


Appendix G.7
Marine Resources
Information Request #19 and 20

December 12, 2014

Catherine Ponsford
Project Manager
Canadian Environmental Assessment Agency
Pacific and Yukon Regional Office
410-701 Georgia Street West
Vancouver, BC V7Y 1C6



Dear Ms. Ponsford:

Reference: Marine Resource Use Information Requests #19 and 20

This letter responds to the request for Outstanding Information received from the Canadian Environmental Assessment (CEA) Agency on August 14, 2014.

Information Request #19

DFO - Outstanding Information:

Vessel maneuvering has the potential to re-suspended sediments within the marine berthing area generating a sediment plume. Suspended sediments have the potential to result in fish mortality, injury to fish and behavioral changes. Understanding sediment generated from vessel maneuvering is required to understand potential long term (residual) impacts on fish and fish habitat. Please provide this information.

Pacific NorthWest LNG Limited Partnership (PNW LNG) - Response:

Liquefied natural gas (LNG) carrier vessels are expected to arrive and berth at dead slow speed (less than 0.1 m/sec) with maneuvering conducted entirely by tugs. Vessels will be in neutral and not generate propulsion at distances more than two boat lengths from the berth at ocean depths greater than 50 m. Four Voith Schneider Propeller (VSP) tugs (e.g., the 93 tonne BP Voith Schneider Tractor Tug) will be secured to the LNG carrier to maneuver, berth and secure the vessel to mooring and berthing dolphins to facilitate LNG loading. Vessels will depart through assistance of tugs to pull the loaded LNG carrier away from the berth at distances one to two boat lengths from the berth. Loaded LNG carriers will engage their propulsion with all clear to their bows with the assistance of tugs and escort tugs. Loaded LNG carriers will engage engines and their propulsion in water depths greater than 30 m.

Vessel berthing and maneuvering at the marine terminal is not predicted to generate or suspend concentrations of sediment, above total suspended solids (TSS) concentrations of 25 mg/L. TSS levels above this concentration begin to alter fish habitats and may cause injury or death to fish in proximity to the marine terminal and berths. A detailed sediment analysis (Hatch 2014) was modelled to assess potential propeller scour and sediment generation and suspension. The Hatch model was developed using Coastal Modeling System Flow to predict local hydrodynamic conditions and Particle Tracking Model (PTM) to investigate the sediment fate, including deposition areas and levels of TSS above background (U.S. Army Corps of Engineers). This study was conducted assuming 29 LNG carrier vessel arrivals and 29 departures during one month that represents the most conservative conditions for generation of scoured sediment volumes. The PTM simulation estimated the sediment fate and TSS during one month, assuming two different paths used by the LNG vessels. When the LNG vessels are berthing with bow towards North (Case 1 and preferred berthing option), the TSS threshold value of 25 mg/L is exceeded for less than one hour along Kitson Island. If carriers are berthed with bow south (not expected) the TSS concentrations were below the threshold value (25 mg/L, CCME 2002). All model estimates of tug and carrier propulsion-generated or suspended TSS over Flora Bank were considered as negligible. Generated or suspended TSS would be

deposited, by existing currents and waves, seaward of the LNG berth and marine terminal in water depths greater than 50 m and not impact existing shallow habitats within Agnew or Flora Banks. .

Information Request #20

DFO - Outstanding Information:

No model was provided. Sediment modelling is needed to evaluate the significance of potential environmental effects. Please provide this information.

PNW LNG - Response:

Planned habitat offsetting projects have been scaled back consistent with reduced levels of expected project related serious harm to CRA fish habitats and fisheries. Planned habitat offsets will be comprised of benched shoreline habitats and are not expected to affect sedimentation around the project development area and Lelu Island.

No additional sediment modelling studies are presented for the construction activities associated with offsetting habitat construction. Five sites have been identified along the foreshore and shoreline of Lelu Island in existing low productivity areas and widely distributed rocky habitat.

Closure

This letter provides the Outstanding Information requested by the Government of Canada. If you have any questions, please contact PNW LNG.

References

Canadian Council of Ministers of the Environment (CCME). 2002. Canadian Water Quality Guidelines for the Protection of Aquatic Life: Total Particulate Matter. Website:
file:///C:/Users/MaArnold/Downloads/Total%20Particulate%20Matter%20(en)%20(1).pdf.
Accessed: November 2014. Hatch 2014a. Pacific Northwest LNG: Lelu Island Terminal Marine Structure Scour. 52p.

Hatch 2014. Pacific Northwest LNG: LNG Jetty Propeller Scour Analysis. 30p.