

**Trans Mountain Pipeline ULC
Trans Mountain Expansion Project
NEB Hearing Order OH-001-2014
Responses to Information Request from
Board of the Friends of Ecological Reserves (FER)**

2.01**Preamble:**

Friends of Ecological Reserves hope to see in a response the elements of a practical approach that will be used/supported by KM to restore ecological integrity marine of Ecological Reserves. FER knows that marine ecological reserves are important as reference ecosystems and ER specific knowledge is essential for designing, implementing and monitoring restoration projects and programs pre and post spill. Question 17 is related to question 1 but seeks information on reference ecosystems and indicator monitoring.

Request:

- 2.01) Based on the current ecosystem conditions of sensitive areas such as ecological reserves, in the event of an oil spill and attempted cleanup and restoration, what are the criteria that KM proposes to use to declare an area restored and in no further need of investment in restoration activities?

Response:

- 2.01) Kinder Morgan does not make the determination of when an area is restored or when clean is clean (cleanup endpoints). Members of the Unified Command, the National Emergency Environmental Team (NEET), participating local stakeholders, and contracted specialist, will have input into establishing cleanup endpoints. Endpoints will typically be determined through a Net Environmental Benefit Analysis (NEBA). As applied to an oil spill incident, NEBA is a formal process to evaluate the risks and benefits of certain proposed cleanup techniques and strategies. NEBA is a stakeholder's performance metric that weighs many factors against the cleanup endpoints established by the Unified Command (UC). This analysis will consider the specific treatment options appropriate to the response; the potential for successfully implementing those discrete options; the environmental trade-off attached to each technique; and, lastly, the types of treatments that can be authorized within the existing regulatory framework.

Although each oil spill is unique, NEBA will conceptually develop a decision flowchart to answer the questions of:

- What will be the probable outcome if no countermeasures are deployed?
- What will be the probable outcome if only conventional mechanical countermeasures are deployed?
- On a priority basis, what are the resources (environmental, social and economical) at risk if applied countermeasures prove to be inadequate?

- Can alternative countermeasures be executed successfully to augment conventional techniques?
- How long should any treatment technique continue?
- Are certain areas within the response candidates for or amenable to natural attenuation?
- Should some oil be left for remedial treatment?
- What is the regulatory process for permitting a remedial treatment?

References:

American Petroleum Institute (2013). Net Environmental Benefit Analysis for Effective Oil Spill Preparedness and Response. Washington, DC. 32 pp.

Environment Canada. 2007. Guidelines for Selecting Shoreline Treatment Endpoints for Oil Spill Response. Ottawa, ON. 29 pp.

2.02**Preamble:**

During the first Information Request July 2014 TMX responded positively with regard to long term monitoring of at least some indicators such as marine birds. *“TMX is supportive of a collaborative approach to long-term monitoring for marine birds. As committed in EC P-IR No. 1.19 (provided in GoC EC IR No. 1.001), Trans Mountain will endeavour to meet with Environment Canada to discuss the potential for development of a long-term monitoring program as a partnership with others.*

We are pleased with this potential for cooperative long-term monitoring and know that some monitoring exists from observations associated with Ecological Reserves. There are other high value habitats along the tanker route too. For example we have learned from government biologists that Mandarte Island is a very important seabird colony in the Strait of Georgia. Monitoring during 2014 breeding season noted there were 675 Pelagic Cormorant (*Phalacrocorax pelagicus*) nests , 322 Double-crested Cormorant (*Phalacrocorax auritus*) nests and 5 Brandt's Cormorant (*Phalacrocorax penicillatus*) nests. If there ever was a spill near Mandarte Island in the summer it would affect about half of the cormorants nesting in the Strait of Georgia. Since populations levels fluctuate natural long term monitoring is needed to know if this was a peak season, average or below average for this colony site.

Request:

- 2.02) Who has TMX met with in Environment Canada and what has been the outcome with regard to long term monitoring partnerships of ecosystem and species indicators?

Response:

- 2.02) On October 23, 2014, Trans Mountain met with 11 representatives of Environment Canada to discuss development of a marine bird monitoring program. The Environment Canada participants were Sean Boyd, Coral Deshield, Bob Elner, Mark Hipfner, Jennifer Huxter, Agathe LeBeau, Erika Lok, Ken Morgan, Andrew Robinson, Kerry Woo, and Miles Zurawell. Trans Mountain is currently exploring potential partnerships with other marine users and researchers; for additional information on programs already underway, refer to GoC IR No. 2.047a, Filing ID [A4H6A5](#)).

2.03**Preamble:**

KM is in agreement and supports recommendation 3 of the TERMPOL 2014 report which states *“Trans Mountain should provide information when requested by the Canadian Coast Guard, to facilitate the Canadian Coast Guard’s evaluation of the proposed additional navigation aids over and above existing navigation aid infrastructure”*

Request:

2.03) What will TMX provide as an incremental improvement over and above existing navigational aids?

Response:

2.03) The list of additional navigational aids in Section 5.2 of TERMPOL 3.5 and 3.12 in Volume 8C (Filing ID [A3S4T7](#)) contains a compilation of feedback from various discussions with individual pilots as well as general measures. However, it is not suggested that these improvements are required to ensure that adequate levels of navigational safety are maintained.

It is Trans Mountain’s view is that the suggestions are not essential requirements, but items that could benefit all marine traffic. Trans Mountain has not investigated the implementation of the suggestions further, as the responsibility would be in the jurisdiction of the Canadian Coast Guard (CCG) to consider as part of their normal review of navigational aids across Canada. Trans Mountain is available to facilitate the CCG’s evaluation of navigation aids upon request from the CCG, to the extent practical.

2.04**Preamble:**

The Consultant's report (B19-14__V8B_TR_8B7_01_OF_24_ERA_MAR_SPILL_-_A3S4K7.pdf) provided spill modelling scenarios using what was referred to as a "credible worse case (CWC) spill of 16,500 m³ and a smaller spill of 8,250 m³". The report states that tankers assumed in this modelling exercise were Aframax tankers with the scenario based on respective loss of two of its cargo tanks (credible worst case scenario) or one of its cargo tanks (small spill). According to the Maritime Connector web site <http://maritime-connector.com/wiki/afamax/> an average Aframax tanker can carry 750,000 barrels of oil. One cubic meter of oil is equivalent to 6.3 barrels of oil. So the CWC modelled was for a spill of 103,950 barrels of oil or 4,365,900 gallons or a loss of 14% of capacity of an average sized Aframax tanker as a credible worst case. The Exxon Valdez tanker was carrying in excess of 260,000 barrels of oil and the commonly accepted amount spilled was 260,000 barrels and that is the figure used by the State of Alaska Exxon Valdez Trust Council. Our concern is the amount spilled in this case was significantly greater than 14% of carrying capacity and some percentage greater than 14% is more realistically a CWC scenario. FER is also concerned that future oil spill preparedness will be based on the CWC scenarios. This appears to be too low a percentage of capacity of the tankers that will be contracted by KM in the future.

Request:

- 2.04) What is the size/capacity of tankers that will be contracted to move oil from the TMX Westridge terminal? In terms of capacity are they equivalent to or larger than the size/capacity of Aframax tankers used in the oil spill modelling report?

Response:

- 2.04) As described in Volume 8A, Section 1.0 (Filing ID [A3S4X3](#)), the maximum size of tanker proposed by the Project is Aframax size. Some Panamax tankers (smaller than Aframax tankers) may also be used, depending on availability of shippers.

2.05**Preamble:**

The Application for Pipeline Facilities Certificate for the Trans Mountain Expansion Project, May 23, 2013 states *"In response to growing market demand and customer contractual commitments, Trans Mountain proposes to expand the existing Trans Mountain Pipeline System by 93,800 m³/d (590,000 bbl./d) from 47,690 m³/d (300,000 bbl./d) to 141,500 m³/d (890,000 bbl./d)."*

Request:

- 2.05) In May 2013 KM proposed to increase daily shipping of oil from 300,000 bbl./days to 890,000 bbl./day. Given this 300% increase is the CWC which was modelled at 103,950 bbls is still a credible worst case scenario as it represents a spill in which the worst case is 12% of a single day's production and it is anticipated that larger tankers **closer to single days production are more likely to be contracted.**

Response:

- 2.05) It appears that the intervenor wishes to make a comment. This is not an information request. Please note that the design capacity of future Westridge Marine Terminal is 630,000 bbls/day, not 890,000 bbls/day as noted in the preamble.

The identification of credible worst case scenario follows direction from the NEB's "Filing Requirements Related to the Potential Environmental and Socio-economic Effects of Increased Marine Shipping Activities, Trans Mountain Expansion Project" (Filing ID [A3V6I2](#)). Please see Volume 8C, Termpol 3.15, Section 9 (Filing ID [A3S5F8](#)) for more information on the credible worst case scenario.

2.06**Preamble:**

In the VTRA 20Int 10 – SYNOPSIS OF RMM SCENARIO COMPARISON APPLIED TO CASE T: GW – KM – DP (George Washington University, 2013),
<http://www.seas.gwu.edu/~dorpjr/VTRA/PSP/CASES/VTRA%202010%20Master%20Comparison%20-%20T%20-%20RMM.pdf>

A completely different set of models is presented because they do not follow from historical data but rather consider 2010 as the base Case year and a base case year is evaluated. Following that, What-if scenarios are developed from the base case by adding additional hypothetical traffic (upcoming if major vessel transport projects go ahead) and a “What-if” potential is evaluated and compared relative to the base case to inform risk management.

Request:

- 2.06) Please clarify why the “credible worst case scenario” modelled and referenced above assumes that only a relatively low percent of a medium size tanker capacity is spilled and provide equivalent modelling for informed risk management, using future potentials as has been done in the research from George Washington University, 2013:

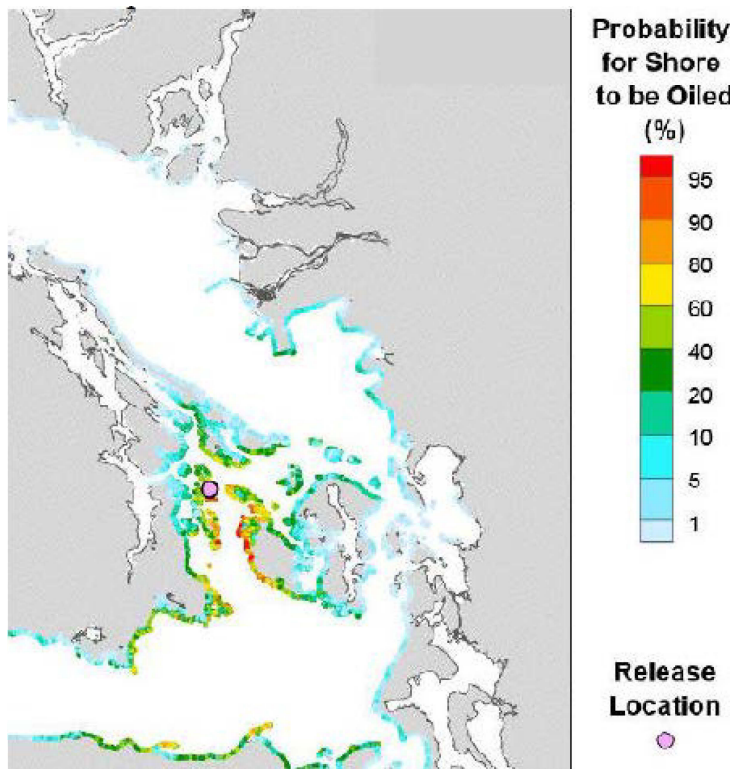
Response:

- 2.06) The identification of credible worst case scenario follows direction from the NEB’s “Filing Requirements Related to the Potential Environmental and Socio-economic Effects of Increased Marine Shipping Activities, Trans Mountain Expansion Project” (Filing ID [A3V6I2](#)). Please see Volume 8C, Termpol 3.15, Section 9 (Filing ID [A3S5F8](#)) for more information on the credible worst case scenario.

2.07

Preamble:

In the report Document #REP-NEB-TERA-00031 Ecological Risk Assessment of Marine Transportation (https://docs.neb-one.gc.ca/ll-eng/llisapi.dll/fetch/2000/90464/90552/548311/956726/2392873/2451003/2393244/B19-14_-V8B_TR_8B7_01_OF_24_ERA_MAR_SPILL_-_A3S4K7.pdf?nodeid=2393426&vernum=-2) it is concluded that the “*Results for the CWC spill indicate a high to very high probability ($\geq 50\%$) of between 143 km and 458 km of shoreline oiling, with the greatest spatial extent of shoreline oiling occurring during winter conditions. The smaller spill case predicts a high to very high probability of shoreline oiling between 94 km and 248 km.*” One of the shoreline impacts modelled is shown below for Archane Reef based on a CWC winter spill .



Request:

- 2.07) How much shoreline will be oiled with spills of the 25, 50 and 75% of tanker capacity for the size of the tankers KM anticipates it will contract to transport the proposed 890,000 bbl. /daily production?

Response:

- 2.07) Please refer to responses to FER IR No. 2.05 and No. 2.06. A loss of cargo oil more than the credible worst case scenario is not a viable scenario for a double hull tanker with multiple subdivided cargo tanks as proposed by the Project and has not been modeled. Trans Mountain is confident that the evaluation of potential environmental

effects at representative locations as described in the Application fulfill National Energy Board requirements and describe the range of environmental effects that could result from an oil spill along the marine shipping route.

2.08**Preamble:**

Three release points were modelled Strait of Georgia, Archane Reef (near Swartz Bay) and Race Rocks west of Victoria. To understand and develop world class spill preparedness a worst case scenario off Oak Bay Islands will be needed. New modelling has to reflect a new Worst Case oil spills based on increases in tanker sizes and daily output to be considered credible.

Request:

- 2.08) Will KM provide a model that shows a release point closer to Victoria and the Oak Bay Islands ER to understand how much oil can potentially reach the shore in this section of the shipping route?

Response:

- 2.08) From a practical perspective, the strength of the stochastic approach is that it shows where spilled oil could go in the event of an accident, but the resulting probability contours are not a reliable guide as to where crude oil would go in the event of a single unique accident. However the probability contours generated through stochastic modelling are valuable for informing spill response and preparedness planning. They also provide a transparent and defensible basis for describing the range of environmental effects that could result from a spill along the marine shipping route.

It is not practical to assess every conceivable accident and malfunction scenario. Evaluation of potential environmental effects at other sites would not have changed assessment conclusions or identified the need for additional preparedness and response planning measures. Therefore a model that shows a release point closer to Victoria and the Oak Bay Islands ER is not contemplated. Trans Mountain is confident that the evaluation of potential environmental effects at representative locations fulfills National Energy Board filing requirements (Filing ID [A3V6I2](#)) and describes the range of environmental effects that could result from an oil spill along the marine shipping route.

2.09**Preamble:**

The Exxon Valdez lost most of its cargo.

Request:

2.09) Please clarify why the “credible worst case scenario” modelled and referenced above assumes that only a relatively low percent of tanker capacity is spilled?

Response:

2.09) Please refer to responses to FER IR No. 2.05 and 2.06.

2.10**Preamble:**

The Exxon Valdez lost most of its cargo.

Request:

- 2.10) The Exxon Valdez was truly a worst case scenario and lost a majority of its oil. Will KM provide another credible very worst case spill scenario based on the size of tankers that will be contracted and a spill that accounts for a majority of the oil being transferred to the marine ecosystems for the three release points modelled earlier?

Response:

- 2.10) The following information is obtained from the Exxon Valdez Trustee Council website (Exxon Valdez Trustee Council 2015).

How much oil was spilled?

Approximately 11 million gallons or 257,000 barrels or 35,000 metric tonnes (38,800 short tons).

How much oil was the *Exxon Valdez* carrying?

53,094,510 gallons or 1,264,155 barrels

From the above, it is clear that about 20.3% of the total cargo onboard the single hull tanker, Exxon Valdez, was spilled as a result of the accident. All tankers used for the proposed Project will be double-hulled with multiple subdivided cargo tanks. Additional safety measures will be used in a variety of other ways, such as the use of tug escorts.

Trans Mountain believes that diligent evaluation and determination of a credible worst case oil spill volume for a partly loaded Aframax tanker as proposed by the Project has been conducted, which meets the National Energy Board's filing requirements. Evaluation of spills larger than the defined credible worst case oil spill scenario will therefore not be undertaken.

Also refer to FER IR No. 2.10 – Attachment 1.

2.11**Preamble:**

It is clear that this understanding is central to a spill recovery and preparedness plan.

Request:

- 2.11) There were differences in understanding of the likely behaviour of dilbit in a marine environment as provided to the NEB during the Northern Gateway hearings. Given that KM has the best understanding of what will be shipped, what has KM learned about the characteristics of spilled dilbit and the probability that dilbit can sink to the ocean floor?

Response:

- 2.11) It is clear in the Application (TR 8C-12 S7, Volume 8C, A Study of Fate and Behavior of Diluted Bitumen Oils on Marine Waters (Filing ID [A3S5G2](#))) that TMPL recognizes that some very specific conditions may lead to a portion of spilled dilbit to submerge or sink in marine waters, as can be the case for Group 3 to 4 oils given a combination of weathering and sediment interaction effects. The results of the Gainford tests, as well as studies conducted by the Government of Canada (2013) and by SLRoss (2010 and 2011), show that fresh and weathered representative samples of diluted bitumen (CLB and AWB) are expected to float on seawater.

The behavior and fate of spilled dilbit (bitumen blended with condensate or synthetic crude oil) was canvassed extensively in the Joint Review Panel hearings relating to Northern Gateway, and the Panel in assessing the issue accepted the following facts:

- The maximum initial density of the dilbit would be 940 kilograms per cubic metre, in conformance with the proposed pipeline tariff specification. When initially spilled, the density would be less than that of fresh water or salt water, making dilbit a floating oil.
- Experts agreed that dilbit is not a simple two-phase mixture of bitumen and condensate, but is instead a new, cohesive, blended product. When spilled into water, lighter hydrocarbon fractions of the entire blend would begin to evaporate. As lighter fractions evaporate, the viscosity of the weathered dilbit would increase, and evaporation of remaining lighter fractions would be progressively inhibited.
- Past examples of spills do not indicate that products similar to dilbit are likely to sink within the timeframe for response options, or in the absence of sediment or other suspended particulate matter interactions.
- Dilbit may sink when it interacts with sediment or other suspended particulate matter, or after prolonged weathering.
- Bench-top and wave tank testing indicated that dilbit is not likely to sink due to weathering alone within a short to medium timeframe. The evidence indicated that multiple factors, such as the interaction between density, viscosity, potential

emulsion formation, and environmental conditions must all be examined together in considering the fate of spilled oil, including the possibility of sinking. Much of the evidence that the Panel heard did not consider these factors collectively.

- The weight of evidence indicates that, when spilled in water, dilbit with a maximum density of 940 kilograms per cubic metre would behave similarly to an intermediate fuel oil or lighter heavy fuel oil with a density less than 1,000 kilograms per cubic metre. Various experts, including those involved in spill response, said that these products provide reasonable analogs for dilbit behaviour as it relates to oil spill response.
- Transport Canada said that a response organization would be likely to treat a dilbit spill as a blended crude oil product spill.

References:

Government of Canada. 2013. Properties, Composition, and Marine Spill Behaviour, Fate and Transport of Two Diluted Bitumen Products from the Canadian Oil Sands. Ottawa, Ont. 87 pp.

SL Ross. 2010. Properties and Fate of Hydrocarbons Associated with Hypothetical Spill at the Marine Terminal and in the Confined Channel Assessment Area. Technical Data Report prepared for Enbridge Northern Gateway. 132 pp.

SL Ross. 2011. Meso-scale Weathering of Cold Lake Bitumen/Condensate Blend. Report prepared for Enbridge Northern Gateway.

2.12**Preamble:**

The above questions are aimed to understand how much oil could end up in the marine ecosystems and impact ecological reserves. FER wants to understand the link between the Oil spill preparedness plans, and whether the spill preparedness will be in any way limited or linked to only the previously modelled CWC scenarios.

Request:

- 2.12) There are a number of marine ecological reserves that include a sub-tidal element and (A3W7H0 <https://docs.neb-one.gc.ca/ll-eng/llisapi.dll/Open/2453639> FER IR1 question #1 provided a summary of foreshore within ERs) What does KM recommend and plan to use to removal of sunken dilbit from Ecological Reserves?

Response:

- 2.12) It is important to first review background information regarding diluted bitumen and its potential to become submerged or sink. Thereafter response strategies will be discussed.

- 1) The products shipped on the Trans Mountain system are, by tariff, restricted from having a specific gravity greater 0.94 and will not sink unless exposed to a combination of conditions. Tests conducted for Trans Mountain, by Environment Canada (2013), and by SL Ross (2010, 2011) for the Northern Gateway application, show that weathered representative samples of diluted bitumen (CLB and AWB) are expected to remain floating on dense saltwater. While the Environment Canada Report does not provide a time element for the densities of samples tested, the Gainford report (in Technical Report TR 8C-12 S7, Volume 8C, A Study of Fate and Behavior of Diluted Bitumen Oils on Marine Waters [Filing ID [A3S5G21](#)]) showed that fresh and weathered representative samples of diluted bitumen (CLB and AWB) would float on freshwater for eight days or more depending on local factors such as sediment and mixing energy. The salinity of Burrard Inlet water has a greater density than freshwater. The same tests showed that conventional skimming equipment is capable of removing both fresh and weathered oil.

Prompt response is important given that the weathering process is in part related to the time over which oil is exposed to the environment. Westridge loading operations will be conducted inside a pre-deployed boom, which would contain a release. Additional boom and response equipment, including skimmers, will be maintained on site. In the unlikely event of a spill, the responsible party (Trans Mountain for a pipeline spill, the tanker owner for a tanker spill) would work with regulatory agencies in a Unified Command to determine both response and remediation strategies appropriate for the specific circumstances of the event. Response strategies employed to avoid sinking oil are those focused on:



- Controlling the source of the spill
- Preventing released oil from entering a waterbody
- Containing, intercepting and promptly removing oil from the water surface
- Removing stranded oil that could be remobilized from the shoreline

The behavior and fate of spilled dilbit (bitumen blended with condensate or synthetic crude oil) was canvassed extensively in the Joint Review Panel hearings relating to Northern Gateway, and the Panel in assessing the issue accepted the following facts:

- The maximum initial density of the dilbit would be 940 kilograms per cubic metre, in conformance with the proposed pipeline tariff specification. When initially spilled, the density would be less than that of fresh water or salt water, making dilbit a floating oil.
- Experts agreed that dilbit is not a simple two-phase mixture of bitumen and condensate, but is instead a new, cohesive, blended product. When spilled into water, lighter hydrocarbon fractions of the entire blend would begin to evaporate. As lighter fractions evaporate, the viscosity of the weathered dilbit would increase, and evaporation of remaining lighter fractions would be progressively inhibited.
- Past examples of spills do not indicate that products similar to dilbit are likely to sink within the timeframe for response options, or in the absence of sediment or other suspended particulate matter interactions.
- Dilbit may sink when it interacts with sediment or other suspended particulate matter, or after prolonged weathering.
- Bench-top and wave tank testing indicated that dilbit is not likely to sink due to weathering alone within a short to medium timeframe. The evidence indicated that multiple factors, such as the interaction between density, viscosity, potential emulsion formation, and environmental conditions must all be examined together in considering the fate of spilled oil, including the possibility of sinking. Much of the evidence that the Panel heard did not consider these factors collectively.
- The weight of evidence indicates that, when spilled in water, dilbit with a maximum density of 940 kilograms per cubic metre would behave similarly to an intermediate fuel oil or lighter heavy fuel oil with a density less than 1,000 kilograms per cubic metre. Various experts, including those involved in spill response, said that these products provide reasonable analogs for dilbit behaviour as it relates to oil spill response.
- Transport Canada said that a response organization would be likely to treat a dilbit spill as a blended crude oil product spill.

2) Should a portion of spilled oil sink due to a combination of factors, and it could not be easily recovered during the emergency phase (such as oil in shallow water or along shorelines) it would be treated as a post emergency recovery function. Remedial actions, including actions required to recover sunken oil would be developed by the responsible party and regulatory authorities working as part in a Unified Command and would be guided by a Net Environmental Benefit Analysis (NEBA). In this respect, the approach to sunken oil remediation would be similar to cleanup of industrially contaminated sediments in waterways. Each situation will be unique and, where warranted, methods may include:

- Capturing the oil where currents and hydrographic conditions are amenable to the deployment of oleophilic material to trap the oil
- Remobilization, containment and removal of the oil through agitation of sediments (raking, dragging, pneumatic agitation)
- Bulk removal of the oil through pumping and/or dredging
- Long-term monitoring and natural attenuation in areas where remedial actions pose more harm than benefit

In general, the equipment components used to recover submerged and sunken oil resides within one of the existing inventories of: a) WCMRC, b) supplemental oil spill response contractors, and c) the marine construction industry.

References:

- Government of Canada. 2013. Technical Report – Properties, Composition, and Marine Spill Behaviour, Fate and Transport of Two Diluted Bitumen Products from the Canadian Oil Sands. Ottawa, Ont. 87 pp.
- National Energy Board. Considerations Report of the Joint Review Panel for the Enbridge Northern Gateway Project Volume 2. Calgary, AB.
- Ross, S.L. 2010. Properties and Fate of Hydrocarbons Associated with Hypothetical Spill at the Marine Terminal and in the Confined Channel Assessment Area. Report prepared for Enbridge Northern Gateway. 119 pp.
- Ross, S.L. 2011. Meso-scale Weathering of Cold Lake Bitumen/Condensate Blend. Report prepared for Enbridge Northern Gateway. 26 pp.
- U.S. Coast Guard. 2013. Development of Bottom Oil Recovery Systems Final Report (CG-D-09-13). New London, CT. 68 pp.

2.13**Preamble:**

Board of FER does not accept nor has an adequate rationale been supplied to support statements that “*emergency management plans are proprietary and of a sensitive nature and due to security concerns are not publicly available nor will they be made available.*” Nor can we accept nor has an adequate rationale been provided to the approach advocated by Trans Mountain (TM) that TM can dictate who is allowed to see the level of preparedness and even then only if those allowed by TM sign confidentiality agreements. The residents of the Gulf Islands and the southern Vancouver Island and the natural environment are at the greatest risk from impact on lifestyle and local economic sustainability from an oil spill along the tanker route. A spill of any size will profoundly change their environment and health for a significant period of time. Ecological Reserves are only a small but productive representation of the coastal line along the route. When the Nestucca oil spill occurred in Gray’s Harbour Washington it was the residents of Tofino and Ucluelet together with other volunteers who did the oil removal from Long Beach. The Board of FER believes when there is an oil spill along the tanker route it will be the residents of Mayne Island, Galiano Island, Pender Island, Saltspring Island, Saanich Peninsula, Victoria, Metchosin, Sooke, Port Renfrew, Ucluelet and Tofino and the many First Nations whose traditional lands border the tanker route who will suffer the impacts and who will desperately want to restore the marine ecosystems to a semblance of their former productivity. The Board of FER believes organizations like FER have valuable information that needs to be included in spill preparedness and be included so we can provide input and comment on the WCMRC Oil Spill Response Plan

Request:

- 2.13) What is the KM plan to share and invite input by the public to the Oil Spill Response plan?

Response:

- 2.13) Over and above consultation with emergency management professionals and first responders in communities along the pipeline corridor, Trans Mountain has endeavoured to engage with the general public about pipeline safety and emergency response. Numerous public consultation events were held in Burnaby, BC, the neighbouring communities, and around BC’s Lower Mainland since 2012. Emergency planning and response was consistently a topic presented on information boards at public events. In addition, Kinder Morgan Canada Inc. (KMC) staff with Emergency Management responsibilities attended the public events to answer questions about the emergency management program.

The general public continues to engage with Trans Mountain to ask questions about emergency response via the toll free information line (1-866-514-6700) and general email (info@transmountain.com). Trans Mountain also hosted a Twitter Town Hall on the topic of pipeline safety and emergency response on October 27, 2014. A record of the tweets can be found in Consultation Update No. 3 (Filing ID [A4H1W3](#)). Trans Mountain’s

engagement is ongoing. Trans Mountain will continue to ensure the public have an ability to engage and ask questions about Trans Mountain's pipeline safety and ERPs in the continued engagement.

Additionally, Trans Mountain's Westridge plans may not address areas of specific community interest in the Burrard Inlet. Trans Mountain encourages Metro Vancouver local governments and communities to participate with WCMRC in exercises and on the development of oil spill emergency response plans including Geographic Response Strategies (GRS) and Geographic Response Plans (GRP) for the Burrard Inlet and, based upon the community's interest, other locations in the Salish Sea.

2.14**Preamble:**

There is a reference to a Coast Guard 2010 report regarding inspections of ships in BC waters. This reference was found in a report commissioned by the BC government and done by Nuka Research <http://www.env.gov.bc.ca/main/west-coast-spill-response-study/>. The report notes that in 2010, the CCG inspected 1082 ships, and found deficiencies in 40% of them. We want to know what information TMX has acquired in terms of the most recent CCG assessments of ships in general. Specifically FER is concerned that substandard ships are currently in operation and on contract to KM so Board of FER is seeking some assurances from KM and evidence of due diligence is being applied to current vessels being used.

Request:

- 2.14) How many ships contracted by KM were inspected by the Canadian Coast Guard (DDG) since 2010 and were any assessed as substandard?

Response:

- 2.14) Port State Control inspections in Canada are carried out by Transport Canada. Transport Canada inspects a tanker on its first call to Canada and thereafter once a year. Trans Mountain does not have records of the exact number of times vessels at the Westridge Marine Terminal were inspected by Transport Canada. No vessel at the Westridge Marine Terminal has been assessed as substandard.

Please note the IMO's definition of **Substandard ship**: A ship whose hull, machinery, equipment or operational safety is substantially below the standards required by the relevant convention or whose crew is not in conformance with the safe manning document.

Please refer to FER IR No. 2.14 - Attachment 1.

2.15**Preamble:**

The Board of FER has requested information to understand spill volumes used in the Credible Worse Case scenarios. The Board of FER is also seeking information on changes in volume of shipping of dilbit and probable changes in

size of tankers that will be contracted to understand what is reasonable to maintain as oil spill cleanup infra-structure. FER is concerned about oil spills and transparency and disclosure and the serious disconnect between what WCMRC professes as a Corporation and as stated in their 2012 handbook (<http://wcmrc.com/wp-content/uploads/2013/06/WCMRC-Information-Handbook-2012.pdf>) which states:

We (Western Canada Marine Response Corporation) *value*:

- 1. Open and honest communication that fosters a climate of trust.*
- 2. Integrity in all our business practices*
- 3. Being a steward of the environment*
- 4. Success through competency, creativity and teamwork*
- 5. Celebrating individual and team successes.*

To have these good values announced as the corporate culture does mean a great deal with regard to social license. There is duplicity when TM seeks to deny access to the public and intervenor that are at undisclosed financial, environmental and cultural risk and need disclosure of the WCMRC Oil Spill Response Plan.

Request:

2.15) Will KM make available the spill preparedness plans so that the public can understand what will be in place?

Response:

2.15) Please refer to response to FER IR No. 2.13.

2.16**Preamble:**

We understand tanker operators must pay insurance but it is unclear if the insurance levels are adequate in many circumstances, and will apply to all forms of transported oil. We have reviewed the submission to the NEB Enbridge Project by Matthew Boulton October 2010 called the *Financial Vulnerability Assessment: Who Would Pay for Oil Tanker Spills Associated with the Northern Gateway Pipeline?* This report was prepared For Living Oceans Society with supervision from the University of Victoria Environmental Law Centre. This report raises concerns that the KM is subject to the same limitations found in the Northern Gateway process when it comes to a major oil spill.

Boulton states *"the total amount available for compensation, clean-up and natural resource damages would be approximately \$1.33 billion CAN. Yet clean-up costs alone for the Exxon Valdez disaster exceeded \$2.5 billion USD, and that was in 1989. The cost for compensation and natural resource damages for the Valdez spill were judged to be at least \$1 billion USD. The total for cleanup costs, compensation and damages for the Valdez disaster was at least \$3.5 billion USD – and likely much higher. For example, one Alaska study of just sport fishing activity and tourism losses indicated a lost passive use value at \$2.8 billion. ... the U.S. government recently required British Petroleum to establish a \$20 billion compensation fund for the oil spill disaster in the Gulf of Mexico"*

It is also our understanding that KM holds a significant share in the company contracted for spill response, the Western Canada Marine Response Corporation (WCMRC). This ownership appears to place KM in a conflict of interest with regard to safety and preparedness because an oil spill is now a revenue source for KM and not a liability or cost. Because of this it is difficult to believe that KM or WCMRC have sufficient motivation for spill prevention or response in light of KM being first in line for draws against tanker owners insurance. These concerns were outlined to Northern Gateway process Robyn Allan, June 21 2013. Canadian Ship- Sourced Spill Preparedness and Response An Assessment. Submitted to the Tanker Safety Expert Panel. Pp30. FER, other intervenors, and the public will only be able to understand environmental and financial risk when information on liability and restoration , compensation, and mechanism for disbursement are clearly outlined. We are asking for that now. <http://www.robynallan.com/wp-content/uploads/2013/06/Canadian-Ship-Sourced-Spill-Preparedness-and-Response-June-21-2013.pdf>

Request:

- 2.16) To what extent if any, will spill costs be covered through current insurance requirements and to what extent if any could the public be liable for cost over runs on a major oil spill? Will you also verify that dilbit is defined as "oil" for the purposes of insurance claims.

Response:

- 2.16) A tanker based spill is governed by a compensation regime under the *Marine Liability Act*. Under those provisions, the tanker owner is liable for spills and regarded as the Responsible Party for insurance purposes. The coverage of the cost of an oil spill arising

from an offshore spill is described in Volume 8A, Section 1.4.1.6 of the Application (PDF page 43 in Filing ID [A3S4X3](#)); funding thresholds and limitations are elaborated in Volume 8A, Section 5.5.3 of the Application (PDF pages 3-4 in Filing ID [A3S5Q3](#)). Compensation mechanisms are governed through provisions in the International Oil Pollution Compensation Fund (IOPCF) and Canada's complementary Ship-source Oil Pollution Fund (SOPF). The IOPCF consists of two Funds: the 1992 IOPC Fund and the 2003 Supplementary Fund. Canada has access to both of these funds. The IOPCF Claims Manual (Filing ID [A3X5W1](#)) provides additional information on claims procedures and eligible costs. Canada's SOPF Claims Manual 2014 (FER IR No. 2.16 - Attachment 1) provides complementary information.

Diluted bitumen spills are covered under the insurance regime in place. For tariff purposes, diluted bitumen is regarded as a blended Petroleum, which given its physical properties constitutes it as falling into a category of heavy oils. The compensation regime distinguishes only between persistent and non-persistent oils, and heavy oils are treated as persistent in this context. Spill costs are covered under the IOPCF for persistent oils; spill costs are covered under Canada's SOPF for both persistent and non-persistent oils. A diluted bitumen spill would thus be covered under both the IOPCF and SOPF. To date, no spill in Canada has exceeded the funds available. Moreover, in the jurisdiction of the IOPCF, no single spill has exceeded funds available from the funds to which Canada has access (1992 IOPC Fund plus the 2003 Supplementary Fund).

Trans Mountain cannot speculate as to how or if the Government of Canada would choose to further extend compensation frameworks in the event that spill costs exceeded current caps. There are various options available now, and additional options are expected to be available in the future.

The Tanker Safety Expert Panel recommended (Recommendation 23) that caps to the SOPF be removed and that the SOPF be able to access Canada's Consolidated Revenue Fund through loans that would be reimbursed with interest from future revenues of levies on oil transported by ship to, from and within Canada. Trans Mountain supports Recommendation 23 of the Tanker Safety Expert Panel, which specifically reads as follows (Appendix 1 – List of Recommendations, Filing ID [A3Y2J1](#)):

The current limit of liability per incident within the Ship-source Oil Pollution Fund should be abolished. The Fund should process and pay for all admissible claims, subject to the Consolidated Revenue Fund's consent to loans in favour of the Ship-source Oil Pollution Fund for amounts sufficient to allow all admissible claims to be paid to claimants. The loans would be reimbursed with interest to the Consolidated Revenue Fund from future revenues of levies on oil transported by ship to, from and within Canada.

References:

Ship-source Oil Pollution Fund. 2014. Claims Manual 2014 Edition. Administrator of the Ship-source Oil Pollution Fund. Ottawa. Website: <http://sopf.gc.ca/about-us/publications/sopf-claims-manual-2014-edition> (Accessed January 2015).

Tanker Safety Expert Panel. 2013. A Review of Canada's Ship-source Oil Spill Preparedness and Response Regime: Setting the Course for the Future. Appendix 1 – List of Recommendations. Transport Canada. Ottawa. Website: <http://www.tc.gc.ca/eng/tankersafetyexpertpanel/menu.htm>

2.17**Preamble:**

A fundamental tenant of restoration or recovery is to understand reference ecosystems which is why Ecological Reserves have been designated and exist within the Salish Sea and along the tanker route.

Request:

- 2.17) What baseline studies of sensitive ecological areas does TMX plan to establish or use as scientific evidence to quantify ecological restoration or recovery trends, in the event of an oil spill?

Response:

- 2.17) In 2013, WCMRC initiated the development of a new coastal mapping system. This new system, still under development, will house not only coastal sensitivities and associated Geographic Response Strategies (GRS) but also all associated logistical support information.

Shoreline sensitivities, as noted above, form part of WCMRC's mapping database. GRS is a plan used for the initial nearshore response in an emergency situation. The program utilizes local knowledge to assist in shoreline sensitivity classification to possible oiling. As for shoreline protection strategies, these are built, in conjunction and/or reviewed with local stakeholders (e.g., Emergency Planners/First Nations) to address the sensitivities that have been identified as part of the coastal mapping project. Each sensitivity has a corresponding geographic response strategy and protective assignment developed and ready to be implemented in the event of a spill. Each feature is then field-tested and a two-page reference document is developed and reviewed with government agencies. The goal of a GRS is to protect sensitive natural and cultural features while reducing decision-making time during an actual spill. GRSs are designed to provide all the necessary information required to carry out an efficient and rapid shoreline response.

Cleanup endpoints and post-spill monitoring regarding ecological restoration or recovery are typically set to best restore habitat use. These incident-specific goals are determined by a Net Environmental Benefit Analysis as detailed in the response to FER IR No. 2.01.

2.18**Preamble:**

The findings of Intervenor Robyn Allen on the limited responsibility of Kinder Morgan in its organizational structure are a concern to Board of FER with regard to clean up and recovery of ecological reserves. The public appears to be the last party able to make a draw for costs of a spill.

Request:

- 2.18) Please provide an up-to-date chart and an indication of who is responsible to provide for long term costs for the protection of Ecological Reserves and cleanup in the event of catastrophic occurrences.

Response:

- 2.18) From the intervenor's reference in the preamble to "The public appears to be the last party able to make a draw for costs of a spill", Trans Mountain assumes that this information request pertains to oil spill compensation from the International Oil Pollution Compensation Fund (IOPCF).

A chart is not required to convey the requested information. British Columbia Ministry of Environment is responsible for the management and protection of ecological reserves; a spill will not change the mandate to protect these reserves.

A tanker based spill is governed by a compensation regime under the *Marine Liability Act*. Under those provisions, the tanker owner is the Responsible Party. Compensation mechanisms are defined through provisions in the International Oil Pollution Compensation Fund (IOPCF) and Canada's complementary Ship-source Oil Pollution Fund (SOPF). Eligible spill costs under these mechanisms include clean-up costs of protected areas. The coverage of the cost of an oil spill arising from an offshore spill is described in Volume 8A, Section 1.4.1.6 (Filing ID [A3S4X3](#)).

Trans Mountain notes that the IOPCF Claims Manual (Filing ID [A3X5W1](#)) provides additional information on claims procedures and eligible costs. Eligible costs include clean-up costs and costs of reasonable reinstatement measures. Of key note is that study costs are also an eligible expense during the recovery period of sensitive systems. The Claims Manual indicates (pp 39-40):

3.6.10 The Fund should be invited at an early stage to participate in the determination of whether or not a particular incident should be subject to a post-spill environmental study. If it is agreed that such a study is justified, the Fund should then be given the opportunity of becoming involved in planning and establishing the terms of reference for the study. In this context the Fund can play an important role in helping to ensure that any post-spill environmental study does not unnecessarily repeat what has been done elsewhere. The Fund can also assist in ensuring that appropriate techniques and experts are employed. It is



essential that progress with the studies is monitored, and that the results are clearly and impartially documented. This is not only important for the particular incident but also for the compilation of relevant data by the Fund for future cases.

2.19**Preamble:**

Board of FER is unsure how much distillate is being imported and how it will impact the environment and public health in the event of a marine spill of distillate.

Request:

- 2.19) Please provide a clear account of from where the distillate to make Dilbit is imported, how much volume, and how often tankers laden with distillate or other compounds used to make Dilbit transit inbound in the Strait of Juan de Fuca, on their way to the Westbridge Terminal?

Response:

- 2.19) By “distillate”, Trans Mountain assumes that the intervenor is referring to the typically diluted bitumen diluent, which is natural gas condensate (condensate). Condensate is a low-density mixture of hydrocarbon liquids that are present as gaseous components in the raw natural gas produced from many natural gas fields. It condenses out of the raw and is collected in liquid form. Producers of diluted bitumen products obtain condensate from national and international sources to use as a diluent in diluted bitumen products. Westridge Marine Terminal is not equipped to receive any hydrocarbon product other than jet fuel and Trans Mountain does not produce or supply condensate to diluted bitumen producers.

2.20**Preamble:**

This information is requested and is in keeping with provincial objectives to see this project meets world class spill standards.

Request:

- 2.20) What specific measures does KM plan to implement directly or through WCMRC affiliates for safe transit of Dilbit through the human communities and sensitive ecological communities along the proposed tanker routes?

Response:

- 2.20) From the background to this information request Trans Mountain assumes that the information requested pertains to marine oil spills.

Based on an evaluation undertaken by Western Canada Marine Response Corporation (WCMRC), Trans Mountain has proposed an enhanced marine oil spill response regime in the Application to the National Energy Board which will be implemented by WCMRC. A summary of proposed improvements to WCMRC's capacity can be found in Volume 8A, Table 5.5.3 (Filing ID [A3S4Y6](#)).

2.21**Preamble:**

In the Trans Mountain Pipeline ULC Trans Mountain Expansion Project NEB Hearing Order OH-001-2014 Responses to Information Request from Board of the Friends of Ecological Reserves Errata (https://docs.neb-one.gc.ca/ll-eng/llisapi.dll/fetch/2000/90464/90552/548311/956726/2392873/2451003/2487413/B239-12_-_Trans_Mountain_Response_to_FER_IR_No._1.03.05-Errata_-_A3Z4T8.pdf?nodeid=2487416&vernum=-2)

---3. Absence of known marine bird colonies as indicators for long term monitoring and reporting of marine health.

The erratum to the earlier response was a change in the removal of the phrase "less than 5% of the shipping route". *"Shorebirds are unlikely to be affected by routine Project operations as they are restricted to coastal habitat, which is within 2 km of the shoreline for less than 5% of the shipping route. The influence of the Project on such species would be limited to wake effect, which is well within the range of natural wave conditions and is therefore not expected to result in adverse effects to marine birds."* In light of that correction of fact, we know KM has information on the actual % of the route when tankers operate within 2 km of the shoreline and that % must be greater than 5 %.

Request:

2.21) Please provide a map showing the location and % of the shipping route within 2 km of the shoreline for the length of the RSA, and highlight the ecological reserves that are within 2 km of the shipping route.

Response:

2.21) In the Canadian portion of the Marine Regional Study Area (RSA), the total length of shoreline is approximately 2,315 km. Of this, 108.9 km (4.7%) lie within 2 km of the shipping lanes. In the United States (US) portion of the Marine RSA, the total length of shoreline is 1,546 km. Of this, 9.8 km (0.6 %) lie within 2 km of the shipping lanes.

The combined length of the inbound and outbound shipping lanes is approximately 592.8 km. Of this, 75.3 km is within 2 km of Canadian shoreline and 16.9 km is within 2 km of US shoreline. In total, approximately 92.2 km (15.6%) of the shipping lanes are within 2 km of shoreline (see Attachment 1).

The following ecological reserves are located within 2 km of the shipping lanes (refer to FER IR No. 2.21 - Attachment 1):

- Oak Bay Islands Ecological Reserve (Canada);
- Discovery Island Marine Park (Canada);
- Trial Islands Ecological Reserve (Canada);
- Eastern Burrard Inlet Rockfish Conservation Area (Canada);
- Saturna South Rockfish Conservation Area (Canada);

- Bedwell Harbour Rockfish Conservation Area (Canada);
- Brethour, Domville, Forrest, and Gooch Islands Rockfish Conservation Area (Canada);
- D'Arcy Island to Beaumont Shoal Rockfish Conservation Area (Canada);
- Discovery and Chatham Islands Rockfish Conservation Area (Canada);
- Trial Island Rockfish Conservation Area (Canada);
- Olympic Coast National Marine Sanctuary (US);
- San Juan County/Cypress Island Marine Biological Preserve (US); and
- Haro Strait Special Management Fishery Area (US).

2.23**Preamble:**

The Board of FER concern lies largely with exposure of species and ecosystems associated with Ecological Reserves along the tanker path and perturbation by anthropogenic causes such as marine noise and oil spills. KM has provided studies on noise and wave height but not on impacts on shore zone from spilled oil.

Request:

- 2.23) Several intervenors recognized that the major threat along the tanker route is not from wave height but from exposure to an oil spill. Given this will TMX to provide information about risk to shoreline species resulting from the chronic pollution and minor and major oil spills?

Response:

- 2.23) A description of risk to shoreline species resulting from spills is provided in Sections 5.6.2.1.1, 5.6.2.2, 5.6.2.3 and 5.6.2.4 of Volume 8A (Filing ID [A3S5Q3](#)).

Habitat and intertidal community effects assessments of shorelines within the Regional Study Area (RSA) for the project have been completed for hypothetical spills originating at the Westridge Marine Terminal in Burrard Inlet, and at various locations along the marine transportation route. Assessments have been completed considering both stochastic oil spill modelling (reflecting one full year of seasonal conditions), as well as detailed deterministic modelling of spills occurring during the summer season. Both credible worst-case and smaller spills have also been considered.

Sections 5.3.1 of both Technical Report TR 7-1 of Volume 7, Ecological Risk Assessment of Westridge Marine Terminal Spills (Stantec Consulting Ltd. December 2013; Filing ID [A3S4X1](#)), and Technical Report 8B-7 of Volume 8A, Ecological Risk Assessment of Marine Transportation Spills (Stantec Consulting Ltd. December 2013; Filing ID [A3S4K7](#)) provide a summary of methodology for defining shoreline types within the RSA, and the associated biological habitats and sensitivity ranking for each shoreline type.

Results of the seasonal stochastic assessment of a 160 m³ crude oil spill at the Westridge Marine Terminal are provided in Section 6.2 of the TR7 -1 (Filing ID [A3S4X1](#)).

Stochastic assessment results for credible worst-case and smaller spills originating at Strait of Georgia, Arachne Reef and Race Rocks are provided in Sections 6.2, 7.2 and 8.2 respectively of Technical Report 8B-7 (Filing ID [A3S4K7](#)).

Methods for estimating crude oil retention on various shoreline types, and benchmarks for evaluating effects to the intertidal zone are also discussed in Section 3.4.4.5 of the Detailed Quantitative Ecological Risk Assessment (DQERA) (Filing ID [A3W9K1](#)).

Potential effects to intertidal communities from shoreline oiling following deterministic modelling of a 160 m³ spill at WMT are summarized in Section 4.4.5 of the DQERA (Filing ID [A3W9K4](#)).

Potential effects to intertidal communities from shoreline oiling following deterministic modelling of an 8,250 m³ spill and a 16,500 m³ spill from a tanker accident at Arachne Reef are summarized in Sections 5.3.5 and 5.4.5 of the DQERA (Filing ID [A3W9K5](#)).

2.24**Preamble:**

Recommendation # 9 of Termpol 2014 report States: *Trans Mountain should implement extended untethered escort for outbound laden Project tankers through the Strait of Juan de Fuca. (3.24 proposed Risk Mitigation Measures) Finding 18: The TRC supports extending the pilot disembarkation zone and tethered tug escort requirements for Project tankers to an area in the vicinity of Race Rocks, weather permitting and subject to the requirements identified in a Pacific Pilotage Authority 'Notice to Industry'.*

To which TMX replied: (3.2.4 Proposed Risk Mitigation Measures) *Trans Mountain is pleased with the TRC's support for extending the pilot disembarkation zone and tethered tug escort requirements for Project tankers to an area in the vicinity of Race Rocks, weather permitting and subject to the requirements identified in a future Pacific Pilotage Authority 'Notice to Industry'*

Request:

2.24) Please explain what is meant by the line "*weather permitting and subject to the requirements identified in a future Pacific Pilotage Authority 'Notice to Industry'*". Does this mean the pilot will not go on board if the weather is too bad, or the pilot will remain on board (until where?) Please indicate in the response in quantitative terms what weather permitting means such as predicted wind speed thresholds and direction and wave heights and swell intensity for the permitted passage of tankers past Race Rocks. Are there weather thresholds that will be used for the cessation of ocean transport tankers, tethered and untethered escort tugs and requirements for pilots to remain on board and provisions for removal further to sea?

Response:

2.24) a) Please explain what is meant by the line "*weather permitting and subject to the requirements identified in a future Pacific Pilotage Authority 'Notice to Industry'*".

This pertains to laden outbound tankers and refers to extending the pilot disembarkation point to the vicinity of Race Rocks, which was agreed to by the Pacific Pilotage Authority and British Columbia Coast Pilots at the request of Trans Mountain. Extending the pilot disembarkation position for Trans Mountain tankers does not mean that the current established pilot disembarkation position (near Victoria) will be moved to Race Rocks. That position is marked on navigation charts and is applicable to all vessels. It means that when conditions allow, the pilots will disembark in an area in the vicinity of Race Rocks. This caveat has been included by the TERMPOL Review Committee in order to ensure that the pilots are able to disembark the vessel safely, which in future is planned to be carried out using helicopter.

The current pilot disembarkation point off Victoria is relatively sheltered and pilot disembarkation by launch can be safely carried out. In fact, there are no records of any weather delays under current operating procedures. Because the area

near Race Rocks is more exposed to stronger winds from the Juan de Fuca Straits, disembarking to a pilot launch was not considered feasible and Pilot disembarkation at Race Rocks is expected to be undertaken by helicopter. Should weather at Race Rocks not allow safe disembarkation at Race Rocks, the pilot will, at the pilot and master's discretion, disembark at the normal established location.

- b) Are there weather thresholds that will be used for the cessation of ocean transport tankers, tethered and untethered escort tugs and requirements for pilots to remain on board and provisions for removal further to sea?

Trans Mountain has committed to develop criteria for tug escort based on weather criteria. Please refer to response to NEB IR No. 1.59a (Filing ID [A3W9H8](#)) for more details. Such criteria will be in place prior to commissioning of the project, if approved.

2.25**Preamble:**

Recommendation # 9 of Termpol 2014 report States: *Trans Mountain should implement extended untethered escort for outbound laden Project tankers through the Strait of Juan de Fuca. (3.24 proposed Risk Mitigation Measures) Finding 18: The TRC supports extending the pilot disembarkation zone and tethered tug escort requirements for Project tankers to an area in the vicinity of Race Rocks, weather permitting and subject to the requirements identified in a Pacific Pilotage Authority 'Notice to Industry'.*

To which TMX replied: (3.2.4 Proposed Risk Mitigation Measures) *Trans Mountain is pleased with the TRC's support for extending the pilot disembarkation zone and tethered tug escort requirements for Project tankers to an area in the vicinity of Race Rocks, weather permitting and subject to the requirements identified in a future Pacific Pilotage Authority 'Notice to Industry'.*

Request:

- 2.25) For tankers inbound in the Strait of Juan de Fuca carrying any of the toxic components of Dilbit, where will pilots be taken on Board and at what point along the route would that be?

Response:

- 2.25) By "any of the toxic components of Dilbit" Trans Mountain assumes that the intervenor is referring to the Dilbit diluent, which is described in the response to FER IR No. 2.19. As the Project is not designed to import hydrocarbons, the inbound tankers will be empty and, as is current practice, pilots will board at the established pilot boarding point located at Brothie Ledge, near Victoria.

2.26**Preamble:**

Board of FER remains concerned about the preparedness even to meet current KM shipping arrangements. KM can show it is ramping up current operations and best practices to higher standards equivalent to those being proposed for TMX project.

Request:

- 2.26) Are there plans for escort and pilotage of Dilbit carrying tankers currently transporting Dilbit out of Burnaby? Please indicate the number and size of tankers currently in operation and provide reasons for any proposed differences in obligations of those tankers?

Response:

- 2.26) Laden tankers sailing outbound from Westridge Marine Terminal in Burnaby are under the direction of two pilots and under tug escort as described in Volume 8A, Section 1.4.1.3 (Filing ID [A3S4X3](#)). Currently Westridge Marine Terminal handles about 60 tankers a year and the maximum size is the Aframax tanker, which tanker size is not expected to change as part of the Project. If the Project is approved, in the future all laden tankers from Westridge Marine Terminal will be subject to all the proposed and accepted additional risk mitigation measures described in the Application and TERMPOL reports.

2.27**Preamble:**

In the report titled An Evaluation of Local Escort and Rescue Tug Capabilities in Juan de Fuca Strait Project 213-063 Revision 3 November 27, 2013 https://docs.neb-one.gc.ca/ll-eng/llisapi.dll/fetch/2000/90464/90552/548311/956726/2392873/2451003/2393359/B21-4_-_V8C_TR_8C_12_TR_S3_TUGS_JUAN_DE_FUCA_STRAIT_-_A3S5G0.pdf?nodeid=2393971&vernum=-2

This report is skeptical about the current ability of the Canadian escort tugs and whether they are dependable. The following statements are made in reference to tugs with the capabilities of handling tankers. *"Of that group of six (6), three are not fitted with aft towing winches, hence are incapable of rescue towing. That leaves only three tugs in BC which have the combined capability of performing escort and rescue towing in Juan de Fuca Strait."* (page 31)

Request:

2.27) What is the number of "available" tugs needed for tethered tanker escort when the TMX Project is completed and where and when are tugs of this type going to be available?

Response:

2.27) The configuration and capability of the existing fleet has and continues to evolve to meet the requirements of the local market. In recent years the two established tug operating companies who provide the escort service (Seaspan Marine and SMIT Marine Canada) have both invested in new equipment to meet changing demands of the local market. Both companies are aware of the requirements of TMEP tankers and have provided letters expressing their ability and interest in providing tug escort services for Project-related tankers. Copies of these letters are attached as NEB IR No. 1.59b – Attachment 1 (Filing ID [A3W9J9](#)) and NEB IR No. 1.59b – Attachment 2 (Filing ID [A3W9K0](#)). Please also refer to responses to NEB IR No. 1.59a and 1.59b (Filing ID [A3W9H8](#)).

2.28**Preamble:**

The modeling done on potential mechanical malfunctions such as loss of rudder shows that a tanker can be grounded within 14 minutes. It was unclear from the modelling what the acceptable speed of tankers is in Canadian waters. https://docs.neb-one.gc.ca/ll-eng/llisapi.dll/fetch/2000/90464/90552/548311/956726/2392873/2451003/2503819/B259-13_-_Juan_de_Fuca_Strait_Proposed_Tug_Escort_Simulation_Study_%2829_Aug_2014%29_-_A4A7R2.pdf?nodeid=2504221&vernum=-2

Request:

2.28) What are the current requirements for speed of tankers in the different sectors of the tanker route for the transit of outgoing and incoming vessels? The modelling done on potential mechanical malfunctions such as loss of rudder shows that a tanker can be grounded within 14 minutes. Please provide similar modelling such as this for the Eastern entrance of the Strait of Juan de Fuca, off Race Rocks Ecological Reserve and for Haro Strait off Oak Bay Islands Ecological Reserve. Also please include possible scenarios with a 7 knot current running off Race Rocks in both flood and ebb conditions with wind driven scenarios of up to 80 knots, from both easterly and westerly directions in the Strait of Juan de Fuca. It was also unclear from the modelling what the acceptable speed of tankers are in Canadian waters. Please explain the rationale why the WCMC Handbook indicates that it will take 72 hours to respond to a spill at Race Rocks. (Source <http://wcmrc.com/wp-content/uploads/2013/06/WCMRC-Information-Handbook-2012.pdf>)

Response:

2.28) This information request is answered in several parts:

- a) What are the current requirements for speed of tankers in the different sectors of the tanker route for the transit of outgoing and incoming vessels?

All vessels across the world, including Canada, requires under law that mariners follow the International Regulations for Preventing Collisions at Sea (COLREGS). Rule 6 mandates that “Every vessel shall at all times proceed at a safe speed so that she can take proper and effective action to avoid collision and be stopped within a distance appropriate to the prevailing circumstances and conditions”. Safe speed is determined by the master and pilot. Tanker speed in Vancouver harbour is kept to about 6 knots. Speed of tankers along the shipping route are generally expected to be in the range of 10-14 knots, depending on weather conditions, requirements of escort tugs, maneuvering conditions, etc.

- b) Please provide similar modelling such as this for the Eastern entrance of the Strait of Juan de Fuca, off Race Rocks Ecological Reserve and for Haro Strait off Oak Bay Islands Ecological Reserve. Also please include possible scenarios with a 7 knot current running off Race Rocks in both flood and ebb conditions with



wind driven scenarios of up to 80 knots, from both easterly and westerly directions in the Strait of Juan de Fuca.

A Project-related tanker losing propulsion or steering or both in the vicinity of Race Rocks is a very low likelihood event. However, in order to ensure due diligence and explore the consequence of such an occurrence, navigation simulation modeled upon extremely conservative but credible assumptions was carried out and submitted to TERMPOL. The simulation results have been considered and addressed in the additional precautionary measures proposed by Trans Mountain including the expansion of escort tug use. Trans Mountain believes that diligent evaluation and determination of the consequence of machinery failure onboard a partly loaded Aframax tanker as proposed by the Project has been conducted, which meets the National Energy Board's filing requirements. Further modeling as requested by the intervenor will therefore not be undertaken.

- c) It was also unclear from the modelling what the acceptable speed of tankers are in Canadian waters.

Please refer to response to FER IR No. 2.28a.

- d) Please explain the rationale why the WCMRC Handbook indicates that it will take 72 hours to respond to a spill at Race Rocks. (Source <http://wcmrc.com/wp-content/uploads/2013/06/WCMRC-Information-Handbook-2012.pdf>)

Western Canada Marine Response Corporation (WCMRC) must demonstrate compliance with Transport Canada (TC) regulations governing certified Response Organizations (RO). To become a certified RO, WCMRC must adhere to planning standards published by Transport Canada (TC). Planning standards are established benchmarks around which ROs build their response systems. Planning standards are not performance standards.

A summary of current federally mandated response times and capacity requirements is provided in the Table below:

Area Type	Response Organization Tier 1 150 tonnes	Response Organization Tier 2 1,000 tonnes	Response Organization Tier 3 2,500 tonnes	Response Organization Tier 4 10,000 tonnes
Designated Port (PMV)	Deployed on-scene in Designated Port (dedicated resident equipment) 6 hours from time of notification	Deployed on-scene in Designated Port 12 hours from time of notification	Not Applicable	Not Applicable
Inside PAR/ERA	Not Applicable	Not Applicable	Delivered on-scene within the PAR/ERA from time of notification 18 hours	Delivered on-scene within the PAR/ERA from time of notification 72 hours
Outside PAR/ERA Inside Outside PAR/ERA ; Inside GAR	Not Applicable	Not Applicable	Delivered on-scene 18 hours from time of notification plus travel time	Delivered on-scene 72 hours from time of notification plus travel time hours

Under the proposed response system enhancements to support the Project, the following voluntary response times have been proposed:

- Within the Port of Vancouver (existing boundaries including Delta Port) - two hours to commence response on a spill up to 2, 500 tonnes size.
- Outside Port of Vancouver to “J” Buoy - six hours to commence response on a spill up to 2, 500 tonnes size.
- Additional equipment necessary to deal with a 20,000 tonne oil spill will be cascaded in within 36 hours of initial notification for entire IRA.
- Offshore of Buoy “J” (outside IRA) existing legislated response time (72-hours + travel time) will remain in effect.

2.29**Preamble:**

The BC government has the ability to require an independent Environmental Assessment should it be unable to obtain the information through the NEB process. Then it seems reasonable for the Province of BC to conduct its own Environmental Assessment. This information is needed to assess the liability and risk and the question of whether or not the public interest of BC citizens is being served by this project.

Request:

- 2.29) Given that Provincial marine parks and marine ecological reserves are managed and protected by the Province of British Columbia would you accept a decision of the Province of BC to conduct its own Environmental Assessment?

Response:

- 2.29) On June 21, 2010, the British Columbia Environmental Assessment Office (EAO) and the National Energy Board (NEB) entered into an agreement (NEB-EAO Agreement) which states the EAO will accept the NEB's environmental assessment of a proposed project (that otherwise would have to be reviewed under BC's *Environmental Assessment Act*) as an equivalent assessment, and that the proposed project may proceed without a provincial environmental assessment certificate. The Trans Mountain Expansion Project is subject to this NEB-EAO Agreement. Accordingly, the information request is speculative in nature and not relevant to one or more of the issues identified in the NEB's List of Issues for the Trans Mountain Expansion Project (Filing ID [A3V6I2](#)).

Reference:

British Columbia Environmental Assessment Office. 2015. *Agreement and Project Listing*. http://www.eao.gov.bc.ca/EAO_NEB.html. Date Acquired: January 21, 2015.

2.30**Preamble:**

FER is concerned that some of the information used by the TMX consultant is out of date and populations continue a decline in the last 7 years. In "Recovery Strategy for the Northern and Southern Resident Killer Whales (*Orcinus orca*), **March 2008**", the following information is provided: *"Resident killer whale populations in British Columbia are presently considered to be at risk because of their small population size, low reproductive rate, and the existence of a variety of anthropogenic threats that have the potential to prevent recovery or to cause further declines. Principal among these anthropogenic threats are environmental contamination, reductions in the availability or quality of prey, and both physical and acoustic disturbance. Even under the most optimistic scenario (human activities do not increase mortality or decrease reproduction), the species' low intrinsic growth rate means that the time frame for recovery will be more than one generation (25 years). The southern resident killer whale population experienced declines of 3% per year between 1995 and 2001, and has increased since then to 85 members in 2003. During the summer and fall, southern residents are primarily found in the trans-boundary waters of Haro Strait, Boundary Pass, the eastern portion of the Strait of Juan de Fuca, and southern portions of the Strait of Georgia. This area is designated as 'critical habitat' based on consistent and prolonged seasonal occupancy. Some members of the population typically remain in the same general area in winter and spring, but others appear to range over much greater distances, and have been reported as far south as Monterey Bay, California, and as far north as Haida Gwaii (the Queen Charlotte Islands). Winter and spring critical habitat has not been identified for the latter group. During the summer and fall, the principal prey of southern residents appears to be chinook and chum salmon (*Oncorhynchus tshawytscha* and *O. keta*); little is known of their diet in the winter and spring. The lack of information about winter diet and distribution of the southern residents is a major knowledge gap that impedes our understanding of the principal threats facing the population"*.

Request:

- 2.30) What are the regulations in place from DFO which will mitigate the impact of increased tanker traffic and potential oil spills from the TMX project with regard to the Southern Killer Whale population.

Response:

- 2.30) An existing regulatory framework emphasizing navigational safety, accident prevention, emergency preparedness and response, and financial liability/compensation in the case an oil spill in a marine environment in Canada governs existing and future marine vessel traffic calling at the Westridge Marine Terminal. Shipping activities within the jurisdiction of Canada are regulated through various legislative tools. Acts, regulations and international conventions that are relevant to Project-related marine transportation are briefly described in Section 1.4.1 of Volume 8A (Filing ID [A3S4X3](#)).

Additional legislative and policy tools to manage and mitigate threats to marine mammals include (but are not limited to) the following:

- the federal *Fisheries Act, 1985* and associated Marine Mammal Regulations, with respect to disturbing a marine mammal in Canadian waters;
- the federal *Species at Risk Act, 2002 (SARA)*, which includes prohibitions against killing, harming, harassing, capturing or taking an individual of a wildlife species that is listed as endangered or threatened;
- Be Whale Wise Marine Wildlife Guidelines for Boaters, Paddlers and Viewers;
- Wild Salmon Policy (Fisheries and Oceans Canada [DFO] 2005);
- DFO Integrated Fisheries Management Plans;
- management of marine mammal species within the context of any relevant recovery strategies or management plans, and in consideration of key threats identified in such plans; and
- consideration of the *Endangered Species Act, 1973* and *Marine Mammal Protection Act, 1972* with respect to disturbing a marine mammal in US waters.

Reference:

Fisheries and Oceans Canada. 2005. Canada's Policy for Conservation of Wild Pacific Salmon. Fisheries and Oceans Canada. Vancouver, BC. Cat. No. Fs23-476/2005E. 57 pp.

2.31**Preamble:**

The following information was provided in section 5.7 of the Recovery Strategy. "*Action Plans will be necessary to successfully achieve the objectives and approaches of the resident killer whale recovery strategy. Action plans addressing the issues of 1) population dynamics and demographics, 2) reduced prey availability, 3) contaminants, 4) physical disturbance, 5) acoustic disturbance, and 6) critical habitat, will be completed by March 31, 2013. Further examination of prey availability and acoustic disturbance may be necessary due to the complex nature of these issues.*"

Request:

- 2.31) Please provide information on how the completed action plan has affected the way in which Trans Mountain will deal with mitigation of the issues listed in the DFO Recovery Strategy for Killer whales.

Response:

- 2.31) Please see the subsection 'Contribution to Southern Resident Killer Whale Recovery Strategies' in Marine Mammal Protection Program framework provided in the response to NEB IR No. 1.56 (Filing ID [A3W9H8](#)). In brief, this subsection of the Marine Mammal Protection Program states that recovery measures identified in the action plan demonstrate that recovery of at-risk whale populations in the Salish Sea is a complex and multi-faceted problem, and that integrated, multi-party solutions are required. As cumulative effects management is most effective when all parties contribute to solutions, Trans Mountain has proposed specific actions as part of a Marine Mammal Protection Program for three of the four objectives outlined in the action plan.

2.32

Preamble:

In the Recovery Strategy for Killer whales published by NOAA in 2008, The risk of Noise on Killer whales was outlined. *"Since (1995), there has been a rapidly growing awareness that noise is a significant threat that degrades habitat and adversely affects marine life (IUCN 2004, IWC 2004). It is estimated that ambient (background) underwater noise levels have increased an average of 15 dB in the past 50 years throughout the world's oceans (NRC 2003).*

Killer whales have evolved in the underwater darkness using sound much the way terrestrial animals use vision: to detect prey, to communicate and to acquire information about their environment. Anthropogenic noise can interfere with all these activities in critically important ways, such as disrupting communication, reducing the distance over which social groups can detect each other, masking echolocation and hence reducing the distance over which the animals can detect their prey, potentially displacing them from preferred feeding habitats, displacing prey, impairing hearing, either temporarily or permanently, and in extreme cases causing death (Bain and Dahlheim 1994, Barrett-Lennard et al. 1996; Erbe 2002, Bain 2002, NRC 2003, Au et al. 2004).

Shipping. Commercial shipping has increased dramatically in recent years. For example, between 1995 and 1999 the worldwide commercial shipping fleet increased 12% (NRC 2003). There are few studies that have measured changes in the background underwater noise levels over time, but those that do suggest that increased vessel traffic is responsible for the increase in ambient noise over the last 100 years (e.g. Andrew et al. 2002). In the northern hemisphere, shipping noise is the dominant source of ambient noise between 10 to 200 Hz (NRC 2003). While shipping energy is concentrated at low frequencies, ships produce significant amounts of high frequency noise as well. The consequences of these chronic sources of noise on killer whales have not been assessed.

At a presentation by Scott Veirs at the Salish Sea Ecosystem Conference in Seattle in May 2014 entitled "Noise impacts in the Salish Sea under commercial shipping growth scenarios" the research of BEAM Reach has provided a stark picture of the threshold levels of acoustic noise from ships beyond which Killer whales can obtain food and communicate by Echolocation allowing their survival. <http://www.beamreach.org/2014/04/30/emaze-talk-fossil-fuel-ship-noise-killer-whales> See more at: <http://www.beamreach.org/2014/04/30/emaze-talk-fossil-fuel-ship-noise-killer-whales#sthash.6DTS4jf7.dpuf>

Another article entitled Salish Sea Orca Whales Not Mating, Socializing in Polluted Soundscape <http://www.desmog.ca/print/8076> This article states that "Vessel noise is already hindering endangered southern resident killer whales from communicating and finding fish and the noise bombardment will get worse if proposals for coal terminals and pipelines in B.C and Washington State are approved"

Scott Veirs, Beam Reach Marine Sciences and Sustainability School program coordinator and professor, speaking at the Salish Sea Ecosystem Conference stated that "Ships dominate the soundscape of Puget Sound," Veirs and his students take underwater sound recordings off Lime

Kiln Park on San Juan Island, an area where the killer whales are known to spend time, and then model the echo-location and communication consequences for the resident killer whales. The resident killer whale population has dropped this year to 80 animals in three pods, the lowest number in more than a decade. Sounds of swooshes, rattles and bangs echoed through the room as Veirs demonstrated noises surrounding the whales every day and audience members covered their ears as he played the screeching and metallic grindings made by a ship with a damaged propeller.

“At least one ship is present about 40 per cent of the time and when that ship is going through it reduces the range that whales can communicate by 68 per cent,” Veirs said. That means the whales miss about 37 per cent of calls and, if traffic doubles – as it could with increases in oil tankers from twinning the Kinder Morgan pipeline from Alberta to Burnaby and with 21 per cent more carriers and barges from proposed coal terminal expansions in B.C. and Washington – it is estimated the whales will miss 44 per cent of the calls. Current noise levels mean whales are already finding almost 50 per cent less fish than they would otherwise and a doubling of traffic would increase that to 58 per cent. The noise is having a significant impact as chinook salmon is already scarce. Canadian and U.S. government studies have pinpointed lack of salmon – and particularly the whales' preferred diet of chinook – noise and pollution as the major threats faced by the resident killer whales.

Request:

- 2.32) In light of the research available on the effects of ship-based acoustic effects on the long-term potential for survival of Killer Whales, what mitigation measures are going to be imposed on the speed and frequency of ships carrying TMX products in the tanker traffic corridor through killer whale habitat?

Response:

- 2.32) Sensory disturbance caused by underwater noise from vessel traffic, including tankers and tugs, is a concern for the maritime industry as a whole.

Port Metro Vancouver (PMV) is engaged in working collaboratively with regulators and industry to develop future guidelines or standards for reducing underwater noise from commercial vessels in local waters. Once such guidelines are available, Trans Mountain, as part of its Tanker Acceptance Standards, shall require Project tankers to adopt those as best practice as far as practical.

PMV has established the Enhancing Cetacean Habitat and Observation (ECHO) Program in collaboration with government agencies, First Nations, marine industry users, non-government organizations and scientific experts, to better understand and manage the potential impacts to cetaceans from commercial vessel activities in BC coastal waters. In addition, PMV participates in Green Marine, a voluntary environmental program for the maritime industry to reduce its environmental footprint. Trans Mountain is participating in both initiatives and continues to raise awareness of such initiatives with its shippers and carriers, with the aim to promote the selection and nomination of modern and efficient vessels operated to current best practices and meeting all local and

international regulations. Further details on the Marine Mammal Protection Program that will be adopted by Trans Mountain are provided in the response to NEB IR No. 1.56 (Filing ID [A3W9H8](#)).