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## **Order of Appearances**

### **Enbridge Northern Gateway Panel 4**

#### Pipeline & Terminal Environmental & Socio-Economic Assessment Panel

Mr. Paul Anderson	Ms. Colleen Bryden	Dr. Colin Buchanan
Mr. Ray Doering	Mr. Tom Fiddler	Mr. Jeffrey Green
Mr. David Reid	Mr. Gord Rozon	Mr. John Thompson
Mr. Michael Preston		

#### Examinations

Examination by Ms. Jennifer Griffith for the Haisla Nation (continued) 28930  
Examination by Mr. Mike Ridsdale, Mr. David De Wit and Mr. Ken Rabnett for  
the Office of the Wet’suwet’en 29800

### **Examination by Ms. Jennifer Griffith for the Haisla Nation (continued)**

28930

### **Environmental effect attributes**

Ms. Griffith's first questions were about the Duration attribute, one of four attributes in Table 8-5, "Definitions of Environmental Effect Attributes" ([Exhibit B3-4](#)) 28931

Section 8.2.7 provides thresholds for determining significance for the effects of surface disturbance on vegetation diversity, for a number of key indicators (KIs). Ms. Griffith asked questions about these thresholds. 28946

She asked Mr. Reid to confirm that in Table 8-36, "Rare Ecological Communities in the Coast Mountains" ([Exhibit B3-5](#)) there are B.C. red-listed rare ecological communities in the PDA (project development area). Mr. Reid said, "That's correct." Ms. Griffith said, "I think that we're in agreement that there are some rare ecological communities that are red-listed in the PDA in the Coast Mountains so I'll move forward." 28959

Moving forward to Table 8-52, "Surface Disturbance for KIs by Physiographic Region", Ms. Griffith stated, "For ecosystems in the Coast Mountains, [the surface disturbance is] 11% which is above the 10% threshold. ... For old growth, it is 12% which is also above the threshold ... Have I understood that these are the anticipated impacts before mitigation to these communities?" Mr. Reid agreed. 28968

### **Residual effects**

Ms. Griffith moved to Table 8-58, "Residual Effects on Vegetation Diversity, and confirmed with Mr. Reid that "residual" means effects which are anticipated to persist after mitigation has been applied. She said that this table shows that the magnitude of effects on ecosystem units and old growth forests is high. The definition for a magnitude value of high in Table 8-5 of B3-4 is greater than 10% change in area for a measurable parameter.

Her question was, "When the residual effect is high, it's greater than 10 percent ... wouldn't that make it significant?" Mr. Reid said, in effect, they are different things, different 10 percents. "... magnitude is not a threshold for significance. Significance is a determination based on analysis of all of the attributes that are listed on the left-hand side of the column (in Table 8-5); we also take into account direction, geographical extent, duration, frequency and reversibility." 28974

In Table 8-58, for "ecosite phases", the residual effect is given as not significant. Ms. Griffith asked, if reversible were replaced by irreversible, would the determination be significant? Mr. Reid said that the determination of not significant is arrived at from consideration of various attributes, including the reversibility analysis. Mr. Doering talked about old growth forests, not ecosite phases. Mr. Fiddler spoke about the work they'll be doing. None of them answered her question. 28986

She put reversibility aside, and reframed the question, and discussion continued. Despite the earlier definition of residual effects as being effects remaining after mitigation is applied, Mr. Anderson qualified that. Ms Griffith asked, "So then, I'm to understand that the residual effects outlined in this table don't ... include consideration of anticipated mitigation measures; is that correct? Mr. Anderson: "Only partially so." 29000

Mr. Green said that in this evidence, and these tables, the tables are a summary, and the text is most important. 29015

Ms. Griffith asked, “Has Northern Gateway assessed the extent to which routing constraints may hinder micro routing to avoid OGMAs and rare plant ecosystems in the Kitimat River Valley? Mr. Anderson agreed with her. 29033

Ms. Griffith returned to Table 8-58, and discussion continued about the determination of not significant residual effect on vegetation impacts. Follow it in the transcript at 29040.

### **Restoring old growth forests**

Ms. Griffith quotes from B3-5: “Old growth forests can be restored over a long period.” She asked, “The time period for reversibility would be approximately 80 years, is that correct?” Mr. Anderson said yes, but “80 years is probably an underestimate. ... That’s why with old growth forests, our focus is not mitigation but avoidance.” 29091

Mr. Reid said that prior to getting into reclamation for old growth forest, they need to verify that the old growth forest is present where the map might say it is. He added that “old growth in the Coast Mountains is defined as trees being more than 250 years old.” Ms. Griffith asked, “Is the mapping not reliable?” Mr. Anderson: “We’re very confident in the information. ... If we were seeming to imply it’s not reliable data, that was not the intent.” 29097

### **Restoring rare ecological communities**

Ms. Griffith asked Mr. Reid if it was his view the populations of rare ecological communities are capable of fully regenerating as a result of restoration or compensation methods. Mr. Reid replied that it is “a challenging activity.” “A mature forest would be re-established within approximately 80 years.” 29105

Ms. Griffith returned discussion to reversibility, duration, recovery, and “my favourite table, 8-58” at 29122.

### **Accelerated restoration**

Mr. Reid spoke about restoration of a rare ecological community. He described “an example in another pipeline where they collected seeds and root crowns of the rare species, grew them up in greenhouses onsite -- so they were growing in the same environment -- and then they planted them out -- on the disturbed portions of the right-of-way ... in micro site conditions that were typical of this rare community. And depending upon the nature of it, but put fences around it to keep people or wildlife from eating the plants, added fertilizer to encourage growth, irrigation to preserve the moisture regime and have had good success in restoring the plant diversity. It can be done in an accelerated manner unrelated to the age.” Ms. Griffith asked if Northern Gateway is willing to commit to this type of approach. Mr. Anderson said, “Yes, we are.” 29140

### **Additional roads not in the vegetation study**

With respect to roads that will be needed, Ms. Griffith asked, “Am I correct that such roads do not fall in the PDA as assessed for this vegetation impact study and that they

would therefore create additional impacts to vegetation that has not been considered ... in the ESA?” Mr. Anderson replied, but did not exactly answer the question. 29151

### **Prediction confidence**

Section 8.4.3.6, “Prediction Confidence”, gives prediction confidence levels for a number of matters related to vegetation. Ms. Griffith read some, then said, “I want to confirm that the anticipated increase in prediction confidence for rare plants and rare ecological communities won’t take place until the surveys of the PDA before construction.” “And from that I understand that that prediction confidence won’t increase until after a certificate is issued, if one is issued; is that correct?” Mr. Anderson said, “Yes, I’d note that the prediction confidence is not low, it’s moderate.” Ms. Griffith said, “I note that the confidence is moderate, it’s not high. ... Wouldn’t it also be possible that that additional information identifies effect that have not been anticipated?” 29158

Mr Anderson, Mr. Reid and Mr. Green provide answers in the ensuing discussion. Ms. Griffith asked whether the PTP right-of-way adds an additional constraint. Mr. Anderson says that it could, but “it also offers opportunities to reduce NGP’s footprint.”

She asked, “The prediction confidence for mitigation measures which is also identified as moderate and not high, ... this did not contemplate the routing constraints in the Kitimat River Valley that are now apparent did it? Mr. Anderson replied, “[When we] came up with a prediction confidence level of moderate and not low, we had not undertaken the [present] level of detail on the Kitimat Valley.” 29183

### **Watercourse crossings**

[Exhibit B41-4](#), a response to an IR regarding watercourse crossings, states that habitat assessments for watercourse crossings is based on field surveys done to October 2009. It states that 265 sites remain to be surveyed, of which 125 are pipeline right-of-way. Mr. Anderson states that all crossing have been surveyed now. An updated aquatic catalogue will not be available for review during the JRP review of the project. 29230

Ms. Griffith asked if the catalogue could be updated with respect to the Kitimat Valley – KP 1083 to 1172 - before the hearings begin in Prince Rupert. Mr. Anderson agreed to that. Later, he said that the undertaking will include zone of influence information. 29246

[Exhibit B39-3](#) is a response to a Haisla request for “which part of the river each species uses at each life stage, including migration routes.” NGP said the information would be made available. Ms. Griffith asked if NGP was of the view that it was not required for the environmental assessment. Mr. Anderson agreed that was their view. 29258

[Exhibit B39-21](#) sets out spawning and emergence times for each fish species in the Kitimat River. It shows that the Kitimat River supports all five species of pacific salmon, eulachon, steelhead trout, cutthroat trout and Dolly Varden char. And it shows that for each of the five salmon species present in the river, chinook, coho, pink, sockeye and chum, at least one life stage is present in every month of the year. Mr. Anderson said that he “would not disagree with the information that’s in this chart, but it is general in nature

and more specific information will need to be gathered, specific to the crossings, locations that we propose.” 29265

### **Least risk windows**

“Would Northern Gateway agree that there is no least risk period for the Kitimat River itself?” Mr. Anderson replied, “Not within the Kitimat River watershed as a whole, so there isn’t a month of the year that you can construct anywhere in the Kitimat watershed. But there would be least risk windows in tributaries. ... I just want to stress that we are not crossing the main stem of the river as part of this project.” He undertakes to provide a list of watercourses where there is no least risk window identified. 29304

Ms. Griffith asked a number of questions arising from Table 11-11, “Criteria for Determining the Zone of Influence Downstream from Watercourse Crossings” ([Exhibit B3-9](#)). The discussion was about velocity, discharge and energy, construction during different flow states, including the freshet. 29333

### **Zones of influence and Deception Creek**

Ms. Griffith focussed on Deception Creek in Table 3, “Estimated HADD values for High Risk Watercourse Crossings” ([Exhibit B47-18](#)). She noted that this stream has no least risk period identified for it and a sensitivity rating of 13 out of 16. One of her questions was about its zone of influence. Mr. Anderson said the zone was 200 metres. 29395

### **Work in watercourses**

With respect to doing habitat use surveys in streams, Ms. Griffith asked would they be done for all of the watercourse crossings in the Kitimat River Valley? Mr. Anderson said they would do the work in areas where there is not a least risk window and where they are not proposing to directionally drill or use other methods that would avoid impact to the fish. In addition, they would just be doing these surveys during the time of year that we would propose to be crossing the watercourse, not at all times of the year. 29400

Mr. Anderson continued that they are also committed to “working with the provincial agencies to determine the best time to cross the watercourse and with the Federal Department of Fisheries and Oceans with respect to the type of crossing that we would be implementing. And if habitat alteration was going to occur, we would also be committing to doing habitat compensation.” 29438

Ms. Griffith asked questions about risks of horizontal directional drilling (HDD). 29448 She asked about a flume collapsing with an isolated crossing method. 29476

### **Release of drilling fluids with HDD**

Ms. Griffith asked about risks of release of drilling fluids, or “frac-out”, with HDD. Mr. Anderson said, “We’re struggling to find an example. We can’t think of an occurrence of an HDD failing into a watercourse in Canada. There are times when drilling fluid has fraced-out, but we can’t think of an example where that frac-out has occurred within a watercourse in the flowing channel.” He explained why that is. 29494

### **Harmful alteration, disruption and destruction of fish habitat (HADD)**

Ms. Griffith said, “It’s my understanding that where Northern Gateway cannot avoid creating a HADD, it proposes to address this through habitat compensation. Mr. Anderson said, “Our priority is to try to avoid where possible and then apply as much applicable mitigation as we can. And if it’s still determined that with mitigation there is still the likelihood of harmful alteration, then we would seek a section 35(2) authorization for that alteration and compensate through Fish Habitat Compensation Program.” 29534

Ms. Griffith quoted from [Exhibit B80-11](#), “Before a Section 35(2) Authorization is issued by DFO, the proponent must demonstrate that potential environmental effects on fish and fish habitat have been avoided to the maximum extent possible through refinement of the project design and implementation of technically feasible mitigation measures. Only when no further changes to the project or implementation of additional mitigation can be made will DFO consider compensation for unavoidable HADDs of fish habitat.” 29570

Much more discussion about HADD continues, and should be followed directly in the transcript from paragraph 29570

NGP has proposed a graduated compensation ratio scheme for graduated scale for HADD. This is described in Section 6.2, “Quantifying Compensation Requirements” (B80-11), in which a higher compensation ratio, requiring more compensation, is applied for higher-risk sites. Ms. Griffith asked some questions about this proposal. Mr. Anderson said they have not yet had a response from DFO. 29645

### **DFO approvals and operational statements**

Ms. Griffith asked about the use of DFO’s operational statements for a number of stream crossings. Mr. Anderson said they proposed to use operational statements where they can. He described them as a method to reduce the number of referrals that are required to DFO by providing guidance for numerous routine activities in or around a stream. He also said, “In British Columbia, ... there is not an operational statement with respect to [wet] pipeline water crossings.”

Mr. Anderson: “Whether crossings follow operational statements or whether they do not, we would ask DFO for their comment.” 29660

### **Blanket authorization process**

“For medium risk crossings, Northern Gateway intends to use a streamlined blanket authorization process” Ms. Griffith asked, is that correct? Mr. Anderson said, “We’ve proposed the blanket authorization process ... but the actual details of how the authorization program will be structured and how that will follow through to an ultimate compensation program for the project has not been worked out with DFO.” Ms. Griffith: “Would that essentially be seeking preapproval from DFO under an agreed to set of terms? Is that the concept?” Mr. Anderson: “Yes, basically.” 29663

### **Culturally modified trees and archaeological sites**

Dr. Buchanan said, “The primary significance of culturally modified trees is in demonstrating use and occupancy.” He agreed that in BC it is illegal to remove or damage a pre-1846 culturally modified tree without first obtaining a permit. Ms. Griffith

made the point that 1846 represents the year specified in the *Delgamuukw* decision as the assertion of sovereignty in British Columbia. 29709

When asked in an IR by the Joint Review Panel to provide a list of post-1846 CMT sites, NGP supplied [Exhibit 40-5](#), which lists 11 sites.

Northern Gateway has provided two reports to the British Columbia Archeology Branch which relate specifically to the destruction of a number of Culturally Modified Trees (“CMTs”) on the Traditional Territory of the Haisla Nation. Ms. Griffith put one of these reports up as an AQ, and read parts of it into the record. It refers only to FITE-33, which Mr. Green said includes about 90% of the PDA for the Kitimat Terminal. 29748

FITE-33 is considered of high significance because of the evidence of use dating from AD1575. It contains at least 817 CMTs, only a few of which have been dated but which include both pre and post-1846 CMTs.

Ms. Griffith asked why FITE-33 was not listed in Exhibit 40-5. Mr. Green said because it is recorded as an archaeological site, rather than a CMT site.

Ms. Griffith asked if there are other sites that include both pre and post-1846 CMTs. Mr. Green said there is another, immediately to the south of the Kitimat terminal asite, referenced as FITE-18, which has 144 CMTs.

## **Examination by Mr. Mike Ridsdale, Mr. David De Wit and Mr. Ken Rabnett for the Office of the Wet’suwet’en** 29800

### **Baseline studies**

Mr. Ridsdale asked why “competent and thorough wetland wildlife habitat and wildlife movement and mortality baseline studies were not incorporated [in the application] in regards to KP 908 to KP 1078 so as to enable a meaningful review by the Office of Wet’suwet’en.” Mr. Anderson said, “Northern Gateway would disagree,” and cited a number of exhibits. “We believe that the information that we have provided is adequate for the assessment.” 29805

Mr. De Wit questioned the value of suitability mapping. Mr. Green said, “The habitat suitability modelling, ... looks at the suitability of the landscape to support wildlife, which is really what this pipeline could affect, is the habitat and altering the habitat. We do not expect to have direct effects on wildlife populations through mortality.” Mr. De Wit: “From the Wet’suwet’en perspective, suitability is one part of the equation but if you don’t have accurate numbers on population, density and movement, they are just estimates based on assumptions.” 29842

Mr. Ridsdale asked Enbridge to explain how adverse effects and their significance to wildlife and their habitats from the proposed project can be determined. Mr. Anderson provided a lengthy reply, which began, “the effects of the project and their significance to wildlife has been determined ... and that was the purpose or one of the purposes of the environmental assessment and it's described in detail in our application. 29871

### **Establishing the baseline for effects on Aboriginal use**

Mr. Ridsdale asked, “Given the lack of surveys or studies related to Wet'suwet'en trapping, hunting and botanical gathering ...” how can the impacts be quantified? Mr. Anderson said that effects on traditional use were assessed in two major ways. The first was information received from Aboriginal groups. The second was from secondary sources, such as reports and assessments. “We are not able to obtain TLU information directly from the Office of the Wet'suwet'en, though we were able to collect traditional land use information from other First Nations that have overlapping ... territory.” 29889

The questioners put a number of questions about information or data which NGP may have gathered. The witness panel, mainly Mr. Anderson, repeated himself, referencing sections in the evidence, or explaining approximately what they had done, or saying that they had not gathered that information and perhaps what they would be doing.

Mr. Rabnett asked for [Exhibit B11-1](#), the Freshwater Fish and Fish Habitat Technical Data Report. He said it notes unique population of sockeye in the Kitimat River. “Could the Proponent describe similarly unique sockeye population spawning in the Morice River and the Bulkley River?” Mr. Anderson replied, “It is possible that a similar unique sockeye population as you’ve described may be present in the Morice and Bulkley Rivers. However ... it wouldn’t change the crossing techniques that we’re prescribing or the conclusions that we’ve come to in our assessment.” 29944

### **Infringement on title and rights**

Mr. De Wit said, “This process ... is to assess potential environmental effects and more specifically for the Wet'suwet'en, ... to determine the potential ... infringement on our title and associated rights.” Mr. Anderson said, “The responsibility that we have under the Canadian Environmental Assessment Act is an assessment of the effects of the project on traditional use by Aboriginal people. We can’t really speak to how that might infringe upon Aboriginal title.” 29952

Mr. Rabnett asked about reports describing baseline conditions of downstream fish and fish habitat that could potentially be affected by oil spills. “I guess we're talking metre by metre by metre. I don't know, there would be a thousand log dams or more in that Reach 2 of Morice River.” Mr. Green replied, in part, “We would work with communities like yours to go to the actual river with people that do the response planning.” 29972

Mr. De Wit said, “We will require detailed information as will the Crown to be able to determine and assess potential levels of infringement.”

“Will there be increased sedimentations to streams and rivers in the Morice watershed through the proposed construction phase,” asked Mr. De Wit. Mr. Anderson replied that trenchless crossings would not have sedimentation, though during construction there is the potential. 30011

### **Will fish be killed?**

Mr. De Wit: “Will fish be killed?” Mr. Anderson: “We do not believe they will.” 30022