



MUSQUEAM INDIAN BAND

6735 SALISH DRIVE
VANCOUVER, B.C.
CANADA V6N 4C4
TELEPHONE: 604 263-3261
FAX: 604 263-4212

March 22nd, 2011

Sara Wilson
Project Assessment Officer
Environmental Assessment Office
2nd Fl., 836 Yates St | Victoria BC V8W 1L8
Tel: (250) 387-2406 | Fax: (250) 356-7440

BY MAIL & EMAIL: sara.wilson@gov.bc.ca

Dear Ms. Wilson:

Re: Preliminary Comments, VAFFC Vancouver Airport Fuel Delivery Project EA Certificate Application

(a) Comments on Environmental Assessment Certificate Application

We enclose a report dated March 22nd, 2011 from our consultants, Keystone Environmental Ltd giving comments on the Application.

(b) The Consultation Process

We wish to confirm our earlier statements that we have not been given adequate time to review the very complex Application. We understand that the Proponents have been working on the technical reports for years and yet we have only been given a few months to review and provide comments from the time that capacity funding was made available by the proponent to retain consultants to review those reports.

We also wish to confirm our earlier statement that we should have been given the opportunity to meet directly with the Proponents and not just their local agent. We understand that they do not wish to travel from Montreal to meet with us and we find this disrespectful of our role as the First Peoples of the lands and waters in which they wish to locate a Project that will have such an adverse impact on our Aboriginal rights and title.

We also wish to confirm that we consider the time table imposed by the Environmental Review process is disrespectful of the role that the Band and other First Nations are playing in the work of the Cohen Inquiry as Justice Cohen is working diligently to find out the causes of the 2009 decline of sockeye salmon in the Fraser River. The Terms of Reference for the Inquiry include "the causes for the decline of Fraser River sockeye salmon including ... the impact of environmental changes along the Fraser River, marine environmental conditions ... and other factors that may have affected the ability of sockeye salmon to reach traditional spawning

ground or reach the ocean". One of the technical reports to be prepared for the Commission includes Technical Report #12 – **Sockeye habitat analysis in the Lower Fraser River and the Strait of Georgia**. The Commission's website states that "the researcher will prepare a habitat inventory for sockeye habitats in the Lower Fraser River (below Hope) and identify human activities that could affect them; analyze Fraser Estuary development, including larger vessels, proposed expansion of the Vancouver International Airport Fuel Delivery Project, development of ports, bridges and damage from dredging ..." (emphasis added). Until Justice Cohen has reviewed all the evidence to be presented at the Inquiry and issued his final report, we think the environmental assessment process should be placed in abeyance and that failing to do so is inconsistent with the honour of the Crown, both federal and provincial.

To have any credibility, the assessment must take the contents and recommendations of Justice Cohen's final report into consideration. The Cohen Inquiry is doing its work with the best scientific advisors and with the input of First Nations and other affected parties. It would be a mistake of historic proportions and a severe breach of the honour of the Crown if the environmental assessment review resulted in approval and, just a few months later, the Cohen Inquiry reported that the types of activities permitted were causes of the decline of the sockeye salmon that is such an integral part of the Musqueam community and its future.

(c) Our Aboriginal Title to the Property

As we have repeatedly made known to the Crown, both federal and provincial, there is strong evidence in support of our Aboriginal title and rights to the lands and water that are to be the location of the Project. We have consistently asserted our title to our traditional territory from the time of first European settlement to the present time – see, for example, the attached Musqueam Declaration of our traditional territory dated June 10, 1976 and the Statement of Intent filed as part of the BC Treaty Process.

Given the extensive information that has been provided to both the federal and provincial Crown as to the nature and extent of our Aboriginal rights and title in litigation and consultations over other projects and land dispositions, we have not provided additional information with this letter but we would be pleased to do so on request.

Like all of our traditional territory, the lands and waters that are to be the location of the Project have significance to the Musqueam, our economy and our culture and a Project of the scale proposed will have significant impact on our rights and title. We have never surrendered that territory and have always maintained our connection to the extent possible given the unwillingness of European colonizers to recognize our title and rights. The Project will have special impact on us because we have made use of the Fraser River for many of our needs including fishing, transport and trade.

(d) Serious Impact of the Proposed Project on our Aboriginal Rights and Title

We refer you to the rulings of the Supreme Court of Canada in the *Sparrow* and *Delgamuukw* cases. The proposed Project will significantly infringe upon our Aboriginal rights and title including our Aboriginal right to fish as upheld by the Supreme Court of Canada in the *Sparrow* case. It would also infringe on our right to have exclusive use and occupation of the lands and waters that are to be the location of the Project and our right to choose what uses the lands and



waters can be put which are essential aspects of our Aboriginal title as held by the Supreme Court of Canada in the *Delgamuukw* case at paragraph 166.

While the Musqueam are committed to working collaboratively with the Crown, we must take whatever steps are necessary to preserve and protect our legal rights. We trust and expect the Crown will undertake its duties in a responsible and responsive manner.

Sincerely,

A handwritten signature in black ink, appearing to read "Leona M. Sparrow". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Leona M. Sparrow – Director, Treaty, Lands & Resources
Musqueam Indian Band

Encl.





**Keystone
Environmental**
Knowledge-Driven Results

March 22, 2011

Ms. Diane Sparrow
Musqueam Indian Band
6735 Salish Drive
Vancouver, BC V6N 4C4

Dear Ms. Sparrow:

**Re: Preliminary Comments, VAFFC Vancouver Airport Fuel Delivery Project
Environmental Assessment Certificate Application
Project No. 10828**

At the request of the Musqueam Indian Band (the "Band"), Keystone Environmental Ltd. (Keystone Environmental) has completed a review of the above-referenced document. The preliminary comments derived from the review are provided to assist the Band with preparation of comments for submission to the BC Environmental Assessment Office (EAO).

As indicated in the meeting between Keystone Environmental and the Band on March 14, 2011, it is understood that the Band has requested formal consultation with the project proponents (VAFFC) and have not been provided that opportunity to date. We also understand that comments the Band may choose to submit to the EAO at this time would be considered preliminary; that the Band does not feel there has been adequate time to review the referenced documents and that the Band would reserve the right to submit further comments following formal consultation with the VAFFC.

The primary section headings in the proponent's application are as follows:

- Part A – Introduction and Background
 - Purpose of the Environmental Assessment Review Process
 - Project Information
 - Information Distribution and Consultation
- Part B – Assessment of Project Effects, Mitigation, and Significance of Residual Effects
 - Assessment Scope and Methodology
 - Assessment of Environmental Effects
 - Assessment of Social and Economic Effects
 - Assessment of Heritage Effects
 - Assessment of Human Health Effects
 - Environmental Management Program

- Part C – First Nations Information Requirements
 - First Nation Background Information
 - Aboriginal Rights and Treaty Rights
 - Other First Nation Interests
 - First Nations Consultation
 - First Nation Conclusions
- Part D – Federal Information Requirements
 - Accidents or Malfunctions
 - Spill Probability and Risk
 - Spill Prevention, Preparedness and Emergency Response
 - Fire Prevention, Preparedness and Emergency Response
 - Fate and Effects Analysis
 - Navigation Assessment
 - Effects of the Environment on the Project
 - Cumulative Effects Assessment
- Part E – Conclusions
 - Summary of Potential Project Effects, Recommended Mitigation Measures and Potential Residual Effects
 - Summary of Commitments
 - Conclusion

The comments below have been organized following the structure of major sections of the application with the addition of a *General Comments* section.

General Comments

1. Within the first paragraph of the Executive Summary the following statement is made, “The existing aviation fuel delivery system is inadequate to meet future fuel requirements at YVR” as the driving reason for the project. The application fails to provide detailed support for this statement (e.g., projected fuel requirements over time, projected increased in air traffic, assumptions used in derivation of projections, methodology that will be used to confirm the veracity of the projections, recent history over past five years). Further justification and support is required. The footnote on pg 5.4-2 also notes that assessment efforts were based off of 2007 YVR fuel requirements and that current fuel requirements are understood to have decreased since that time. It would be of interest to know whether YVR fuel requirement projections made in the years prior to 2007 accounted for these subsequent decreases. The footnote suggests that there may be considerable uncertainty with the assertion that YVR fuel requirements will continue to increase at an extent requiring the proposed project.
2. It is noted in the Executive Summary that truck tanker traffic will be reduced or eliminated with the proposed project. Which is it? Will the proposed project eliminate tanker traffic transporting fuel to YVR?

3. With respect to economics, what will the impact of the proposed project be on the existing suppliers and those that benefit from existing infrastructure and delivery methods (e.g., TMJ, Chevron Burnaby Refinery, Truck Tanker Companies, Local Municipalities, etc.)?
4. With a desire to access global offshore suppliers, there would be reduced costs to YVR and benefits to the offshore suppliers in terms of sales. Specifically, what are the potential economic benefits and potential impacts of this for the Band?
5. If the project were to proceed, would the terminal facility and associated infrastructure be dedicated solely for YVR fuel requirements as indicated in the application? Would the terminal or infrastructure be used for vessel traffic or fuel transportation opportunities beyond YVR needs?
6. It would seem that efforts to avoid in-river navigation and transportation of hazardous materials would significantly reduce a number of logistical and environmental concerns. Other than VAFFC having already purchased the proposed river terminal location what is the rationale supporting navigation of freighter traffic across ecologically sensitive Sand Heads and Fraser River estuary, and the construction of a fuel pipeline through residential areas, relative to more direct options given that YVR is located on the coast?
7. In terms of project timing, the current timeline appears to be out of sync with other critical studies affecting the Fraser River and Tanker traffic in the region. Namely, the Cohen Commission study on salmon and the Port Metro Vancouver Tanker Risk Study. Unless there is the suggestion that the outcomes of these studies are forgone conclusions, would it not be prudent to review the results of these efforts before looking to certify a dependent project?

The Cohen Commission inquiry was to be conducted in two phases. During the first phase, the Commissioner will be reviewing and assessing any previous examinations, investigations or reports that he deems relevant to the inquiry and the Government's responses to those examinations, investigations and reports. Phase two will be to investigate and make independent findings of fact regarding:

- The causes for the decline of Fraser River sockeye salmon including, but not limited to, the impact of environmental changes along the Fraser River, marine environmental conditions, aquaculture, predators, diseases, water temperature and other factors that may have affected the ability of sockeye salmon to reach traditional spawning grounds or reach the ocean;
- The current state of Fraser River sockeye salmon stocks and the long term projections for those stocks; and
- To develop recommendations for improving the future sustainability of the sockeye salmon fishery in the Fraser River including, as required, any changes to the policies, practices and procedures of the Department (of Fisheries and Oceans) in relation to the management of the Fraser River sockeye salmon fishery.

Clearly, these are extremely important matters to First Nations and also our federal government. The Band feels that it is inappropriate to pursue approval of new projects that cumulatively would increase the demands and reliance upon the Fraser River for industrial use.

8. What considerations have been given with respect to the future potential that industrial activity may need to be decreased along the Fraser River to maintain/sustain fish stocks and/or other valued ecosystem components.
9. Will the project create any complications for future acquisition or use of land for the Band?
10. Because worldwide statistics are used in the analysis, the assumption is that tanker safety and navigational risks associated with the project are similar to those in the rest of the world – what is the rationale for this and were these statistics based on other similar riverine navigation situations? How has the unique location of this project in British Columbia been factored into these risk equations with respect to Fraser River freshet/flooding events, BC/Richmond-specific earthquake/tsunami concerns? Please provide further justification.
11. During the recent presentations by the project proponents, when questioned about the protection of Species at Risk it was noted that these will be protected at the population level. This would appear to contradict the Species at Risk Act that requires protection at the individual level for such species. Protection at the population level is not sufficient as it reveals that individuals may be impacted. Given the number of species at risk in the region, there does not appear to have been a comprehensive Species at Risk study completed for the location of proposed infrastructure and areas potentially impacted by river traffic?

Comments on Part B – Assessment of Project Effects, Mitigation, and Significance of Residual Effects

12. The only residual effect noted to be of unknown or possible significance was vegetation along the pipeline corridor and its disturbance during construction and operations/maintenance phases. Acute and chronic disturbance will facilitate the recruitment and potential success of invasive species and other opportunistic weeds in such areas. These effects may be on-going and long-term as can be observed along other shorelines and managed linear corridors. The effects of this do not appear to be addressed in the application from either a direct or cumulative perspective. Clarification and justification for this is requested both for project-specific consideration and cumulative effect.
13. The assessment summarizes available background information and additional field study findings (existing conditions) of fish, wildlife, vegetation, heritage, archaeological and other valued ecosystem components (VECs). The proposed mitigative strategies during construction and operational phases are standard best management practises (BMPs) and adherence to current legislation, policies and guidelines. Given the many unique aspects of the project, reporting of clear and acceptable BMPs should be provided for review to give stakeholders improved clarity on such items and to indicate where opportunities may exist for involvement.
14. It was noted that a BC Site Registry search was completed for a 10 km radius area and a 1 km radius area, but it is not noted specifically where these searches were completed. Registry searches are from a point, not along a corridor. It is recommended that a search be completed for the entire project area. Also the notation that the detailed reports were not requested because they 'typically do not provide useful information at a screening level' is simply not true. The searches will provide very important information including, but not

limited to whether or not the projects are active or no longer active. The information can also provide important information on the types of issues being address, which could be important to the project siting as well as risks to human health and the environment.

15. The section on 'risk ranking' is not adequately explained and clarification is requested. Does it refer to risks associated with properties, or is it just the risk of given properties having the potential to be contaminated. If the latter, was this based solely on BC Contaminated Sites Regulation (CSR) standards and considerations, or does it also consider federal CCME guidelines and considerations?
16. The risk ranking methodology for contaminated sites also appears to have only considered current land use. Both BC and Federal approaches to assessing the potential for a property to be 'contaminated' requires consideration of historical land use. The bullets on 5.6-7 do not indicate whether previous operations at given properties were considered.
17. Use of the duration of occupation of site properties as being contaminated is not a good measure as many activities that result in contamination happen over very short durations (spills, etc.). It is recommended that a more appropriate Preliminary Site Investigation, Stage 1 or Phase 1 Environmental Site Assessment, be completed to provide indication of the potential for contaminated sites along the footprint of the project. The focus on 'dry-cleaners' is absurd. Yes it is true that there are many dry-cleaning operations that have caused contamination, but there are also many other types of operations and activities that need consideration.
18. The section on Project Construction notes that "adaptive management" will be used to mitigate construction across contaminated sites. Greater detail is required as to what methods may be brought to the 'adaptive management' approach as there are only limited approaches available to address contamination. It is not clear how Adaptive Management fits into contaminated sites management with respect to remediation/risk assessment?
19. The EA report does not specify whether pile driving activities will be conducted simultaneous at the marine terminal upgrades and at the fuel receiving facility construction.
20. It was mentioned in the report that noise from pile driving will be temporary, short in duration and intermittent? What does temporary mean? How long is it going to take?
21. Will pile driving activities be conducted during the weekend?
22. Dredging activities can also be quite noisy. Evaluation of dredging noise was not included in the report.
23. Do pile driving and dredging activities have the potential to affect birds/migratory birds/species at risk?
24. Page 6-27. What may be the impacts to dry-racking if fuel is released and evaporates in the air?
25. Page 6-29. Moray Channel has been a significant fishing site for the Band. The Moray could be impacted if a spill were to migrate up river to the east end of Annacis and then run out the North Arm. What is the potential for this and how would it be mitigated?
26. Page 6-65 to 66. The proponent should not imply that a lack of response from the Band in any way represents agreement with the application.

Comments on Part C – First Nation Information Requirements

27. Chapter 12 lists previously identified First Nations concerns and Proponent responses in tabular format. However, the responses are repetitive, refer to existing legislation, guidelines and policies (i.e., FREMP dredging management), side-step historical and traditional land and resource issues, and fall back on standard BMPs and mitigation strategies (no unique or out-of-box thinking). The issue of performance bonding or other forms of in-trust bonds is waived as insurance will be carried by the transporters and the fuel facility.
- a. How long does it take to collect money from Lloyd's of London or other insurer or from foreign-held companies?
 - b. By the time monies are paid out to provide habitat restoration, lost wages, etc., productivity of existing habitats and restoration of fishing activities may have been affected for several seasonal cycles. How does the Proponent intend to manage impacts at the time of an accident without some form of contingency fund? For example, other projects have been required to post letters of credit and/or performance bonds during construction. Strata holdings typically pay into contingency funds for potential maintenance issues.
 - c. Why does the Proponent feel it is any different and that local peoples affected by a catastrophic event should depend on federal/provincial assistance or the goodwill of charitable organizations, family and neighbours in the interim? These issues also affect non-native fishermen and residents along the pipeline route and river.

Comments on Part D – Federal Information Requirements

28. Agreement between contractors and first nation groups to stop pile-driving or any other noisy activities during special days (ceremonies) needs to be established.
29. More specific procedures need to be created to follow up noise complaints. The EA application reports that if there are complaints caused by shipboard generator noise the procedure is to take noise levels measurements and to keep records for future mitigative actions. However, there does not appear to be a requirement for any immediate action to address the noise (Part B 5.5-25)
30. Community education – what education/information will VAFFC provide to the Band to outline the risks/remedial actions associated with a major spill (e.g., processes that will be followed to clean up the Fraser River and surrounding areas, potential impacts to economic and cultural resources, time that an area/s cannot be fished, impacts to human health along the Fraser River and associated shorelines, etc.)?
31. Earthquakes – there is a potential for the pipeline to rupture during a significant earthquake. What will the emergency response be in such an event? This could potentially lead to contaminated sites in the Fraser River and surrounding lands. The EACA states that probability is low, but impacted areas could potentially have resources (e.g., fisheries) and cultural heritage destroyed or rendered useless for the Band.

32. Loss of power (e.g., during floods, fire, earthquakes, etc.) - may result in a shutdown of mechanized sensors, pressure indicators, and the various control valves. What is the operational time of the emergency power? What are the risks associated with loss of power and/or running on emergency power during catastrophic events?
33. In the event of a major spill, will it be easy to identify which 'polluter' is at fault and commence remedial works in a timely manner? If a case becomes complex, there is potential for Band to lose cultural/economic resources for extended periods of time, how would this be addressed?
34. Catastrophic events are not discussed. Regular and routine accidents/spills and response to emergencies fall back on current legislation and building codes and standard BMP's despite the unique nature and significance scale of the project in terms of hazardous materials handling and management. There appears to be no commitment to provide performance bonding.
35. The bird habitat compensation plan provided consists only of what may or may not be followed – this is not sufficient to provide adequate comfort – are there specific plans in place to evaluate the adequacy of such plans and determine potential impacts or opportunities for the Musqueam FN.
36. As evidenced by recent events along the Pacific Rim, the potential impacts, particularly to low lying areas such as Richmond, from significant earthquakes is extreme. As noted elsewhere, it is not sufficient to address such matters simply through estimating probabilities. Probability does not equal risk. $Probability \times Hazard = Risk$. The importance of this equation is critical because as the hazard increases (even when the probability is low), the risk increases and methods to address the potential risk may change. Typically one might expect considerably greater levels of pre-event planning, broader education, contingency planning. These are not sufficiently addressed in the application – further detail is requested.

Reports of fires, including an oil refinery, in a nation as advanced as Japan in emergency response reminds us that the best laid plans are not capable of addressing the unknown unknowns ("black swans"). The document also passes over "third-party" damage in a very cursory manner - yet, there have been incidents here in BC of attempted (and successful) terrorism on pipelines.

37. Residual and cumulative effects are reported as being not significant. Other important projects are dismissed or not even mentioned. Yet, studies are currently in progress to look at exactly those effects on salmon (Cohen Commission), port traffic (PMV Tanker Risk Study) and on-going monitoring programs for annual maintenance dredging of the Fraser River (including individually held waterlot licenses for the purpose of sand removal for upland sale as preload and aggregate). Potential effects of dredging in the local environment and effects of ocean disposal is not mentioned.
38. With respect to inhalation exposure to aviation fuel, the health risks associated with short-term acute inhalation exposures are provided, but there is no discussion regarding chronic long term exposures to lower concentrations. Justification is requested along with further supporting detail supporting this omission.

39. The notations in the health section indicating the percentages of aviation fuel constituents suggests that compounds such as benzene are of lesser concern. However, as a carcinogen it is understood that benzene is not a threshold toxicant and that exposure to extremely low concentrations has the potential to cause cancer. We feel this should be more explicitly addressed in the documentation along with discussion on mitigation as well as cumulative concerns above existing urban background levels.
40. There appears to be very little study on the potential for cumulative effects on the food chain?
- With respect to the study area on the Fraser River, in the case of flood tides, to what degree could spilled product be carried up river via back eddies or other reverse currents?
 - With respect to the study area 'Bowen Island', a reference is made 'heavily used by large tanker traffic'. What is the basis for this statement?
 - With respect to commercial fisheries, references are made to tonnage and dollar value, with consistency between the two missing. Regarding the lower values in 2010 does this refer to only one species? Is this the expected continued harvest? To what degree have First Nation traditional and ceremonial harvests been considered?
 - There does not appear to be mention of traditional harvesting of shellfish?
41. The report states the difficulty in assessing the potential socio-economic effects of a temporary closure. We feel this is a responsibility of the proponent's to evaluate given that it is in relation to potential closures associated with future operation of the proponent's project. Being difficult should not be sufficient reason to not address.
42. Second paragraph, 19-193
- a. Provide long term effects on salmon runs if out migrating juveniles are impacted by a spill – could it be a 5 year, 10 year impact
 - b. Provide long-term effects on salmon runs if in-migrating adults are impacted by a spill. If they survive the initial impact, what may be the impact of nonlethal health effects such as reduced reproductive success, or others?
 - c. Last sentence is vague. It alludes to either no issue or catastrophic issue. Provide more what if scenarios.
43. There is a lack of empirical data regarding a spill during open fisheries. What are the probabilities of a tanker avoiding additional traffic during fisheries, what season are fisheries – is there heightened potential for navigational concerns during storms, etc.
44. Page 19-195, 3rd bullet. What are the provisions in place to deal with substrates where the residual fuel may exist post-spill?
45. Page 19-195 4th bullet. What is the probability of spill during bird migration? During salmon spawning runs?

46. Page 19-195 5th bullet. Where along the shoreline are the substrates located to trap the hydrocarbons. Have sediment transport analyses been completed to determine areas of greatest concern, clarification and detail is requested.
47. Page 19-198. Clean up operations could shut down the river for a period of time (perhaps a week or more) what are the economic impacts of slowing down upriver industry. Demurrage and delivery delays.
48. There is no mention of evacuation of on-water residents – float homes, in boats, etc.
49. Page 19-200. Second sentence. The word possible needs replacing with safe to assume.
50. Page 19-200. End of paragraph 1. What are the impacts of lost harvesting for one growing season?
51. How many types of fuel will be brought to the operation?
52. Is there any contemplation for more fuel types in the future?
53. In reference to statements about cleanup costs? Does this include evaluating the socio economic impacts, the claims levied and the fines? If not, what are the socio economic costs?
54. Page 19-201. Does the fund cover avoidance accidents too, or only negligence on the part of the operator.
55. Page 19-201-mid-page. “Clean-up costs would exclude any claims related to loss of business revenues, and lost income or opportunity due to fisheries closures.” What are these costs, what could they be and who is expected to compensate people for their direct losses?
56. Page 19-201, last sentence. “...worst case spill scenario are likely to be locally and regionally restricted, temporary and reversible.” But this is the entire issue. Also, temporary could mean 4 to 10 years.
57. Page 19-202, second paragraph. This statement misses the potential impacts on fisheries and is light of facts.

19.4.2 Heritage Section

58. Opening paragraph, last sentence. “... not intended to predict potential effects to the interests of First Nations.” Where is the heritage analysis predicting potential effects on the interests of FN.?
59. Page 19-205. First paragraph. Are there ceremonial times when artefacts impacted by a spill might be a cause for the ceremony to be cancelled or postponed and what are the lasting impacts of this? Perhaps some ceremonies cannot be postponed.
60. With respect to evaluation of human health from exposure to vapour resulting from spills. The treatment of this issue is not sufficient and requires further consideration.

The comparison of modeled air vapour to WorkSafe BC time-weighted-average thresholds is inappropriate for the vast majority of the population except perhaps spill responders trained and exposed during the course of their work. WorkSafe BC thresholds are intended for application only within a workplace and where those exposed are previously trained and made aware not only of the hazardous materials they are handling, but also trained in the appropriate use of personal protective equipment. They are for occupational exposures. The general public and other workers in the region (i.e., people whose regular work would not normally include their being exposed to the vapours resulting from a spill) are NOT covered by WorkSafe BC thresholds. An appropriate risk assessment addressing exposure to vapours resulting from a spill should be completed. The use of an 8-hour WorkSafe threshold for total hydrocarbons does NOT represent a conservative approach as noted on page 19-217. Rather it may significantly underestimate the risk to the general public and/or others in the area of a major spill. Typically occupational risk thresholds are in the range of protecting 1/10,000 workers from unacceptable adverse health effects. The approach to protection of the general public is typically 1/100,000 (provincially) and 1/1,000,000 (federally).

61. The use of time-weighted averages to address human health risks is only appropriate for workers whose jobs involve their being exposed to such vapours. Information presented in the application and at the EAO presentation indicate that up to 95% of a spill would evaporate within the first 8 hours of the event (or sooner). With spills being considered in the 40,000 barrel range, that's approximately 35,000 barrels of Jet A fuel constituents partitioning into air within an extremely short period of time. Acute exposure in such a scenario is very possible, not to mention concerns of explosion and fire of such a vapour cloud. Although there may not be specific Canadian acute exposure guidelines for the public, the USEPA does have such guidelines through their Acute Exposure Guideline program. Further consideration of this concern is requested.
62. Since 9/11 the field of risk assessment has shifted and begun to place a much greater degree of importance and rigour to the study of what is often termed 'low probability/high consequence' risk events. Examples of such events would be the BC Ferry that sank a couple years back, the BP oil spill in the gulf, and certainly many examples of terrorist attacks. Throughout the application document and the presentations regarding spills, the proponent has used the assertion that low probability essentially equals low risk. This approach is outdated and has the potential to leave significant gaps with respect to the need for adequate pre-planning, training and education, and coordination of responsibilities. With low probability for catastrophic situations such as those required to be considered for a project such as that proposed, it is critical to understand the 'hazard' or 'hazards' as it is the probability of an event occurring, multiplied by the hazard, that equals risk: $\text{Probability} \times \text{Hazard (or expected loss)} = \text{Risk}$.

It is noted in several areas that spills will be the responsibility of the vessel owner/operator. This kind of finger-pointing at such an early stage is a recipe for serious problems down the road in the event of a serious incident. What is required and recommended for stronger inclusion in the project application is a more clear and well considered approach that will be implemented prior to the occurrence of any major catastrophic events, what will occur during such an event, and what the follow-up will be following such an event. This approach would should commitment to the community and stakeholders potentially affected in the event of losses associated with the project.

Closing

We appreciate the opportunity to respond to your comments. If you have questions, please do not hesitate to contact the undersigned.

Sincerely,

Keystone Environmental Ltd.

ORIGINAL SIGNED BY

Shawna Reed, PhD, RPBio
Senior EA Specialist

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ORIGINAL SIGNED BY

Geoff Wickstrom, MASc, RPBio
Project Manager