Kamloops Area Preservation Association
2068 Sifton Ave. Kamloops BC *Email:* theneaves@shaw.ca

January 12, 2018

To Whom it May Concern:

RE: Submission to Professional Reliance Review

Stakeholder's Background

Six and a half years ago, residents of Kamloops learned that the Polish national mining company, KGHM, was planning to develop an open pit copper/gold mine adjacent to the City of Kamloops with its population of 90,000. The mine property was located 1.6 km from Aberdeen neighbourhood and its 11,000 residents and only 1.7 km from one of the neighbourhood's two elementary schools.

The Kamloops Area Preservation Association (KAPA) worked from 2011 to 2017 to ensure that a thorough and diligent environmental assessment process was undertaken because we found it difficult to believe that such a project could be safely conducted so close to an urban setting. We believed that the long-term economic future of Kamloops did not lie in the development of an open pit mine which, in 23 years,would close, leaving behind a devastated landscape including adverse impacts to First Nations cultural heritage site, a negative impact on airshed quality, and groundwater problems in a key drainage area for the South Thompson River.

On December 14, 2017, The Minister of Environment and Climate Change Strategy, George Heyman, and the Minister of Energy, Mines and Petroleum Resources, Michelle Mungall, denied approval of KGHM-Ajax's application to develop this mine.

We are providing this Stakeholder Submission because, since 2011, our organization participated in the Community Advisory Group to the Environmental Assessment Office, thoroughly reviewed the proponent's applications and submitted meticulously researched documents during the three Public Comment Periods.

As a result we have extensive knowledge of the studies that were done by professionals hired by KGHM-Ajax, and the quality and accuracy of those studies.

Professional Reliance Problem: Qualified Professionals' failure to understand the limitations of the baseline data, which led to seriously unreliable conclusions about the impacts of the proposed mine.

Professional reliance in the environmental assessment of the proposed Ajax open pit copper/gold mine has completely failed to deliver a rigorous and comprehensive assessment that is required of a massive project in close proximity to a major population centre. The assessment of large, complex projects such as Ajax requires not only the most accurate and reliable scientific,

technical and financial information obtainable, but an interdisciplinary approach to understanding this information.

The Ajax assessment failed on both these counts, mainly because the provincial and federal assessment agencies (the BC Environmental Assessment Office and the Canadian Environmental Assessment Agency) failed to carry out a rigorous, interdisciplinary, comprehensive assessment. Instead, the assessment consisted of the assessment agencies relying on information that was being provided by the proponent and the proponent's consultants; information that was often not adequately critiqued and verified by the government ministries and departments that were entrusted to review this information. Key baseline information would be generated by several professional disciplines. This information would then be given to other professional disciplines to determine potential changes to the biophysical and cultural environments from the project, and this assessment would in turn be given to other professional disciplines that would determine the significance of the changes.

The Ajax assessment process was multi-disciplinary in nature, where a professional expert in one discipline would rely on the accuracy of the information from another professional expert in another discipline. However, the expert receiving the information from another expert in another discipline often simply accepted this information without discussing, in an interdisciplinary manner with the other expert, the characteristics, limitations and reliability of that information.

This failure was never more apparent than in the human health assessment of the Ajax project. For example, the proponent's geologists provided information about the geochemical characteristics of the rock that was to be blasted and processed into waste rock, concentrate and tailings. This information was then used by the air quality and water quality professionals without qualifying that different laboratory techniques used in determining the geochemical composition of the rock will often generate varying degrees of accuracy in the content of various toxic elements in the rock. This information was then input to air and water dispersion models, and used to determine deposition levels downstream and downwind of the project. These deposition levels were then used to determine potential human health impacts. Without a critical assessment of the original geochemical baseline data at every step that followed in the assessment process, there is no way of knowing whether the human health impact assessment is based on reliable and accurate baseline data.

Here are two examples where professional reliance in the Ajax assessment failed to understand the limitations of the baseline data, which led to seriously unreliable conclusions about the impacts of the proposed mine.

1. Professional Reliance failed to qualify the reliability of geochemical data.

KAPA provided the following comments in October 2017 to the assessment agencies (in italics) on the lack of disclosure of all the assay data the proponent had for the Ajax project, and of the laboratory techniques that were used to generate this data. Reports prepared by Dr. Kevin Morin as supporting documents to KAPA's comments are provided in the appendix of this submission.

If the test of best practice for environmental assessment is applied to the assay disclosure issue, the Ajax environmental assessment once again comes up short. The Australian National Pollution Inventory Emission Estimation Technique Manual for Mining states that "metal emissions can be estimated as a fraction of the TSP emissions, ***based on available assay data."***[1] *(emphasis added)*

KAPA first raised the issue of full disclosure of all Ajax assay data in its comments on the draft Application Information Requirements on March 26, 2012.[2] *The lack of full disclosure for the assay data was raised by the Community Advisory Group in a submission dated December 17, 2014,*[3] *and by several Community Advisory Group members in several meetings with the BC EAO and the CEAA. Finally, KAPA raised this issue in its April 7, 2016 comments on the Ajax Application.*[4]

Why the Assessment Authorities have not required the disclosure of all of the assay data that is available for the Ajax project is a question the Authorities have repeatedly refused to answer. Consequently, those members of the public that would be affected by Ajax cannot be certain that the limited assay data that has been released is representative of the metal content in the Ajax deposit.

KAPA has argued since the start of the Ajax assessment that all assay data should be disclosed in electronic spreadsheet format, including the methodologies and techniques used to derive each sample, so that the geochemical data that is used in the assessment can be checked and verified for accuracy. In response to Application/EIS Comment SSN-872, the Applicant has stated that it has an Ajax drill hole database including 1,170 drill holes for 255,250 meters of drill length, and a total sample database including 100,961 samples in 1031 drill holes.[5] *The KGHM memo further stated:*

---

[1] *National Pollutant Inventory Emission Estimation Technique Manual For Mining Version 3.1 January 2012, p. 13.*

[2] *Submission from the Kamloops Area Preservation Association for the Proposed Ajax Copper-Gold Mine,* March 26, 2012

[3] *Community Advisory Group Submission to the British Columbia Environmental Assessment Office and the Government of Canada Canadian Environmental Assessment Agency for the November 7, 2014 Version of the Application Information Requirements/Environmental Impact Statement Guidelines for the Proposed KGHM Ajax Mining Inc. Ajax Project*, December 17, 2014, p. 13. Available online at: https://projects.eao.gov.bc.ca/api/document/5887e0c3f64627133ae5b1a3/fetch.

[4] *Kamloops Area Preservation Submission to the British Columbia Environmental Assessment Office and the Government of Canada Canadian Environmental Assessment Agency for the Proposed KGHM Ajax Mining Inc. Ajax Project,* April 7, 2016, p. 3. Available online at: https://projects.eao.gov.bc.ca/api/document/5887e0f4f64627133ae5b29c/fetch.

[5] *Memorandum from Chris Wild, Project Manager, to Nicola Banton, Permitting Manager, Ajax Assay Data in response to Application/EIS Comment SSN872,* June 14, 2016, p. 1.

> *Consulting scientists working on HHERA had access to all the data available in 2012. These data comprised 50,084 samples each consisting of 2 - 3 metres of drill core cut in half. These data are representative of the deposit. The 2012 cut-off date for inclusion in health studies remains appropriate as exploration data is almost continuously added to the database and is reviewed for consistency and quality control. In some cases, the 2012 data over-estimates the actual values; the result of higher Lower Detection Limits (LDLs) in pre-2012 data. This adds a degree of conservatism to the impact assessments.*[6]

What is really at issue here is lack of disclosure of all Ajax assay data, which prevents verification of the data, the analysis and the conclusions, and flies in the face of the proponent's stated commitment to be transparent in its information sharing.[7] *All of the Ajax assay data is in electronic spreadsheet format so that the proponent can do geological modeling. Given this, it makes no sense to use sampling techniques to determine geochemical content since sampling techniques generate statistical errors. Rather, the entire assay data base contained in the spreadsheet could and should have been used for environmental assessment and human health risk purposes. Moreover,*

drilling is itself a form of sampling, with associated statistical errors. It therefore also makes no sense to use drilling sample data when the entire drilling data base can and should be used for assessment purposes. The following is KGHM's response to the SSN request to disclose all of the assay data:

> *We do recognize there must be a balance between **proprietorship** and **transparency**. We feel the procedures for collecting data to assess all impacts from future operations at Ajax achieves that. The geochemical database carries much of the project value. Conservatively, to drill 1,000 diamond drill holes totalling 250,000 m would cost in the order of $40 million. Cost of analysis alone would be >$4 million. Assay data is considered to be "proprietary" as it carries significant value. Furthermore, Ajax will be routinely sampling the material being mined and processed during the operation of the mine to confirm the material is consistent with what is analyzed in the Application/EIS.*[8]

In our submission, full disclosure of geochemical data for a project that is in close proximity to a large human population should be a mandatory requirement for environmental and human health assessment and related regulatory purposes (e.g. granting of project permits). Section 7 of the Canadian Charter of Rights and Freedoms arguably provides a constitutional basis for disclosure of information about chemicals that could interfere with "the right to life, liberty and security of the person…."[9]

---

[6] *Ibid, p. 2.*

[7] *Joint Assessment Report, p. 176, 186.*

[8] *Ibid, p. 3.*

[9] *The Constitution Act 1982,* being Schedule B to the *Canada Act 1982 (UK)*, 1982, c 11, s. 7.

In September 2016, KGHM apparently filed Ajax assay data with the Ministry of Mines as required under Section 33 of the Mineral Tenure Act.[10] Conveniently for the proponent, this data is confidential for one year under subsection 16(6) of the BC Mineral Tenure Act Regulation.[11] It seems contrary to the principles of transparency and corporate social responsibility to have filed this information so that it will not be disclosed until after the Ajax assessment is in its final stage. As for the responsibility of government to disclose such information, Section 25 (1) of the BC Freedom of Information and Protection of Privacy Act states:

Whether or not a request for access is made, the head of a public body must, without delay, disclose to the public, to an affected group of people or to an applicant, information

> *(a) about a risk of significant harm to the environment or to the health or safety of the public or a group of people, or*
>
> *(b) the disclosure of which is, for any other reason, clearly in the public interest.[12]*

Given the legal hierarchy of statutes and regulations, KAPA respectfully submits that a regulation cannot be contrary to a statutory requirement, and that the above-noted disclosure requirements in the Freedom of Information and Protection of Privacy Act therefore takes precedence over the privacy protections provided under the Mineral Tenure Act Regulation. Given that a HHERA was underway while the Government of British Columbia was in possession of Ajax assay information that is obviously in the public interest, KAPA submits the B.C. Government failed to fulfill its duty to disclose the assay data under ss. 25(1) of the Freedom of Information and Protection of Privacy Act.

2. Professional reliance failed to qualify the emissions factors used in the Ajax assessment.

An open pit mine has a multitude of airborne emissions sources, mostly fugitive, but some point sources. Emissions factors are used to estimate the potential emissions, and the accuracy of the data used for these emissions factors is therefore extremely critical to the human health assessment. The October 2017 KAPA submission to the assessment agencies provided many examples of deficiencies in the Ajax application with regard to emissions factors, the accuracy of which was the responsibility of the qualified persons and the assessment agencies. Here is one example of how professional reliance failed to provide accurate information about key emissions:

---

[10] *RSBC 1996, c 292.*

[11] *BC Reg 529/2004.*

[12] *RSBC 1996, c 165.*

Dust emissions estimates from the tailings

The equation that Ajax's consultants used to predict dust emissions from tailings was

$EF_{TSP\ (kg/ha/yr)} = 1.9 \times (s_{\%/1.5}) \times 365 \times (365\text{-}p/235) \times f_{\%/15})$

Where TSP = total suspended particulate
S% = silt content (% weight)
p = number of days per year when rainfall is greater than (0.25 mm)
f% = percentage of time that wind speed is greater than 5.4 m/s at the mean height of the stockpile

For the Ajax Application, silt content for the tailings was given as 11%, p was given as 152 days, and f was given as 17.7%. Both the precipitation and wind factors were open to question, but the most egregious error was the assumed 11% silt content of the tailings.

To achieve profitable metal recovery in the extraction process, hard rock mining typically requires a 50-80% particle size content that is classified as clay and silt, as indicated in the following chart. When questioned about the expected silt content in the Ajax tailings, former project manager Clyde Gillespie replied that the silt content would be about 40%.

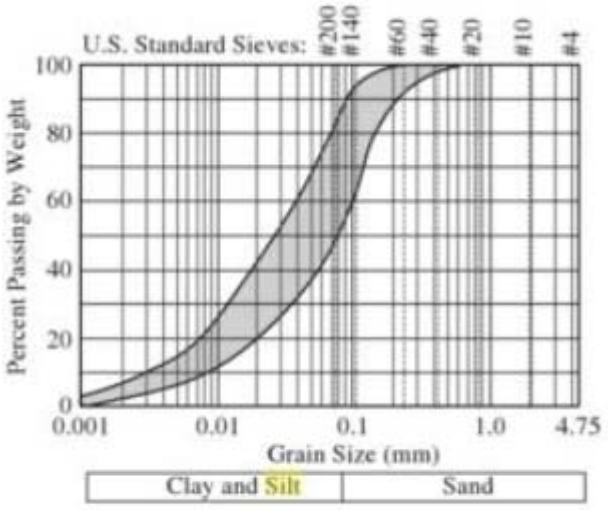

Figure 1. General range of grain size distributions of hard rock tailings (Vick 1990, Aubertin et al. 1996, Qiu & Sego 2001).

Applying a 40% silt content to the tailings dust equation increases the dust emissions by 3.63 times. A 70% silt content would increase the dust emissions by 6.36 times. The silt content for the Ajax application was disclosed in the air quality technical report. Clearly, the air quality consultants who prepared this report did not understand the significance of this error, and the geologists and mining engineers involved in preparing Ajax's application neglected to correct this error. This contributed to the under-estimation of airborne emissions, which were used by

Ajax's human health consultants to determine human health impacts. Clearly, these health impact consultants neglected to question the validity of the data being used in the air quality emissions studies, something which could have been easily done by doing an internet search for the equations for estimating dust emissions from mine tailings.

Tailings facilities for large open pit mines are also large facilities, and therefore large sources of potential dust emissions. Therefore, an error in calculating dust emissions from tailings facilities is not inconsequential since in the case of Ajax, the tailings facility would be approximately 600 hectares.

Recommendations

1. The proponent's consultants should not determine the terms of reference.

Under the BC Environmental Assessment Office, the terms of reference for environmental studies is called the Application Information Requirements (AIR). Under the professional reliance model, the AIR is drafted by the proponent's consultants. In the case of Ajax, the AIR was written by Ajax's consultants, with the BC EAO giving final approval, with no significant modifications. This process led to the proponent determining what was considered to be "in scope" or "out of scope."

One of the issues that was determined to be out of scope was the cumulative impacts of mining activity incremental to the Ajax project, but being enabled by the Ajax project. The proposed Ajax mine is in a mineralized area that includes the old Afton mine deposit that was mined between the 1970s and 1990s and the New Gold Afton deposit that is currently being mined. Ajax was initially mined as a satellite deposit to the old Afton mine, and the ore was trucked to the old Afton mine processing facility located 8 kilometres from the Ajax deposit. Other deposits such as the Rainbow, Crescent, Pothook, Iron Mask, and Galaxy deposits are located within the Afton-Ajax mineralized area.

Historical mineral resource estimates for the Galaxy deposit indicate that the known extent of the deposit is not currently large enough to support a stand-alone mine, but that the copper and gold grades make the deposit suitable as a satellite deposit to the proposed Ajax mine, which is located only 4 kilometres away.[13] The Galaxy deposit is located only 1.1 kilometres from the nearest residential community in the City of Kamloops, Pineview.

Community groups tried to include the development of the other mining properties in the Ajax-Afton area in the potential cumulative effects assessment for the Ajax project, but the BC EAO approved the proponent's AIR draft to exclude these properties from the cumulative effects assessment.

It is not known what role professionals and qualified persons associated with the Ajax proposal played in having these cumulative effects deemed out of scope, but the potential for bias towards

[13] NI 43-101 *Technical Report Galaxy Copper-Gold Project,* Prepared for: Discovery-Corp Enterprises Inc., October 15, 2013.

limiting the scope of environmental assessments based on a proponent's consultants preparing the terms of reference suggests that this practice should be abolished.

2. Professional reliance in preparing NI 43-101s report should be reviewed.

NI 43-101 reports are prepared by Qualified Professionals as part of disclosure requirements under securities legislation. These reports often contain valuable technical and financial information for proposed mining projects; this information is critical to the environmental assessment of a proposed project. Two NI 43-101 reports were prepared for the Ajax project: one in 2009 and the other in 2012.

The Kamloops Area Preservation Association tried to have the 2012 NI 43-101 report included in the Ajax assessment as key technical and financial information for the project, but this request was rejected by the BC EAO and the CEAA.

It is completely illogical that highly relevant information prepared by qualified persons not be included in the environmental assessment process, and this exclusion should be included in the review of the professional reliance model as currently practiced in British Columbia. In the case of the Ajax project, important information regarding the financial capability of the proponent to fund mitigation and compensation costs was included in the 2012 NI 43-101 report.[14]

It should be noted however that the role of professional reliance in the preparation of NI 43-101 reports should also be reviewed, given the importance of the information in NI 43-101 reports to resource development decisions. In 2012, the Ontario Securities Commission reviewed 50 NI 43-101 reports and found that only 20% of these reports were compliant with NI 43-101 reporting requirements, while 40% were rated as minor non-compliance, and 40% were rated as major non-compliance.[15]

3. We need rigorous, non-biased assessment of key scientific, technical and financial data, including more and better expertise at the government level and a combined community and expert panel review involving public hearings.

The deficiencies noted in the professional reliance model as it relates to the assessment of a complex mine project raise the question of how expert information should be processed in the assessment process. As the deficiencies in the Ajax assessment have shown, both the federal and provincial assessment agencies and the government ministries that were enlisted to review the information provided by the proponent, failed in many cases to facilitate a rigorous and comprehensive assessment.

We are concerned about the lack of qualifications in government ministries, and in cases where there are government experts, their expertise is not applied. In the case of the federal assessment of the Ajax project, the federal government has expertise in emissions factors, in the form of

[14] Ajax Copper/Gold Project – Kamloops British Columbia Feasibility Study Technical Report, January 6, 2012.

[15] Available online at: http://www.osc.gov.on.ca/en/SecuritiesLaw_sn_20130627_43-705_rpt-tech-rpt-mining-issuers.htm. Accessed January 7, 2018.

guidelines that Environment Canada has for polluters submitting data to the National Pollutants Release Inventory (NPRI). Yet we have found no evidence that all of the potential emissions from Ajax were assessed by Environment Canada according to the guidelines for the NPRI.

More and better expertise at the government level is part of the solution, but this alone would not ensure that a rigorous and comprehensive assessment will be done. To ensure that the best possible assessment has been done requires that such an assessment be conducted in an open and public manner.

The best way of achieving the best possible assessment is a combined community and expert panel involving public hearings, where the evidence is subject to the scrutiny of cross-examination. Although it is recognized that there are numerous procedural issues involved in this model, public hearings encourage a proponent and its professional consultants to provide more reliable and accurate information, knowing that such information will be subjected to a higher level of scrutiny. The Ajax assessment suffered from the lack of public hearings, with the result being an assessment that contained a staggering multitude of flaws and deficiencies. As a result, it was First Nations and community groups that had to force government agencies to fulfill their responsibilities, a task which will only be completed when reforms to the environmental assessment and professional reliance models in British Columbia are enacted.

Professional Reliance Problem: Proponents and government are relying on expert opinion that falls outside the guidance or oversight of a professional body.

In the Ajax mine application, the BCEAO relied on the input of the proponent's economic professionals to develop and oversee the property value assessment Valued Component (VC). It became apparent through the review process that the proponent's economic professionals:

- Did not have in-depth experience with property value assessments as they made several statements that reflected an overall lack of knowledge of the data used in property value assessments;
- They used very selective information and case examples to put forward;
- Refused to cite their detailed research methods and sources, which they relied upon to derive their conclusions, thus completely ignoring standard research methods or allow others to verify their findings; and,
- Provided comments that were really opinions and not ground in the conventional research or literature available.

For their part, the BCEAO stated they had relied on the input of the various local governments and their own consultants but here discrepancies quickly appeared, including:

- Local governments did not agree with the BCEAO that their input had been considered in the case of property value VC assessment and, in the case of the Thompson Nicola Regional District, stated that they in fact they had not provided comment on property values at all; further,

- The BCEAO stated that they had retained a consulting firm to review the property value VC; however, upon reviewing the terms of reference, there was no mention of property values and the documented comments attributed to the BCEAO's consultant were minimal, given the issues at hand to be explored.

In the end the BCEAO, stated they used their own internal expertise, but again, never provided evidence of those individuals that had a suitable background to undertake such a review.

Recommendations

Overall, this work left many in the community and, in particular, the neighborhood of Aberdeen, very concerned about the reliability and credibility of the work being undertaken and overseen by the province. In the future it is critical that the province ensure a transparent process be employed and that appropriate expertise be retained by senior levels of government. Specific recommendations would include:

1. **Take a greater oversight role in VC development that do not have experts who are backed by professional organizations that have oversight rules or bodies;**

2. **Develop assessment processes on controversial VCs that involve steering committees representing both perspectives (proponent, community, First Nations, etc.) to jointly develop the scope and method of study;**

3. **Engage an independent third party to ensure valid methods and appropriate data standards are employed by the professionals during their research; and,**

4. **Ensure all major projects that may potentially create significant risks to health be subjected to a panel review.**

Appendix

(see attached documents)

Ajax Mine Project – Comments on Mercury Contamination by K. Morin June 2017,

Ajax Mine Project – Joint Federal Comprehensive Study- Provincial Assessment Report Draft June 2017 Comments on Draft Decision by K. Morin.

Assay Analytical Technique Evaluation Ajax Project Review –MDAG March 31, 2016.

Morin Report – Ajax Project Review – Sierra Club of BC Foundation –MDAG Review of Predicted Water Contamination, March 31, 2016.