
From: Tennant,Jennifer [PYR]
Sent: January 21, 2014 6:45 PM
To: SiteC Review / Examen SiteC [CEAA]
Cc: Trevis,Courtney [CEAA]; Martin Carver; Beltaos,Spyros [Burlington]
Subject: Site C - Environment Canada response to questions from Dr. Martin Carver

Dear Panel Secretariat;

As follow up to the discussions at the January 11 Aquatic and Downstream Environment panel sessions, Dr. Spyros Beltaos (Environment Canada) received an email from Dr. Martin Carver, dated January 15, 2014, posing two questions.

After consulting with the panel secretariat, Environment Canada thought it would be appropriate and helpful to share the response with the Joint Review Panel, as a follow up to discussions and presentations heard at the January 11 Aquatic and Downstream Environment panel session.

If you have any questions, please do not hesitate to contact me.

Thank you,

Jennifer Tennant
Environmental Assessment
Pacific and Yukon Region
Environment Canada
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Dr. Spyros Beltaos' responses to the questions posed by Dr. Carver.

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Question #1

In response to Martin Carver's written submission for the Site C hearing, BC Hydro has stated: "Since the Project would not influence the timing of the ice front recession downstream of the Smoky Rive (sic) confluence, it would correspondingly not influence the occurrence of ice-jam release waves that could lead to dynamic ice-jamming in the lower reach of the Peace River."

In your opinion, is this statement valid? In your response, would you please specifically comment on the potential for changes to the freeze-up level resulting from the Project's new operating regime (which led to Environment Canada's Recommendation 3.2) and changes expected to come about due to Site C to ice extent/duration in the reach from the Smoky River confluence to Carcajou?

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Reply to question #1

Within the uncertainties associated with the CRISSP model, acknowledging our limited knowledge of certain river ice processes and provided BC Hydro's assumption of a run-of-the-river condition is fulfilled in practice, BC Hydro's statement is plausible.

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Question #2

At the Site C hearing, Dr. Smol gave a presentation which he concluded with the following statement:

"Using a weight-of-evidence approach, I cannot identify any discernible signal related to river flow regulation."

Please comment on his implication that river regulation has had no effect on flooding patterns of the Delta's lakes and wetlands, in light of the findings of the extensive hydrologic research that has been undertaken over the past twenty or more years.

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Reply to question #2

I will comment on the facts related to flooding and river flow regulation from my work.

Historical hydrometric records demonstrate unequivocally that freeze up levels have increased as a result of flow regulation.

My own scientific work uses (a) empirical data; (b) 40 years of field observations on various Canadian rivers; and (c) the known physics of ice breakup and jamming processes to demonstrate that increased freeze-up levels reduce ice-jamming frequency (other factors being equal). Furthermore, this cause-and-effect relationship operates independently of climate related cycles.