the closure cost estimate. (Since it was not part of the plan).

Teck requests that stipulation c. be removed.

Stipulations d. through h

5.22

Reclamation Stipulations (d) through (h) appear to have been copied from State of Alaska Exploration Permit forms and are not applicable to open pit mine permitting. The practice of drill hole plugging is done to protect ground water from contamination by surface water. The Red Dog mine is in permafrost; there is no groundwater to impact. All drill holes, regardless of type, within the pit areas will be excavated during mining making this requirement irrelevant and unnecessary.

Teck requests stipulations d. through h. be removed.

Application for Renewal

5.23

Only the following documents should be referenced as being required for update prior to permit renewal. These documents will necessarily incorporate updates of some of the technical information on the property, but it is not appropriate to require the previous documents to be repeated/updated.

SD A2 – Legal Description of Property
SD B1 – Red Dog Mine Development Plan (TCAK, 2004);
SD I – Red Dog Mine, Waste Management, Reclamation and Closure Monitoring Plan (TAK, 2009);
SD J1 – Basis of Estimate – Closure Costs;
SD J2 – Basis of Estimate – Post-Closure Costs;
SD J3 – Basis of Estimate – Suspension Costs;
EXCEL Closure Cost Estimate;
EXCEL Post-Closure Cost Estimate; and,
EXCEL Suspension Cost Estimate

NORTHWEST ARCTIC BOROUGH
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August 3, 2009

Jack DiMarchi, Project Manager
State of Alaska Large Mine Permitting Team
ADNR Office of Project Management & Permitting
3700 Airport Way
Fairbanks, AK 99709

Public Comments – Red Dog Permitting

Dear Mr. DiMarchi:

On behalf of the Northwest Arctic Borough, included are comments regarding the (1) Alaska Department of Natural Resources, Division of Mining, Land and Water draft Reclamation Plan Approval (**F20099958**); and (2) Alaska Department of Environmental Conservation draft Waste Management Permit No. **0132-BA002** for management of mine water, tailings and other solid wastes at the Red Dog Mine site.

Draft Reclamation Plan Approval (F20099958)

Considering the draft reclamation plan, the borough requests Teck to consider the possibility of drought in the long-term water management of the site. It is difficult to predict the effects of global climate change in the Arctic during the next 20 years, but
6.1 drought is a very real possibility. The reclamation plan should have a contingency strategy if additional water is necessary to maintain the water cover. Maintenance of an adequate water cover over the tailings pond is critical to prevent oxidation of metals and other contaminates.

The borough would also like to suggest the Bio-monitoring Program frequency should be fixed on at least a monthly, and preferably, a semi-monthly schedule during the discharge months from May-October. In addition, the bio-monitoring frequencies listed
6.2 in Tables 2-1 and 2-2 should be universally updated to higher frequencies of testing. One of nearby residents' primary concerns has been effects on aquatic life and increased sampling rates throughout the mine's life and closure should help alleviate some of these concerns.

In addition, Table 2-3 and 2-4 Thermistor and Piezometer Monitoring sampling frequencies for the Dam Area and Tailings Impoundment should be increased for summer
6.3 months from May-October, rather than quarterly, to more accurately monitor potential permafrost loss that could affect the seepage and dam stability.

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Draft Waste Management Permit No. 0132-BA002

Draft waste management permit section 1.13 – proof of financial responsibility: the borough would like to participate in determining and monitoring the bonding and other financial guarantees DNR plans to implement because of the large scope of closure and post-closure responsibilities and financial liability assumed by the project within the borough's jurisdiction and municipal boundaries.

A.S. 27.19.060 provides that the state may enter into Cooperative Management Agreements to implement a reclamation bond. 11 A.A.C. 97.700(a) clarifies that the commissioner may enter into a cooperative management agreement with a municipality under Art. X, § 13 of the Alaska Constitution, which provides that "any local government" can enter into such agreements.

6.4 The borough's interest in being involved in the mine closure reclamation bond stems primarily from two uncertainties – (1) the uncertain nature of any bond partially guaranteed by a multi-national corporation's financial stability; and (2) the many unknown cost-variables in operation, closure, and post-closure monitoring and water treatment for the mine.

Any financial assurance tied to Teck's solvency must be balanced with an actual cash bond because of the uncertain global economy as has been demonstrated by the recent national and global economic turmoil. Further uncertainty is introduced into Teck's financial status because its solvency is directly tied to volatile commodity prices.

With regard to closure and post-closure monitoring and treatment costs, the Reclamation Plan and supporting documents demonstrate the highly variable nature of many components. For example, the *Assessment of Water Treatment Methods Applicable for Closure*, notes that "the future cost for effluent treatment is very sensitive to changes in the assumed wastewater flow and acidity" (p i). It goes on to note that "acidity concentrations in the tailings pond are predicted to rise significantly after closure" and that "a doubling of the acidity loading would increase the NPV treatment cost by approximately $45 million." In consideration of the doubts about low and high precipitation volumes affecting water quality and treatment noted above, the borough recommends erring on the side of sufficient financial assurance to reasonably ensure the long-term stability of the Red Dog Mine site and the health of the surrounding environment.

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The borough seeks to become actively involved in the determination and continued assessment of the financial assurance, preferably through a cooperative agreement with DNR and Teck.

Sincerely,

Ukallaysaaq Tom Okleasik,
Planning Director

CC: Mayor Siikauraq Whiting
Grant Hildreth, Deputy Director Planning
John Chase, Community Planner and Coastal Area Specialist

KIVALINA FORMAL ORAL PUBLIC COMMENTS, JULY 6 2009

BERT ADAMS:

I'd like to make comments here. For the record, I'm Bert Adams. I'm a lifelong resident of Kivalina. Presently, I'm the mayor of Kivalina. Right now I'm just speaking on my behalf personally. I Believe this is the second time I've made some comments on record. My views and thoughts are still the same. I am in favor of -- Aqqaluk should be -- there should be no more regulations, permitting, the
7.1 Aqqaluk deposit. It should be done as soon as possible. As far as subsistence goes, we do have a subsistence committee that monitors our subsistence here in this area, both from Kivalina and Noatak, and I think they are doing a good job. There are always an awful lot of other concerns of people, people who are concerned who -- and we respect their concerns, you know, like every time the Wulik changes color. There's – people jump to conclusions all the time. I'm glad there are some good people in NANA and our local people here and Teck that get together and work things out. But right now I was hoping that the permit would be issued real fast. Thank you.

BECKY NORTON:

I also wrote a little that I would like to share as my public testimony. I'm Becky Norton. I'm a resident of
7.2 Kivalina and also a member of the Kivalina IRA Council, but I speak for me and my family, but, you know, also includes the people of Kivalina. But for the health and safety of our people and our subsistence way of life, our concerns should be heard and taken seriously, taken into consideration very seriously, for the benefit of our future generations to come.

LEROY ADAMS:

7.3 My comment is concerning the approving authority of the reclamation process. Has the approving authority taken into consideration the past violations Red Dog has committed in the past while they were reviewing the reclamation plan? That's my comment.

COLLEEN SWAN:

7.4 (Comment made at Kivalina IRA Council Meeting, July 6, 2009)
What is being done about the “crack” in the Red Dog Tailings Dam?

NOATAK FORMAL ORAL PUBLIC COMMENTS, JULY 7 2009

RACHEL SHERMAN:

8.1 I'd like to thank you for coming here and keeping us updated on all these things. Thank you all, Teck Cominco. Thank you for bringing your people, for your food, and your smiles. Thank you.

VICTOR ONALIK, SR.:

8.2 Next time when you're meeting, why don't you take a couple of people from Kivalina when you start talking about that water over there? They're the ones that complain about the water.

CAROL WESLEY:

For a public comment, I wrote down three things, but I'll hand them to the court reporter, too. To have Noatak and Kivalina fully involved with the actual reclamation process; one, reports on all activities of the closure; two, form land committees from the two communities as part of oversight of closure
8.3 activities; and three, local hire of personnel at the site during closure activities. And local meaning Noatak and Kivalina given employment priority and in writing. Today we try to get documentation on those promises made before the mine opened and there's no documentation showing that Noatak and Kivalina was given priority, and it's not happening today.

(These comments were submitted in writing separately)

(Off the record.)

MIKE ADAMS:

I have a concern about the timing of this meeting that we being a seasonal people, a lot of our people are in camps and that the timing is not the best for having a meeting with our public people. We have a lot of people in camps, you know, since we're a gathering subsistence community,
8.4 our people. For future meetings, we want to make sure that -- if we're going to have joint meetings with different committees, that we have more -- a better timing for this so that our people can be more aware. Because a closure of this size is definitely going to affect a lot of our subsistence activities that we do in the future. So I'd sure hate to see that it's closed off and we have to deal with the aftereffects of this.

CALVIN MOTO:

I've always liked working in mine companies, you know. I worked for a mining company in Nome in the
9.1 '50s and I worked for a mining company in Deering. In fact, I cooked for a couple of mining companies. I got along real well with most of them.

One of the reasons why Deering -- it's one of the only villages in the region that don't speak Inupiaq because of the influence we have. We talk English all the time because of the mining, stuff like that. And most of our Elders, like our -- I've got to think about it because I'm the third oldest man in Deering. I'm the third oldest person. I'm young, 71. But on the Dog Mine, we -- a lot of our people thought -- well, there was some people who were opposed to it, you know, are still some. We have a couple of people at Deering that -- but I asked them one time. I said, "You don't like the Red Dog Mine being opened?" I said, "Next time you get a check from Cominco send it back." And they get red in the face and shut up, you know. But I'm not afraid to speak what's on my mind. I've been involved in regional city politics for 50 years.

Yeah. I look at all the facts and everything. See, I was on a lot of different boards. I was on a NANA board for nine years. I was on a school board for three years. I was chairman of the Arctic Regional Fish and Game Advisory when they first started for five years. And a lot of different things that we -- you know, mining and fishing, you know, they always kind of mixed together. But as far as I could see, I know Red Dog, the Cominco people, are very cautious of our environment up there. What I heard, they talk about bad water. I think that was from a previous year when they had different runoffs, you know. But now that they've been able to do a lot of work, I kind of see good things coming out of that. Maybe -- I don't know how many years they're going to be open yet.

What I see, I worked -- I was a chef and I cooked up in Prudhoe Bay all the way up to Miller's Bay Point. I enjoyed it. But I've been a chef since I was -- cooked since I was 14. 57 years, you know. I used to be a gourmet chef in a Lebanese restaurant in Akron, Ohio where I met my wife.

Anyhow, when we think about mining, a lot of people think about the differences. Like, you know, the only thing I didn't like about the fact that there was a mine in Deering was that at that time they weren't very well regulated. So consequently we are in a process of clearing up the mercury that they spilled there. And when they left their dredges, they didn't drain them. Now the oil is seeping out of the tanks, idle since 1955 or '56.

I've always said I wanted to go dig into those buckets. I bet there's gold in them. But 1955, I think it was, or '54, when the gold price went down to 35 cents an ounce, that's when a lot of our mining companies closed, Candle, Deering. Candle was all mining. They had -- they had Jim Creek, Candle Creek, and Mud Creek were three different sites in Candle. They had hired out each one about a total of 200 to 300 men in that village.

And the mining company owned the whole town. You couldn't get into a house unless you were working for them. So that's what we did. A lot of our people worked, you know. And it created some jobs for us young guys here at the time because at that time they didn't have running water. So what we used to do is we used to get five-gallon buckets and yoke, haul water to houses that

need it. 25 cents a trip at that time. That was pretty good money. 10 cents a trip. Because you figure at that time you can get a Baby Ruth Bar for 5 cents and they were a lot bigger than the ones they have now.

In fact, when the mining started, we had a lot of barges, you know. All the men from 17 up were working at the mine. So consequently they had a barge company. They had to hire us kids. Jack Wulik and Rodman had that.

I told Wulik I'd like to work for him. He said, "If you take this box to the store, you're hired." They were making 50 cents an hour, you know. My check paid 50 bucks. I thought I was rich. In 1950 that's a lot of money you know. Because you figure I went to the store and I spent $4.95 for my clothes. I got a shirt, a pair of jeans, belt, shoes, socks, $4.95 at that time. A pair of jeans was only 75 cents, T-shirts were only 50 cents.

That's one of the things about the mine. They also introduced us to a lot of different things that we never had before you know. And I think in the long run we kind of benefited from that because we learned a lot. And it made most of us my age think about, hey, there's got to be something better than what we're doing now.

So I went to high school and I graduated. They said, "Where do you want to go now?" I said, "Well, as far away from Alaska as possible." You couldn't guess where I wound up. Florence, Kansas. I went two years, High School Institute; two years University of Kansas. I went to high school from 7:00 to 2:00, university from 3:00 to 11:00, two years. And then I got a job at the university so I learned how to banquet and cater cook.

Because of the fact that we were influenced by these people, you know, we figured out something better than what we're doing. Consequently, they lost a lot of us for a while, a lot of our -- at that time, we didn't have high schools in our villages. The schools were run by BIA. And because we had a lot of Native, we had Alaska Territorial School. If you go to Deering you can still see that territorial school standing. That great big building out of the east of the town. That's the old Alaska Territorial School.

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August 18, 2009

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Re: Comments on Draft Red Dog Reclamation Plan Approval & ADEC Solid Waste Permit

Dear Jack and Sharmon:

Below are my comments on the DNR and DEC draft plans, and supporting documents. I appreciate the extension of the comment period which has allowed me to review these documents. The length of the comments below does not reflect the amount of time it took to review and comment on the supporting material for the draft permits (over 18 hours). Although the comments are not lengthy, I believe they do raise some important issues for regulatory consideration.

Tailings Dam Seismic Safety

In section 3.2.4 – Main Dam of the Red Dog Mine Closure & Reclamation Plan – Final it is noted

> "Calculations reported in Supporting Document C5 show that the dam would be stable, with a static factor of safety of 1.7 and a seismic factor of safety of 1.2 under the design earthquake. Even in the maximum credible earthquake, the dam is expected to suffer only slight movement of the crest."[1]

10.1

The executive summary for Supporting Document C5 lists the closure Seismic (MDE)[2] Circular factor of safety as 1.14, and the Seismic (MDE) Block factor of safety as 1.06.[3] This is slightly smaller than the "… seismic factor of safety of 1.2 under the design earthquake …" referenced in section 3.2.4 (above).

There is also no apparent reference in Supporting Document C5 to any calculations made for the maximum credible earthquake. It may be true that "Even in the maximum credible earthquake, the dam is expected to suffer only slight movement of the crest." as quoted in section 3.2.4, but there is no way to substantiate this via the supporting documents.

These are both minor issues. There are, however, two issues of greater concern.

[1] Supporting Document C5 is titled Stability Analysis for Future Raises to Closure, Tailings Main Dam, URS, 2007.
[2] MDE = Maximum Design Earthquake. This represents the ground motions or fault movements from the most severe earthquake considered at the site, relative to the acceptable consequences of damage in terms of life and property. This definition is taken from: "Guidelines for Cooperation with the Alaska Dam Safety Program" Dam Safety and Construction Unit, Water Resources Section, Division of Mining, Land and Water, Alaska Department of Natural Resource, 2005.
[3] Stability Analysis for Future Raises to Closure, Tailings Main Dam, URS, 2007, p. vi

Choice of the Maximum Design Earthquake for Tailings Dam Design

First, it is noted in Supporting Document C5 that:

> "ADNR (2005) provides a 1,000 to 2,500-year range for return periods … (for the MDE). Therefore, the selection of a 2,475 year return period seismic event for MDE is conservative."[4,5]

ADNR (2005) categorizes the Red Dog tailings dam as a Class II dam. A Class I dam, the highest category class for ADNR, would require an earthquake return period of 2,500 years to the Maximum Credible Earthquake,[6] which is normally assumed to be a 10,000 year event.

10.2 From a reading of the ADNR Guidelines document it appears these guidelines are aimed at water supply dams, and they do not specifically address tailings dams. There are significant differences between tailings dams and water supply dams. A primary difference is that tailings dams must be designed to stand in perpituity, while a water supply dam's life is considerably shorter. Another is that a water supply dam is designed to hold back water, while in most cases a tailings dam is not designed to impound water. This is the case at Red Dog, and because of it tailings dams generally have a different type of water barrier than a water-supply dam.

Because of the extreme length of time a tailings dam must stand (unlike a water supply dam, you can't 'drain' the tailings behind a tailings dam if something begins to go wrong), ADNR should classify tailings dams as Class I dams, and require the use of the Maximum Credible Earthquake as the Maximum Design Earthquake. This is a conservative, but reasonable approach to tailings dam design.

Seismic Coefficient for Pseudo-Static Stability Analysis

Second, it is noted in Supporting Document C5 that:

> "Based on the standard of practice for pseudo-static stability analysis, the seismic coefficients for the future raises to closure design were taken as 50% of the surface PGA values in (the 2005 USGS seismic hazard maps for Alaska)."[7]

10.3 This means that once the Maximum Design Earthquake has been determined, and the amount of energy which will result from that earthquake determined, then that amount was cut in half for the design calculations used for the Red Dog tailings dam. The primary justification for this reduction in energy from the Maximum Design Earthquake is taken from the Washington State Department of Transportation, 2005, "Geotechnical Design Manual," M46-03, September 2005.[8] A reading of this document shows that it is focused on bridge design. Dams are not addressed in this document.

Because this is a significant reduction in the amount of seismic energy for which the dam must be designed, it is important to fully understand why this assumption is valid and appropriate for a tailings dam. Together the use of an earthquake that is less than the Maximum Credible Event, and then taking the energy from this lesser earthquake and cutting it in half, raises concern about whether these assumptions are conservative and appropriate for the design of a tailings dam. These design considerations are established by the State of Alaska, through the ADNR. I hope that ADNR would reconsider (or actually establish) seismic design event guidelines for tailings dams.

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[4] Stability Analysis for Future Raises to Closure, Tailings Main Dam, URS, 2007, p. 27
[5] Alaska Department of Natural Resources, Division of Mining, Land and Water, Water Resources Section, Dam Safety and Construction Unit, Guidelines for Cooperation with the Alaska Dam Safety Program, June 30, 2005.
[6] ADNR, 2005, Table 6-2 – Operating- and Safety-Level Seismic Hazard Risk
[7] Stability Analysis for Future Raises to Closure, Tailings Main Dam, URS, 2007, p. 28
[8] Stability Analysis for Future Raises to Closure, Tailings Main Dam, URS, 2007, p. 28

Reclamation Bond

The Departments have proposed a bond for the Red Dog mine of $304,520,000. Using the costing assumptions presented in Support Document J – Cost Estimates, which appear to be reasonable, I have checked the calculation of the Net Present Value (NPV) of the bond/cost for the reclamation and post closure operation of water treatment, monitoring, etc., and agree with the $304 million figure.

10.4 The NPV calculation, which was performed by ADNR and/or ADEC, does not appear to be included in the documentation provided with the permit review documents. At a minimum, a discussion of how this value was calculated should be included, although this commenter has independently reached the same conclusion.

However, there are two important observations to be made about the bond amount.

First, the NPV calculation is very sensitive to the net rate of return. In this case ADNR/ADEC is assuming a net 4.3% rate of return (8% investment return minus 3.5% rate of inflation + 0.2% management fee).[9] If the net return were to drop from 4.3% to 3.3%, an additional $80 million would need to be added to the bond amount in order to provide for long term water treatment. If the net return drops to 2.3% the additional amount needed for the bond would be over $225 million. Choosing a rate of return for the bond NPV calculation is a policy decision to be made by ADNR/ADEC. Because of the very long time terms and large amount involved with this type of bond, a conservative choice of investment rates should be made. In particular, the assumption of an average 8% rate of return over the long term made by Treasury, especially in light of the performance of the financial markets in the past year, raises some concern.

Second, use of an NPV assumes that the money will be available for investment at the time the bond is established. If the "bond" is received in cash which can be invested by ADNR/ADEC, then inflation is taken into account. But if the bond is really a "bond" and not a cash payment, which is usually the case, then the bond amount should be indexed for inflation. At 3.5% inflation, the Red Dog bond amount would increase by approximately $10.5 million per year. If ADNR/ADEC does not index the bond for inflation then, for example, over a 5 year period the bond would be undervalued by approximately $53 million. Taking inflation into account, especially for large bonds, is needed to protect the public from financial liability.

Dust Monitoring

Supporting Document I – Monitoring Plans, contains a Fugitive Dust Risk Management Plan, but this does not include an actual monitoring plan that describes the methods, frequency and sites/stations where the actual monitoring will take place.

10.5 A detailed dust monitoring plan, not a conceptual monitoring scheme, is needed. Dust along the haul road has been an issue for the better part of 10 years, and we still don't have an actual monitoring plan.

[9] Memorandum from Pamela Green, State Comptroller, Department of Revenue, Treasury Division, to Rick Fredrickson, ADNR, May 20, 2009.

Waste and Ore Stockpile Closure

It is noted that the waste and ore stockpiles will be flattened to an "approximate overall angle of 3H:1V."[10] This is an appropriate closure design. However, in the supporting document for the waste and ore stockpiles there is a somewhat confusing data modelling result.[11]

10.6 Table 2: Cover profiles modelled in 2D, shows that the shallower the slope of the stockpile, the less the infiltration fraction. Normally the reverse is true. This needs more explanation.

The conclusion of the cover modelling was that "The cover modelling could not demonstrate any clear trend in the various cover options reproduced with the 1D and 2D simulations."[12] Lacking better explanation, the data in Table 2 raises concern about the adequacy of the modeling.

ADNR Draft Reclamation Plan Approval

In Section 3.1.3 – Waste and Ore Stockpiles, it is stated that:

> "A vegetative cover criteria of 40% shall be achieved a minimum of three years after the last
> 10.7 application of cover material, seed or fertilizer before financial assurance will be released for reclaimed areas."

Three years post seed/fertilizer is probably too short a period to determine vegetative viability. Five years would be more reasonable, and possibly longer in the environment at Red Dog.

ADEC Draft Waste Management Permit

In Section 1.6.1 it is stated that:

> "… department-approved changes to project monitoring that do not result in increased detrimental
> 10.8 environmental impacts will be included in amendments to the Monitoring Plan and do not require public notice."

Whether or not an action results 'in increased detrimental impact' is a subjective decision. Regardless of legal requirements, since the Monitoring Plan is adopted as a part of the Waste Permit the Monitoring Plan should be made available to the public (on a website is best), and changes to the Monitoring Plan should be documented on this same location. That way the public is at least aware of the changes that are being made, even if the changes do not formally go through the 'public notice' process.

Thank you for the opportunity to comment.

Sincerely:

David M Chambers

[10] Red Dog Mine Final Closure and Reclamation Plan, SRK Consulting, May 2009, Section 3.1.3, p. 33
[11] SD F1: Mine Area Closure Option – Summary of the Cover Studies, Table 2, page 9 of 11
[12] SD F1: Mine Area Closure Option – Summary of the Cover Studies, p. 10 of 11

PART B

Part B contains the formal State response to each Public Comment for the draft Waste Management Permit (No. 0132-BA002) and Reclamation Plan Approval (F20099958) for the Red Dog Mine. Each State response has a unique number which corresponds to the number of the Public Comment in Part A.

State of Alaska
Department of Environmental Conservation and Department of Natural Resources
Consolidated Responses to Public Comments on the draft Waste Management Permit (No. 0132-BA002)
and Reclamation Plan Approval (F20099958) for the Red Dog Mine
November 28, 2009

Response Numbers correspond to Comment Numbers in Part A

1.1 Both the Waste Management Plan and the Reclamation Plan Approval both provide for protection of the environment at Red Dog and a plan to return it to a stable condition.

2.1 The DNR Reclamation Plan Approval requires the company to submit quarterly monitoring reports and an annual report. The annual report summarizes the activities, including reclamation, conducted during the previous calendar year and planned for the upcoming year. The Division of Mining, Land & Water will post these reports on our website. http://www.dnr.alaska.gov/mlw/mining/index.htm

2.2 Since the Sate permits are with Teck, the State cannot formally make community committees part of the formal process. The State could provide updates on closure activities to the communities. The communities could also approach Teck about working with the company directly on their implementation of their closure measures.

2.3 The State has no authority to enforce any promises that the company may have made with regard to hiring practices at the Red Dog mine.

3.1 Neither DEC or DNR have the authority to require any testing with regard to human health. The State Department of Health and Social Services, Division of Public Health, Section of Chronic Disease Prevention and Health Promotion is not currently considering cancer-related studies directly in your community or at the Red Dog Mine. In addition statistically valid studies are not feasible in smaller populations such as occur in Noatak, and Kivalina or the mine population.

3.2 The State has no authority over the hiring practices at the Red Dog mine. These comments are better addressed by Teck.

4.1 The Department of Environmental Conservation (ADEC) agrees with the assertion regarding the definition of the ML. Consequently, values less than the ML cannot produce enforceable information on permit compliance. However, data trends below the threshold of enforceability may offer useful information and even a margin of compliance. For that reason, condition 1.8.3 prescribes that data trends may lead to corrective actions that prevent permit violations. ADEC appreciates the comment, but draft condition 1.8.3 remains intact in the final permit.

4.2 ADEC made the suggested change

4.3 Under AS 46.06.021, ADEC shall promote waste source reduction, recycling of waste, waste treatment, and waste disposal to protect the state's human health and environment from solid and hazardous waste. To promote the state's pollution prevention strategy, the wording of section 1.15 has been kept unchanged.

5.1 Comment noted; the format used was provided by Teck

Response Numbers correspond to Comment Numbers in Part A

5.2 Quarterly Monitoring Reports for 1st, 2nd and 3rd quarters should be provided in electronic and hard copy to the Authorized Officer (Rick Fredericksen) and in electronic format to Steve McGroarty, Jim Vohden, Jack DiMarchi, Al Ott, and Tim Pilon. Annual Reports should be provided in electronic and hard copy to Rick Fredericksen, Steve McGroarty, Jim Vohden, Jack DiMarchi, Al Ott, and Tim Pilon.

5.3 The mailing address for the Authorized Officer is listed on page 4 of the Reclamation Plan Approval. The mailing addresses for other report recipients have been incorporated into the Reclamation Plan Approval as requested.

5.4 Please note that "maps shall be 1" = 200' **or other appropriate scale necessary to review the development of individual facilities"** (emphasis added). A scale of 1" = 200' is not considered an absolute requirement. The requirement for "as-built maps" only applies to "facilities"; undeveloped areas within the Permit Boundary are not considered facilities. No change to the Reclamation Plan Approval language is required.

5.5 The reference has been changed in the Reclamation Plan Approval.

5.6 ADNR has made the suggested change

5.7 ADNR has made the suggested change with the clarification that the water quality to be maintained is "effluent water quality".

5.8 The environmental audits required by the Reclamation Plan Approval and the Waste Management Permit No. 0132-BA002 are assumed to satisfy the requirements of both authorizations. Clarifying language has been added to the Reclamation Plan Approval: "The environmental audits required by this Reclamation Plan Approval and those required by the ADEC Waste Management Permit No. 0132-BA002 refer to the same audits, conducted to fulfill the requirements of both authorizations."

Teck requested the language of the last sentence of the second paragraph of this stipulation, on page 8, be expanded to read: "..., the agencies retain the final contractor selection and scope of audit decisions within the context of their statutory authority". All state agency decisions must be made within the context of relevant statutory authority, so no change to the language of the Reclamation Plan Approval regarding this issue is required.

To further minimize the potential for differences in the requirements of the two authorizations, the language in the final paragraph of the Environmental Audit Section of the Reclamation Plan Approval has been modified as follows: "The audit results will be used by the permittee to assist in updating policies, plans, procedures, and suspension, closure and post-closure cost-estimates and by the ADNR in determining compliance with the Reclamation Plan Approval and in evaluating the adequacy of the financial responsibility. The audit will be an objective, systematic, documented review of the conditions, operations, and practices related to plan approval and permit requirements and facility management conducted under this Reclamation Plan Approval. The audit will be paid for by the permittee."

Response Numbers correspond to Comment Numbers in Part A

5.9 The ADNR appreciates all of the efforts that Teck has made with regards to the development of the Red Dog Mine Closure and Reclamation Plan; however, when agency comments on Draft Reclamation Plans were not addressed in the Final Reclamation Plan submitted for agency review and approval, the agency was obligated to request that these comments be addressed. ADNR is authorized under 11 AAC 97.300(d) to "approve with conditions a proposed reclamation plan" and we look forward to continuing to work cooperatively with Teck in the future to resolve these conditions.

5.10 The language in the Reclamation Plan Approval has been modified to allow the submittal of the geotechnical investigation report to be no later than May 2013 to allow the report findings to be considered during the first scheduled environmental audit.

5.11 Section 2.1.3 (Waste Rock and Ore Stockpiles) of the Red Dog Mine Closure and Reclamation Plan states "The Qanaiyaq waste cannot be as accurately characterized, but is expected to be dominated by strongly acid generating material. Currently, the Red Dog Development Plan calls for the Qanaiyaq waste to be placed on the top of the Main Pit Stockpile, where it will cover about half of the upper dump surface. However, further characterization of the Qanaiyaq waste may indicate that it would be preferable to encapsulate it in less reactive Aqqaluk material. Those details will be assessed further in later revisions of this plan." The Project-Specific Stipulation for Section 2.1.3 has been retained in the Reclamation Plan Approval.

5.12 The stipulation only requires submission of "final closure plans prior to the initiation of the reclamation (emphasis added) of the waste rock that would be exposed by the blasting back of the eastern limit of the Aqqaluk Pit to a 4:1 slope". Alaska Administrative Code 11 AAC 97.200(c) exempts pit walls from the requirements of 11 AAC 97.200(a) and (b) if the steepness of the wall makes them impracticable or impossible to accomplish. The stipulation only applies to that portion of the pit wall that has been blasted back to a 4:1 slope; therefore, ADNR does not believe that the exemption prohibits this condition to the Reclamation Plan Approval.

5.13 All three potential cover materials have similar physical characteristics, including permeability; however, they have very different geochemical characteristics. Supporting Document F1: Mine Area Closure Options – Summary of the Cover Studies states:

> Section 1.2.1 Kivalina Shale – "The Kivalina shale contains traces of orange sphalerite and may have a potential for zinc leaching. **This potential for zinc leaching is not desirable for cover material because the contaminants could eventually be released to the environment**". (Emphasis added);

Response Numbers correspond to Comment Numbers in Part A

Section 1.2.2 Okpikruak Shale – "The Okpikruak shale has similar physical properties as the Kivalina shale but **its potential to release metals is much smaller, thus is more suitable for cover material."** (Emphasis added); and,

Section 1.2.3 Overburden Shale – "**Kivalina shale is the dominant material in this stockpile, and other mineralized materials are also present."** (Emphasis added)

Supporting Document F2: Evaluation of Borrow Sources lists the potential sources of cover material as the existing coarse rock quarries (MS-14 and DD-2), new quarries (Kivalina Formation located just north of the future Aqqaluk Pit and Okpikruak Formation located just south of the future Qanaiyaq Pit), waste rock from future mining, and the Overburden Stockpile. The report fails to provide any quantity for the potential Okpikruak Formation; therefore, it may be premature to conclude that "The total quantity of acceptable cover material in the Red Dog area is limited and all types of the identified cover materials (Kivalina Shale, Okpikruak and overburden stockpile material) may be needed for reclamation". Regarding the Overburden Stockpile, the report goes on to state that "Kivalina shale is the dominant material, but it is known that other more mineralized materials are also present. Material from this stockpile is therefore somewhat contaminated. Runoff from the stockpile area currently carries about 2,700 mg/L zinc."

Supporting Document F1 – Mine Area Closure Options – Summary of the Cover Studies (5 Section on Covers for Further Consideration) states: "The work carried out to date suggests that the minimum soil cover consists of a properly sloped and compacted surface where 1.5 feet of material from the Overburden Stockpile would be placed on top. Given the contaminated nature of the Overburden stockpile material, the surface runoff would have to be intercepted and redirected to either the tailings impoundment or directly to the water treatment plant. The main criterion is to encapsulate and prevent direct contact with the stockpiled material. The thickness of the cover is limited and may not be sufficient to prevent root penetration through the cover if vegetation eventually develops on the cover. The second option consists of compacting the waste rock surfaces and place 3 feet of Okpikruak shale. This option appears to be a more efficient cover in relation to the net infiltration and surface water management. It achieves the goals of "minimum cover", but it also prevents the migration of metals by using the Okpikruak shale. Additionally, the increase in the thickness should reduce the risk associated with the penetration of the roots through the cover."

Supporting Document B2 – Plan of Operations for Waste Rock Management Section 4 – Waste Rock Classification and Segregation states "Siksikpuk Shale from the mining operations will be used for tailings dam construction, and Okpikruak Shale and portions of the Kivalina Shale are expected to be used for cover construction. (Cover trials and further assessment of the distribution of zinc in the Kivalina Shale are needed to confirm this part of the plan.)"

ADNR acknowledges that the most significant factor in the long-term post-closure water quality in the tailings pond will be the effectiveness of the seepage collection system for the Main Waste Rock Stockpile; however, surface runoff from the Main Waste Rock Stockpile also has the potential to negatively impact the water quality in the tailings pond. Without data to compare the surface runoff quality for covers constructed of Okpikruak Shale vs. those constructed from either Kivalina Shale or the Overburden Stockpile, it will be difficult to evaluate whether the use of Okpikruak Shale for cover material could improve the post-closure water quality in the tailings pond to the point where a "clean pond" was achieved and direct discharge to Red Dog Creek without water treatment could be permitted. Given that the overwhelming first choice for the tailings facility closure options communicated to Teck by NANA and the local residents during the workshops held in April and June of 2006 was a "Clean Pond Closure Option", and the information contained within the supporting documents, the ADNR believes that a test cover constructed of Okpikruak Shale is warranted.

5.14 Teck's concerns can be summarized as follows:

- The requirement of a fertilizer application rate of 500 lbs per acre of 20N-20P-10K is too prescriptive and goes against the recommendation of their consultant botanist, who recommended 400-450 lbs of fertilizer per acre. Furthermore, fertilizer requirements may differ depending upon soil analysis.
    - Response – The Red Dog Mine Closure & Reclamation Plan states "Results from vegetation trials are needed before final recommendations with respect to seed and fertilizer will be possible". The Draft Reclamation Plan Approval inserted a specific standard for the fertilizer application but allowed changes to be approved by ADNR. The ADNR Plant Materials Center has advised that the 400-450 lbs per acre application rate would be adequate. The language in the Reclamation Plan Approval has been modified to reflect this lower application rate.

- The requirement, as written, does not permit the addition of native plant seeds or transplants without authorization, which runs contrary to the regulation encouraging revegetation with native species.

    - Response – The Reclamation Plan Approval listed the species and application rates proposed by the applicant, but allowed for changes to be approved by ADNR. The language in the Reclamation Plan Approval has been modified to allow the inclusion of other native species that have proven successful at the site, including transplants.

- The requirements to prevent rills and gullies are not specified in 11 AAC 97.200, only that the site be left in a stable condition. This requirement imposes an obligation outside the scope of the regulations and should be written to reflect the regulation.

    - Response – If erosion is creating rills and gullies, the site is not in a stable condition. The language has been modified to clarify that this condition also applies to engineered covers, but has been limited to erosion that affects the long-term stability of the site.

- The requirement for 40% cover in three years is not supported by any studies in the Red Dog area or by regulation. The regulations discussed above specifically address the timeframe for performance, which is that achievement of the reclamation standards must be reasonably expected to occur after one year and five years of the completion of reclamation. Nowhere is a three-year period mentioned.

    - Response – The cover criteria condition was included in the Draft Reclamation Plan Approval in an effort to reduce the subjectivity in determination of site stability. The language has been modified to eliminate the reference to the 40% vegetative cover criteria and the three-year time period.

The condition for Section 3.1.3 Waste and Ore Stockpiles has been modified as follows:

Unless changes are approved by ADNR, the fertilizer application rate shall be 400 - 450 lbs per acre of 20N-20P-10K and the seed application rate and species shall be as listed in Table 3.1 (Revegetation Species for Stockpile Covers) or other native species that have proven successful at the site, including transplants. Erosion features that form in areas that have been regraded and covered with topsoil or engineered covers, must be stabilized if they affect the long-term stability of the reclaimed area. A renewable vegetative cover shall be achieved a minimum of five years after the last application of cover material, soil amendment, seed or fertilizer before full financial assurance will be released for reclaimed areas.

5.15 The condition to the Reclamation Plan Approval does not require the construction of extensive beaches prior to final closure; alternatively, it allowed for the provision of financial assurance for the construction of this beach in the event of premature mine closure. The language of the condition has been modified in the Reclamation Plan Approval to incorporate some of Teck's suggestions as follows:

> "3.2.4 Main Dam – Prior to the next five-year renewal of the Red Dog Mine Closure and Reclamation Plan, Teck Alaska Incorporated shall increase the width of the tailings beach from the current 300-feet to 600-feet (or as otherwise required by ADNR Dam Safety Authorizations), or provide a plan, cost estimate and financial assurance with the next five-year renewal of the Red Dog Mine Closure and Reclamation Plan for the construction of this beach in the event of premature mine closure."

5.16 Condition 4.2.2 has been modified to require the submission of the preliminary plans and cost estimate for eventual "out-of-pit" sludge disposal, no later than May 2013 to allow the report findings to be considered during the first scheduled environmental audit. Condition 5.1.4 has been modified to allow the submission to occur with the next five-year renewal application for the Red Dog Mine Closure and Reclamation Plan.

5.17 The condition is not duplicative of the requirements under the "Application for Renewal" section of the Reclamation Plan Approval. The condition was specifically included to require the submission of any updates that occur prior to the next five-year Reclamation Plan Renewal process. This information is needed to evaluate the adequacy of the financial assurance. The condition has been retained in the Reclamation Plan Approval.

5.18 Alaska Administrative Code 11 AAC 97.240 Acid Rock Drainage requires a miner to reclaim a mined area that has potential to generate acid rock drainage in a manner that prevents the generation of acid rock drainage or prevents the offsite discharge of acid rock drainage. Supporting Document B2 – Plan of Operations for Waste Rock Management is incorporated by reference into the Red Dog Mine Closure and Reclamation Plan; therefore, the management of waste rock is subject to ADNR regulation.

> ADNR does not believe that weekly visual inspections of the active waste rock deposition areas to confirm that the geological properties of the waste rock are appropriate for the designated storage location or end use constitutes adequate assurance that the Waste Rock Segregation Criteria are being consistently applied. Supporting Document B2 – Plan of Operations for Waste Rock Management Section 4 – Waste Rock Classification and Segregation states: "Elements of

the above (Waste Rock Classification and Segregation) may need to be revised as more experience is gained. In particular, procedures for the sampling, analysis and handling of "unmineralized" cover material will need to be tested by monitoring of the rock quality in cover material stockpiles." The "monitoring of the rock quality in cover material stockpiles" cannot be accomplished with weekly visual inspections.

The QA/QC Plan, as provided in the Waste Management, Reclamation and Closure Monitoring Plan for the chemical analysis of blast holes used in characterization of both ore and waste, is not being questioned; however, this laboratory QA/QC Plan does not address the fundamental question of whether the application of the waste rock segregation criteria is being consistently applied in the field.

The stipulation has been modified to allow Teck Alaska Incorporated 90-days from the issuance of the Reclamation Plan Approval to develop and submit to ADNR for review and approval, a Waste Rock Management QA/QC Plan that will demonstrate compliance with Waste Rock Management Plan and Segregation Criteria specified in Table 1.

Supporting Document B2 – Plan of Operations for Waste Rock Management Section 4 – Waste Rock Classification and Segregation states: "Siksikpuk Shale from the mining operations will be used for tailings dam construction, and Okpikruak Shale and portions of the Kivalina Shale are expected to be used for cover construction. (Cover trials and further assessment of the distribution of zinc in the Kivalina Shale are needed to confirm this part of the plan.)".

The stipulation has been modified to require that Okpikruak Shale and Kivalina Shale shall be segregated where practicable, and stockpiled separately unless otherwise approved by ADNR, until cover trails and further assessment of the distribution of zinc in the Kivalina Shale are completed and demonstrate the acceptability of Kivalina Shale as a cover material.

5.19 Comment noted; some of these "Standard Stipulations" may not apply to the current site conditions at the Red Dog Mine and have been deleted from the Reclamation Plan Approval.

5.20 The condition paraphrases requirements under Alaska Administrative Code 11 AAC 97.200. The reclamation performance standards under 11 AAC 97.200 apply to the reclamation of the Red Dog Mine and need not be restated in the Reclamation Plan Approval. The condition has been removed from the Reclamation Plan Approval.

5.21 ADNR has reviewed the stipulation in light of current conditions at the Red Dog Mine and determined that it may be removed from the Reclamation Plan Approval

5.22 ADNR has reviewed the stipulations in light of current conditions at the Red Dog Mine and determined that stipulations d. through f. can and will be removed from the Reclamation Plan

Approval. Stipulation g. has been modified as follows: All surface drill holes for the purpose of subsurface exploration or sampling that enter into a water source (other than those holes within the ore to be mined) shall be plugged with a minimum of 7 feet of bentonite holeplug, a benseal mud, or equivalent slurry immediately above the static water level in the drill hole. A bentonite holeplug, a benseal mud, or equivalent slurry, shall also be placed for a minimum of 10 feet within the top 20 feet of the drill hole in competent material. The remainder of the hole will be backfilled to the surface with drill cuttings. Complete filling of the drill holes, from bottom to top, with a bentonite holeplug, benseal mud, or equivalent slurry is also permitted and is considered to be the preferred method of drillhole closure. Stipulation h. has been retained in the Reclamation Plan Approval.

5.23The Application for Renewal Section of the Reclamation Plan Approval has been modified as follows:

Application for Renewal. Applications for renewal of this Reclamation Plan Approval must be made no later than 30 days before the expiration date of the Reclamation Plan Approval. Unless otherwise approved by ADNR, the periodic five-year renewal of the Red Dog Mine Closure and Reclamation Plan will require the submission of the following updated Supporting Documents (SD) or the information must be incorporated into the body of the Reclamation and Closure Plan:

SD B1 – Red Dog Mine Development Plan (TCAK, 2004);
SD B2 – Plan of Operations for Waste Rock Management;
SD B3 – Plan of Operations for Tailings and Water Management;
SD E1 – Red Dog Water and Load Balance;
SD I – Red Dog Mine, Waste Management, Reclamation and Closure Monitoring Plan (TAK, 2009);
SD J1 – Basis of Estimate – Closure Costs;
SD J2 – Basis of Estimate – Post-Closure Costs;
SD J3 – Basis of Estimate – Suspension Costs;
EXCEL Closure Cost Estimate;
EXCEL Post-Closure Cost Estimate; and,
EXCEL Suspension Cost Estimate.

The periodic five-year renewal of the Red Dog Mine Closure and Reclamation Plan will require the submission of updates to the following Supporting Documents (SD) only if the relevant information within the documents has changed since the original submission:

SD A2 – Legal Description of Property;

SD F3 – Revegetation Plan for the Red Dog Mine (ABR, Inc., 2007); and,

SD G – Demolition Cost Estimates (Denison Environmental Services, 2004).

6.1 The site annual water balance after closure includes 306 million gallons of seepage and runoff from the Main Tailings Dam that report to the Aqqaluk Pit and 518 million gallons reporting from the Tailings Pond to the Water Treatment Plant for treatment and discharge. Should drought conditions reduce the amount of precipitation and runoff reporting to the Tailings Pond, the seepage and runoff from the Main Tailings Dam could be readily redirected back into the Tailings Pond through currently existing pipelines and the amount of water reporting to the Water Treatment Plant could be reduced or suspended in order to maintain and adequate water cover over the tailings. It is not believed that a formal contingency strategy within the Reclamation Plan for this circumstance is warranted.

6.2 The current sampling program, as reflected in the monitoring plan, includes biological sampling four times each summer. The spring sample focuses on Arctic grayling spawning in Mainstem Red Dog and North Fork Red Dog Creeks and in Bons Creek and Bons Pond. The second sample event occurs in early July; periphyton, aquatic invertebrates, and juvenile Dolly Varden are sampled. The July sampling effort is set for this specific time to take advantage of low stream flows, maximum daylight, and an adequate time following breakup for primary production to occur. The third sample event occurs in late July to late August and is focused on collection of juvenile Dolly Varden with a sample retained for laboratory analysis of whole body metals loading. The late July to late August trip is specifically timed to capture juvenile Dolly Varden which reach their peak numbers and maximum distribution in early fall. In the spring, early July, and late July to late August field trips, Arctic grayling are captured, marked, and released in Bons Pond and in the Red Dog Creek drainage. Aerial surveys for chum salmon are conducted along Ikalukrok Creek in early to late August. A final aerial survey is conducted during September to estimate the number of Dolly Varden in the Wulik River. In addition, Teck collects water quality samples at multiple sites twice per month throughout the open-water season. The overall biomonitoring program is designed to monitor the aquatic environment from water quality and then the three major trophic levels of aquatic organisms present (periphyton, invertebrates, and fish). The program is, in our opinion reasonable and practicable and we are comfortable with the data collected and believe it is adequate to document major changes that might occur that would be attributable to mine-related activities. There is considerable natural variability in the aquatic systems in the Red Dog Mine area that are related to environmental conditions such as the timing of breakup and freezeup, precipitation, and weather. No change will be made, at this time, to the bio-monitoring frequency required under the Red Dog Mine Waste Management, Reclamation and Closure Monitoring Plan.

6.3 Table 2.3 and 2.4 of the Red Dog Mine, Waste Management, Reclamation and Closure Monitoring Plan (TAK, 2009) specify thermistor and piezometer monitoring required under the Groundwater Supplemental Environmental Project (SEP) for the Red Dog Mine (See Red Dog Mine Monitoring Plan – Supporting Documents: Red Dog Mine – Long-Term Permafrost and Groundwater Monitoring Plan for the Tailing Impoundment). Thermistor and piezometer monitoring in the area of the tailings dam are also required under the Operations and Maintenance Manual for the Red Dog Tailings Main Dam (See Red Dog Mine Monitoring Plan – Supporting Documents: Operations and Maintenance

Manual Rev. 5 Red Dog Tailings Main Dam, NID ID # 00201 Red Dog Mine, Alaska). The monitoring frequency required by the Operations and Maintenance Manual is monthly for the thermistors. The monitoring frequency for the piezometers is: quarterly under normal operating conditions; monthly if the tailings impoundment water level is changing at a rate faster than six inches per day; weekly if the tailings impoundment water level is changing at a rate faster than one foot per day; and, daily or more frequently if flooding causes the tailings impoundment water level to exceed El. 955 feet, unusual seepage develops at or near the Main Dam, or any piezometer shows sudden or unexplained changes in the water level. Furthermore, current thermistor monitoring indicates that a substantial thaw bulb exists under the tailings storage facility and dam, although the rate of thawing has decreased substantially in recent years. Seepage analyses indicate a correlation between thawing and seepage, but the rate of seepage is not considered sensitive to additional permafrost degradation (Supporting Document C6 – Seepage Analysis Report, Red Dog Tailings Main Dam, Future Raises to Closure). Although the stability of the dam is sensitive to the phreatic surface in the dam, which is a function of seepage, the stability analysis does not rely on the presence of permafrost or frozen materials in the dam or foundation (Supporting Document C5 – Stability Analysis for Future Raises to Closure, Tailings Main Dam). Monitoring of thermistors and piezometers specifically related to the dam, including some of those listed in the referenced tables, has historically occurred monthly during the operational period of the mine. Increasing the frequency of the monitoring from quarterly to monthly for the thermistors and piezometers associated with the SEP is not believed to be necessary because the current data set indicates that the rate of thawing has decreased and the actual seepage rate and stability of the dam are closely monitored through other instruments.

6.4 The State of Alaska welcomes participation by the Northwest Arctic Borough, and other stakeholder groups, in the determination and monitoring of the financial assurance submitted for the Red Dog Mine, through the submission of detailed comments on the periodic renewal of the ADNR Reclamation Plan Approval and the ADEC Waste Management Permit. The Borough may also comment on the Annual Report for the Red Dog Mine, which must address the adequacy of the financial assurance. The form of the financial assurance is governed by state statutes and regulations; at this time ADNR does not have regulations for, nor does ADNR accept, Corporate Guarantees. This comment will be considered during establishment of the financial assurance.

Alaska statutes require that the amount of the financial assurance for the reclamation of the Red Dog Mine reflect the reasonable and probable costs of the reclamation. The Alaska Administrative Code requires that after a multi-year reclamation plan goes into effect, the miner shall ensure that the amount of the bond is sufficient at all times. The cost estimates for the closure, post-closure and suspension periods of the Red Dog Mine were critically reviewed by ADNR and ADEC. The amount of the financial assurance has been determined by the State to reflect the reasonable and probable cost for the closure and post-closure maintenance of the site, including long-term water treatment. Consequently, predicted acidity after closure was used to determine water treatment and monitoring costs.

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Please note that the ADNR recently discovered an error in Column N of the Relocation Unit Cost sheet within the Red Dog Mine Closure Cost Estimate; the original formula failed to include all the labor costs when there was more than a single unit of any class of equipment. The error resulted in an underestimation of premature closure costs of approximately $800,000. The NPV calculation has been revised to include an additional $400,000 in each of years 6 and 7 and the NPV of the total financial assurance requirement was increased to $305,150,000. Further, the project authorizations require an annual assessment of the adequacy of the financial assurance. Renewal of the Reclamation Plan Approval and the ADEC Waste Management Permit requires the submission of updated supporting documents, including the Red Dog Mine Water and Load Balance and other documents necessary for the continued evaluation of the adequacy of the closure and post-closure costs for the Red Dog Mine.

The specific request by the Northwest Arctic Borough to enter into a cooperative management agreement with ADNR for the determination and monitoring of the financial assurance required for the Red Dog Mine is beyond the scope of the request for comments on the current Draft Reclamation Plan Approval; however, ADNR is reviewing the Borough's request to enter into a cooperative management agreement for the determination of future financial assurance amounts and this will be addressed in a separate letter.

7.1 Thank you for your comment

7.2 Thank you for your comment. The State takes your comments seriously.

7.3 Current and past site conditions and operating practices were considered during the evaluation of the Red Dog Mine Closure and Reclamation Plan and the development of the Draft Reclamation Plan Approval.

7.4 In response to concerns about cracks in the Red Dog TSF Dam, also known as the Main Dam, the ADNR-Dam Safety and Construction Unit, reviewed periodic safety inspection reports, annual dam inspection and instrumentation reports, and other correspondence between Teck Cominco and ADNR-Dam Safety for the period 1994 to 2008. In the 1994 and 1998 periodic safety inspection reports, "stress" cracks were observed in discrete areas along the upstream slope of the dam. The cracks were oriented horizontal to and near the crest of the embankment. Engineers recommended regarding the face of the dam. In response to a specific request from ADNR-Dam Safety in 1999, a consultant for Teck Cominco provided a follow-up study that correlated the cracks with a pipe bench cut into the face of the dam to deploy the tailings discharge line. In an application for a Certificate of Approval to Modify a Dam in 1999, Teck Cominco submitted a slope stability analysis for a revised pipe bench design, consisting of fill on the upstream face (instead of a cut), which demonstrated that the upstream slope and pipe bench were stable. In 2003, cracks were observed in a limited area on the left (west) abutment. These were reportedly mitigated with the Stage VII-A raise construction in 2003 and 2004. No cracks have been reported in subsequent inspection reports, including field inspections conducted by ADNR-Dam Safety in 2009.

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8.1 Thank you for your comment

8.2 Thank you for your comment

8.3 These same comments were also submitted in writing and answered under 2.1, 2.2 and 2.3

8.4 State DEC regulations specify that the public meetings have to occur after the first 15 days but before the 30th day of the public comment period. The state contacted both village IRA Councils and the Kivalina City Council administrators to agree on suitable dates and times for these meetings. We will work closely with the villages to schedule future meetings at a date and time that is acceptable to the communities and consider their seasonal activities in that process.

9.1 Thank you for your comments

10.1 SRK issued Addendum #1, dated October 26, 2009, to the Closure and Reclamation Plan which clarified the inconsistent reference to safety factors reported in Supporting Document C5.

10.2 The Red Dog Tailings Dam was originally designed and constructed as a Class III (low) hazard potential dam. As a result of subsequent agency review with respect to Alaska dam safety regulations revised in 2004, the dam was reclassified as a Class II (significant) hazard potential dam. One effect of this reclassification was to increase the seismic design standards. The return interval for the Maximum Design Earthquake was therefore increased to approximately 2500 years, the maximum recommended period for a Class II dam and the minimum return period for a Class I (high) hazard potential dam. It is notable that Alaska dam safety regulations define a Class I dam as a dam for which its failure would result in the "probable loss of human life". Loss of human life is not expected should the Red Dog Tailings Dam fail for any conceivable reason.

10.3 The designers reduced the peak ground acceleration (PGA) by 50% for use in specific models based on guidance recommended in references that included the "Geotechnical Design Manual" by Washington Department of Transportation (2005), as well as commonly cited references that address earth dams, specifically "Rationalizing the Seismic Coefficient Method" by Hynes-Griffin and Franklin (1984) and "Geotechnical Earthquake Engineering" by Kramer (1996). It is also notable that the referenced design evaluations are based on a conceptual design of the closure configuration, and that a final design and refined seismic stability evaluations are pending.

10.4 The first concern is the use of an underlying 8% average rate of return over the long term in light of the recent financial market performance. This concern stems from the sensitivity the net rate of return has on the bond amount. The commenter is correct that a lower average net rate of return assumption would require a larger bond amount. The net rate is comprised of an assumed real rate of return as well as an assumed inflation rate. Both of the amounts assumed in the analysis are based on numerous factors and the State of Alaska Department of Revenue, Treasury has relied on the guidance of investment advisors and actuaries in developing the assumptions and believes them to be reasonable. It is Treasury's understanding that intermittent reviews will be made to ensure the bond's adequacy to meet future cash flow needs and that additional funding would be available,

should a shortfall be identified. This mitigating fact should provide some relief to the commenter's concern.

The assumptions that were used in the NPV calculations were clearly defined in the June 9, 2009 Memorandum to Rick Fredericksen from Pamela Green (State Comptroller), which was available for public comment, and the section on financial responsibility in the ADEC Draft Waste Management Permit included a table that illustrated the cash flows and dates used in the NPV calculations. Please note that the ADNR recently discovered an error in Column N of the Relocation Unit Cost sheet within the Red Dog Mine Closure Cost Estimate; the original formula failed to include all the labor costs when there was more than a single unit of any class of equipment. The error resulted in an underestimation of premature closure costs of approximately $800,000. The NPV calculation has been revised to include an additional $400,000 in each of years 6 and 7 and the NPV of the total financial assurance requirement was increased to $305,150,000.

The commenter is correct that if the financial assurance mechanism is a Surety Bond, then future inflation is not properly accounted for. The NPV calculation was based upon an assumption that the financial assurance would be provided in the form of an Irrevocable Letter of Credit (or equivalent), which would be available in its entirety should the company default on their permit obligations, and therefore the NPV calculation would take inflation into account. The Reclamation Plan Approval requires the financial assurance be submitted in a "form" that is acceptable to ADNR. If the company proposes a Surety Bond, the NPV calculation would need to be revised to incorporate inflation into future costs. The State can mandate that the bond amount be changed at any time, including in response to the inflation rate. The State will monitor the amount of the bond in relation to the reclamation obligation of the company and other factors, including inflation, and require that the bond amount be adjusted periodically.

10.5 Dust monitoring within the boundary of the waste management permit will be integrated with a dust monitoring plan for all facilities at the Red Dog mine including the DeLong Mountain Regional Transportation System (DMTS) Access Road and the DMTS Port Site. On October 2, 2009 the company released a draft version of a comprehensive Fugitive Dust Monitoring Plan to a multi-stakeholder technical review working group known as the Ikayuqtit Team Technical Review Workgroup (IT). The IT Review Workgroup is made up of 14 stakeholder representatives who are committed to helping effectively managing fugitive dust concerns at Red Dog by acting as a voice for each of their respective stakeholder groups. Each member of the IT Review Workgroup is given an opportunity to review, and comment on, technically-oriented documents related to fugitive dust management prior to the release of the document for public review and finalization. The IT Review Workgroup will complete their review of the Fugitive Dust Monitoring Plan by October 31, 2009 at which time changes will be incorporated and a new draft will be issued for public review and comment.

The table of contents in the draft Fugitive Dust Monitoring Plan is as follows:

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10.6 The comment on waste and ore stockpile closure probably results from misinterpretation due to transcription errors in Table 2: Cover profiles modeled in 2D in Report F1_Cover Studies.pdf which has different values then are listed in Table 5.2, Baseline net percolation predictions for various cover system alternatives and side-slope configurations based on 2-D numerical simulations, from O'Kanes 2004 report, "Development of a Cover System Design for the Waste Rock Stockpiles at Red Dog Operations,Phase 2 Final Report: Material Characterization and Soil- Atmosphere Modeling". The Infiltration Fractions are not applied to the correct covers for the compacted models and it appears the order of the model runs was transposed but the results were not.

A careful examination of O'Kanes Table 5.2 clearly shows that shallower slopes do have greater net peculation (Infiltration Fraction) in all scenarios. Steeper slopes have more runoff.

The reference to 1D results in a table showing 2D modeling results was confusing. In his 2004 report, O'Kane's explanation of the lower values obtain from 1D results, is as follows:

"In general, the sloping cover systems had a higher average net percolation than the 1-D cover systems. This was an unexpected result because runoff does not occur on the flat cover systems; runoff water pools on the surface where it could infiltrate into the cover system at a later date. The fact that the cover systems are predicted to perform better on a horizontal surface compared to a sloping surface may be due to slightly different initial conditions in the 1-D and 2-D models."

SRK has issued Addendum 2 to correct Table 2: Cover profiles modeled in 2D in Report F1_Cover Studies.pdf, The revised table adjusts the infiltration values to correspond with the correct cover profile. In addition we have removed the 1D results from the table to avoid confusion.

10.7 The condition has been modified to reflect the five-year period: "A renewable vegetative cover shall be achieved a minimum of five years after the last application of cover material, soil amendment, seed or fertilizer before full financial assurance will be released for reclaimed areas." (See Response to Comment 5.14).

10.8 The Monitoring Plan will be posted online and maintained in its most current version among Red Dog Mine documents on the Large Mine Permitting section of the Division of Mining, Land, and Water page of the Alaska Department of Natural Resources' website.