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February 3, 2020

Mr. Patrick Wruck  
Commission Secretary and Manager  
Regulatory Support  
British Columbia Utilities Commission  
Suite 410, 900 Howe Street  
Vancouver, BC V6Z 2N3

Dear Mr. Wruck:

**RE: British Columbia Utilities Commission (BCUC or Commission)  
British Columbia Hydro and Power Authority (BC Hydro)  
Dam Safety Complaint  
BC Hydro's Further Response to the Commission's Request for  
Information**

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BC Hydro writes in response to the Commission's letter of December 19, 2019 requesting BC Hydro review correspondence it provided in response to a freedom of information request (FOI Request), and to address the safety concerns raised, by February 3, 2020. This response is further to BC Hydro's preliminary filing of January 3, 2020, which provided the Commission with the Dam Safety Reviews for the W.A.C. Bennett Dam and the Peace Canyon Dam, filed confidentially pursuant to section 42 of the *Administrative Tribunals Act* and Part 4 of the Commission's Rules of Practice and Procedures. Dam Safety Reviews are maintained and filed in confidence as they may contain information regarding critical infrastructure with the potential to cause harm if disclosed.

The Commission, in its initial email to BC Hydro dated December 18, 2019, indicated that it was in receipt of the FOI Request documents and, although there was no specific complaint noted, asked BC Hydro to "review the correspondence" and to "address the safety concerns raised". Accordingly BC Hydro has contained this submission to a summary of its dam safety management, including seismic events and concerns raised in the FOI Request regarding the impact of oil and gas activities in proximity to BC Hydro dams in the Peace River region.

## **1 Dam Safety Management at BC Hydro**

BC Hydro's first priority is the safety of the public and its employees. This priority extends to the manner in which BC Hydro manages the safety of its dams, which is in

accordance with British Columbia's *Water Sustainability Act*<sup>1</sup> and *Dam Safety Regulation*<sup>2</sup> and follows accepted Canadian and international practices established by the Canadian Dam Association and the International Commission on Large Dams, respectively.

Our website provides information on dam safety at BC Hydro, some of which has been provided in this submission.<sup>3 4 5</sup>

## 1.1 Regulation and Governance

As a dam owner, BC Hydro is accountable to the Government of B.C. for overseeing the safety of BC Hydro dams in accordance with the *Water Sustainability Act* and the *Dam Safety Regulation (Regulation)*. BC Hydro employees communicate regularly with the Comptroller of Water Rights, who represents the Government of B.C. on dam safety matters, and provincial Dam Safety Officers, who work to ensure compliance with the Regulation.

The importance and priority that is accorded to dam safety in BC Hydro is underscored by its governance over dam safety activities. The Board of Directors is accountable for all risks incurred by BC Hydro and delegates authority for risk management to the Chief Executive Officer, who in turn delegates authority for management of dam safety risks to the Senior Vice-President, Integrated Planning and the Director, Dam Safety.

## 1.2 BC Hydro's Dam Safety Program

Through our comprehensive Dam Safety Program (**Program**), BC Hydro complies with the requirements of the Regulation and, as delegated to the Director, Dam Safety, manages the risks associated with our dams, reservoirs and water passages to protect against any impacts from their misoperation or failure and to support continued reliability of electricity supply.

The Program encompasses all activities that pertain to regulatory compliance and management of dam and reservoir-related risks, such as:

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<sup>1</sup> <http://www.bclaws.ca/civix/document/id/complete/statreg/14015>

<sup>2</sup> <http://www.bclaws.ca/civix/document/id/complete/statreg/40> 2016

<sup>3</sup> [https://www.bchydro.com/news/press\\_centre/news\\_releases/2020/statement-from-bc-hydro-director-of-dam-safety.html](https://www.bchydro.com/news/press_centre/news_releases/2020/statement-from-bc-hydro-director-of-dam-safety.html) [page active as of January 9, 2020]

<sup>4</sup> <https://www.bchydro.com/energy-in-bc/operations/dam-safety.html> [page active as of January 2020]

<sup>5</sup> <https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/safety/bc-hydro-seismic-safety-executive-summary-2014.pdf> [page active as of January 2020]

- Establishing operational controls for dam safety – e.g., rules for reservoir elevations and characteristics and operations of discharge facilities;
- Maintenance of dams – e.g., preventative and corrective maintenance;
- Surveillance, monitoring and testing of dams – e.g., thousands of instruments and devices are used to continuously monitor the dams' performance; all dams are visually inspected monthly and major dams are inspected weekly; spillway gates and other critical equipment are tested monthly; motion accelerometers are located at most dam sites to record ground motions and earthquake alerts<sup>6</sup> are monitored;
- Maintaining an issues database – e.g., a repository for noted concerns and deficiencies and used in developing plans for resolution of minor issues, engineering investigations of potential deficiencies, and capital investments for remediation of deficiencies;
- Investigation and remediation of potential dam safety issues and deficiencies – e.g., BC Hydro budgets \$2.9 million annually to perform engineering investigations of potential deficiencies, to develop a better understanding of internal hazards and failure mechanisms, and to model external hazards such as floods and earthquakes. Further, over the course of the next ten years, BC Hydro's capital plan includes approximately \$2 billion dollars of investment in dam safety improvements;
- Regulatory reporting – e.g., BC Hydro provides all required regulatory reporting to the Comptroller of Water Rights. Through this reporting, BC Hydro's objective is to keep the regulator for dam safety fully apprised of the status of BC Hydro's Program and satisfied that BC Hydro is meeting the requirements of the Regulation by meeting the responsibilities of a dam owner for dam condition and safety;
- Audit and review – e.g., the Regulation requires independent Dam Safety Reviews<sup>7</sup> be conducted every ten years for High and Very High consequence dams, and every seven years for Extreme consequence dams. Additionally audits of the Program have been performed by BC Hydro's Audit Services.<sup>8</sup>

## 2 Hydraulic Fracturing and other Oil and Gas Industry Activities

BC Hydro first became aware of and concerned about oil and gas activities in the Peace River region and particularly near Peace Canyon Dam in 2009 with the commencement of coal bed methane fracking. Since then BC Hydro's interest in fracking, waste water injection, and the potential for these activities to induce earthquakes has developed.

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<sup>6</sup> Alerts are issued by Natural Resources of Canada (<http://earthquakescanada.nrcan.gc.ca/recent/index-en.php>) and the United States Geological Survey (USGS) (<https://earthquake.usgs.gov/earthquakes/map/>).

<sup>7</sup> 2018 Dam Safety Reviews for the W.A.C. Bennett Dam and the Peace Canyon Dam were confidentially submitted to the BCUC on January 3, 2020.

<sup>8</sup> [BC Hydro Fiscal 2020 to Fiscal 2021 Revenue Requirements Application, pdf](#) pages 2991-2992.

BC Hydro has worked with the BC Oil and Gas Commission (**BCOGC**) since then, including discussions as to whether it would be possible for BC Hydro to establish “no-fracking” zones around its dams through the titles office or to have restrictions put on titles that would require a well operator to notify BC Hydro if they started to develop fracking plans.

In March of 2014, the Ministry of Natural Gas Development (now the Ministry of Energy, Mines, and Petroleum Resources (**MEMPR**)) put restrictions in place so that no new fracking tenures could be issued within five kilometres of BC Hydro's dams and generating facilities; the Tenure Buffer Area.

In January 2017, the BCOGC added a requirement for well operators to notify BC Hydro prior to drilling or commencing completion (fracturing) activities within five kilometres of the W.A.C. Bennett Dam, the Peace Canyon Dam or the Site C Dam project site; the Dam Notification Well Permit Condition Area. The BCOGC further required that well operators not undertake any work in a manner that has a material adverse impact on the construction and/or operation of the BC Hydro sites.

At present, only the Site C Dam project site has ongoing well drilling and completion within the Tenure Buffer Area (MEMPR) and the Dam Notification Well Permit Condition Area (BCOGC). BC Hydro regularly meets with holders of tenures and well permits within this “buffer zone”, as well as some who are operating outside the zone but nearby to Site C, to receive updates on current and planned activities and summaries of observed seismicity during well completion activities. To date, none of the completed or planned activities within the buffer zone around the Site C Dam project site have created unresolved concerns for the safety of BC Hydro infrastructure or construction works.

The BCOGC has recently confirmed that there are no current well drilling or completion operations within ten kilometres of either the W.A.C. Bennett Dam or the Peace Canyon Dam.

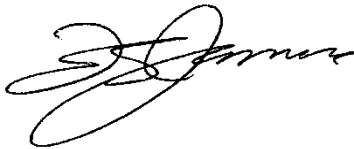
BC Hydro does not presently consider the hazard from induced seismicity due to oil and gas activities in the Peace River region to pose a significant risk to the stability and structural integrity of its dams in the region. BC Hydro does, however, consider there to exist a potential for the type of ground motions from such induced seismicity to damage vibration-sensitive electrical and mechanical equipment in its facilities.

We trust that this submission addresses the safety concerns raised by a complainant to the Commission regarding materials acquired through a freedom of information request and adequately responds to the Commission's letter of December 19, 2019.

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For further information, please contact Fred James at 604-623-4046, or by email at [bchydroregulatorygroup@bchydro.com](mailto:bchydroregulatorygroup@bchydro.com).

Yours sincerely,



Fred James  
Chief Regulatory Officer

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