Southeast Alaska
Conservation Council

2207 Jordan Ave
Juneau, AK 99801
(907) 586-6942
www.seacc.org

Kyle Moselle, Associate Director
Alaska Department of Natural Resources
Office of Project Management and Permitting
400 Willoughby Avenue, Suite 400
Juneau, AK 99801

May 15, 2019
Sent Via Email

Re: Draft Waste Management Permit Application No. 2019DB0001

Please accept these comments on behalf of the Southeast Alaska Conservation Council (SEACC) on the proposed Waste Management Permit for operation of a Land Application Disposal system (LAD) at the Constantine Metals Palmer Exploration Project. We also incorporate by reference our comments on the Draft Reclamation Plan and calculation of financial assurances attached.

SEACC has been actively involved and interested in maintaining the productivity and character of the Chilkat Valley for almost 50 years. Our members in the region include sport and commercial fishermen, tourist business operators, people that engage in traditional and cultural practices and Southeast Alaskan's from all walks of life. SEACC offers these comments with the expectation that the agencies tasked with the responsibility to protect the public's resources in a sustainable manner for future generations will act to protect the existing values that currently drive a vibrant economy in this unique valley.

Comment Summary

We find that the application including the Draft Waste Management Permit (draft permit) is incomplete and lacks critical data and analysis that would provide the information necessary for either the Department of Environmental Conservation (Dept.) or the public to make an informed decision. 18 AAC 15.020 provides that an applicant must serve a complete application to the Dept. The above referenced draft permit is incomplete. We request the Dept. under 18 AAC 15.040 exercise its authority to request additional information as described in this comment letter and then resubmit an updated draft permit for public comment once a complete application has been received.

In addition, the application and draft permit indicate a hydrological connection exists between the proposed upper diffuser and a nearby surface water, Waterfall Creek. We request that the applicant conduct a tracer study to definitively eliminate the possible connection or withdraw this application and apply for an Alaska Pollutant Discharge Elimination System permit for this project.

The application and draft permit is based on the Plan of Operation (POO) and supporting documents, collectively "the POO". The application and draft permit fail to describe critical aspects of individual project components and performance of the project in its entirety. Among the components missing necessary for analysis and critical to the operation of the Land Application Disposal system (LAD) are the performance of the avalanche deflection structures, power supply and fuel tanks, and access during the winter. The application fails to consider the overall functioning of the LAD during freezing temperatures and deep snow cover, overflow or failure conditions, or from the threat of avalanches. The application provides no information on the effects of locating avalanche mounds on top of the lower diffuser.

The application also fails to consider the structural stability and long-term performance of the avalanche diversion structures separate from their role in the LAD.

The baseline groundwater and surface water data is insufficient for any type of meaningful effects analysis. Despite assurances that a substantial effort was made to define the baseline conditions of the natural environment in the project area (*See* Palmer Stage 2 Plan of Operation (henceforth "POO" 2.0 at 9), the draft permit fails to support the conclusion that the "data from these efforts contribute to a fundamental understanding of the natural environment in the project area, including a baseline of environmental conditions. They define an environmental backdrop that Constantine can design around, and one against which Constantine can detect potential changes, over time." *See* POO App. A 1.0 at 1.

Pre-discharge groundwater monitoring wells were only tested twice 11 days apart. Many surface water monitoring sites have only been sampled 4 times. This level of data does not meet basic thresholds for data creditability. This lack of a realistic starting point is compounded by an ineffectual monitoring system. As a result the groundwater and surface water quality data is woefully insufficient in both quantity and quality to be used to determine background natural conditions for the reasons of monitoring. Baseline data quality sensitivity all around is very low.

SEACC requests the Dept. withdraw this application and obtain from the applicant sufficient information to fully evaluate the proposed operation under its authority at 18 AAC 15.040 (Requests for additional information) including a clear, complete design for the LAD system. The Dept. should request the applicant to collect data representative of all four seasons in accordance with Dept. guidelines for each monitoring site. "A minimum data set consisting of 10 valid data points within the last five years is necessary to perform a valid statistical analysis. Limiting data to the last five years ensures data is timely and relevant to the current analysis." *See* Reasonable Potential Procedure for Water Quality Based Effluent Limits Development Guide at 4 (Jan. 2009).

The applicant also should relocate the mid-Glacier Creek monitoring station currently designated P-27. This site will not detect any significant change in water quality, over time, that may be coincide with Constantine's underground exploration activities because of the upstream influence of Oxide Creek. *See* POO App. D2 Figure 2. SEACC further suggests applicant utilize a contract laboratory certified by the Alaska Department of Environmental Conservation

be used to establish defensible baseline data and for subsequent monitoring. See list of certified labs at http://dec.alaska.gov/spar/csp/lab-approval/list-of-approved-labs.

Comments

Project Scope Limited

Defining the LAD System

The draft permit arbitrarily limits the scope of the LAD system analyzed in the application. "For the purpose of the approval process Constantine is considering the buried diffusers, settling ponds and piping to comprise the LAD system." *See* POO App. B 1.0 at 1.

It is clear that a broader definition the LAD system is warranted. The LAD system is designed to dispose of ground water intercepted by the exploration ramp. The Water Management Plan anticipates this. "Constantine will need to manage this water, including discharging it to the environment to develop the ramp and maintain exploration activities in the ramp into the future." POO Appx B at 5. This water will be pumped to the portal and directed the LAD system. *See* App B 1.2 at 5. Pumping requires power and power requires fuel tanks and generator sets. All these components are critical to the operation and performance of the LAD.

Performance and Monitoring Are Dependent on Other Components Not Adequately Evaluated

The performance and monitoring of the settling ponds depends on the construction and maintenance of avalanche berms. *See* POO 3.1.3 at 23. The POO specifies that Constantine plans to "[p]lace ~70,000 m3 of non-PAG development rock on the surface to construct avalanche deflection structures (berms and mounds) *to protect the road and settling ponds* or in development rock disposal piles, or using it for road construction and maintenance." *See* POO 3.0 at 15 (emphasis added). The performance of the settling pond is tied directly to the existence and performance of the avalanche berms. Since the fuel tanks are situated next to the settling ponds, their protection also relies on these structures. *See* POO 2.2.3 at 14.

Both the operation and monitoring of the entire LAD system requires fuel and power and protection from avalanches. For the basis of this draft permit, the LAD consists of "[t]he entire water conveyance and discharge system, collectively referred to as the LAD," which the draft permit says "will be authorized by ADEC through a design review and approval process leading to an 'Approval to Construct' from ADEC prior to construction." *See* POO App. B 1.2 at 5. This 'collective' LAD must necessarily encompass the ramp collection system, sumps and pumps, avalanche structures, power, access and fuel tanks in addition to the pipes, ponds and diffusers. The WMPA lacks any information on how these connected systems interact with the functioning of the LAD or contingency if one fails.

Performance During Freezing Temperatures Not Evaluated

The draft permit lacks sufficient information to evaluate the performance of the LAD in freezing temperatures that encompass 5-6 months of the year in the project area. "Average daily

temperature is typically above freezing from the months of April through October." *See* POO App. D-2 at 6. The part of the LAD system consisting of the ponds and diffusers operate by gravity. "Settled water will leave the second pond and flow by gravity to the lower diffuser." *See* POO at 19. If the ponds, inverted siphons and spill ways freeze, the LAD system will have reduced capacity and may fail to work altogether. The application does not acknowledge this possible failure or evaluate its potential consequences.

Project Timeline and Order of Construction Absent

The draft permit and supporting documents do not offer information as to the project timeline or order of activity. The overall project time line described in the application includes developing the ramp and temporarily dealing with any seepage by disposing [solid waste? water?] into the upper diffuser while building the settling ponds and lower diffuser system. The project offers no time line for the completion of other critical components including the avalanche protection structures and ramp collection trenches and sumps.

Information on Avalanche Berms is Insufficient

According to the POO, the non-PAG rock removed from ramp development will be repurposed for use in constructing the avalanche deflection structures (mounds and berms) shown on Figure 5. *See* POO at 16. The ramp is expected to progress 12 feet per day and have a dimension of 16 ft. x 16 ft. *See* POO 3.2.1 at 25. This would produce 87 M^3 of rock a day available for construction of avalanche structures. At that rate, it will take 804 days of ramp development to produce the 70,000 M^3 of rock for necessary for constructing the avalanche berms. The draft permit offers no information as to how the applicant will ensure performance of the LAD during a time period that encompasses two winters. The draft permit also offers no information about the dimensions or predicted performance of these avalanche structures.

The avalanche berms and pads described in the POO are structural fills under 18 AAC 60.008. A proposal to build either a small (>23,000 cubic yds.) or large (< 23,000 cubic yds. or take more than a year to complete) structural fill must be completed on a Department form and meet certain requirements. *See* 18 AAC 60.008(b) – (d). This form should be completed and attached as part of Constantine's complete proposal. 18 AAC 60.008(e). However, the only information given in the draft permit is that "[m]uch of the excavated development drift rock will be used for constructing avalanche berms & mounds, road surface and building flat laydown areas. Three areas have been selected as potential rock dump sites to store excess waste rock, each with a capacity to store 20,400 to 38,600 cubic meters (Figure 3)." *See* POO App. D-10 at 2. The draft permit provides no information as to the size or stability of the individual rock dumps and avalanche structures. It does not meet the requirements of 18 AAC 60.008.

Information on Structural Integrity Absent

The draft permit fails to address, for example, the requirements under 18 AAC 60.008(c) that a person shall not place waste on the land until submission of a proposal that must include "estimation of compaction density and load bearing capacity" and construction drawings including before and after site contours. *See* 18 AAC 60.008(c)(8), (10).

Compaction density is especially critical since two of the "mounds" are on top of the lower diffuser and Rock Dump 2 is directly under the Upper Diffuser. Changes from compaction of the ground under these structures could change the percolation rate near the diffuser locally and the performance of the LAD as a whole. Loading and stability issues under large rock structures could alter the hydrology and direction of ground water.

Load bearing capacity is also critical for the long term performance of the structures built of development rock. The site surface geology is characterized by unconsolidated glacial deposits and avalanche runouts. The largest of these structures is the avalanche deflection structure and Rock Dump 2. It appears that the upper diffuser discharges into Rock Dump 2. See POO Figure 5 at 27. These structures are in a geologically dynamic area. The Conceptual Site Layout and Test Pit Locations map in the POO (App. D-12) labels the area as "mass movement and alluvial deposits." The draft permit gives no information on the structural integrity or long-term performance of the structures due to the unstable nature of the ground they are built upon, or as a consequence of discharges from the diffuser. The draft permit offers no modelling on the performance of the avalanche diversion structures.

Other Impacts of Avalanches Are Ignored

The project is located in an area that experiences frequent avalanches. The applicant acknowledges the danger but only offers that they "will likely implement some form of active avalanche management including mechanically triggering controlled avalanches." *See* POO at 36-37. The possible effects of avalanches on the performance of the LAD, access to the site, power disruptions, and human health and safety issues have been ignored throughout the permit process. Avalanches may pose a threat to human health and contribute to further mass movement and erosion (See pictures in Attachment 1).

Lack of access because of avalanches at the site or access road will hamper crews from repairing any damage or restoring power to the pumps, affecting the performance of the LAD. Avalanche coverage and even the threat of avalanches will obstruct access for daily visual monitoring for seeps and access to ground water monitoring wells described at POO App. B at 7.

The draft permit and application contain no information on the applicant's determination of avalanche hazard/risk assessment, uncertainty in predictions, margin of safety, or the risk to human activity.

It also appears from the draft permit that no effort was made to accommodate snow storage areas necessary to clear the road and pads while avoiding pushing plowed snow into surface waters, the effects of which have not been evaluated. Plowing into surface waters should be avoided, and if it occurs it will require a Clean Water Act permit. Therefore, the Department should either require Constantine to incorporate snow storage areas or require an APDES permit for the inevitable discharge.

Performance of the LAD

Development of the underground ramp is dependent on the performance of the LAD. The public is given insufficient information in the draft permit for either the Dept. or the public to evaluate the short-term or long-term performance of the LAD.

Estimate of Adit Water Quality Inadequate

Although the proposed adit attempts to avoid the sulfide orebody and the predicted water quality is neutral to basic, the application offers no mention of, or makes a prediction of the quality of water intercepted during exploratory drilling into the orebody on the exploration drift. The draft permit is for a five-year term and purports to encompass exploratory drilling after the exploration drift is complete. It is very probable that any ground water intercepted during drilling into the orebody from the exploration drift will encounter water quality issues requiring additional treatment. No process for this is described. According to surface water quality samples taken from Argille Creek that flows down through the mineralized zone, all samples taken were above the chronic and acute aquatic life standards for selenium. *See* Application for Waste Management Permit (henceforth WMPA) App. B at 17.[1] It is likely that any water encountered by drilling into the orebody from the exploration drift will have similar results.

The POO predicts that water chemistry from the underground ramp may not meet AWQS for Aluminum, Manganese and Vanadium. But will likely only exceed background water chemistry for Manganese and Vanadium compared to MW-01 and MW-02. *See* POO App. B Table 1 at 8. As previously noted, there inadequate baseline data on groundwater monitoring, so the predicted water quality may very well understate possible exceedances of ambient quality. The seepage water will also pick up nitrogen compounds as a result of interaction with the ramp system and blasting residues from adit development, causing further reductions in water quality. It is estimated that 242,508 pounds of explosives will be used for drift development. "The percentage of leaching of nitrogen compounds was assumed to be between 6 and 12% of the total explosives usage and speciated as 56% nitrate, 4% nitrite and 40% ammonia based on an underground mine case study (MDAG, 2008)." *See* WMPA App. C at 14. For ammonia the 6 to 12% range of leaching potential equals somewhere between 5,800 to 11,600 pounds of ammonia and 8,100 pounds and 16,000 pounds of nitrate into the LAD. There seems to be a reasonable potential for ammonia and nitrate to exceed water quality standards.

The draft permit and application must explain how Waterfall Creek and other surface water will be protected from the exploration-stage discharges that are likely to exceed at least some water quality standards for dissolved components.

Upper Diffuser and Connection to Surface Water

[1] It is worth noting that none of the samples in Argille Creek were tested for total selenium and not the fractions selenate or the more bioavailable selenite.

The draft permit and application state that the Upper Diffuser is necessary for temporary disposal of ramp-intercepted groundwater until the lower diffuser and ponds are built. The Upper Diffuser also serves as a backup system in case the lower diffuser fails or water volume exceeds its capacity.

The design of this part of the LAD was changed just prior to the public release of the supporting documents. Previously there was a diffuser just east of Sediment Pond 2. *See* WMPA App. A Field Investigations and Drawings. This diffuser was eliminated. The new Upper Diffuser is located in the same area as the previously planned percolation trench off the first switchback below the portal. *See* WMPA Figure 1 at 5. No information is given as to how this change effects performance of the LAD or the reasons behind the change.

One very real possibility was that the eliminated diffuser had a direct hydrological connection to surface waters in Waterfall Creek. The permit application stated this clearly:

> "The design of the diffuser system consists of a perforated pipe embedded in cobbles and buried adjacent to a stream bed. The diffuser will allow peak flows piped from the exploration adit to filter through a shallow trench, spreading out the flow prior to discharging down gradient into Waterfall Creek. This will assist in limiting erosion and sediment transport within Waterfall Creek. It is anticipated that an Alaska Pollutant Discharge Elimination System (APDES) permit may be required for the diffuser discharge system." WMPA App. A at 4 Diffuser System.

Such a connection is impermissible because the draft permit prohibits the discharge of waste water into surface waters. *See* WMPA 2.2.3 at 6.

The Draft Permit offer no information if the change in location prevents discharge into surface waters. The supporting documents show extensive ground water connectivity in the region of the upper diffuser and all along the western side of Waterfall Creek. "Infiltration testing indicated a hydraulic connection from the upper Waterfall Creek test pit (ITP18) to the lower test pit (ITP27) over a distance of about 100 m (330 ft), as evidenced by seepage observed in the lower test pit during the infiltration test in the upper test pit." *See* POO App. D-12 at i. ITP18 is just below the new location of the Upper Diffuser making ITP18 connected with Waterfall Creek. *See* App. D-12 at 70. Waterfall Creek is much closer to the Upper Diffuser than it is to TP-18 and also down gradient.

Nothing in the draft permit or the application indicate any barrier to a connection between the new location and surface waters in Waterfall Creek. To complicate matters further, Rock Dump 2 is located directly below the Upper Diffuser. The draft Permit and application contain no information as to how loading of thousands of tons of development rock below the diffuser may contribute to compaction, changes in percolation rate or direction of ground water since the site was evaluated.

Neither the applicant or its contractors conducted any type of tracer study while measuring infiltration rates. Regardless, it is clear that hydrological connectivity between the Upper

Diffuser and Waterfall Creek may exist.[2] The application provides no information demonstrating that the new diffuser will avoid connectivity to Waterfall Creek.

Waterfall Creek is a major contributor to water quantity in the Klehini system "The major surface features Impacting the Project include Waterfall Creek and Hangover Creek. Waterfall Creek is one of the main creeks of the Klehini River Watershed" See, WMPA App. A 3.4 at 9. The draft permit lacks information to assure the reviewer that this discharge will not end up in surface water.

Given the high likelihood that discharges into the Upper Diffuser will discharge into Waterfall Creek, the Department must either require Constantine to obtain an APDES permit or require Constantine to run a simple, inexpensive tracer dye study to demonstrate there is no connection before approving this waste management permit.

Site Instability and Inadequate Monitoring

The newly designed upper buried diffuser is in a location characterized as "mass movement and alluvial deposits." *See* POO App. D-12 at 70. "The Waterfall area is composed of a mix of glacial outwash and debris flow material. The alluvial deposits and colluvial material are mainly derived from glacial till and have been deposited *in a relatively high energy environment*." *See* POO App. D-12 at 1 (emphasis added). This geological environment raises concerns about the performance of the upper diffuser and Rock Dump 2. The draft permit does not offer any information as to how a diffuser pipe will perform buried in an area subject to mass movement.

To make matters worse, the upper diffuser lacks a permanent down gradient monitoring well. MW-04 near the diffuser is described as temporary. Monitoring ground water "may rely on the baseline ground water quality from a reference well located down gradient of the diffuser." If this well is not established and repeatedly tested prior to use of the diffuser, it cannot act as a reference well. *See* POO at 2.2.5.2 at 6. The well may be located about 225 meters away from the upper diffuser and not directly down gradient. *See* POO App. A Figure 3 at 8. The most direct down gradient route from the upper diffuser is about 80 meters toward Waterfall Creek. In between the diffuser and monitoring well, Constantine is constructing rock Dump 2. As noted above, the draft Permit does not consider the implications from Rock Dump compression on the permeability of the soils below the diffuser pipe or if such compression could direct groundwater more directly to Waterfall Creek.

Even if the well was permanent, the monitoring plan is inadequate. The POO at 2.2.5.4-6 describes a "trial period" where "the monitoring well shall be sampled at least 3 times at weekly intervals to establish background water quality for the parameters." *See* POO 2.2.5.4. Three samples over a 3- week period is insufficient to determine any creditable background water quality.

The POO at 2.2.5.6 only confuses the scope of the trial period monitoring by stating that "beginning with the onset of the discharge for the trial period, the discharge and the monitoring

[2] Tracer testing was not conducted at the site of the Lower Diffuser and Hangover Creek either.

well shall be sampled on the same day with at least a monthly frequency." The POO at 2.2.5.5 limits this trial period to 120 days or 4 months. This would result in only 4 samples (data points) taken during the 120-day trial period. That is also insufficient. The Data Quality Objectives for this project do not define the number of samples required for reducing measurement error. "When collecting field samples, alternative sampling and analysis designs should, at a minimum, specify the sample selection technique, the sample type, *the number of samples*, and the number of analyses per sample." *See,* Guidance on Systematic Planning Using the Data Quality Objectives Process, USEPA 2006 at 74 (emphasis added).[3]

Agency regulations regarding on Ground Water Sampling and Analysis require collection of background data "in each of the four seasons before waste is placed in the waste management area being monitored." 18 AAC 60.830(f). Therefore, this 4-month "trial period" referred to in the POO is insufficient. Additional concerns about the groundwater and surface baseline determination and monitoring program follow below.

The application cannot rely on surface water monitoring in Waterfall Creek at P25. In addition to the lack of baseline data at P25, any noticeable effect from the Upper Diffuser at P25 would result in the decommissioning of that part of the LAD and the entire system would be severely compromised. This possibility is not addressed.

Lower Diffuser

The Lower Diffuser is comprised of three parallel, buried perforated pipes just west of Hangover Creek. This area was chosen because of the high infiltration rate when tested. The lower diffuser is the primary discharge area of the LAD. The site of the Lower Diffuser is located on an alluvial fan comprised of poorly sorted sandy gravel, on the west side of the site between Waterfall Creek and another glacial outwash valley, Hangover Creek. *See* POO Figure 9 at 24. The soil analysis describes alluvial deposits that have been deposited in a relatively high energy environment:

> "The Hangover Area is characterized by poorly sorted and poorly stratified mixtures of silt, sand, gravel, cobbles and boulders. With frequent and episodic flood, debris flow and avalanche events creating the surface deposits, the fan is generally interlayered with finer material (lower permeability) and coarser material (higher permeability) up to boulder sizes." WMPA 3.2 at 6.

The end of the Lower Diffuser is within feet of the Hangover Creek channel. As noted before, neither the applicant nor its contractors conducted any tracer studies while measuring the percolation rate when locating the Lower Diffuser. There is no evidence that the Lower Diffuser is not hydrologically connected to Hangover Creek. There is no information on mass movement in the area or its effect on a buried diffuser pipes.Overall, the draft Permit and application fail to provide any evidence that the discharges leaving the diffusers will not discharge into surface

[3] Available at: https://www.epa.gov/sites/production/files/2015-06/documents/g4-final.pdf

waters. The Dept. must require definitive evidence that there is no hydrological connection between these diffusers and surface water before approving this application.

Insufficient Baseline Data

The Quality Assurance Protocol Plan (QAPP) included in the supporting documents states that the Data Quality Objectives (DQO) and measurement criteria "are designed to ensure that the type, *quality, and quantity* of environmental data used in decision making are appropriate for their intended application. For this QAPP, the following DQOs have been identified to ensure that data of *adequate quantity and quality* are generated to support the project goals." *See* WMPA Attachment 1 A.7.1 at 14 (emphasis added).

DQO's for surface water quality and groundwater quality further emphasize that the data be sufficient to establish a robust baseline data set at an acceptable level of confidence in "the absence of significant site disturbance from mineral exploration and related activities prior to mine development." *See* WMPA Attachment 1 A.7.1. at 15. ADEC data quality requires that the "type and number of samples collected must be appropriate to achieve the level of precision, accuracy, and data completeness required by the QAPP." *See* ADEC WPQMP rev. 6 at 17.[4] Since many of the mineral exploration and related activities outlined in The Palmer Project Phase 1 Plan of Operations have already occurred, none of the data samples presented in support of the applications do not meet ADEC's objectives for data quality.

The site described in Phase 2 of Constantine's Plan of Operation was greatly disturbed during Phase 1 activities that included constructing 0.7 mi of access road to the proposed portal pad site, constructing a portal pad, snow avalanche deflection berm and avalanche mounds, constructing two water settling ponds with nearby fuel tanks and, constructing an LAD trench. *See* Plan of Operations Palmer Exploration Project Haines, Alaska Phase I Surface Construction at v. All of this activity occurred prior to testing the two groundwater monitoring wells subsequently tested on 9/17/18 and 9/28/18 and relied upon by the applicant to establish baseline conditions. Site sampling should have occurred prior to any disturbance. If the applicant is planning to carry forward a sampling program as stated, further data points will lack adequate background (pre-disturbance) data for comparison.

"The groundwater monitoring wells above and below the lower LAD diffuser have only been sampled three times so far but they are used to characterize the shallow ground water in the vicinity of the lower LAD diffuser and to provide a basis for comparison after construction and starting discharge through the lower diffuser."[5] *See* WMPA Attachment 1 at 1.2.1 at 7. Agency guidance for groundwater monitoring requires collection of at least 4 independent samples from each well to establish background concentrations.[6] Guidance also recommends that a "minimum

---

[4] Available at:
https://dec.alaska.gov/water/wqsar/Docs/water_quality_management_plan.pdf

[5] As noted below in text, only two sample results are reported in Table 1 at 8 for MW-01 and 02

[6] Groundwater Detection Monitoring Technical Memorandum 18.03 ADEC Solid Waste Program at 1.

of 8 to 10 independent background samples before performing most statistical tests, but as many background data points as possible are preferable to provide adequate statistical power to control false positives and negative errors." [7]

Two (or 3) samples separated by 11 days is wholly inadequate as a basis for comparison and cannot account for differences due to seasonally or normal site variance. *See* WMPA Attachment 1, Table 1 at 8 for MW-01 and 02 sampled on 9/17/18 and 9/28/18.

The data presented in the application does not meet any level of sufficient or creditable threshold necessary to determine baseline water quality or to be used in any effects analysis such as trends over time or as a comparison between up-gradient or down-gradient sites.

Further uncertainty is added because none of the groundwater or surface water testing was conducted by a laboratory certified with the State of Alaska. Alaska has never verified the quality or performance of these laboratories. In support of the data, the applicant includes a quality control document and Alaska Certification for ALS Laboratories of Kelso, Washington, yet the majority of the analysis was conducted at ALS Whitehorse and Vancouver labs. Neither of these laboratories are certified in the State of Alaska as confirmed by the DEC in a phone conversation on 4/18/19 (9:10am).[8]

Estimate of Water Quantity Insufficient

The data presented in the application is also insufficient for determining water quantity. Constantine states that the quantity of water is estimated because they have no data on the volume of seepage that will be encountered in the furthest third of the ramp and uncertainty regarding their ability to control seepage though grouting and other mitigation efforts. "Tundra suggests that a higher flow rate should be anticipated for the remainder of the ramp, although an estimate of those flows was not developed." *See* WMPA Attachment 2, 1.2 at 5. As noted above, the application also does not consider any water intercepted during exploratory drilling from the exploration drift. Although the applicant acknowledges the degree of uncertainty about the total volume of seepage, the applicant states that the measure of uncertainty is based on "a robust data set supported by field investigations and computer modeling." *See* WMPA Attachment 2, 1.3 at 10.

The application gives no indication of the quality of this data, performs no error analysis, or gives any basis for assessing its "robustness." As stated above, the data sets provided are not even compliant with basic data quality and quantity requirements let alone robust. The predictions of water quantity from groundwater seepage into the ramp could be off by an order of magnitude. *See* WMPA Attachment 2, 1.3 at 10.

Before approving this waste management permit, the Department must require Constantine to submit adequate estimates of potential water quantity at the farthest third of the ramp, and an adequate plan for dealing with that water. The public must have an opportunity to review and

---

[7] Id. at 3.
[8] See, https://dec.alaska.gov/spar/csp/lab-approval/list-of-approved-labs

comment on an application that includes sufficient information on water quantity. Alternatively, the permit should be limited to those portions of the adit for which there is sufficient information about water quantity.

Inadequate Water Monitoring Plan

The Draft Permit calls for visual monitoring for seeps below the diffusers. *See* WMPA Attachment 2, 1.2.3 at 7. This condition is inadequate to guard against seepage occurring during the 5-6 months a year the area may be snow-bound. To make matters worse, both observation areas are in avalanche zones that could prevent observations for extended periods. *See* Attached pictures. These daily monitoring costs also are not carried forward in the temporary closure costs for LAD monitoring. *See* also SEACC comments on the draft Reclamation Plan (attached).

The Department must require Constantine to submit a permit application that includes a realistic and sufficient ground water monitoring plan accounting to monitor the performance of the LAD year round. That monitoring must also be accounted for in the reclamation plan and costs.

Performance Criteria for Water Monitoring is Incorrect

The WMPA at 2.1.1.7 states that groundwater in the monitoring wells must not "show a statistically significant increase above water quality standards" to protect groundwater quality. Once such a criterion is reached and measured it is too late to protect ground water quality.

18 AAC 60.830(8)(h) requires that "the owner or operator shall specify in the operating record one of the following statistical methods to be used in evaluating groundwater monitoring data for each hazardous constituent. The statistical method selected must be conducted separately for each hazardous constituent in each well. The methods to be selected from and used are:" and goes on to list 5 different tests. None of the methods are described in the Draft Permit.

Section 2.2.6.2 of the WMPA then gives "trigger" levels that may not be exceeded in MW-02 below the diffuser. *See* Table 1 at 7. It is unclear how these 'triggers' relate either to the water quality criteria or to ambient background levels of these contaminants. It is unclear what defines 'statistically significant'.

Tables 2-4 of the WMPA gives additional triggers not to be exceeded at surface water monitoring stations including Site P27 located at about the midpoint of Glacier Creek below all exploration activities. *See* WMPA at 8-10. It is unclear for a permit that allows no discharge to surface waters how these triggers relate to protecting existing water quality. Most of the trigger levels exceed Alaska Water Quality Criteria for fresh water. If this permit is allowing the natural quality of the ground or surface water to be degraded above ambient levels, the application should be for an APDES permit and should trigger an antidegradation review.

Additionally, the location of surface water monitoring station P25 is described as "at the mouth of Waterfall Creek." *See* WMPA 2.2.7 at 8. However, the Project Map indicates the location of P25 as upstream from the mouth and uphill from the road. *See* WMPA 6.1 at 23. Please correct.

To confuse matters, the WMPA at 1.1.1.4 describes MW-01 as up gradient to WM-02 which is down gradient of the diffuser. There is no mention of an inter-well comparison between up gradient and down gradient water quality or if MW-01 is meant to measure background.

Questionable Location of Monitoring Wells

WM-2 is located on the slight ridge between Hangover Creek and the avalanche run out to the south. *See* WMPA 6.4 at 26. Hangover Creek is much closer and the lower diffuser comes with feet of the channel. Hangover Creek is also an avalanche run, a high energy environment similar to what is described for the upper diffuser. The draft Waste Management Permit offers no assurances, or provides any evidence that water from the lower diffuser will not surface in Hangover Creek. In addition, the draft Permit provides no analysis as to the effects of placing two avalanche berms on top of the diffuser and how that may affect infiltration rates and direction of groundwater. WM-2 seems too far away and not directly down gradient to detect any impact of the diffuser prior to that impact showing up in Hangover Creek.

"Proper well spatial and vertical location is critical to ensure accurate monitoring of the groundwater flow regime. Monitoring wells and well points are typically installed in the uppermost permeable water-bearing zone under or adjacent to a regulated facility or potential source of contamination." *See* ADEC, Monitoring Well Guidance September 2013 Contaminated Sites Program at 4. The draft Waste Management permit needs to consider whether well placement is sufficient to enable the applicant to monitor the effects of the lower diffuser on Hangover Creek. If not, how will ADEC insure full protection for water quality in Hangover Creek?

Surface Water

The surface water monitoring plan is also unsupported and inadequate. Section 1.1.1.3 of the WMPA (at 3) that "[s]urface water is monitored at five sites" but then only 4 sites are described. Site P01 is below the glacier, the only upriver site. Site P25 in Waterfall Creek below the upper diffuser; Site P26 is located below the lower diffuser in Hangover Creek; and Site P27 is about 4,000 feet down Glacier Creek at the edge of the anadromous portion of Glacier Creek.

Site P27, midpoint of Glacier Creek below all exploration activities downstream, is described as serving "to monitor potential impacts, if any from the cumulative exploration activity on downstream water quality." *See* WMPA 2.2.9 at 10. P27, however cannot be directly compared to, or measure the effects of the project because of the influence of Oxide Creek in-between the project site and P27. Oxide Creek contains levels of contaminants that would mask any effect from upstream project activities. "Oxide Creek stations also exhibit unique water quality that is influenced by the highly mineralized geology in the catchment." *See* POO App. D-1, 3.3.1 at 18. And, as previously pointed out, earlier baseline data is insufficient to compare with natural conditions or the effects of upriver exploration activities.

P-27 is useless to measure the effects of the project area due to inadequate baseline and the influence of Oxide Creek. Setting "trigger" levels in excess of Alaska Water Quality Criteria is also not protective of the designated uses of Glacier Creek. ADEC should require the applicant to

add an additional monitoring station above the confluence of Oxide Creek, conduct an adequate baseline analysis prior to any activities at the project site and set limits that reflect the no discharge to surface water limits of this permit.

Effects of Other Decisions

The described action(s) are dependent of additional decisions by federal agencies. The LAD relies on a notice level authorization from EPA under 40 CFR 144.3 to discharge water under a underground injection well (UIC) Class V permit. This is an "authorization by rule" and requires adhering to the requirements of 40 CFR 144.3 on compliance with the Class V Injection Well General Permit. *See* POO at 9-10.

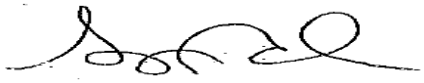
Given the gaps in the application concerning ground water and surface water protections, long term performance and site threats to worker safety, compliance with in General Permit may not be certain. Regardless, the WMPA lacks any information this compliance.

Another related decision is on BLM to authorize a Federal Land Policy and Management Act (FLPMA) Right of Way under 43 C.F.R. § 2801.9, required to grant use public lands for any transportation system, specifically including tunnels under public lands. If a FLPMA right of way is required, BLM would have to conduct a NEPA review, undertake Government to Government consultation with the Chilkat Indian Village, determine whether the plan complies with applicable federal and state laws, and determine whether sufficient public interest exists to warrant a public meeting. *See* 43 C.F.R. § 2804.25(e).

A NEPA review would have to consider the connected and cumulative effects of nearby projects including the activities on State Land.

For all the reasons cited above, we request the Dept. exercise its authority under 18 AAC 15.040 to request additional information and then provide a revised draft permit for public comment. The Dept. is required to take a hard look at the effects of its decision. This application fails to do that. The issues identified cannot be remedied through modifications of the draft in a final document. The missing information must be provided and another public comment period scheduled to accommodate the public's right and ability to review the information.

Thank you,



Guy Archibald
Staff Scientist

Southeast Alaska
Conservation Council

2207 Jordan Ave
Juneau, AK 99801
(907) 586-6942
www.seacc.org

Kyle Moselle, Associate Director
Alaska Department of Natural Resources
Office of Project Management and Permitting
400 Willoughby Avenue, Suite 400
Juneau, AK 99801

May 15, 2019
Sent Via Email

Re: Comments on draft Reclamation Plan Approval (J20185690RPA) Amendment 1 (Estimate of Financial Assurances) and Phase II Plan of Operations

Please accept these comments on behalf of the Southeast Alaska Conservation Council (SEACC) on the agencies proposal to approve a Waste Management Permit for Constantine Metals Palmer Exploration Project. We also incorporate by reference our comments on the Draft Reclamation Plan and calculation of financial assurances attached.

SEACC has been actively involved and interested in maintaining the productivity and character of the Chilkat Valley for almost 50 years. Our members in the region include sport and commercial fishermen, tourist business operators, people that engage in traditional and cultural practices and southeast Alaska's from all walks of life. SEACC offers these comments with the expectation that the agencies tasked with the responsibility to protect the public's resources in a sustainable manner for future generations will act to protect the existing values that currently drive a vibrant economy in this unique valley.

We also submit our comments of the Draft Waste Management Permit by reference as supporting our comments on the Draft Reclamation Plan.

The Reclamation Plan is Vague and Unrealistic.

It is based on unrealistically generous assumptions as to the degree at which natural conditions are understood and unrealistically optimistic assumptions as to the short and long term performance of various activities and components of the project. These missing pieces include the avalanche structures, fuel tanks and site stability issues. The performance of these components is critical to overall site integrity and therefore impact estimates for temporary or permanent closure reclamation plans and cost.

The Reclamation Plan and supporting documents do not support the assertion in the POO (App. C at 2) that the project is low risk, low uncertainty, good access, the lack of complexity. The Reclamation Plan ignores many aspects of the project identified in our comments on the Draft Waste Management Permit and application including the effects of avalanches, freezing conditions, lack of access during the winter, siting of fuel tanks in a dynamic geological setting

and inadequate analysis of natural conditions and insufficient monitoring, uncertainties in effluent water quality or quantity and overall performance of the LAD.

Instead "Constantine concluded that the low end of the range was appropriate for the Palmer project owing to the low overall cost of reclamation, the simplicity of the project, past performance of local contractors and relatively few number of contractors/subcontractors required to perform the reclamation." *See* POO App. C at 2. This unsupported conclusion leaves no room for performance failures or contingency.

Definition of Temporary Closure does not Match Site Maintenance Requirements

Temporary closure is described as care and maintenance leaving the LAD and monitoring program intact. Permanent closure calls for plugging the portal, removing the LAD and any other surface structures not reserved by the landowner. The estimation of financial assurances reflects the assumption that there will be no need for water treatment under permanent closure. "[T]here will not be any facilities required for long-term water management [or] any costs associated with operating or maintaining any facilities following reclamation and closure." *See* WMPA Attachment 3, 3.0 at 8. This assumption is unwarranted.

In the permanent closure plan a portal plug is described but not required. Even if a portal plug is required and constructed, portal plugs do not eliminate the need to capture, contain and treat seepage water. "Constructing plugs in the tunnel using concrete or other materials can reduce drainage for adits. The drainage will never be totally be eliminated since seepage will always occur to some degree through joining in the rock mass surrounding the plug, even if the rock mass has been grouted."[1] Supporting documents speak of reducing the seepage to de-minimis levels (WMPA Attachment 3 at 8) or "stemming" the seepage (WMPA Attachment 2 at 3). At no point is there expected to be zero ground water exiting the adit. The LAD must be maintained even under long-term closure. These costs must be included in the Direct Costs section

The application described the applicant performing and reporting monthly site inspections during the snow-free months for a two-year period following final closure to monitor seepage from the portal and reliance on the portal plug to eliminate seepage to de-minimis levels. *See* POO App. C at 2. This is completely inadequate monitoring for any long-term protection of the surrounding environment or to gauge the performance of the portal plug. Any concrete plug will face increased static pressure as seepage water accumulates behind it over time and possible structural deterioration due to corrosion of the cement if acid conditions occur. By stopping inspections after two years, the plan only provides monitoring at the time when portal plug is most likely to remain effective. The LAD or some significant part of it must remain operational as long as any seepage water is exiting the portal as well as maintain the daily inspections. Water quality testing needs to be routinely conducted to assure conditions remain neutral in order to protect the plug.

---

[1] Permanent Sealing of Tunnels to Retain Tailings or Acid Rock Drainage. Brennan Lang. Mine, Water and Environment 1999 IMWA Congress, Sevilla, Spain at 1. Available at: http://www.mwen.info/docs/imwa_1999/IMWA1999_Lang_647.pdf

Pressure transducers need to be installed inside the interior terminus of the plug and routinely monitored.

Temporary Closure Cost Estimates Inadequate

Under temporary closure the cost of "biweekly" inspections is listed. *See* POO App. C Table 1 at 5. This ignores the requirement of daily visual monitoring for seeps and access to ground water monitoring wells described at POO App. B at 7. "Year 1" costs reflect a value of 12 inspections per year. Merriam Webster defines "biweekly as **1:** occurring every two weeks, or 2**:** occurring twice a week. See, https://www.merriam-webster.com/dictionary/biweekly. Please correct. This is the same for Table 3. *Biweekly* Inspection Costs. The total cost shown is for twelve trips (1-Yr.) The $12,480.00 in biweekly site inspection costs assumes two inspections a month during 6 snow free months and when access road is passable. Half a year, 28 weeks would be 14 trips, not 12—and that should be in addition to the requirement for daily visual inspection below the LAD diffusers and maintenance of avalanche deflection structures currently not reflected in the cost estimates.

Furthermore, uncertainty in reclamation activities and cost do not reflect the uncertainty in the amount of time the LAD would be required.

> "BGC (the contractor) understands that, while sedimentation loading should be negligible once drilling ceases, water inflow will continue for a number of years following exploration activities, until such time as the adit is plugged. This is expected to occur approximately X years following the completion of the drilling. Management of water flows beyond the 3-year exploration activities are outside the scope of the design." *See* WMPA App. A at 5.

The Niblack project on Prince of Wales is an example where care and maintenance can be administratively extended numerous times. See Reclamation Plan extension at: http://dnr.alaska.gov/mlw/mining/largemine/niblack/pdf2/niblackrpa_j122711extension2017.pdf. If the applicant's contractor cannot predict performance beyond the three-year period of temporary closure, then administrative extensions should explicitly not be allowed.

If acid generating rock is encountered, a cover is required. *See* WMPA 2.3.3 at 10. No other description of this 'cover' is described anywhere. The mentioned "lack of project complexity, ease of access and moderate, moderate weather is not supported by the any of the supporting documents as mentioned in our comments of the draft Waste Management Permit. *See* POO App. C at 2. Not accounting for a reasonable level of uncertainty and underestimating the complexity of this project could dramatically underfund the cost of reclamation and site maintenance during the very time the project is producing no income for the owners.

Section 1 estimates the indirect closure costs and all estimates are at or just above the low end of the range of ADNR's suggested percentage of direct costs. The estimated direct costs are $756,116.00. *See* POO App. C Table 7 at 9. If one was just to take the midrange suggested costs defined by ADNR as a percentage of the direct closure costs, this would add $83,171

dollars to indirect costs or about 12% on the low end. Overall, the level of uncertainty of the project argues against choosing the low end of indirect cost estimation.

For all the reasons cited above, we request the DNR notify the applicant that additional time is needed and establish an alternative review schedule once the applicant provides all the information needed. *See* 11 AAC 97.300(e). Once DNR obtains all the needed information, the draft reclamation should be subject to additional public comment. The extent of issues identified cannot be remedied through modifications of the draft in a final document until the missing data and analysis is provided and another public comment period is scheduled to accommodate the public's interest in reviewing the information.

Thank you,

Guy Archibald
Staff Scientist