



Environmental Appeal Board

Fourth Floor 747 Fort Street
Victoria British Columbia
V8W 3E9
Telephone: (250) 387-3464
Facsimile: (250) 356-9923

Mailing Address:
PO Box 9425 Stn Prov Govt
Victoria British Columbia
V8W 9V1

Website: www.eab.gov.bc.ca
E-mail: eabinfo@gov.bc.ca

DECISION NO. 2015-WAT-007(a)

In the matter of an appeal under section 92 of the *Water Act*, R.S.B.C. 1996, c. 483

BETWEEN: 5997889 Manitoba Ltd. **APPELLANT**

AND: Acting Regional Executive Director **RESPONDENT**

BEFORE: A Panel of the Environmental Appeal Board
Gabriella Lang, Chair
Daphne Stancil, Member
Douglas VanDine, Member

DATES: February 29 – March 4, 2016
March 7 – March 10, 2016
March 21, 2016

LOCATIONS: Vancouver, Kamloops and Victoria, BC

APPEARING: For the Appellant: Tony Crossman and
Nardia Chernawsky, Counsel
For the Respondent: Bill Wagner, Counsel

APPEAL

[1] 5997889 Manitoba Ltd. appealed the May 15, 2015 decision (the “Decision”) of Peter Lishman, Acting Regional Executive Director, Thompson Okanagan Region, Ministry of Forests, Land and Natural Resource Operations (the “Ministry”).

[2] In the Decision, the Respondent denied the Appellant’s request to amend the Instream Flow Requirements (the “IFRs”) stipulated in Conditional Water Licence 127446 (the “Licence”), which was issued on May 3, 2012. The Licence is held by the Appellant, and authorizes the diversion of water from Jamie Creek for the purposes of a run-of-river hydroelectric project (the “Project”).

[3] The Environmental Appeal Board has the authority to hear this appeal under section 93 of the *Environmental Management Act* and section 92 of the *Water Act*¹. Section 92(8) of the *Water Act* provides that, on an appeal, the Board may:

¹ The *Water Sustainability Act* came into effect on February 29, 2016; however, because the Decision was made on May 15, 2015, the *Water Act* continues to apply in this appeal.

- a) send the matter back to the comptroller, regional water manager or engineer, with directions,
- b) confirm, reverse or vary the order being appealed, or
- c) make any order that the person whose order is appealed could have made and that the board considers appropriate in the circumstances.

[4] The Appellant asks the Board to reverse the Decision and amend the Licence with the IFRs it requested in December 2014, or to send the matter back to the Respondent with specific instructions to amend the Licence as requested.

BACKGROUND

The Appellant

[5] Beginning in about 2001, different companies proposed a run-of-river hydroelectric project on Jamie Creek, British Columbia, starting with Cloudworks Energy Inc., which submitted a conditional water licence application for such a project. In the following years, that licence application was transferred to other companies until about June 2010, when Sequoia Energy Inc. ("Sequoia") took over the project studies, the design, and the application process.

[6] On April 2012, Sequoia entered into an agreement with the Appellant to assign the project appurtenancy to the Appellant. Sequoia then asked the Ministry to issue the Licence to the Appellant. In 2012, Boralex Inc. ("Boralex") acquired the project from Sequoia through Jamie Creek LP and the Appellant.

[7] The Appellant, 5997889 Manitoba Ltd., filed this appeal; however, throughout the hearing, witnesses referred to the current project owner and operator as Boralex. The Appellant's witnesses testified that they worked for or were contracted by Boralex and the most recent contacts with the Ministry were made by Boralex. Therefore, hereafter, the Panel will refer to the Appellant as Boralex.

Jamie Creek and the Project

[8] Jamie Creek is located about 15 kilometres west of Gold Bridge, British Columbia. The area has a history of forestry, mining, and hydroelectric projects, the latter dating from the 1920s.

[9] The Jamie Creek drainage is in the Coast Mountains on the south side of the Bridge River valley. The elevation of the Jamie Creek drainage ranges from about 2,700 metres at the peak of Mt. Vayu to about 750 metres at its confluence with the maximum normal operating level of Downton Reservoir. Jamie Creek is one of about 125 creeks flowing into Downton Reservoir.

[10] Downton Reservoir, which covers an area of about 985 square kilometres, was created by Lajoie Dam, a BC Hydro dam constructed in the 1940s. BC Hydro operates the reservoir and regularly draws down the water level. The water level can fluctuate about 30 metres annually, and from April to June it can be drawn down almost completely.

[11] Jamie Creek has two branches – West Jamie Creek and Jamie Creek. West Jamie Creek flows into Jamie Creek, and the whole creek drainage covers an area of about 81 square kilometres.

[12] The Project consists of two small dams and head ponds, a water transfer intake structure, a power intake structure, an overland and a buried pipeline, a powerhouse, and a transmission line. West Jamie Creek flows into Jamie Creek about 1,500 metres upstream of the powerhouse. This confluence is about 900 metres downstream of the water transfer intake on West Jamie Creek, and about 1200 metres downstream of the power intake on Jamie Creek. The powerhouse is located about 1400 metres downstream from the confluence of West Jamie Creek and Jamie Creek. Therefore, the length of the reaches of these creeks from which water has been diverted is about 3500 metres. These reaches, between the tributary intakes and the powerhouse, are collectively referred to as the diversion reach. There are impassable fish barriers in the form of waterfalls on Jamie Creek about 170 metres upstream of the powerhouse.

[13] Water from the intake structure on West Jamie Creek is piped overland to a small head pond on Jamie Creek. Water from that head pond is diverted into a power intake structure, and then it flows through a buried pipeline (the penstock) to a powerhouse located at an elevation of about 765 metres.

[14] After going through the turbines in the powerhouse, the piped water rejoins Jamie Creek and then flows into Downton Reservoir. No water is consumed in this process.

[15] Boralex plans to generate hydroelectricity from the Project for at least 40 years. It has a long-term Electricity Purchase Agreement with BC Hydro.

[16] The Project is in the territory of the St'at'imc First Nations, including the Seton Lake Indian Band and the Bridge River Indian Band. They both support the Project.

[17] The Project was commissioned in the spring of 2014 and has been operating since then.

The Licence

[18] On May 3, 2012, the Ministry issued the Licence authorizing the diversion of water from West Jamie Creek and Jamie Creek for hydroelectric power to be generated with the Jamie Creek Generating System.

[19] Typically, in conditional water licences for run-of-river hydro projects, the Ministry stipulates maximum water diversion amounts and IFRs. IFRs are the minimum flows of water in a stream required to maintain a certain level of the stream's ecological health, and at all times the stream flow must not be less than those minimum flows. The stipulated IFRs can vary from month to month.

[20] Up to May 2012, the Project proponents requested various IFRs. The IFRs stipulated in the Licence, however, are higher than the IFRs requested by the various Project proponents. The Ministry issued the Licence with the following requirements in section (e):

(e) The maximum quantity of water which may be diverted is 5.6 cubic metres per second provided that:

1. A maximum flow of 3.5 cubic metres per second from West Jamie Creek may be diverted and used; and a maximum flow of 3.5 cubic metres per second from Jamie Creek (as measured upstream of the outlet from the transfer pipe from West Jamie Creek) may be diverted and used; but the combined total of the diversion must not exceed 5.6 cubic metres per second and;
2. A minimum flow of 0.27 cubic metres per second must pass the flow measuring station located immediately upstream of the tailrace between October 1 and May 31 at all times when the Jamie Creek Generating System is operating. A minimum flow of 0.39 cubic metres per second must pass the flow measuring station located immediately upstream of the tailrace between June 1 and September 30 at all times when the Jamie Creek Generating System is operating. These instream flow requirements may be adjusted by the Regional Water Manager after the 2012 field season information has been submitted and;
3. a) A minimum flow on West Jamie Creek as measured at a flow measuring station upstream of the confluence with Jamie Creek must not be less than 0.15 cubic metres per second between October 1 and May 31 and not less than 0.21 cubic metres per second between June 1 and September 30.
b) A minimum flow on Jamie Creek as measured at a flow measuring station upstream of the confluence with West Jamie Creek must not be less than 0.12 cubic metres per second between October 1 and May 31 and 0.18 cubic metres per second between June 1 and September 30 when the Jamie Creek Generating System is operating and;
4. A minimum flow as may be specified by the Engineer under the Water Act (the "Engineer") under clause (o) must flow through the diversion reach at all times....

[21] In its Decision Summary for the Licence, the Ministry explained its rationale for these conditions as follows:

In order to promote a healthy stream system it has been agreed that 10% (0.27 m³/s [cubic metres per second]) of the mean annual flow of 2.70 m³/s will be left in the stream between October 1 and May 31 and then raised up to 14.4% of the mean annual flow (0.39 m³/s) between June 1 and September 30. These instream flow requirements may be subject to negotiation a year after the licence is issued to allow for the proponent to collect additional field data to determine if these percentages accurately portray the requirements for fish and stream. Annual high flows that exceed the maximum diversion rate are expected to maintain channel processes and fluctuation in the hydrograph shape.

[22] With the Licence, the Ministry also issued a letter dated May 3, 2012. It states in part:

In order for the Regional Water Manager to consider adjustments to the minimum instream flow requirements it is imperative that the appropriate field assessment be conducted in 2012 as described in the document entitled Jamie Creek Instream Flow Assessment: Study Plan for 2012 prepared by Pottinger Gaherty Environmental Consultants Ltd. ["PGL"] and dated January 2012. If a satisfactory report is submitted by a qualified professional biologist based on the 2012 field [assessment] described above, the Regional Water Manager may by Order under the Water Act adjust the instream flow requirements. Operation validation of any changes will be required.

[23] The following additional Licence conditions are also material to this appeal:

- (a) The sources on which the rights are granted are West Jamie Creek and Jamie Creek.

...

- (f) One of three permanent flow measuring stations shall be located upstream of the tailrace and downstream of the 1st waterfall, one shall be located on West Jamie Creek upstream of the confluence with Jamie Creek, and one shall be located on Jamie Creek upstream of the confluence with West Jamie Creek.

- (g) The period of the year when the water may be diverted and used is the whole year.

...

- (j) The licensee must:

1. Include in the Operational Environmental Monitoring Plan (OEMP) a program suitable to determine the nature of any impacts on fish and/or wildlife and their habitats that covers a period of both pre- and post- (minimum of five years) commissioning of the Jamie Creek Generating System to the satisfaction of the Engineer under the Water Act;
2. Implement the monitoring program to the satisfaction of the Engineer under the Water Act;
3. At the completion of the monitoring program, prepare a report that identifies the nature of any impacts on fish and/or wildlife and, if applicable, implement the appropriate mitigation and/or compensation to the satisfaction of the Engineer under the Water Act.

...

- (o) The licensee must operate the works authorized under clause (i) in accordance with:

1. Procedures ordered by the Engineer under the Water Act, including any order for the regulation of the diversion, rate of diversion, and use of water as may be required for the preservation of fish and aquatic habitat;
2. Any amendment ordered by the Engineer under the Water Act.

Boralex’s request for lower IFRs

[24] On December 18, 2014, Boralex requested a Licence amendment for lower IFRs. Ms. Stephanie Bujold, Boralex’s Environmental Manager, sent the request by email in a memo to Mr. Grant Rodgers. At that time, Mr. Rodgers was the Assistant Regional Water Manager in the Ministry’s Water Stewardship Division.

[25] In her memo, Ms. Bujold reviewed the Project proponents’ various IFR requests, as well as the studies provided to, and contacts with, the Ministry from about November 2009 to December 2014.

[26] Ms. Bujold provided a table setting out the IFRs requested over the years, highlighting the IFRs that Boralex requested in December 2014. The Panel has summarized that table as follows: the IFRs proposed in Sequoia’s 2010 Project Development Plan (the “2010 PDP”) in row one; the IFRs specified in the Licence in row two; and, the IFRs requested by Boralex in December 2014 in row three:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Dec 2010 Proposed IFR m³/s	0.10	0.10	0.11	0.12	0.19	0.22	0.21	0.20	0.18	0.14	0.12	0.10
Licensed IFR m³/s	0.27	0.27	0.27	0.27	0.27	0.39	0.39	0.39	0.39	0.27	0.27	0.27
Dec 2014 Requested IFR m³/s	0.10	0.10	0.11	0.12	0.19	0.22	0.21	0.20	0.18	0.14	0.12	0.10

[27] To support Boralex’s request, Ms. Bujold provided several arguments, which the Panel has summarized as follows:

- The Federal Department of Fisheries and Oceans and the Ministry have accepted that Jamie Creek is non-fish bearing and the Project is not likely to affect fish or fish habitat. This justifies the changes from 0.39 m³/s to lower IFRs from June to September of each year;
- Water quality and biological productivity is poor due to persistently very high turbidity throughout the growing season;
- Jamie Creek is not considered an important food source for any fisheries resource;
- Invertebrate mortality does not constitute a violation under section 35 of the Federal Fisheries Act;
- There are no recreational users in Jamie Creek;
- Viable habitat for aquatic invertebrate production, will be maintained with the proposed flows ranging from 0.1 m³/s to 0.22 m³/s;
- The proposed IFRs ensure retention of the hydrographic shape of Jamie Creek;
- Wildlife values are retained so long as pool and shoreline habitat remains accessible;
- Long term monitoring through the Project’s Operational Environmental Monitoring Program (“OEMP”) commitments will continue to focus on

invertebrate production and riparian vegetation as a function of flow releases. Any significant changes will be detectable and reversible.

[28] In her memo, Ms. Bujold wrote that the requested IFRs will be verified by the hydrometric station located upstream from the tailrace. Because the IFR measurements at this location are closely linked to the IFRs at the intakes, Boralex also proposed the following:

- The minimum flow on West Jamie Creek measured by the magnetic flow meter located at the diversion intake will never be less than 0.06 m³/s when the power plant is operating and;
- The minimum flow on Jamie Creek as measured by the magnetic flow meter located at the power intake will never be less than 0.04 m³/s when the power plant is operating.

[29] Ms. Bujold added that Boralex did not believe that any other changes to the Licence were needed, and the Regional Manager could change the IFRs in the Licence based on any new information.

[30] At the appeal hearing, Ms. Bujold testified that she spoke with Mr. Rodgers on December 19, 2014. She said that Mr. Rodgers offered to adjust the ramping rates² for the Project if Boralex abandoned its request for lower IFRs. She testified that Boralex's request for adjusted ramping rates was an entirely separate matter supported by different field studies and information. Ms. Bujold said that she consulted with Boralex's senior management because the company had not asked for this kind of conditional approval for either of its separate requests.

[31] In an email dated December 23, 2014, Ms. Bujold responded to Mr. Rodgers, advising that Boralex could not accept his proposal. She noted that there had been two separate operational field tests, one for ramping rates and one for the requested IFRs, based on work plans approved by the Ministry, and Ministry staff were present during those separate tests.

[32] Ms. Bujold also wrote that Boralex was convinced that the IFRs could be reduced with minimal environmental impacts on the ecosystem of Jamie Creek. She indicated that Boralex was committed through the OEMP to continue operational field tests and to evaluate any changes to the ecosystem made by the Project. Any important changes would be discussed with the Ministry and would be reversible.

[33] On December 30, 2014, Mr. Rodgers responded to Ms. Bujold by email. The Respondent was copied on that response. Mr. Rodgers wrote that he believed his December 19, 2014 proposal was a reasonable offer and represented a significant compromise that the Ministry was willing to make to reach a consensus to move forward. He wrote that the Ministry's decision on IFRs was not solely based on fish presence. It was also based on general stream health and the Ministry's policy concerning the prevention of "starving a stream of water". Also, if the Ministry agreed to the December 2010 IFR proposal, the Ministry would be agreeing to

² In a run-of-river project, the "ramping rate" is the rate of change of water discharge in a stream, and the corresponding and opposite rate of change of water discharge that flows through a penstock and the turbines.

subject the stream to “a perpetual low flow during drought conditions”. Mr. Rodgers also wrote that if Boralex did not accept his December 19, 2014 proposal, “the entire offer needs to come off the table”, and under the circumstances he encouraged Boralex to reconsider.

[34] At the appeal hearing, Mr. Rodgers testified that he believed that the Licence terms and conditions, including the stipulated IFRs, were arrived at by mutual agreement.

[35] In April 2015, Mr. Alistair Howard, Manager Project Development for Boralex, wrote to Craig Sutherland, an Assistant Deputy Minister with the Ministry, regarding the Licence, and he requested a meeting with the Ministry to understand its outstanding concerns.

The Decision

[36] The Respondent issued his Decision in a one page letter dated May 15, 2015. The Decision is addressed to Mr. Howard, and was not responding directly to Boralex’s December 2014 request, but rather, to the letter that Mr. Howard sent to the Assistant Deputy Minister.

[37] The Respondent’s Decision states as follows:

I appreciate your concern regarding this licensed parameter of your power generation facility as I am aware that it has an operational consequence to your plant. I also note the effort Boralex has expended in obtaining professional opinions from two consultants. I am aware that Ministry concessions were made with respect to the closely related parameter of ramping rates, but with regard to instream flow requirements our staff differed in opinion from the expressions made by your consultant. The Ministry has the responsibility of protecting ecosystem values, and in this respect they have recommended to me that the present licensed instream flow requirements (IFR) be preserved for that purpose.

I agree that opinions can vary but I am convinced that all concerned have invested sufficient time and effort in gathering field data to arrive at a conclusion. My decision is that that we have accommodated Boralex’s request enough by relaxing the ramping rates in response to expressed concerns about wear and tear on their equipment. On the matter of IFRs, I consider our desire to protect ecosystem health to be an equally important concern. Accordingly I am prepared to ask my staff to amend the Licence for ramping rates, but not IFRs. I believe that to be a fair and practical solution that takes into account concerns expressed by both Boralex and the Ministry.

[38] Mr. Rodgers testified that he wrote this letter for the Respondent’s signature.

[39] The Respondent testified that before issuing the Decision, he relied on advice from staff, including Mr. Rodgers and Mr. Philip Belliveau, who at that time was the Section Head of the Ministry’s Ecosystem Section. Mr. Belliveau testified that he was generally familiar with the file, but based his advice to the Respondent on input from his staff. The Respondent and Mr. Belliveau also testified that Mr. Rodgers maintained oversight of the Project file, coordinating the advice and input of the Ministry’s Water Stewardship Section and the Ecosystem Section.

The Appeal

[40] On June 10, 2015, Boralex appealed the Decision, citing a number of grounds, including that the Respondent acted unreasonably by refusing to approve the requested IFRs and by failing to provide reasons for the Decision. Subsequently in its pre-hearing Statements of Points, and in its opening and closing submissions, Boralex cited additional grounds of appeal.

[41] The Panel has summarized Boralex's grounds of appeal and main arguments as follows.

[42] Boralex argues that the Respondent acted unreasonably by:

1. making an offer to trade ramping rates for IFRs. The assessment of IFRs and ramping rates involve different environmental and legal considerations under the *Water Act*. Also, decisions under the *Water Act* are not a negotiation where Boralex's application for ramping rates will be traded for its application for lower IFRs.
2. failing to adequately consider the field studies and legal considerations. The Respondent failed to consider or to consider adequately the application for lower IFRs on the merits, failed to consider or to consider adequately that the management objectives for Jamie Creek have been met, and failed to consider or to consider adequately that the field studies and other environmental assessments support the proposed IFRs.
3. failing to provide detailed reasons for the refusal to adjust the IFRs. This failure suggests that the Respondent did not consider or consider adequately Boralex's application for lower IFRs on its merits.
4. fettering his and the Ministry's discretion. The Respondent and the Ministry misunderstood legislation and policies, failed to properly apply the requirements of the *Water Act*, and did not consider all the specific facts relevant to Jamie Creek.
5. exhibiting a reasonable apprehension of bias by their actions. After additional studies were complete, the Respondent and Ministry staff refused further discussions about the requested IFRs. After the Decision was issued, the Respondent and Ministry staff raised new issues about the requested IFRs that had not been communicated to Boralex, and that the Ministry had not previously required Boralex to address.

[43] Boralex requests a number of possible remedies, including several alternatives, which are set out below. The Panel notes that the primary focus of the requested remedies is to incorporate into the Licence the IFRs that were requested in December 2014.

[44] Specifically, Boralex asks the Board to amend the Licence to incorporate the following conditions:

- a) The following minimum flows (IFRs) must pass the flow measuring station located immediately upstream from the tailrace:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
IFR m³/s	0.10	0.10	0.11	0.12	0.19	0.22	0.21	0.20	0.18	0.14	0.12	0.10

b) A minimum flow on West Jamie Creek as measured at a flow measuring station upstream of the confluence with Jamie Creek must not be less than 0.06 m³/s; and,

c) A minimum flow on Jamie Creek as measured at a flow measuring station upstream of the confluence with West Jamie Creek must not be less than 0.04 m³/s.

[45] Boralex submits that no further conditions are required because the Licence and the OEMP have sufficient requirements to ensure that unanticipated impacts will be detected, managed and/or mitigated.

[46] In the alternative, Boralex asks the Board to amend the Licence to include the IFRs requested, with such conditions as the Board considers reasonable in the circumstances and that are typical of similar run-of-river projects on similar creeks in British Columbia. Such conditions could include one or more of the following:

a) a condition requiring that connectivity will be maintained in Jamie Creek at all times; e.g., section (e) of the Licence could read: "The maximum quantity of water which may be diverted is 5.6 m³/s provided that connectivity is maintained in the diversion reach at all times."

b) a condition requiring a winter connectivity study to be conducted after the requested IFRs are implemented, using language similar to that found in a conditional water licence for a run-of-river project on Culliton Creek, as follows:

A winter connectivity study is to be prepared for the diversion reach by a qualified professional and the licensee is to complete the field verification as specified in the connectivity study. The minimum stream flow requirements in winter may be revised through an amendment to this licence, in accordance with result(s) of the field verification.

c) a condition setting out the management actions if a significant adverse impact on invertebrates is detected, adding language similar to that found in the conditional water licence for a run-of-river project on Kwoiek Creek, as follows:

If the minimum instream flow release is not effective at maintaining expected fish habitat (defined in the OEMP as a reduction of greater than 50% in invertebrate abundance, biodiversity or species richness), the licensee will retain a qualified professional to create an adaptive management plan to identify the cause and significance of these impacts and propose a response. This plan may include an increase to the IFRs, other mitigation or compensation.

d) a condition requiring the OEMP to be amended to expand the current fish sampling to the lower downstream reach in accordance with the current OEMP

fish sampling schedule (alternating years for the first eight years of operation). If fish are detected, a qualified professional will develop a plan to evaluate the cause, the impacts and propose a response.

[47] In the alternative, Boralex asks the Board to order the Respondent to amend the Licence to adjust the IFRs to those requested, within 30 days.

[48] In the further alternative, Boralex asks the Board to order the Respondent to reconsider Boralex's request to adjust the IFRs based on any directions provided by the Board, make a decision based on such directions within 30 days, and provide detailed reasons for any decision. Boralex also asks for such other relief as is appropriate in the circumstances.

[49] In its closing submissions, Boralex asked for costs. However, because Boralex provided no reasons, no basis, and no evidence for its request for costs, the Panel will not consider the request for costs any further.

[50] The Respondent submits that the Decision should be upheld and the appeal dismissed.

Panel's order and findings regarding economic/financial evidence

[51] In the statements of points that Boralex filed prior to the appeal hearing, it referred to contractual, community, and economic implications of the Licence and the Decision. In response to those statements, the Respondent asked the Board for an order directing Boralex to disclose various contractual and financial documents. Boralex submitted those documents to the Board and to the Respondent on February 17, 2016.

[52] On February 25, 2016, before the hearing commenced, Boralex applied for what it characterized as a "confidentiality order" with respect to some of the disclosed contractual and financial documents. Boralex asked the Board for an order to exclude those documents from the public record of the appeal. In a letter dated February 26, 2016, the Respondent opposed that application. Because the hearing of the appeal was due to begin on February 29, 2016, the Board's Chair directed the parties to bring this application before this Panel.

[53] During the hearing, Boralex submitted no evidence about any contracts, its finances or any portion of the documents disclosed on February 17, 2016. Boralex did advise the Panel that it would ask that the requested confidentiality order apply to evidence that it expected the Respondent to submit.

[54] As part of his case, the Respondent submitted some financial and economic evidence about Boralex and the Project. Before the evidentiary record closed, the parties made further submissions regarding Boralex's application for a confidentiality order. Boralex identified the specific testimony and exhibits from the Respondent that it sought to have sealed and not be part of the public record of the appeal.

[55] After considering the specific evidence identified by Boralex, the parties' submissions and relevant case law, the Panel ordered that the specific evidence from the identified testimony and exhibits be sealed and not be part of the public record of the appeal, subject to the terms stated in the order. The Panel issued a

written Confidentiality Order dated April 5, 2016, separate from the present decision.

[56] Regarding the relevancy of the contractual and economic evidence in this appeal, Boralex's position is that, in its pre-hearing submissions, it cited business contracts, and community and economic implications of its Licence as a context for the Project and the requested IFRs, not as a reason to justify the requested IFRs, or as grounds of appeal.

[57] In particular, Boralex noted that, in its Statement of Points in the section submitting why the Decision was unreasonable, it made no references to contractual or economic implications as grounds of appeal. Also, with respect to its IFRs request and the Decision refusing to amend the IFRs, Boralex submitted no arguments or evidence relating to any economic impacts from the requested lower IFRs or impacts to its power generation.

[58] The Respondent's position is that Boralex raised financial impacts to its power contracts, and community and economic implications as grounds of appeal. The Respondent argues that Boralex's request for lower IFRs was motivated mainly by economic considerations and that, in its Statement of Points, Boralex identified economic and community factors as grounds for appeal and relevant issues in this appeal.

[59] After considering the evidence protected by the confidentiality order, the parties' submissions, and all of the evidence from the hearing, the Panel finds that Boralex's references to contractual, community and economic implications in its Statement of Points and in other pre-evidentiary submissions are not grounds of appeal nor are they issues in this appeal. Further, after considering all of the evidence and arguments submitted in this appeal, the Panel gives little weight to the economic evidence submitted by the Respondent.

ISSUES

[60] The main issue in this appeal is whether, in all of the circumstances including taking into account the ecosystem health of Jamie Creek, the Panel should amend the Licence to include the IFRs requested by Boralex in December 2014, or direct the Respondent to either do so or reconsider Boralex's request. Deciding this main issue involves the consideration of a great deal of technical and expert evidence. Boralex also raised several grounds for appeal that do not engage the technical evidence. The Panel addressed the non-technical grounds for appeal before moving on the technical issues.

[61] Thus, in deciding the appeal, the Panel has considered the following issues and sub-issues:

1. Whether the Respondent failed to provide adequate reasons for the Decision, fettered his discretion, or exhibited a reasonable apprehension of bias.
2. Whether the requested IFRs will protect Jamie Creek with respect to:
 - a. Stream flow continuity at all times.
 - b. Aquatic invertebrates and riparian vegetation.

- c. Fish and fish habitat.
3. Whether and/or how any remaining uncertainties and potential adverse impacts that the requested IFRs may pose in relation to the factors discussed above can be addressed.

RELEVANT LEGISLATION

[62] The *Water Act* establishes the property interests in water in any stream in British Columbia, as well as how stream water is used and allocated in the province.

[63] Section 2 of the *Act* provides as follows:

Vesting of water in government

2 (1) The property in and the right to the use and flow of all the water at any time in a stream in British Columbia are for all purposes vested in the government, except only in so far as private rights have been established under Licences issued or approval given under this or a former Act.

(2) No right to divert or use water may be acquired by prescription.

[64] Part 2 of the *Water Act* sets out who may acquire licences, conditions that may be imposed in licences, procedures for acquiring licences, amending licences, and the rights and responsibilities under a licence. In this case, the Respondent considered an application to amend a conditional water licence. Similar considerations apply to an amendment of a conditional water licence as to an original water licensing decision. Section 18 of the *Water Act* provides for amendments to water licences, and states in part as follows:

Amendment and substitution of licence or approval

- 18 (1) Subject to subsection (1.1), on notice to all persons whose rights would be injuriously affected, and after consideration of any objections filed and after notifying the objectors of his or her decision, the comptroller or the regional water manager may amend a licence to do any of the following:
- (a) extend the time set for beginning construction of the works;
 - (b) extend the time set for completion of the works;
 - (c) extend the time set for making beneficial use of the water;
 - (d) authorize additional or other works than those previously authorized;
 - (e) correct an error in the licence;
 - (f) remove a provision of the licence that is inconsistent with this Act;
 - (g) authorize the use of water for some purpose other than that specified in the licence;
 - (h) extend the term of the licence;
 - (i) increase or reduce the quantity of water authorized to be diverted or stored if it appears to have been erroneously estimated.

- (1.1) If satisfied that no person's rights will be injuriously affected, the comptroller or the regional water manager may dispense with providing notice under subsection (1).
- (2) If the comptroller or the regional water manager considers that an amendment to a licence under subsection (1) would substantially change that licence, the comptroller or the regional water manager may issue in substitution for it another licence on the conditions he or she considers advisable.
- (3) In cases not coming within subsection (2), the comptroller or the regional water manager may, with the written consent of the licensee, issue in substitution for a licence a conditional or final licence on the conditions the comptroller or regional water manager considers advisable.

...

SUMMARY OF EVIDENCE

[65] For this decision, the Panel considered all of the parties' arguments, the legal decisions they cited, and the applicable legislation. The Panel also carefully considered the dozens of documents (including studies, reports, photos, charts, meeting notes and emails) that it accepted into evidence, as well as the testimony of all the witnesses. In its analysis of the issues, the Panel especially focused on the studies completed for the Ministry from the early days of the Project's development through to the hearing of this appeal, as well as the Ministry's responses to those studies. In this decision, the Panel has not repeated all of that evidence, but rather has summarized the evidence and facts relevant to the issues.

Boralex's witnesses

[66] The following witnesses testified for Boralex.

[67] Mr. Tyler Gray is a Registered Professional Biologist in British Columbia. He has worked for PGL from about 2007 and has primarily worked on hydroelectric projects, including the Project. Mr. Gray testified about the environmental studies and reports he and others prepared for the Project proponents, and his contacts with the Ministry regarding the Project.

[68] Ms. Stephanie Bujold has been the Environmental Manager for Boralex since 2007. She testified that since 2012, she has overseen the environmental assessments and reports for the Project, including those undertaken by PGL. Ms. Bujold also testified about her contacts with the Ministry regarding the Project.

[69] Dr. Todd Hatfield is a Registered Professional Biologist in British Columbia, with advanced degrees in biology and zoology. He is employed at Ecofish Research Ltd., and has more than twenty years of experience consulting in the areas of fisheries and water issues. Dr. Hatfield also has been the lead author or co-author on guidelines for the provincial government related to water diversion and allocation, including the following:

- Guidelines for the collection and analysis of fish and fish habitat data for the purpose of assessing effects from small hydropower projects in British

Columbia, prepared for the BC Ministry of Environment (2007) (“Hatfield et al 2007”).

- Assessment Methods for Aquatic Habitat and Instream Flow Characteristics in Support of Applications to Dam, Divert or Extract Water from Streams in British Columbia, prepared for the BC Ministry of Water, Land and Air Protection and the BC Ministry of Sustainable Resource Management (2004) (“Lewis et al 2004”).
- British Columbia Instream Flow Standards for Fish, Phase II; Development of Instream flow thresholds as guidelines for reviewing proposed water uses, prepared for the BC Ministry of Sustainable Resource Management and the BC Ministry of Water, Land and Air Protection (2003) (“Hatfield et al 2003”).

[70] After the Decision was issued, Boralex retained Dr. Hatfield to undertake an independent review of the lower IFRs requested in December 2014, and their potential impacts on Jamie Creek.

[71] During the appeal hearing, the Panel qualified Dr. Hatfield as an expert witness in the following areas:

- biological and environmental impact assessments of aquatic resources;
- conservation biology of freshwater aquatic life; and
- environmental assessment of instream flow changes.

[72] Dr. Hatfield testified that before the Decision was issued, he had no first-hand knowledge about the Project. He visited the Project site once during his review. Dr. Hatfield also testified about his analysis of the potential impacts of the requested lower IFRs on stream flow continuity and on valued ecosystem components (“VECs”). Dr. Hatfield’s expert and rebuttal reports were admitted into evidence.

[73] The Panel accepts Dr. Hatfield’s evidence as that of an expert in the areas cited above, even though he was retained by Boralex. In his testimony and his reports, Dr. Hatfield explained what approaches he used and what materials he relied on to reach his conclusions. During cross-examination, Dr. Hatfield stated clearly that he was giving his evidence as an independent witness, and he described how he approached his assessments from an objective standpoint. Dr. Hatfield also is recognized as an authority on instream flow characteristics and assessments as evidenced by the guidelines he has authored or co-authored for the province, as well as the various assessments he has conducted.

The Respondent’s witnesses

[74] The following witnesses testified for the Respondent.

[75] Mr. Lishman, the Respondent, is a Registered Professional Forester in British Columbia, and was the Acting Regional Executive Director for the Ministry in May 2015. Before that, he was the Director of Operations for the Ministry’s Land Branch. The Respondent testified about meetings he had and the information he received from Ministry staff regarding the requested IFRs.

[76] Mr. Philip Belliveau is a Registered Professional Biologist in British Columbia. He has worked as a biologist for the provincial government and had been the Ministry’s Ecosystem Section Head for about five years up to the time of the

Decision. He testified that, as Section Head, he was in charge of a small group of biologists and he reviewed major applications to provide advice to other managers. Mr. Belliveau also testified about his meetings with Ministry staff and the Respondent about the Project and the requested IFRs.

[77] Mr. Grant Rodgers is a Registered Civil Engineering Technologist in British Columbia, and was designated as the Assistant Regional Water Manager in the Ministry's Water Stewardship Division when the Decision was issued. He testified about his involvement in reviewing and responding to the Project's proponents' studies, reports, and IFR requests from about 2010.

[78] Mr. Alan Caverly is a Registered Professional Biologist in British Columbia. When he retired in August 2013, he was the Regional Aquatic Ecologist in the Ministry's Regional Ecosystem Section, and provided information and recommendations to the Ministry's Regional Water Manager and Assistant Regional Water Manager. Mr. Caverly testified about his involvement in reviewing and responding to the Project's proponents' studies, reports, and IFR requests starting in about 2007.

[79] Dr. Richard McCleary is a Registered Professional Biologist in British Columbia, and is the Regional Aquatic Ecologist for the Ministry. He has worked for the provincial government since November 2013 and became involved in the Project in the spring of 2014. Dr. McCleary submitted his evidence by affidavit dated January 5, 2016. Boralex submitted a transcript of the cross-examination of Dr. McCleary, conducted on January 25, 2016.

The proponents' studies/reports and the Ministry's responses

[80] The impact of IFRs on stream flow continuity, aquatic invertebrates, riparian vegetation, and fish and fish habitat was the primary focus of the proponents' studies and reports, as well as the Ministry's responses to those studies and reports, which are summarized below.

[81] In his Decision, the Respondent did not define what he meant by the "ecosystem health" of Jamie Creek. Also, the Panel noted that throughout the documents and also during the witnesses' testimony, the terms describing components of ecosystem health were not used consistently. For example, "flow connectivity" and "dewatering" were used interchangeably, and so were "aquatic invertebrates", "benthic invertebrates" and "macro invertebrates".

[82] In this decision, the Panel generally repeats the terms used by the witnesses. However, in its discussion of the issues, the Panel uses the terms in the 2010 PDP describing the management objectives for Jamie Creek; that is, stream flow continuity at all times, aquatic invertebrates production/habitat, maintenance of riparian vegetation, and fish and fish habitat.

[83] The Panel also noted that, in the document evidence and the witnesses' testimony, the words "impact" and "effect" were used interchangeably. To be consistent with section (j) of the Licence, the Panel has used the term "impact".

Pre-May 2012 studies/reports and Ministry responses

[84] The Project proponents began daily water flow measurements on Jamie Creek as early as October 2007. PGL was the environmental consultant for the Project proponents starting in about 2007, and has continued in that capacity for Boralex. PGL prepared most of the environmental assessments submitted to the Ministry.

[85] Starting in about October 2008, the Project proponents carried out baseline environmental assessments. These included sampling for fish using multiple methods and through multiple seasons, and sampling for aquatic invertebrates.

[86] In April 2010, the Project proponent submitted a draft PDP with a Biological Impact Assessment ("BIA") to the Ministry for comments on the selected VECs for Jamie Creek, the baseline studies, and whether the proposed diversion reach should be considered non-fish bearing.

[87] In about June 2010, Mr. Rodgers, Mr. Caverly, and staff from other government agencies provided feedback to PGL on the draft PDP including the BIA. Mr. Rodgers raised concerns about dewatering the diversion reach, and referred to a Ministry policy against dewatering any section of a stream. He asked for monthly steps in the IFRs to mimic a more natural hydrograph shape.

[88] Mr. Caverly indicated that aquatic invertebrates were not a "show stopper", but the Project proponents needed to have a monitoring plan even if it would not provide statistically significant data.

[89] In December 2010, Sequoia submitted a revised PDP (i.e., the 2010 PDP) and an updated BIA (the "2010 BIA"). The 2010 PDP proposed IFRs (shown in the table in the Background of this decision) which were stepped to more closely mimic the natural hydrograph shape of Jamie Creek; that is, higher flows typically occurring from May through September when the IFRs would likely be augmented by significant spill, and lower flows at other times of the year.

[90] Sequoia's rationale for these IFRs was based on a combined mean annual discharge ("MAD") of 3.26 m³/s at the proposed intakes on West Jamie Creek and Jamie Creek, and based on the finding in the BIA that there were no fish in Jamie Creek. Therefore, the potential impacts on fisheries resources would be minimal.

[91] Regarding aquatic invertebrates, the 2010 BIA noted that Jamie Creek normally freezes at channel margins, but snow cover may provide important thermal insulation. The 2010 BIA stated that aquatic invertebrates generally cope with freezing winter conditions by either migrating away from a freezing front or remaining in habitats that do not freeze. Also, adequate flows were expected to be present during summer when high invertebrate productivity was most likely. The 2010 BIA concluded that invertebrate production is not expected to be significantly affected by potentially increased freezing at river margins.

[92] The 2010 PDP and 2010 BIA also referred to mitigation measure designs, a monitoring program to detect any adverse changes, and if changes occurred, how to address and manage those changes.

[93] In 2011, Ministry staff expressed their concerns, in internal memos and in their communications with Sequoia and PGL, about Sequoia's proposed IFRs. The Ministry stated that the proposed IFRs were on the "low side".

[94] The Ministry's view was that Sequoia had not demonstrated that its proposed IFRs were adequate to protect aquatic life, or that winter flows in the diversion reach would be adequate to maintain benthic insect production to supply aquatic drift to rainbow trout in Downton Reservoir. The Ministry also did not want the stream to be dewatered, and it wanted to ensure that a wetted perimeter along the diversion reach was maintained. Ministry staff indicated that there needed to be verification and appropriate monitoring to confirm Sequoia's assessments.

[95] In response, in late 2011, Sequoia provided the Ministry with a further assessment by PGL. In that assessment, PGL focused on the following management objectives for Jamie Creek: maintenance of aquatic invertebrate production/suitable habitat; retention of the stream's natural hydrographic shape; and maintenance of stream flow continuity at all times.

[96] PGL described the ecological value of Jamie Creek as comparatively low relative to other watersheds. PGL noted that the riparian cover is absent or diminished in considerable portions of the upper watershed. The water in Jamie Creek is nutrient-poor, has notable levels of dissolved metal concentrations, and invertebrate productivity is low based on initial baseline data collected. Also, based on various studies, PGL considered Jamie Creek to be non-fish bearing. PGL concluded that, under the proposed IFRs, the key functions of Jamie Creek's aquatic habitat would be maintained.

[97] In a memo dated November 4, 2011, the Ministry provided Sequoia with guidance to revisit its proposal with new information on hydrology, to be prepared to revise its proposed IFR numbers, to commit to adaptive management, and to include all of this in a revised PDP and in the Project OEMP. According to the memo, which was prepared by Mr. Caverly and another biologist from the Ministry, the Ministry still had concerns after receiving the PGL assessment. The memo indicated that there was no quantitative rationale for the minimum IFR of 0.10 m³/s proposed for certain months; the only rationale was a restatement that the aquatic habitat value was low. In that regard, the memo stated "**low is not zero**" [emphasis in the original]. Further, regarding the proposed IFRs, the memo stated that Sequoia had not addressed the risk to "continued benthic production to provide food supply to Downton [reservoir] wild fish stocks [downstream from the powerhouse and tailrace]." The memo also concluded that there was "no new compelling evidence that stream flow continuity will be maintained throughout the diversion reach."

[98] In response to the Ministry's November 4, 2011 memo, Sequoia had its engineering consultants, Sigma Engineering Limited ("Sigma") prepare a memo dated November 21, 2011. In that memo, Sigma stated that the Project proponents intend to maintain the IFRs throughout the proposed diversion reach, and to monitor the IFRs with gauges upstream of the proposed powerhouse, in addition to gauges at the proposed intake head ponds, downstream of each proposed intake, and downstream of the proposed powerhouse.

[99] In a further memo to the Ministry, dated December 16, 2011, Sequoia also modified its proposed IFRs to address Ministry concerns about potential impacts to the lower reach of Jamie Creek during critical and sensitive time periods. The memo proposed new IFRs "in an attempt to protect fish habitat in the lower reach of Jamie Creek." Sequoia proposed increases to the IFRs for August through January. The IFRs proposed for February to July remained unchanged from the December 2010 proposal, because the IFRs for those months were considered to have low risk of adverse impacts due to cold weather and cold water temperatures (February 1 to March 31) or increased rain and snow melt (April 1 to May 31), or were considered to already be appropriate due to high flows during freshet (June 1 to July 31).

[100] Sequoia modified its proposed IFRs for another reason. In September 2011, Sigma reduced its hydrological estimate of the combined MAD at the proposed intakes on West Jamie Creek and Jamie Creek from 3.26 m³/s (estimated in March 2010) to 2.70 m³/s (estimated in September 2011). This reduced estimate of MAD had the effect of increasing the proposed IFRs when expressed as a percentage of MAD.

[101] In January 2012, Mr. Frank Bauman, a professional engineer, carried out a geological engineering study of the Jamie Creek drainage for Sequoia. Mr. Baumann's opinion was that the loss of surface water flow due to infiltration of water into surficial material at Jamie Creek is very limited and should not significantly decrease the water available in the proposed diversion reach during periods of low flow.

[102] In late 2011 and early 2012, the Ministry requested additional studies to address its concerns about the impacts of the proposed IFRs on riparian vegetation and on stream flow continuity during times of freezing. The Ministry also wanted more information about fish absence/presence and potential impacts on fish habitat. Therefore, in early 2012, PGL developed the "Jamie Creek Instream Flow Assessment Study Plan for 2012" (the "2012 Study Plan"). The Ministry approved this plan in March 2012, and later referred to it in its May 3, 2012 letter that accompanied the Licence.

[103] PGL conducted the Ministry approved field studies from March 2012 through to December 2012, providing the Ministry with periodic updates. Based on those studies, PGL prepared the January 2013 "Instream Flow Supplemental Assessment Report" ("2013 Assessment Report"), and sent it to the Ministry.

[104] Therefore, when the Ministry issued the Licence on May 3, 2012, it did not have the results of the 2012 field studies, which are set out in the 2013 Assessment Report. The Ministry also did not accept Sequoia's revised IFRs request, and instead issued the Licence with higher IFRs than those proposed by Sequoia.

Post-May 2012 studies/reports and Ministry responses

[105] After the Licence was issued, the Project proponents submitted the following studies and reports to the Ministry to support a Licence amendment for lower IFRs and to comply with sections (j) and (n)(2) of the Licence. Section (n)(2) requires the licensee to submit and implement an OEMP "prior to the post-commissioning of operation, to the satisfaction of the Engineer under the *Water Act*."

Instream Flow Supplemental Assessment Report (January 2013)

[106] In a section headed "Study Objective(s)", the 2012 Study Plan states:

The work ... will constitute a detailed IFR assessment consistent with the framework of provincial guidelines and shaped by discussions between [Sequoia] and [the Ministry] in late 2011 and early 2012. It will confer the means to more carefully evaluate potential impacts of IFR values below 10% MAD for Jamie Creek. The study plan and subsequent reporting will supplement the previously made commitments (PGL, 2011) to monitor the project during operations within the framework of adaptive management.

[107] The Executive Summary of the 2013 Assessment Report concludes, in part, as follows:

... The study undertaken in 2012 support[s] the conclusions that: (1) the Jamie Creek diversion reach is not a "losing" stream and maintains continuous or increasing surface flow; (2) fish do not appear to use the 170m section of the diversion reach, although it is technically accessible from Downton Reservoir; and (3) the IFR regime proposed by [the proponent] will maintain the key ecological objectives for this system.

Given the results of this assessment, the impacts to fish habitat from the monthly IFR values proposed by [the proponent] are not expected to be significant. Riparian restoration and monitoring of disturbed areas will occur following construction, but no specific stream habitat compensation is proposed.

[108] After the Ministry reviewed the 2013 Assessment Report, Mr. Caverly provided the Ministry's comments on the findings under the three main study elements. The Panel has summarized the comments provided in Mr. Caverly's letter, as follows:

1. Collect data to demonstrate whether or not the diversion reach is influent (loses flow to groundwater) or effluent (gains flow from groundwater).

The Ministry questioned whether either branch of Jamie Creek is actually gaining flow from groundwater or losing flow to groundwater, without an on-the-ground assessment of tributary inflows. The Ministry suggested that operational testing in 2013 may be the only way for PGL to verify its conclusions that the diversion reach is not a "losing stream" and maintains continuous or increasing surface flow.

2. Collect data necessary to provide quantitative predictions of potential changes to fish habitat quantity, quality, and connectivity for a given flow.

The Ministry responded that PGL's study design and assessment demonstrated again PGL's "strong understanding of instream flow methods", but the assessment did not "consider impacts of the diversion on benthic invertebrates"; that is, food supply to the fish in Downton Reservoir. The Ministry wrote that protection of the overall ecology of the diversion reach, including benthic insects and the riparian zone, "remains uncertain until the

hypothesis that the proposed less than 5% mean annual discharge IFR is actually tested during operational trials.”

3. Collect additional seasonal fish sampling data to better support or revise current fish usage assumptions in the lowest 170 metres of the diversion reach and inform appropriate monthly IFR values.

The Ministry responded that the commitment to continue to collect fish sample data “is sufficient to refine risks to fish (none present in diversion [reach]) and to guide future discussions on IFRs and ramping.” Combined with the proponent’s commitment to assess and ensure the IFRs are effective after construction, it was clear to the Ministry Regional Ecosystems Section “that there is no serious harmful alteration of fish habitat in Jamie Creek from [the] water diversion. This was a key uncertainty earlier in this process.”

[109] Mr. Caverly also addressed another issue reflected in a tracking table that was part of the 2012 Study Plan; that is, a riparian vegetation baseline assessment for the diversion reach. Mr. Caverly recommended that the riparian vegetation baseline be updated with field work.

Operational Environmental Monitoring Program: 2012 Annual Report

[110] PGL prepared the OEMP 2012 Annual Report for Boralex, which in turn submitted it to the Ministry in June 2013. The document presents the results of the environmental monitoring field work carried out in 2012 based on the May 2012 draft OEMP.

[111] The May 2012 draft OEMP identified several areas for monitoring compliance. The ones relevant to this appeal are IFR monitoring, aquatic invertebrate monitoring, riparian vegetation monitoring, and fish and fish habitat monitoring.

[112] The OEMP 2012 Annual Report states that IFR monitoring is required continuously throughout the life of the Project’s operations. The report also describes the IFR monitoring sites, noting that in addition to the three IFR monitoring sites required by the Licence, two additional monitoring sites were installed in the diversion reach. The report notes that separate IFR monitoring, unrelated to environmental impacts, is part of a different reporting structure.

[113] Regarding fish presence/absence and habitat use, the report states that none of the sampling undertaken in 2012 resulted in fish being observed or captured in any portion of Jamie Creek. The results of the 2012 fish sampling program were presented in greater detail in the 2013 Assessment Report.

[114] The OEMP 2012 Annual Report also cites a February 27, 2013 meeting, when all parties (Boralex, PGL, and the Ministry) agreed that Jamie Creek in its entirety can be considered to be non-fish bearing. However, because there had been anecdotal information of fish occasionally congregating near the mouth of Jamie Creek, the Ministry wanted assurances that monitoring would continue during Project operations. The parties agreed to ongoing sampling according to the methods described in the OEMP 2012 Annual Report.

[115] Regarding aquatic invertebrates, this report provides details about the monitoring sites, when sampling occurred, the types of samples taken, and the data

collected and analyzed (aquatic invertebrate community health, and abundance, richness and diversity) from 2008 through 2012. Also, the data collection methodology, the analytical approach, the rationale for the long term data collection, and the long term data collection schedule complied with the requirements in the May 2012 draft OEMP.

[116] The OEMP 2012 Annual Report states that the full baseline data for aquatic invertebrates will be presented as part of the OEMP's final baseline report in the spring of 2014. That report will include prospective data analysis, with a power analysis demonstrating the predicted ability to detect changes of various sizes over the operational monitoring years.

[117] With respect to riparian vegetation, the OEMP 2012 Annual Report states that the 2010 PDP required a riparian vegetation monitoring plan to be implemented as part of the OEMP. The objective of that plan is to assess the changes, if any, to existing riparian vegetation communities and to provide informed opinions about the functional value of the riparian vegetation compared to baseline conditions.

[118] The OEMP 2012 Annual Report describes the 17 riparian vegetation monitoring plots established along the Jamie Creek corridor, based on the methodology in the May 2012 draft OEMP. The report also states that the 2012 monitoring was completed to characterize and assess baseline riparian vegetation conditions prior to any alterations in the flow regime from Project operations. Future monitoring during Project operations will be compared to this baseline to assess potential changes in riparian vegetation community composition and condition.

[119] In the OEMP 2012 Annual Report's conclusions, PGL wrote that the OEMP must be finalized, but the OEMP will remain a living document. Based on interim results collected each year, changes to the program may be suggested through a collaborative dialogue involving PGL, the Project operators, and the Ministry.

[120] PGL also stated that the OEMP 2012 Annual Report was not the final baseline report for long-term Project monitoring. The final baseline report would include one more year of baseline data collection through the remainder of 2013, and then that report would be issued in the spring of 2014.

Operational Environmental Monitoring Program: Final Baseline Report (and 2013 Annual Report)

[121] PGL prepared the OEMP Final Baseline Report, dated May 2014, for Boralex. Boralex submitted it to the Ministry on June 13, 2014. This report is, in essence, the OEMP 2013 Annual Report.

[122] The report summarizes the results of the environmental monitoring fieldwork carried out through 2013, representing the full extent of pre-operational baseline data that would be available for the Project. It addresses baseline data and monitoring results for aquatic invertebrate, riparian vegetation, and fish and fish habitat. The report follows on the monitoring data in the OEMP 2012 Annual Report.

[123] The OEMP Final Baseline Report also states that the baseline data and monitoring methodology are consistent with the initial direction from Mr. Caverly for

aquatic invertebrate monitoring in a non-fish bearing creek. With respect to fish, this report notes that, in February 2013, both the Ministry and Fisheries and Oceans Canada accepted a non-fish bearing designation for Jamie Creek.

2014 Connectivity Study Plan and 2014 Connectivity Report

[124] In the spring of 2014, Boralex and the Ministry discussed a study plan for operational tests of stream flow continuity in the diversion reach under IFRs proposed by Boralex (the same as the ones Boralex requested in December 2014). The final study plan for the operational tests (the "2014 Connectivity Study Plan") incorporated all of the Ministry's requests. The tests were conducted on September 9 and 10, 2014.

[125] PGL prepared a report of the results of the field tests, titled "In-stream Flow Release: Field Tests for Proposed IFR Revisions" (the "2014 Connectivity Report"). Boralex submitted that report to the Ministry in December 2014.

[126] The 2014 Connectivity Report states that conditions leading up to the tests were ideal. The summer in 2014 was extremely dry in general, and the test period coincided with typical dry periods for ephemeral creeks. Combined precipitation in Lillooet (nearest Environment Canada weather station) for the six weeks leading up to the test was less than 20 mm, including less than 6 mm for the preceding two weeks. Thus, the conditions observed were those associated with base flows.

[127] The 2014 Connectivity Report also describes how the tests were conducted. On the morning of September 9, 2014, the water flow into the diversion reach was gradually decreased in a two part process from 0.39 m³/s (the Licenced IFR for the months of June to September) to 0.10 m³/s (the lowest requested IFR). Observers from the Ministry, Boralex and PGL, including Mr. Rodgers, Ms. Bujold and Mr. Gray, were stationed at different locations to make direct observations of the stream flow.

[128] The 2014 Connectivity Report states that continuous surface flow throughout the diversion reach was evident once flow in the entire diversion reach was stabilized at a known release of 0.10 m³/s. All monitored locations had obvious flow continuity, with no appearance of being on a threshold cusp of losing surface water.

[129] During the testing, Mr. Rodgers asked that the stream flow release into the diversion reach be reduced to zero (0 m³/s). The controlled flow releases were then restricted to zero from 13:10 p.m. to 7:00 a.m. the following morning (about 18 hours). The 2014 Connectivity Report states that during this period, flow was noticeably lower, but even at 0 m³/s release, continuous surface flow was evident at all monitored locations throughout the controlled period.

[130] Ms. Bujold and Mr. Gray testified that they were both present during the tests, and stream flow continuity was observed at all locations during these tests; that is, at the lowest requested IFRs (0.10 m³/s), and also for 18 hours at zero flow release as requested by Mr. Rodgers. Mr. Rodgers did not dispute these observations during his testimony.

[131] The 2014 Connectivity Report concludes that the operational tests (including the zero flow release) showed conclusively that IFR releases lower than the Licenced IFRs provide continuous surface flow even under low base flow conditions.

It notes that wetted surface width measured in the downstream 400 metres of the diversion reach varied from approximately 1 m through narrow chutes to approximately 15 m in wider riffle habitat. The report also notes that this is a very similar range of wetted widths to what is seen at the currently approved minimum release of 0.27 m³/s (the Licenced IFRs for the months October to May).

[132] The 2014 Connectivity Report further states that the testing demonstrates that Jamie Creek is a “gaining” stream, in that various seeps and upwelling zones provide contributions to surface flow downstream of the two intakes. Consequently, the total flow in the diversion reach increases in a downstream direction.

[133] Finally, the second last paragraph of the 2014 Connectivity Report sets out PGL’s professional opinion regarding the potential impacts of the proposed IFRs, as follows:

A number of common concerns for run-of-river projects do not apply to Jamie Creek; there are no resident fish, nor is there a need to manage for gravel or large woody debris recruitment into downstream habitat, since the project discharges directly to Downton Reservoir. There are no recreational users, and wildlife values are retained so long as pool and shoreline habitat remains accessible. Insofar as in-stream habitat is concerned, water quality and consequent biological productivity is poor due to persistently very high turbidity throughout the growing season. Flow releases should still account for the need to keep viable habitat for aquatic invertebrate production, but year-round maintenance of such habitat will be achieved with the proposed flows ranging from 0.1 m³/s to 0.2 m³/s. Long term monitoring through the Operational Environmental Monitoring Program commitments will continue to focus on invertebrate production and riparian vegetation as a function of flow releases, and should any significant changes occur, these will be detectable and reversible.

[134] Additional evidence about the September 2014 stream flow tests included photographs taken by an independent environmental monitor. On September 25, 2014, the independent environmental monitor sent Mr. Rodgers the photographs taken during the September 9 and 10, 2014 tests at three different diversion reach locations at three different periods of flow releases; that is, at the Licenced flows, at the lowest requested IFR flow of 0.10 m³/s, and at zero flow. In all of these photographs, continuous stream flow, not just pooling water, is clearly visible.

[135] On September 26, 2014, Mr. Hall sent Mr. Rodgers four more photographs, identified as Jamie Creek IFR operational testing photos taken from the “Bridge Main FSR bridge” near the powerhouse. Two photographs are views looking upstream and two are views looking downstream. In all four photographs, water is clearly visible in the stream.

Operational Environmental Monitoring Program (November 2014)

[136] PGL prepared the November 2014 OEMP for Boralex. Boralex submitted it to the Ministry to comply with section (n)(2) of the Licence. The November 2014 OEMP describes requirements for ongoing monitoring and assessment of various

VECs, and for reporting annual results to the Ministry. This document provides further information relevant to the issues in this appeal, as follows.

[137] For fish presence and habitat use, the November 2014 OEMP states that Jamie Creek has been sampled using three methods over multiple seasons and years, including 2014. Since 2012, studies have specifically focused on the stream reach from the Downton Reservoir confluence to the first permanent fish barrier. During this time, no fish were seen or captured in Jamie Creek.

[138] The November 2014 OEMP also refers to the Ministry's 2013 formal acceptance that Jamie Creek is non-fish bearing in its entirety. However, because there are fish in Downton Reservoir, and the lower reaches of Jamie Creek may be accessible to fish, sampling for fish will continue in spring, summer and fall, every other year in the first eight years of operation (i.e., 2014, 2016, 2018 and 2020), using various sampling methods.

[139] For aquatic invertebrates, the November 2014 OEMP refers to the Hatfield et al (2007) guidelines for data collection methodology for aquatic invertebrates for run-of-river projects. It also states that other site specific considerations informed the data collection, including that Jamie Creek is non-fish bearing, and drift from it (although environmentally important) is one of many nutrient supplies for fish in Downton Reservoir. Also, nutrient concentrations and primary productivity are low, diminishing overall downstream reliance on Jamie Creek's contributions to the reservoir, and the very high flows and glacial flow during most of freshet results in a short growing season.

[140] The November 2014 OEMP indicates that baseline data for aquatic invertebrates were collected from July of 2008 through 2013 at five separate locations. In September 2012, additional sampling was conducted to compare values within a single year. Baseline data was also collected in July and September 2013, as reported in the OEMP 2013 Final Baseline Report.

[141] The November 2014 OEMP states that in the data analysis and definition of environmental impacts for aquatic invertebrates, the following parameters will continue to be evaluated: abundance, biodiversity index and species richness (number of taxa). This document also details how changes to the population community will be addressed, depending on the extent and nature of the change.

[142] In the November 2014 OEMP, the vegetation monitoring program has three focuses: monitoring for invasive species; overall success of post-Project construction site restoration; and, monitoring for potential changes in riparian vegetation along the diversion reach due to Project-related changes in the Jamie Creek flow regime. Details of the monitoring plan are in an appendix with an illustration showing the monitoring locations. The document states that this part was developed with extensive input from the Ministry, and was approved by the Ministry as part of the Project permitting process in 2012.

[143] Finally, the November 2014 OEMP states that, as previously committed, the OEMP 2013 Final Baseline Report summarizing all baseline data collected was provided to the Ministry within 90 days of the Project commencing operations.

Operational Environmental Monitoring Program: 2014 Annual Report

[144] PGL prepared the OEMP 2014 Annual Report, dated June 2015. The report details the environmental monitoring and assessment work performed through 2014, and represents the first year of monitoring during Project operations. Boralex submitted the report to the Ministry after the Respondent issued his Decision.

[145] Several monitoring components are described in the OEMP 2014 Annual Report, including the following which relate to this appeal: riparian vegetation as it relates to flow diversion; aquatic invertebrate community structure; fish presence and habitat use; and, an overview of IFRs and the prospective reporting structure for those elements within the OEMP through 2020. The report includes extensive appendices consisting of tables, figures and records of field observations, all part of the monitoring field work.

[146] For fish presence and habitat use, the OEMP 2014 Annual Report states that because 2014 was the first operational year for the Project, fish surveys were conducted in spring, summer and fall. Sampling was intensive and included multiple methods. No fish were caught or observed in Jamie Creek.

[147] For aquatic invertebrates, the OEMP 2014 Annual Report identifies the monitoring sites and the dates the sampling occurred. The report has several tables identifying the taxa, the life cycle stages, and the numbers of individuals observed. The report also has a table summarizing aquatic invertebrate abundance, richness and diversity data for sampling from 2010 to 2014. That table is described as demonstrating high variability in abundance across years and across sites, evident from the baseline data and continuing through the first year of operations. The report states that overall, the data analyses conclude that the results observed in 2014 are not unexpected given natural variability. Monitoring in subsequent years will provide ongoing insight into the response of the aquatic invertebrate indicators.

[148] For riparian vegetation, the OEMP 2014 Annual Report identifies the location of the vegetation monitoring sites and the appendix includes observation field records. The report also states that riparian plant communities observed along the Jamie Creek Corridor were generally in good health and represented plant composition of typical upland riparian forests. The report notes that, generally, there were no significant changes in riparian vegetation community composition or condition observed between baseline data and the first year of operational data. There were no indications that would suggest any impacts resulting from changes to moisture regimes. The work also included monitoring undisturbed areas to assess for potential long-term changes due to flow reductions.

[149] Ministry staff received the OEMP 2014 Annual Report before this appeal was heard. During the hearing, the Respondent and the Respondent's witnesses gave no indication that the Ministry was dissatisfied with any monitoring/sampling efforts or the findings in the OEMP 2014 Annual Report.

Summary of Ministry Concerns about IFR Related Impacts

[150] At various times before and after the Licence was issued, the Ministry raised the same concerns regarding the potential impacts of the different proposed IFRs; that is, impacts on stream flow continuity at all times, impacts on aquatic invertebrates, impacts on riparian vegetation, and impacts on fish and fish habitat.

[151] Also, various Project proponents undertook studies and monitoring programs approved by the Ministry and designed to address any uncertainties, to detect and assess any adverse changes, and to inform any mitigation and or compensation measures.

[152] The Panel has identified these continuing concerns and the measures to address them in its discussion of the issues in this appeal.

DISCUSSION OF THE ISSUES**1. Whether the Respondent failed to provide adequate reasons for the Decision, fettered his discretion, or exhibited a reasonable apprehension of bias.**

[153] Under section 92(8) of the *Water Act*, the Panel may confirm, reverse or vary the Respondent's decision, send the matter back to the Respondent with directions, or make any decision that the Respondent could have made and that the Panel considers appropriate in the circumstances. Also, section 92(7) of the *Water Act* provides that the Board may conduct an appeal by way of a new hearing, also known as a hearing *de novo*. That means that this Panel may consider new evidence that was not available when the Respondent made his Decision. The Board may also consider the information that the Respondent had when he issued the Decision. This is considered to be a 'hybrid' approach because it has the elements of a hearing *de novo*, but the "record" of information that was before the Respondent is also available to the Panel.

[154] In almost all previous decisions, this Board has adopted this hybrid approach. Also, the Board has previously determined that, when an appeal hearing is conducted in this manner, the hearing cures any procedural errors that may have been made by the original decision-maker, such as the failure to give reasons for a decision. Additionally, because the Board may make a new decision under section 92(8) of the *Water Act*, a new hearing of the matter would also cure any fettering of discretion by the original decision maker, and/or any reasonable apprehension of bias or any actual bias (see for example: *Hindson v. Assistant Regional Water Manager* (Decision No. 2004-WAT-011(a), May 16, 2005)); and *Lindelauf et al v. Assistant Regional Water Manager* (Decision Nos. 2013-WAT-003(a), 004(b), 005(a), August 17, 2015)).

[155] The Panel conducted this appeal as an oral hearing. The parties had full opportunities to put forward evidence, including witness testimony and documentary evidence, and to cross-examine witnesses. The Panel also carefully considered all of the oral and written submissions from the parties about the issues and the evidence in this appeal, including new evidence that was not available to

the Respondent when he made the Decision. Therefore, this appeal hearing was conducted as a new hearing of the matter.

[156] Given that the Panel conducted the appeal hearing as a new hearing of the matter, the Panel finds that any procedural defects in the Respondent's decision-making process have been cured by the appeal hearing. Specifically, any failure by the Respondent to provide reasons for the Decision, any reasonable apprehension of or actual bias, and/or any fettering of discretion by the Respondent and/or Ministry staff, have been cured by the appeal hearing.

[157] The Panel will not consider those grounds of appeal any further.

2. Whether the requested IFRs will protect Jamie Creek with respect to stream flow continuity at all times, aquatic invertebrates and riparian vegetation, and fish and fish habitat.

a. Stream flow continuity at all times

The Parties' positions

[158] Boralex's position is that the IFRs it requested in December 2014 should be approved because the lower IFRs would only "incrementally" increase the diversion of water from Jamie Creek to a maximum of 98% of the water flow from Jamie Creek. The Licence currently allows for the diversion and return to Jamie Creek of up to 95% of the water in the creek, so there would be a difference of up to 3%.

[159] Boralex argues that the IFRs it requested are not unprecedented. During the hearing, Boralex provided examples of other conditional water licences issued for creeks in British Columbia, authorizing IFRs that resulted in maximum stream flow diversions ranging from 97% to 98%.

[160] Boralex submits that, by the end of 2014, the field studies contemplated in section (e)(2) of the Licence and referred to in the documents accompanying the Licence, were completed. The Ministry reviewed and approved the field study plans, participated in some of the field studies, and reviewed the results. Boralex also notes that Ms. Bujold testified that the Ministry did not communicate any outstanding concerns to Boralex in the months prior to the Decision.

[161] Boralex further submits that all of the field studies and tests concluded that Jamie Creek is a gaining or effluent stream (i.e., gains flow from groundwater), and all of the studies confirm that the requested IFRs will not affect stream flow continuity in the diversion reach.

[162] Boralex also takes issue with what it considers to be the Ministry's late concerns about stream flow continuity in winter. Boralex submits that if the Ministry was concerned about winter flow continuity as a separate issue, it should have required the appropriate study prior to or as part of the 2014 Connectivity Study. Boralex argues that winter flow continuity can be addressed by monitoring in winter and by making "stream flow continuity at all times" a condition of the Licence.

[163] Boralex submits that, because the Respondent provided no reasons for the Decision, it asked Dr. Hatfield to undertake an independent assessment of the

potential impacts of the requested IFRs. Dr. Hatfield carried out his assessment before Dr. McCleary swore his affidavit and before the Respondent's witnesses testified at the appeal hearing, but after the notice of appeal was filed. Boralex argues that Dr. Hatfield, in his written and oral evidence, addressed all of the issues raised by Dr. McCleary in his affidavit and in his cross-examination, and generally responded to the issues raised by the Respondent in this appeal, as follows.

[164] Regarding the question of whether the requested IFRs will result in the loss of stream flow continuity in the diversion reach, Dr. Hatfield concluded that there is currently moderate uncertainty about flow continuity under certain conditions. He noted that there is little information available for flow continuity during winter conditions. He also noted that no monitoring of flow continuity is prescribed in the November 2014 OEMP to resolve this uncertainty, nor are specific management actions prescribed elsewhere in any documents to address the loss of stream flow continuity.

[165] To address the uncertainty, Dr. Hatfield recommended several possible actions; for example, ongoing monitoring, foot surveys, or overflights to verify flow continuity of the full diversion reach during periods of low background flow and/or low precipitation.

[166] If loss of stream flow continuity is detected through direct observation or data at the monitoring station upstream of the powerhouse (the "USPH monitoring station"), Dr. Hatfield recommended that the IFRs be adjusted immediately. Additionally, Dr. Hatfield stated that conditions for observed loss of flow continuity should be analyzed by a qualified professional, and a flow continuity management plan should be developed with input from the Ministry to provide supplemental flows under sensitive conditions.

[167] Boralex also addresses concerns that Mr. Rodgers expressed about the likelihood of the diversion reach completely freezing in winter and shoulder months, and about allowing "drought level IFRs". Boralex argues that the Ministry has provided no scientific basis or analysis for Mr. Rodgers' concern about subjecting Jamie Creek to drought conditions, nor did the Ministry define what it meant by "drought level IFRs".

[168] To address these concerns, Boralex relies on Dr. Hatfield's evidence. Dr. Hatfield stated that during extremely cold temperatures, ice could form naturally in the diversion reach, hindering visual verification of stream flow continuity. The USPH monitoring station could be used to verify that the IFR release flowing through the diversion reach is present just upstream of the powerhouse. Photographs of icing conditions at set time intervals could also be taken.

[169] In response to the "drought level IFRs" issue, Dr. Hatfield compared the requested IFRs to the "7Q10", which Dr. Hatfield defined as the lowest stream flow for seven consecutive days that would be expected to occur once in ten years; in other words, a proxy for a one-in-ten year drought. Dr. Hatfield's opinion is that the requested IFRs for Jamie Creek are greater than the 7Q10 between May and September, and less than the 7Q10 between October and April. Also, it is not uncommon for an IFR to be less than 7Q10. Dr. Hatfield stated that he is not

aware of any provincial policy or guidance regarding the acceptability of an IFR relative to 7Q10 or any other drought metric.

[170] Boralex also maintains that stream flow continuity is not a separate VEC requiring protection, but rather it is a mechanism to achieve and protect other VECs. Stream flow continuity in the diversion reach is, therefore, a factor associated with aquatic invertebrates and the fish in Downton Reservoir.

[171] Regarding the Respondent's issues about being able to safely access the diversion reach for monitoring and testing, Boralex argues that access for such activities is its responsibility. It has resources and experienced personnel, and it has accessed Jamie Creek at multiple locations under deep winter conditions with a range of equipment.

[172] With respect to Dr. McCleary's evidence, Boralex submits that little to no weight should be placed on it, for a number of reasons. Dr. McCleary joined the Ministry in November 2013, and only became involved in the Project in the spring of 2014. Boralex also argues that Dr. McCleary does not appear to have read all of the relevant Project documents, and on cross-examination he changed his opinion on a number of issues.

[173] The Respondent submits that stream flow continuity is a valid stand-alone issue for a statutory decision-maker considering licence conditions under the *Water Act*, and it is not in the public interest to allow any stream to be "dewatered". The Respondent's witnesses referred to long-standing provincial policies of not allowing streams to be dewatered through human activities.

[174] In response to Boralex's argument that the Ministry has issued other conditional water licences that result in 97% to 98% diversion of flows, the Respondent argues that every creek is a unique watershed and has specific habitat characteristics. Therefore, the environmental impacts of licensed IFRs will be specific to each creek, and the IFRs that the Ministry has approved for other creeks are irrelevant to Jamie Creek.

[175] The Respondent further submits that the requested IFRs pose a risk of anchor icing or solidification of the diversion reach during the winter, resulting in a loss of stream flow continuity in the months when natural stream flows are at their lowest. The baseline data, submitted by Boralex, failed to address winter flow continuity questions and ice challenges, which may become apparent with the requested IFRs.

[176] The Respondent also questions whether Boralex can safely access the diversion reach for monitoring and testing during all times of the year, especially during the winter months.

[177] The Respondent disagrees with Boralex's characterization of the conclusions of the various studies and reports. The Respondent also disagrees with Dr. Hatfield's conclusions, and submits that dewatering is still a concern, as indicated by the evidence of Mr. Rodgers and other Ministry witnesses.

[178] The Respondent argues that there is no evidence to support the IFRs requested in December 2014, and that the Respondent based his Decision on scientific advice from Ministry staff. All of the information available to the

Respondent before he issued the Decision left him with outstanding concerns about the potential impacts of the requested IFRs on stream flow continuity.

The Panel's findings

[179] In this appeal, there are fundamental differences between the parties' positions. Boralex submits that all of the information available to the Respondent up to the end of December 2014, plus the evidence submitted in this appeal, support its request for lower IFRs. The Respondent's position is that the evidence demonstrates that there is still too much uncertainty about the impacts of the requested IFRs to support an amendment to the Licence.

[180] The Panel first will address Boralex's argument that the Ministry has, on other streams, issued conditional water licences with IFRs comparable to the ones requested by Boralex. The Panel agrees with the Respondent's position that every creek has a unique watershed and has specific habitat characteristics. Therefore, the fact that the Ministry approved certain IFRs for other projects in the province has no bearing on what IFRs should be approved for the Project. However, conditions in other conditional water licences, including how the Ministry manages uncertainties and/or adverse impacts, may be relevant in this appeal.

[181] The Panel next addresses Boralex's argument that stream flow continuity is not a separate VEC requiring protection, but rather is a mechanism to achieve and protect other VECs. The Panel agrees with the Respondent that, with respect to this Project, the Ministry treated the possible interruption to stream flow continuity in the diversion reach as a distinct issue related to the potential impacts of the requested lower IFRs. This is clear from all of the evidence, especially the evidence from Mr. Rodgers, about the Ministry's concerns regarding potential loss of "connectivity" or "dewatering", and the need for operational tests.

[182] Additionally, the Panel notes that the 2010 PDP established "stream flow continuity at all times" as a management objective for IFR values in Jamie Creek. This management objective was highlighted by PGL in its reports, and by Dr. Hatfield in his analysis. Therefore, the Panel finds that, for the purposes of deciding this appeal, the potential impact to "stream flow continuity at all times" from the requested IFRs is a distinct issue.

[183] A related issue is the Ministry's concern about whether Jamie Creek is a 'losing' or 'gaining' stream. The Panel notes that, at various times, including in its response to the 2013 Assessment Report, the Ministry was not satisfied that Jamie Creek is a gaining stream, and therefore this could impact stream "connectivity".

[184] The Panel has considered all of the evidence from Boralex responding to the Ministry's losing versus gaining stream concerns. For example, in a detailed memo about several matters that Mr. Gray provided in February 2014 to Mr. Rodgers, Ms. Bujold, and other representatives from the parties, he addressed the issues of stream flow continuity and whether Jamie Creek is an influent (loses water to groundwater) or effluent (gains water from groundwater) creek in the diversion reach. Based on the field data up to that time, PGL had concluded that the diversion reach gains flow from groundwater.

[185] The Panel also notes that the 2014 Connectivity Report states that the testing demonstrates that Jamie Creek is a “gaining” stream, in that various seeps and upwelling zones provide contributions to surface flow downstream of the two intakes. The report states that, consequently, the total flow in the diversion reach increases in a downstream direction. The Panel was provided with no evidence that the Ministry responded to this conclusion, or had specific information to dispute it. Therefore, the Panel finds that the evidence presented during the appeal process establishes that the diversion reach likely gains flow from groundwater, and that the ‘gained’ flow contributes to overall stream flow.

[186] Regarding the Ministry’s response generally to the September 2014 tests, the Panel considered the following evidence from Boralex’s witnesses. Ms. Bujold testified that she spoke to Mr. Rodgers on September 10, 2014, and he did not raise any concerns about the operational tests or ask for any additional tests. Mr. Gray and Ms. Bujold both testified that neither PGL nor Boralex received any response from the Ministry about the September 2014 operational tests or the 2014 Connectivity Report. None of the Respondent’s witnesses disputed this testimony.

[187] The Panel also notes that the Decision did not refer to the September 2014 tests, the 2014 Connectivity Report, or any other information that the Respondent or other Ministry staff may or may not have considered regarding the stream flow continuity issue in May 2015. In fact, the Panel notes that the Decision referred to no specific information about any of the issues the Ministry was concerned about.

[188] After reviewing the Ministry’s detailed responses to the pre-2012 studies, the 2012 Study Plan, and the 2013 Assessment Report, the Panel is struck by the Ministry’s lack of response to Boralex about the 2014 operational tests and 2014 Connectivity Report. Even during this appeal, the Respondent’s witnesses provided no details about what they did or did not accept from the 2014 operational tests. They simply said that there was too much uncertainty about the potential loss of connectivity or dewatering.

[189] With respect to the issue of potential drought conditions, the Panel agrees with Boralex that the Ministry did not define what “drought level IFRs” or drought conditions are for the Project’s diversion reach. Without a definition or some criteria, it would be very difficult for Boralex to address this concern.

[190] The Panel considered Dr. Hatfield’s evidence regarding the Ministry’s concerns about “drought level IFRs”. Dr. Hatfield discussed and relied on the concept and calculation of 7Q10 that are found in the guidelines that he, with others, developed and documented for the province (cited above). Although the Panel did not qualify Dr. Hatfield as an expert in hydrology, the Panel did qualify him as an expert in environmental assessments of instream flow changes. Therefore, the Panel finds Dr. Hatfield’s evidence regarding the requested IFRs and 7Q10 to be reliable.

[191] The Respondent’s witnesses testified about their concerns about icing and stream flow continuity during winter months; however, the Panel found no evidence that Mr. Rodgers or anyone else from the Ministry asked for winter flow tests before May 2015. The Ministry could have requested such tests when it reviewed the 2013 Assessment Report, when it approved the 2014 Connectivity Study Plan, or after

receiving the 2014 Connectivity Report, but it did not do so. The Panel also questions why the Ministry did not request monitoring measures and/or a flow continuity management plan similar to what Dr. Hatfield suggested.

[192] The Panel notes that the Respondent's witnesses, especially Mr. Rodgers and Dr. McCleary, instead seemed to be focused on accessibility to areas of Jamie Creek in the winter to monitor stream flow continuity and icing.

[193] The Panel agrees with Boralex that it is its responsibility to determine when, where, and how it will access Jamie Creek and the diversion reach for any monitoring or testing it commits to undertake.

[194] From the evidence, it is not clear to the Panel whether the Respondent, Mr. Rodgers, or anyone else from the Ministry fully considered and evaluated Boralex's December 2014 IFR request, including its proposal to verify the requested IFRs at the USPH monitoring station and to maintain minimum flows at two locations. The Panel also finds that the evidence does not establish whether the Respondent or any other Ministry staff considered any of the reasons that Ms. Bujold provided in her December 2014 memo to support Boralex's request for the lower IFRs.

[195] In summary, the Panel finds that the evidence submitted by Boralex during the appeal hearing establishes that Jamie Creek is likely a 'gaining' stream, in that groundwater contributes to stream flow. The evidence also establishes that during the 2014 operational tests, conducted during extremely dry conditions and with zero flow release for 18 hours, stream flow continued at all times in the diversion reach.

[196] The Panel further finds that the 2010 PDP and other documents cited above state an ongoing commitment by the Project proponents and operators, including Boralex, to ensure stream flow continuity at all times. The 2010 PDP is part of the Ministry's regulatory approval for the Project.

[197] The Panel acknowledges that there is a lack of information about the potential impact of the requested lower IFRs on stream flows in the diversion reach during winter months. However, the Panel finds that the evidence, especially the studies and reports provided by Boralex including Dr. Hatfield's evidence, establishes that stream flow continuity at all times can be assured with the requested IFRs, provided that the measures proposed by Boralex and Dr. Hatfield are implemented.

[198] These measures should include Licence conditions requiring Boralex to: immediately reduce the amount of water being diverted if at any time the measured stream flows are less than the licenced IFRs; conduct operational stream flow continuity studies during winter months; and, monitor year round stream flow at various locations to ensure that any flow interruptions can be immediately reversed. The Panel addresses such measures later in this decision.

b. Aquatic invertebrates and riparian vegetation

The Parties' positions

[199] Boralex submits that aquatic invertebrates and riparian vegetation in Jamie Creek can be sufficiently protected under the requested IFRs through continued

monitoring and sampling in accordance with the November 2014 OEMP and, if necessary, a condition in the Licence that requires stream flow continuity to be maintained in the diversion reach at all times.

[200] Boralex argues that, through this appeal, the Ministry raised issues about aquatic invertebrates and riparian vegetation that were already addressed in previous studies and reports, all of which were satisfactory to the Ministry. The Ministry did not advise Boralex of any outstanding or unresolved issues, nor did the Ministry require Boralex to address any outstanding issues before the Decision was issued. Boralex further argues that issues raised by the Ministry in this appeal should not have persisted as concerns after the Decision was issued.

[201] In response to the Respondent's concern about detecting adverse impacts, Boralex maintains that the Ministry agreed that definitive conclusions about the potential impacts of the requested IFRs on aquatic invertebrates and riparian vegetation were not required. That is why the Ministry required aquatic invertebrate and riparian vegetation monitoring to be included in the OEMP. Boralex submits that it is already undertaking the required monitoring and reporting, as evidenced by the OEMP annual reports.

[202] Boralex submitted evidence about its ongoing commitment to maintain stream flow continuity to protect aquatic invertebrates, and about the diversion reach's low contribution to aquatic invertebrate productivity. Mr. Gray testified about a meeting of representatives from Boralex and the Ministry in July 2013. After the meeting, Mr. Gray wrote a memo to the meeting participants, which included the following paragraph regarding the flow needs for aquatic invertebrates:

Commitments have been made since 2011 to ensure that enough flow will be released to provide continuity, regardless of the approved IFR value. Eggs (and larvae) of many invertebrate species are freeze-tolerant, so exposure does not always equate to mortality or injury. The diversion reach of Jamie Creek is a minority of the total creek length and sampling data (and habitat characteristics) show comparatively low productivity.

[203] Boralex also relies on the evidence of Mr. Gray and Dr. Hatfield that any adverse impacts from the requested IFRs will be detected during the required monitoring. In the July 2013 memo, Mr. Gray stated that if future monitoring shows adverse impacts on invertebrates, root causes can be explored and any adverse impact, if it occurs, is reversible.

[204] Boralex summarizes Dr. Hatfield's conclusions as follows:

- The requested IFRs are protective of ecosystem values in Jamie Creek provided that the impacts of the IFRs are monitored and adaptively managed as described in his report.
- Although the requested IFRs have the potential to reduce "macroinvertebrate" productivity and cause a decline in "macroinvertebrate" drift relative to the Licenced IFRs, this decline will not have a significant impact on food availability for fish in Downton Reservoir due to the small magnitude of the expected decline relative to other food sources.

[205] Boralex argues that the Ministry's concerns about the impacts of the requested IFRs on invertebrates during the winter are misplaced because Mr. Gray and Dr. Hatfield testified that Jamie Creek is naturally subject to winter icing conditions, and therefore, aquatic invertebrates are adapted to ice and freezing. Boralex also submits that, if winter icing is a concern, verification of winter stream flow is possible.

[206] In response to the Ministry's concern about whether aquatic invertebrates could be restored if significant adverse impacts are detected, Boralex refers to Dr. Hatfield's evidence that there is support for an assumption of "reversibility" of impacts to invertebrates from low flow or no flow periods. Dr. Hatfield stated that, if a significant adverse impact on aquatic invertebrates occurred, recolonization is expected to take less than a year. Boralex also refers to the cross-examination evidence of Dr. McCleary, in which he stated that recolonization of invertebrates and the reversibility of adverse impacts would be likely.

[207] The Respondent submits that the primary issue in this appeal is whether there is sufficient evidence, or a combination of sufficient evidence coupled with a viable plan for adaptive management, for ensuring the protection of all the VECs at Jamie Creek, especially aquatic invertebrates and riparian vegetation.

[208] The Respondent refers to Ministry policies to protect freshwater ecosystems, such as a Ministry policy titled "Environmental Flow Needs Policy", which was approved on March 1, 2014 (the "EFN Policy"). The EFN Policy defines "environmental flow needs" as "the quantity and timing of flows in a stream required to sustain freshwater ecosystems, including fish and other aquatic life". The Respondent argues that the requested IFRs would not provide the environmental flow needs necessary to sustain such ecosystems in Jamie Creek.

[209] The Respondent also argues that Boralex's baseline data is generally incomplete, and the data gathered for aquatic invertebrates is flawed. Although the Respondent admits that the data was perhaps acceptable for the Licensed IFRs, he argues that the baseline data, either alone or coupled with the sampling data gathered to date, is insufficient to support the requested IFRs, or even intermediate lowering of IFRs and subsequent adaptive management. However, the Respondent did not explain what parts of the baseline data were incomplete, or whether he was referring to field data gathered for aquatic invertebrates from before or after the Project was operable.

[210] The Respondent disputes Dr. Hatfield's conclusions regarding aquatic invertebrates and riparian vegetation. The Respondent argues that Dr. Hatfield only considered two VECs, and that there are other values worthy of consideration. The Respondent argues that such other VECs include aquatic invertebrate health as an integral part of overall stream and riparian health, and therefore, stream flow continuity and prevention of total solidification during the winter months are also important.

The Panel's Findings

[211] The Panel finds that there is ample evidence that the Ministry made key decisions before December 2014 regarding concerns that it had about the Project's potential impacts on aquatic invertebrates and riparian vegetation. The Ministry

also made key decisions about how Project proponents and Boralex should address such concerns. Based on the studies, the reports, and the Ministry's responses cited above, the Panel finds that the Ministry decided to address any uncertainties and/or potential risk of adverse impacts by approving the monitoring, assessment, and reporting programs in the November 2014 OEMP.

[212] Additionally, the evidence establishes that Boralex has been complying with the Ministry's requirements since the Licence was issued in 2012 by undertaking annual field studies and submitting OEMP annual reports. Those annual reports detail where data is collected, and how the data is collected and analyzed. This includes details about aquatic invertebrate abundance, richness, and diversity. It also includes data about the health of riparian vegetation in the study areas.

[213] Regarding the extent of any adverse impacts on aquatic invertebrate productivity, especially in winter, the Panel accepts Dr. Hatfield's evidence that, despite anticipated winter icing, any potential impacts from the requested IFRs are expected to be low, provided that stream flow continuity is maintained. Dr. Hatfield also noted that a reduction of aquatic drift from Jamie Creek will have a low impact on the food supply for fish in Downton Reservoir, given all of the other food sources for those fish.

[214] In addition, Dr. Hatfield's evidence is that any significant adverse impacts to aquatic invertebrates will be detected through ongoing monitoring, and are reversible. Dr. McCleary also admitted that, if significant adverse impacts on aquatic invertebrates are detected, the recolonization of invertebrates and the reversibility of the adverse impacts would be likely.

[215] After considering all of the evidence, especially the 2010 BIA, the November 2014 OEMP, and the OEMP annual reports from 2012 through 2014, the Panel disagrees with the Respondent's submission that the baseline data for aquatic invertebrates is flawed. For example, the OEMP 2014 Annual Report details the data collected and analyzed from 2008 through 2014, based on the analytical approach and rationale for long term data approved by the Ministry in the November 2014 OEMP. Also, the OEMP annual reports provide details about where the data are collected, and about aquatic invertebrate abundance, richness, and diversity.

[216] Regarding riparian vegetation, the Panel finds that this VEC was assessed as part of the 2010 BIA, and it continues to be monitored through the OEMP annual reports. Also, Mr. Gray testified that when the Ministry requested a specific Riparian Vegetation Monitoring Plan, PGL ensured that the plan was implemented starting in May 2012. Under that monitoring plan, all riparian vegetation, including moss, overstorey, and understorey, are monitored at 17 locations.

[217] Based on the evidence, the Panel is not convinced that, before the Decision was issued, the Respondent and Ministry staff fully considered the 2012 OEMP Annual Report, the OEMP 2013 Final Baseline Report (which includes the 2013 OEMP Annual Report), or the Ministry's own directions to Boralex and PGL. In particular, the Panel finds that the Respondent provided no specific evidence about any concerns that he or other Ministry staff may have had up to May 2015 regarding whether aquatic invertebrates or riparian vegetation had been adequately

monitored or had been adversely affected based on the assessments in the 2014 November OEMP, the OEMP 2013 Annual Report, or the OEMP 2014 Annual Report.

[218] After considering Dr. McCleary's affidavit and cross-examination, and Mr. Belliveau's evidence at the hearing, the Panel detected a change in the Respondent's position on some issues regarding the sampling and reporting of the Project's potential impacts on aquatic invertebrates and riparian vegetation.

[219] For example, in his affidavit, Dr. McCleary questioned aspects of the aquatic invertebrate sampling methods. Yet, on cross-examination, he acknowledged that the aquatic invertebrate sampling methods and times were appropriate.

[220] Also, in his affidavit, Dr. McCleary expressed uncertainty about whether the riparian vegetation monitoring included moss and the spray zone. However, on cross-examination, Dr. McCleary confirmed that monitoring of moss and the spray zone are no longer concerns for the Ministry. Dr. McCleary also stated that he knew that the Ministry had approved the riparian vegetation management and monitoring program. He acknowledged that Boralex is applying the Ministry-directed protocol for vegetation studies, focusing on percent cover of vegetation and a rating of plant health.

[221] The Panel considers Dr. McCleary to be a qualified biologist who approaches his responsibilities as the Region's Aquatic Biologist in a professional manner. The Panel's assessment of Dr. McCleary's evidence is that he seemed to identify a broad range of general concerns about stream health, but his evidence did not reflect a comprehensive review of the numerous Project studies and reports, or of the Ministry's earlier decisions. The Panel recognizes that Dr. McCleary was not assigned to the Project file until the spring of 2014.

[222] The Panel finds that, in the absence of any contrary evidence, the Ministry accepted Boralex's aquatic invertebrate and riparian vegetation monitoring plans and assessments of aquatic invertebrates and riparian vegetation, as required in the November 2014 OEMP and as evidenced in the OEMP annual reports. Even a cursory review of those reports demonstrates that extensive monitoring and data analysis is taking place. The Panel further finds that the Respondent provided no evidence about any specific concerns about the reported results.

[223] The Panel also finds that all the evidence, including the July 2013 memo written by Mr. Gray, together with the documents cited in the previous section of this decision, establish that Boralex is committed to maintaining stream flow continuity to protect aquatic invertebrates and riparian vegetation health, regardless of the approved IFRs.

[224] Therefore, based on its review of all of the evidence, the Panel finds that the requested IFRs will protect aquatic invertebrates and riparian vegetation health, provided that the required monitoring and assessments of impacts on aquatic invertebrates and riparian vegetation continue, as required under the OEMP, and provided that stream flow continues at all times in the diversion reach. Under Issue 3, the Panel discusses the further Licence conditions that should be added to address these findings.

c. Fish and fish habitat*The Parties' positions*

[225] Boralex submits that years of monitoring and sampling established that there are no fish in Jamie Creek, and therefore, the requested IFRs are not expected to have a significant adverse impact on fish and fish habitat. Also, the drift of aquatic invertebrates from Jamie Creek provides a small contribution to the total food source for fish in Downton Reservoir.

[226] Boralex further submits that, in February 2013, September 2013, and April 2014, the Ministry accepted that Jamie Creek in its entirety is considered non-fish bearing. Boralex points out that, notwithstanding the Ministry's acceptance that Jamie Creek is non-fish bearing, sampling for fish presence (or absence) continues in the lower reach of the creek as required by the November 2014 OEMP and as evident from the submitted OEMP annual reports.

[227] In his closing submissions, the Respondent questioned whether the fish sampling methodology and timing for the lower reach of Jamie Creek was appropriate in all circumstances for detecting fish. However, the Respondent provided no evidence or rationale to support changes to the sampling regime, or in fact any suggested changes.

The Panel's findings

[228] Based on all of the studies and reports cited above, and the testimony from both parties' witnesses, the Panel finds that the Ministry accepted that Jamie Creek in its entirety is non-fish bearing, and Ministry staff also accepted that the Project posed a low risk to fish and fish habitat.

[229] Further, as is evident from the November 2014 OEMP and the OEMP annual reports, Boralex continues to monitor the lower reach of Jamie Creek for fish presence/absence using the sampling times and methods that were requested by the Ministry. For example, the OEMP 2014 Annual Report states that because 2014 was the first operational year for the Project, fish surveys were conducted in spring, summer and fall. Sampling was intensive and included multiple methods. No fish were caught or observed in Jamie Creek.

[230] The Panel notes that the Ministry provided no comments to Boralex or PGL after receiving the OEMP 2014 Annual Report or any of the other OEMP annual reports. In addition, the Respondent provided no evidence during the appeal hearing to support the proposition that the fish sampling methodology and timing for the lower reach of Jamie Creek was inappropriate for detecting fish.

[231] Consequently, the Panel finds that the requested IFRs pose a low risk of having any adverse impact on fish and/or fish habitat, given that the evidence establishes that there are no fish in Jamie Creek and the Ministry accepted that Jamie Creek is non-fish bearing. The Panel further finds that the low risk posed by the requested IFRs, and any remaining uncertainty regarding the potential adverse impacts on fish and fish habitat, can be addressed through the monitoring measures already in place under the November 2014 OEMP. The Panel addresses such measures below.

3. Whether and/or how any remaining uncertainties and potential adverse impacts that the requested IFRs may pose in relation to the factors discussed above can be addressed.

The Parties' positions

[232] Boralex submits that section (j) of the Licence already requires it to monitor for adverse impacts from the Project and to report results annually to the Ministry. Boralex maintains that it is complying with the Ministry approved monitoring and reporting methods, as evidenced by the OEMP annual reports for the 2012, 2013 and 2014 field seasons.

[233] Boralex also refers to section (e)(2) of the Licence, which gives the Regional Water Manager the authority to amend the Licence after the completion of 2012 field studies. Boralex submits that, if additional protective measures are required, the Ministry can impose them through a Licence amendment. For example, the Ministry could require IFRs to be adjusted for winter conditions, or require that continuous stream flow must be maintained at all times in the diversion reach.

[234] In addition, Boralex notes that its witnesses, Ms. Bujold and Mr. Gray, testified about how mitigation measures and/or compensation would be used if significant adverse impacts are detected through monitoring. Boralex also cited evidence from Mr. Rodgers, who gave an example of how mitigation and compensation have been used on another run-of-river project on Kwoiek Creek, where a licensed project adversely impacted fish and fish habitat.

[235] Boralex further submits that monitoring and adaptive management are recognized methods for detecting unanticipated adverse impacts during project operations, and managing any uncertainties. Boralex refers to Dr. Hatfield's evidence that the requested IFRs will remain protective of ecosystem values, provided that the impacts are monitored and an adaptive management approach is used to respond to any adverse impacts.

[236] To support its position about how adaptive management can be used with the Project, Boralex made several arguments, which the Panel has summarized as follows:

1. Adaptive management is a scientifically recognized method, which has been used for decades to address uncertainties and risks in natural resource management by informing management decisions and allowing for ongoing changes and/or improvements.
2. Adaptive management is currently used at Jamie Creek through the Licence conditions, requiring Boralex to implement a monitoring program to assess the impacts of the licensed diversion of water, to submit annual monitoring reports that are reviewed and considered by the Ministry, and to implement any required mitigation or compensation measures.
3. Adaptive management was acknowledged and supported by the Ministry's staff during their review of the studies and reports provided by Project proponents. Also, the Ministry recognizes adaptive management in its guidelines and policies under the *Water Act*, including its EFN Policy.

4. The Ministry uses adaptive management in other run-of-river hydro projects, such as the run-of-river project on Kwoiek Creek, and to regulate other environmental permits and licences. Mr. Rodgers testified that adaptive management can be incorporated into a water licence after a licence has been issued.
5. Adaptive management of the requested IFRs does not require significant additional Ministry resources because the Licence already incorporates adaptive management, and the Respondent's concerns about the need for additional Ministry staff resources are speculative. The current regulatory regime is based on the "professional reliance" model, where the Ministry relies on third party qualified professionals for document reviews and analysis.

[237] The Respondent admits that adaptive management was discussed as a possibility before the Licence was issued, but he argues that it was mentioned only once between May 2012 and April 2015. The Respondent also submits that adaptive management is not being used for Jamie Creek. Further, the Ministry is not prepared to accept adaptive management as part of the Licence's regime, because it is not part of the Licence conditions and the Ministry has not used adaptive management in that region.

[238] The Respondent argues that Boralex never proposed any detailed or comprehensive plan of adaptive management to address the known risks to the VECs at Jamie Creek. The Respondent also argues that Boralex has not addressed the practicalities of adaptively managing stream flow continuity and stream icing. The Respondent takes issue with Dr. Hatfield's evidence regarding the practicalities of implementing adaptive management at Jamie Creek, given the remoteness of the site and the monitoring challenges posed by the gorge portion of the diversion reach. The Respondent argues that, on the evidence, adaptive management is not viable in any identifiable form.

[239] The Respondent disagrees with Boralex that implementing an adaptive management scheme would involve the same workload for Ministry staff as the current OEMP and Licence conditions. The Respondent argues that adoption and implementation of an adaptive management scheme would overwhelm Ministry resources. The Respondent questions whether it is an appropriate use of government resources to undertake a plan of adaptive management at this stage of the Project.

[240] The Respondent also questions whether there exists the prospect of a relationship of trust and cooperation between the parties that would be sufficient to enable an adaptive management plan to succeed.

The Panel's findings

[241] The Panel finds that the Respondent did not address any of the Licence conditions, especially section (j), either in the Decision or in his submissions regarding this appeal.

[242] Although there may be uncertainties about the impacts of projects which require conditional water licences, the Ministry does accept some measure of uncertainty when issuing such licences. The Ministry allowed this Project to move

forward by imposing requirements, such as ongoing monitoring and possible adjustments to the Project, through Licence conditions. Therefore, conditions such as section (j) of the Licence are part of the Ministry's regulatory regime for managing uncertainties and potential adverse impacts from the Project's operations, yet the Respondent did not acknowledge this.

[243] Also, the Respondent did not respond to Boralex's suggestions about additional Licence conditions. The Respondent can impose additional requirements to address potential adverse impacts or uncertainties from the requested IFRs, such as those submitted by Boralex, including requiring stream flow continuity at all times and winter flow monitoring.

[244] The Panel finds that Boralex has provided substantial evidence about how it is already complying with the monitoring and reporting requirements under the Licence. This is evident from the details in the November 2014 OEMP and the OEMP annual reports. The Respondent provided no evidence that he or any other Ministry staff were dissatisfied with the OEMP annual reports, or even whether they had carefully reviewed the reports.

[245] The Panel also considered the testimony of Ms. Bujold and Mr. Gray. Both of them described the November 2014 OEMP as an ongoing program under which Boralex is required to, and does, monitor all impacts of the Project's operations. They testified that, if monitoring data indicated unanticipated adverse effects, Boralex would take remedial action. Ms. Bujold gave an example of how Boralex is already complying with requirements to mitigate or compensate for adverse impacts from the Project. In areas where post construction re-vegetation is required, Boralex is using seeds from local and native plants, and is working with a First Nation's company to reseed where needed.

[246] The Panel finds that Ms. Bujold's and Mr. Gray's testimony, and the OEMP annual reports, demonstrate that the monitoring and analytical efforts under the OEMP involve high levels of expertise, effort, and time by the consultants doing the work on Boralex's behalf.

[247] Based on the foregoing considerations and the evidence, the Panel finds that Boralex is complying with the Licence conditions. The Panel further finds that, based on such compliance and Boralex's stated commitment to accept additional Licence conditions, Boralex would comply with any additional licence conditions that may be imposed if the Licence is amended with the requested IFRs.

[248] As for adaptive management, from the evidence and especially the witnesses' testimony, it is unclear to the Panel whether the parties mean the same thing when referring to "adaptive management". The Panel notes that, in documents submitted in this appeal, there are a number of references to adaptive management in the context of natural resource management in general, and managing the impacts of this Project specifically.

[249] For example, in the Ministry's 2014 EFN Policy, there is a section titled "Adaptive Management", which states:

The field of environmental flow needs is an emerging science with large uncertainties in flow alteration and ecosystem response. Over time, an

adaptive management approach with monitoring and site-specific detailed studies will build our body of knowledge and potentially lead to refinements in the policy. Adaptive management is particularly important with climate change.

[250] Also, Mr. Caverly, Sequoia, and PGL referred to the adaptive management of IFRs in memos between the parties. Dr. McCleary referred to those memos in cross-examination. The 2012 Study Plan approved by the Ministry referred to a commitment to conduct monitoring within the framework of adaptive management.

[251] The Panel recognizes that the approach in section (j) of the Licence may not be exactly comparable to how the Ministry has used the term "adaptive management" or how it has approached adaptive management for other projects. However, that section of the Licence does use an approach that is characterized by monitoring, identifying and assessing impacts, and then adjusting as needed with regard to "any impacts [that the Project may have] on fish and/or wildlife and their habitats."

[252] Regarding the argument that adaptive management places a strain on Ministry resources, the Panel finds that the Respondent provided no evidence about what additional resources the Ministry might require to administer an adaptive management approach. The Panel also questions the Respondent's submission about the Ministry's potential future resource needs in an adaptive management scenario, given that the Ministry has already imposed monitoring and reporting requirements for the Project under the Licence. Presumably, the Ministry will review the required reports and respond accordingly, as it has in the example described by Mr. Rodgers.

[253] Also, the Panel finds that Boralex has acknowledged that it is responsible for the costs of monitoring, reporting, and any corrective action such as mitigation or compensation. Boralex noted that government use of independent third party professionals paid for by licensees is not a new practice, and this could be an option for the Ministry.

[254] The Respondent raises a concern about the apparent lack of trust and cooperation between the parties, and whether that would jeopardize the success of an adaptive management plan. The Panel finds that this concern has no bearing on whether any uncertainties and/or adverse impacts from the requested IFRs can be managed by compliance with Licence conditions and/or adaptive management of the Project.

[255] In this case, through the studies and reports that have been prepared for the Project and the combined work of the parties, specific issues about any uncertainties or potential adverse impacts from the Project's operations have been well characterized. The Panel finds that under these circumstances, through section (j) of the Licence and the November 2014 OEMP requirements, the Ministry has sought to reduce the Projects' remaining uncertainty and address its potential adverse impacts by requiring ongoing monitoring and specific assessments, followed by Project adjustment if necessary. The adjustments may include mitigation, compensation, or other measures, as directed by the appropriate

Ministry staff. This approach is similar to the “Adaptive Management” approach described in the Ministry’s 2014 EFN Policy, as set out above.

[256] The Panel also finds that Boralex is prepared to accept additional Licence conditions and has even suggested specific conditions, such as requirements to maintain stream flow continuity at all times and to undertake a winter flow monitoring program. Boralex also is committed to implementing further Project management measures.

[257] After considering all of the evidence and submissions from the parties, the Panel finds that the evidence establishes that the requested lower IFRs will protect the ecosystem health of Jamie Creek, specifically stream flow continuity at all times, aquatic invertebrates and riparian vegetation, and fish and fish habitat, through compliance with the existing Licence conditions and with the addition of further Licence conditions that have been suggested by Boralex and Dr. Hatfield. The Panel has set out those additional Licence conditions in its Conclusion below.

CONCLUSION

[258] For all of the reasons provided above, the Panel concludes that Boralex’s request to amend the Licence with the requested IFRs should be granted, subject to the Panel’s directions set out below.

[259] Under 92(8) of the *Water Act*, the Panel sends the matter back to the Respondent with directions to amend the Licence, within 30 days from this decision, with the following conditions:

1. Amend the Licence with the IFRs requested by Boralex in December 2014, as follows:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
IFR m ³ /s	0.10	0.10	0.11	0.12	0.19	0.22	0.21	0.20	0.18	0.14	0.12	0.10

These IFRs must pass the flow measuring station located immediately upstream of the tailrace.

2. Amend the minimum flows measured on West Jamie Creek and Jamie Creek upstream of the confluence in the Licence, as follows:

- a) The minimum flow on West Jamie Creek as measured at a flow measuring station upstream of the confluence with Jamie Creek must not be less than 0.06 m³/s at any time.
- b) The minimum flow on Jamie Creek as measured at a flow measuring station upstream of the confluence with West Jamie Creek must not be less than 0.04 m³/s at any time.

3. Add the following conditions to the Licence:

- a) If at any time the measured stream flow, as measured at the measuring stations located immediately upstream of the tailrace or at either of the measuring stations located upstream of the confluence, is less than the

licensed IFRs, the Licencee shall immediately reduce the amount of water being diverted, so as to increase the stream flow released into the diversion reach and restore the measured stream flow to at least the licenced IFRs.

- b) The Licensee shall undertake a winter stream flow continuity study or studies as soon as possible, designed and carried out by a qualified professional, subject to approval by the Respondent or another appropriate statutory decision-maker. The results shall be submitted to the Ministry. The minimum stream flow requirements in the Licence may be revised by the Respondent or other statutory decision-maker, based on the results of such a study or studies.
- c) The Licensee shall submit a year-round flow monitoring plan to provide supplemental flows under sensitive conditions for the diversion reach. The plan shall be prepared by a qualified professional, and is subject to approval by the Respondent or another appropriate statutory decision-maker.

DECISION

[260] In making this decision, the Panel has carefully considered all of the relevant evidence before it and all of the submissions of the parties, whether or not specifically referred to in this decision.

[261] For the reasons provided above, the appeal is allowed.

[262] Boralex's application for costs is denied.

"Gabriella Lang"

Gabriella Lang
Panel Chair

"Daphne Stancil"

Daphne Stancil
Panel Member

"Douglas VanDine"

Douglas VanDine
Panel Member

November 17, 2016