



# Submission to BC Ministry of Environment: Mount Polley Mine Permit Application for Long Term Water Management Plan & Discharge into Quesnel Lake

MiningWatch Canada

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## Introduction

MiningWatch Canada was created in 1999 as a co-ordinated public interest response to the threats to public health, water and air quality, fish and wildlife habitat, and community interests posed by some irresponsible mineral policies and practices in Canada and around the world. It is supported by twenty-seven Canadian environmental, social justice, Indigenous, and labour organisations.

MiningWatch has worked on environmental and water quality assessments of dozens of mining projects, directly or in collaboration with other groups, experts and affected communities. We have been very active in trying to improve water quality law, policy, and practice, working with administrative and legislative bodies and even resorting to litigation when it proved necessary to protect the public interest and the integrity of Canadian waters.

MiningWatch Canada is very concerned about Mount Polley Mining Corporation's (MPMC) application for a long-term permit to discharge not-fully treated mine waste water into Quesnel Lake.<sup>1</sup> We recommend that the BC Ministry of Environment (MOE):

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<sup>1</sup> Golder Associates 2016: [https://imperialmetals.com/assets/docs/3\\_2016-10-17---LTWMP-Technical-Assessment-Report-\(Golder\).pdf](https://imperialmetals.com/assets/docs/3_2016-10-17---LTWMP-Technical-Assessment-Report-(Golder).pdf)

1. reject this permit application and require MPMC to propose alternative options to its long-term water management plan, including full treatment of mine effluent and possible discharge points into less sensitive waters;
2. require a ‘dry closure’ to reduce risks and ensure long-term stability, as recommended by the Independent Expert Panel report<sup>2</sup> on the 2014 Mount Polley dam breach and spill;
3. strengthen current MPMC’s financial securities to eliminate long-term public liability for site closure, clean-up, maintenance, and perpetual care;<sup>3</sup>
4. obtain clear support and consent from all of the locally affected communities, First Nations, and organizations for a proposed long-term water management and closure plan—including proper remedies for the people that were, and still are, affected by the 2014 mine spill.

This submission focuses primarily on the rationale behind our **Recommendation #1**.

## Over 38,000 tonnes of contaminants in the first 5 years

If approved, this permit would allow MPMC to discharge, over the next 5 years, more than 38,000 tonnes of additional contaminants into Quesnel Lake, including over 0.9 tonnes of arsenic, 1.1 tonnes of copper, 1.9 tonnes of zinc, 2.4 tonnes of selenium, 2.9 tonnes of phosphorous, 11.8 tonnes of molybdenum, 32.6 tonnes of iron, 42.4 tonnes of ammonia, 489.7 tonnes of unspecified suspended solids, 1,110 tonnes of nitrite, and 36,237 tonnes of sulphate. These quantities would increase by as much as 53% if a maximum yearly discharge of 10M m<sup>3</sup> (10 billion litres) is used instead of the predicted average discharge of 6.5M m<sup>3</sup> (6.5 billion litres) per year. They would be added to the 18M m<sup>3</sup> of mine waste that the 2014 mine spill already spread at the bottom of Quesnel Lake, downstream from Hazeltine Creek. The current permit application does not fully address the risks and impacts of those additional contaminants in the water and on the sediments, particularly over longer period.<sup>4</sup>

## Failing to meet BC’s Water Quality Guidelines

The current permit application would allow MPMC to increase contaminants release into Quesnel Lake over its current ‘temporary’ permit levels (Sept. 2016 permit) by up to 25% for selenium, 54% for sulphate, 80% for molybdenum, 175% for copper, 217% for ammonia, 251% for nitrite, 264% for chromium, 611% for zinc, 724% for arsenic, and 809% for iron.<sup>5</sup>

While MPMC claims that it would respect the federal Metals and Mining Effluent Regulations (MMER), it should be remembered that the MMER limits provide poor guidelines: only 5 toxic metals are regulated and their limits should be considered as ceiling, ‘never-to-be surpassed’ levels. The US

<sup>2</sup> <https://www.mountpolleyreviewpanel.ca/final-report>

<sup>3</sup> MPMC states that, as of January 2016, the Reclamation and Closure Bonding in place for the mine totals only \$22.1 million (<https://www.imperialmetals.com/assets/docs/mp-technical-report-may-20-2016.pdf>, p.20-167). MiningWatch considers this bond to low when considering all of the long-term risks, maintenance, and perpetual care issues, as well as potential risks of additional failures, spills, or accidents. See also the following recent reports on the financial risks and liabilities of contaminated mine sites in British-Columbia: BC Auditor General (<http://www.bcauditor.com/sites/default/files/publications/reports/OAGBC%20Mining%20Report%20FINAL.pdf>). Economist Robyn Allan ([https://d3n8a8pro7vhmx.cloudfront.net/ubcic/pages/1290/attachments/original/1463347826/Toward\\_Financial\\_Responsibility.pdf](https://d3n8a8pro7vhmx.cloudfront.net/ubcic/pages/1290/attachments/original/1463347826/Toward_Financial_Responsibility.pdf)), and MiningWatch’s analysis (<http://miningwatch.ca/news/2016/5/30/new-analysis-british-columbia-ranks-worst-canada-unsecured-environmental-liability>)

<sup>4</sup> For a more detailed description of the impacts of the 2014 spill on waters, ecosystems and fish habitat, see [http://miningwatch.ca/sites/default/files/the\\_lawsuit\\_0.pdf](http://miningwatch.ca/sites/default/files/the_lawsuit_0.pdf)

<sup>5</sup> Dr. David Chambers, Center for Science in Public Participation (CSP2), Letter to BC Ministry of Environment Re: Comments on Mt. Polley Technical Assessment Report, December 2016, and Golder Associates 2016 [https://imperialmetals.com/assets/docs/3\\_2016-10-17---LTWMP-Technical-Assessment-Report-\(Golder\).pdf](https://imperialmetals.com/assets/docs/3_2016-10-17---LTWMP-Technical-Assessment-Report-(Golder).pdf)

Environment Protection Agency (EPA) and most provinces and territories usually apply stricter water quality guidelines.

Overall, MPMC's permit application would allow it to discharge contaminants at levels significantly higher than the BC's Drinking Water and/or Fresh-Water Aquatic Life 30-day Guidelines: 44% higher for molybdenum, 300% for chromium, 409% for sulphates, 460% for Arsenic, 500% for phosphorous, 687% for zinc, 1033% for nitrite, 1550% for copper, 3650% for selenium<sup>6</sup>. And the gap widens even more when compared to pre-breach, unaltered waters of Quesnel Lake<sup>7</sup>.

## Dilution is not an acceptable solution

MPMC justifies such discharge levels by counting on an 'Initial Dilution Zone' (IDZ) that would 'water down,' over a distance of approximately 100m into Quesnel Lake, contaminant levels to ambient BC water quality guidelines. Instead of investing into water treatment technologies and practices to ensure that its effluent quality meets the BC's water quality guidelines at the point of discharge, MPMC is counting on the natural waters of Quesnel Lake to do the cleaning job and dilute contaminants.

MiningWatch Canada considers this approach as unacceptable and contrary to best available practices and technologies. Both BC and Canadian water quality guidelines discourage or prohibit the use of an 'initial dilution zone' (IDZ) if alternative technologies and practices are available and economically achievable (BAT-EA)<sup>8</sup>. The Canadian Guidance on the Site-Specific Application of Water Quality Guidelines (SSA-WQG) insists that "*mixing zones should not be used as an alternative to reasonable and practical pollution prevention, including wastewater treatment (pollution prevention principle)*"<sup>9</sup>. Even Golder Associates, the main author for the permit application, acknowledges this fundamental principle: "[Initial Dilution Zones] are typically only allowed when BAT has been applied"<sup>10</sup>.

The Canadian Guidance also states that water quality limits obtained through a dilution zone "*cannot be higher than those that are developed based BAT-EA*". It dictates that it cannot 'impinge on critical fish or wildlife habitats,' result in 'accumulation of toxic substances in water or sediment,' or adversely affect 'the aesthetic qualities' of the receiving waters. BC's 2015 Waste Discharges policy also insists to take into account "*many considerations... when developing waste discharge standards,*" including "*environmental sensitivity, cumulative effects... local air and water shed plans, First Nations interests, other guidelines, and stakeholder input.*"<sup>11</sup> It "*encourages the consideration of technologies that are not yet in commercial operation, to promote innovation,*" and refers to technology as including any "*industrial processes... pollution control equipment... and engineering practices.*"<sup>12</sup> We argue that MPMC's permit application fails to meet many of the above criteria.

<sup>6</sup> Ibid. and <http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines>

<sup>7</sup> Golder Associates 2016, Table 3-16: [https://imperialmetals.com/assets/docs/3\\_2016-10-17---LTWMP-Technical-Assessment-Report-\(Golder\).pdf](https://imperialmetals.com/assets/docs/3_2016-10-17---LTWMP-Technical-Assessment-Report-(Golder).pdf)

<sup>8</sup> <http://ceqg-rcqe.cme.ca/download/en/221>, [http://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/pulp-paper-wood/best\\_achievable\\_control\\_tech.pdf](http://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/pulp-paper-wood/best_achievable_control_tech.pdf)

<sup>9</sup> <http://ceqg-rcqe.cme.ca/download/en/221>

<sup>10</sup> Golder Associates, Appendix E, Attachment B

<sup>11</sup> BC MOE, Factsheet Waste Discharges, March 2015

[http://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/pulp-paper-wood/best\\_achievable\\_control\\_tech.pdf](http://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/pulp-paper-wood/best_achievable_control_tech.pdf)

<sup>12</sup> BC MOE, Factsheet Waste Discharges, March 2015

[http://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/pulp-paper-wood/best\\_achievable\\_control\\_tech.pdf](http://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/pulp-paper-wood/best_achievable_control_tech.pdf)

As an advising and steering committee member for over 15 years of the Mine Environment Neutral Drainage (MEND) group and the National Orphaned/Abandoned Mine Initiative (NOAMI), both industry-government and multi-stakeholder initiatives,<sup>13</sup> we have contributed to, and reviewed multiple studies focused on mine waste and mine effluent technologies and practices. In one report produced for MEND in 2014, Hatch clearly identifies an array of technologies that could be used to significantly reduce most of the contaminants identified above to about one third of their current proposed permit limits<sup>14</sup>. For MPMC, cost estimates for those methods would range from \$7 to 11 million per year in operation, and about \$14 to 22 million in initial investment.<sup>15</sup> Hatch's report also identifies higher-cost, higher-performance treatment methods. While MPMC's financial capacity is relatively limited, those cost levels fall within the range of the project's annual operating and capital costs estimated at an average of \$130 million per year for next five years.<sup>16</sup> They also fall within the range of the company's annual gross revenue and available cash flow, respectively at \$350 million and \$108 million from Jan. 2016 to Sept. 2016, which represents a 483% and 800% increase when compared to the same period the year before.<sup>17</sup>

## Non-degradation standard

The Canadian Guidance on the Site-Specific Application of Water Quality Guidelines (SSA-WQG) identifies 'non-degradation' as one of three main approaches to limit or eliminate waste water effects into receiving waters.<sup>18</sup> The other two approaches include a technology-based approach, using best available and economically achievable technologies (BAT-EA), and an approach based on the 'assimilative capacity' of the receiving waters using a dilution zone. Both latter approaches were discussed above.

Under a non-degradation approach, the Canadian Guidance SAA-WQG explains that contaminant "*limits are established based on the natural background levels,*" ensuring that "*environmental receptors... have no incremental risk of adverse effects due to discharges from point sources*".<sup>19</sup> In other words, mine effluent quality at the discharge point needs to be 'as good' or 'better' than the receiving water quality as to avoid its degradation.

Several US States and mines—such as in Montana, Alaska and Washington States—enforce a non-degradation (or antidegradation) standard for waste water discharge.<sup>20</sup> Where a non-degradation standard is legislated, proponents cannot deviate from its application unless they can satisfy exceptional conditions. This represents, overall, a much stricter framework than the Canadian guidelines, which do not legally require the application of a non-degradation standard.

Two examples of US mines enforcing a non-degradation standard are the Buckhorn Mine (Kinross Gold Corporation) in Northern Washington State, near the Canadian border, and the Pogo Mine in Alaska (Sumitomo Metal Mining Pogo LLC). Buckhorn Mine's permit requires extensive effluent treatment and imposes strict limits, which compared to MPMC's current permit application, would

<sup>13</sup> <http://mend-nedem.org/default/> et <http://www.abandoned-mines.org/en/>

<sup>14</sup> E.g. for As, Fe, Se, Zn, and TSS (see Hatch 2014, Table 10.1 for base metal mines: [http://mend-nedem.org/wp-content/uploads/MEND\\_3.50.1\\_BATEA.pdf](http://mend-nedem.org/wp-content/uploads/MEND_3.50.1_BATEA.pdf)).

<sup>15</sup> Assuming a 6.5 to 10.0 Mm<sup>3</sup>/year of effluent treatment, an operational cost of \$0.02 to \$1.08/m<sup>3</sup>, and an initial investment of \$550 to \$19 800/m<sup>3</sup>/h (see Hatch 2014, Table 10.1 for base metal mines: [http://mend-nedem.org/wp-content/uploads/MEND\\_3.50.1\\_BATEA.pdf](http://mend-nedem.org/wp-content/uploads/MEND_3.50.1_BATEA.pdf)).

<sup>16</sup> <https://www.imperialmetals.com/assets/docs/mp-technical-report-may-20-2016.pdf>, p.21-170

<sup>17</sup> <https://www.imperialmetals.com/for-our-shareholders/press-releases/imperial-reports-third-quarter-2016-financial-results>

<sup>18</sup> <http://cegg-rcqe.ccme.ca/download/en/221>

<sup>19</sup> <http://cegg-rcqe.ccme.ca/download/en/221>

<sup>20</sup> E.g. Montana <http://www.mtrules.org/gateway/Subchapterhome.asp?scn=17.30.Z>, <http://deq.mt.gov/Portals/112/DEQAdmin/DIR/Documents/legal/Chapters/CH30-07.pdf>, or Alaska <http://dec.alaska.gov/commish/regulations/pdfs/18%20AAC%2070.pdf>

represent a 73% reduction in ammonia release, 76% for copper, 78% for zinc, 94% for iron, 98.6% for arsenic, and 99.8% for sulphate<sup>21</sup>. Except for copper, these reduced levels would meet all of the BC water quality guidelines<sup>22</sup>. For its part, the Pogo Mine permit in Alaska requires an ‘off-river’ dilution and effluent treatment in order to meet existing water quality conditions into the Goodpasture River, as prescribed by a non-degradation standard. If levels are too high, the waste water is re-routed back to the treatment and off-river dilution process.<sup>23</sup>

## Outstanding waters

Some States—such as Montana and Alaska—require a mandatory non-degradation standard if receiving waters are, or can be classified as “*outstanding resource waters*.”<sup>24</sup> Alaska defines such waters as “*a water of a national or state park or wildlife refuge*” or “*a water of exceptional recreational or ecological significance*.”<sup>25</sup> Montana can designate ‘outstanding waters’ using similar criteria.<sup>26</sup>

It can be argued that Quesnel Lake is an ‘outstanding resource water.’ It is one of deepest lakes in the world, home to multiple fish species crucial to regional fisheries, a source of drinking water, and is sacred to local residents and Indigenous peoples who depend on its quality for their livelihoods.

According to BC Parks, the Quesnel Lake area meets BC’s Protected Areas Strategy “Goal 2 (Special Feature),” which objective is to “*protect special natural, cultural heritage, and recreational features, including rare and endangered species and critical habitats, outstanding or unique botanical, zoological, geological, and paleontological features, outstanding or fragile cultural heritage features, and outstanding recreational features*.”<sup>27</sup>

BC Parks adds: “*Quesnel Lake... is provincially unique... the deepest lake in British Columbia and possibly the deepest fiord lake in the world.*”<sup>28</sup> Various areas within Quesnel Lake “*contain important habitat for fish species which support a host of species including... Lake Trout, Rainbow Trout, Redside Shiner, Chinook Salmon, Coho Salmon, Sockeye Salmon, Kokanee, as well as the blue-listed Bull Trout.*”<sup>29</sup>

In the wake of the 2014 mine waste spill, even Premier Christy Clark did not hesitate to recognize the outstanding value of Quesnel Lake for British-Columbia: “*This is a pristine resource for everybody... We are going to be with you, shoulder to shoulder, to do everything we can to return it to the real pristine beauty we all know this lake is for our province, because this is just such an incredible, incredible asset*”.<sup>30</sup>

<sup>21</sup> WA Department of Ecology, National Pollutant Discharge Elimination System, Permit No.WA0052434, 2014 (paper copy only).

<sup>22</sup> Selenium is not a contaminant of interest at the Buckhorn Mine.

<sup>23</sup> <https://www3.epa.gov/region10/pdf/permits/npdes/ak/ak0053341-fs.pdf>

<sup>24</sup> Montana Code <http://www.mtrules.org/gateway/Subchapterhome.asp?scn=17.30.7> and Alaska Water Quality Guidelines <http://dec.alaska.gov/commish/regulations/pdfs/18%20AAC%2070.pdf>

<sup>25</sup> Paragraph 3, Provision 18 AAC 70.015, Alaska’s Department of Environmental Conservation Water Quality Standards: <http://dec.alaska.gov/commish/regulations/pdfs/18%20AAC%2070.pdf>

<sup>26</sup> E.g. if one, or more, of the following criteria are met: (a) waters have been designated as wild and scenic; (b) endangered or threatened species found in the waters; (c) outstanding recreational fishery in the waters; (d) only source of suitable water for a municipality or industry; (e) only source of suitable water for domestic water supply. Paragraph 4, Provision 75-5-316 “Montana Outstanding resource water classification -- rules -- criteria -- limitations -- procedure -- definition” <http://leg.mt.gov/bills/mca/75/5/75-5-316.htm>

<sup>27</sup> Ibid.

<sup>28</sup> BC Parks 2015, *Quesnel Lake Park Management Plan*, [http://www.env.gov.bc.ca/bcparks/explore/parkpgs/quesnel\\_lk/quesnel-lk-mp.pdf?v=1482786732317](http://www.env.gov.bc.ca/bcparks/explore/parkpgs/quesnel_lk/quesnel-lk-mp.pdf?v=1482786732317)

<sup>29</sup> Ibid.

<sup>30</sup> Premier Christie Clarke, *CBC News* 8 Aug. 2014

## Local opposition and lack of consent

In this context, it is not surprising that local residents and First Nations members have mobilized to oppose MPMC's current permit application and any further, long-term discharge of mine waste water into Quesnel Lake.<sup>31</sup> They are already affected by both the dumping of 18 billion litres of mine waste at the bottom of Quesnel Lake in 2014 and the 'temporary' discharge of contaminated mine effluent that followed. Destruction of Hazeltine Creek, blurry waters, clogged water filters, and slimy beaches along the lake are some of the visible impacts since 2014. People have also lost part of their livelihood and suffered various social and cultural impacts. There are also long-term impacts to people and ecosystems that remain yet to be documented.<sup>32</sup>

As stated above, BC's 2015 Waste Discharges policy insists to take into account "*many considerations... when developing waste discharge standards,*" including "*environmental sensitivity... First Nations interests... and stakeholder input.*"<sup>33</sup> Ongoing concerns raised by members of Xat'sull (Soda Creek) and T'exelc (Williams Lake Indian Band), as well as formal opposition taken by local organizations such as the Likely Chamber of Commerce, Concerned Citizens of Quesnel Lake, and local members of First Nation Women Advocating for Responsible Mining, clearly indicate that MPMC's long-term water management plan, as currently proposed, is unacceptable. Alternative options should be considered, taking into account locally affected communities, residents, and First Nations.

## Conclusion

MiningWatch Canada is very concerned about Mount Polley Mining Corporation's (MPMC) application for a long-term permit to discharge not-fully treated mine waste water into Quesnel Lake. In light of the issues described above, we recommend the BC Ministry of Environment (MOE) to reject this permit application and require MPMC to propose alternative options, including full treatment of mine effluent and possible discharge points into less sensitive waters. This is the main recommendation of this submission. It supports the position of locally affected residents and community members whose well-being and livelihoods have depended on the quality of Quesnel Lake waters in the past, and will continue to do so in the future.

Thank you for the opportunity to share our views on this important matter.



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*\*\*Thank you to MEC & Patagonia for supporting the work we do in BC to help better protect critical ecosystems and livelihoods affected by mining.*

<sup>31</sup> See for example: <http://www.wltribune.com/opinion/letters/400459181.html>, <http://www.wltribune.com/opinion/letters/401759055.html>, [http://image.issuu.com/161209115211-a79251e4b6fe407ab9ddd41abd85469b/jpg/page\\_10.jpg](http://image.issuu.com/161209115211-a79251e4b6fe407ab9ddd41abd85469b/jpg/page_10.jpg), <http://www.wltribune.com/news/405644506.html>, and <http://www.princegeorgecitizen.com/opinion/columnists/mount-polley-brings-new-cause-for-concern-1.4477108>

<sup>32</sup> For a more detailed description of the impacts of the 2014 spill on waters, ecosystems and fish habitat, see [http://miningwatch.ca/sites/default/files/the\\_lawsuit\\_0.pdf](http://miningwatch.ca/sites/default/files/the_lawsuit_0.pdf)

<sup>33</sup> BC MOE, Factsheet Waste Discharges, March 2015  
[http://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/pulp-paper-wood/best\\_achievable\\_control\\_tech.pdf](http://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/pulp-paper-wood/best_achievable_control_tech.pdf)