

5.0 Summary and Conclusions

5.1 Potential Issues

Potential issues that are generally applicable to East Coast oil and gas exploration activity, including the Study Area, include:

- Effects of accidental spills on marine flora and fauna,
- Effects of industrial sound on marine mammals, and to a lesser extent on commercial invertebrates and fish,
- Disturbance of sensitive benthic communities,
- Attraction of seabirds, particularly petrels, to rigs and supply vessels.

Potential issues specific to the Western Newfoundland and Labrador Offshore Area Study Area identified during this SEA include:

- Sensitivity of shallow subtidal and intertidal areas to an accidental spill, particularly with respect to coastal seabirds, coastal waterfowl and shorebirds, and their respective habitats,
- Potential sensitivity of the Cape St. George Spawning Area off the Port au Port Peninsula where there may be aggregations of spawning Atlantic cod,
- Potential sensitivity of key lobster spawning and nursery areas,
- Potential sensitivity of The Hole, a highly productive steep slope area at the northern extent of the Esquiman Channel,
- Intensive exploitation of fisheries throughout the Study Area,
- Effects on aesthetics associated with the presence of oil and gas infrastructure nearshore.

5.2 Data Gaps

There is a considerable database on fishery landings in the Study Area and it is clear that the entire Study Area is very important to the fishery, particularly for invertebrate species such as American lobster, snow crab, and northern shrimp, and finfish species such as herring, mackerel, and historically, Atlantic cod. Inshore regions of the Study Area are known to be important bird nesting areas.

Key data gaps identified during this SEA include:

- Distribution of VECs in time and space, specifically fish eggs and larvae, marine birds, marine mammals and sea turtles, particularly for *SARA*-listed species such as wolffish, leatherback sea turtles, and various whale species,
- Locations of enhanced areas of production and/or concentrations of feeding seabirds and marine mammals,

- Locations of important habitat for coastal waterfowl and shorebirds,
- Locations of spawning areas or other critical habitat for commercial invertebrates and fish,
- Almost total lack of information on benthic communities in the Study Area, particularly those in the deeper areas,
- Lack of underwater noise data in the Study Area, modeled or measured,
- Information of oil and gas physical and chemical properties for the Study Area,
- Oil spill trajectory modeling for the different Bid Parcels and existing Exploration Licences within the Study Area.

5.3 Addressing Data Gaps

Depending on timing and nature of exploration activities, the Board may require baseline data collection, modeling studies, or monitoring programs associated with project activities.

Some of the data gaps can be addressed by the relevant government departments under their respective mandates, some by collaborative efforts between industry and government, some during monitoring programs during exploration, and some as part of site specific EAs. Some examples are listed below.

- Additional spatial and temporal distribution data on fish spawning aggregations would be valuable for managing the fisheries as well as for use in impact assessment. It is likely that the Board in collaboration with DFO and others in industry will find means to continue gathering these types of data.
- Additional distributional data on marine-associated birds and marine mammals will likely be collected by operators through seabird and marine mammal observation programs carried out in conjunction with exploration activities. These monitoring and observation programs have been undertaken for many of the exploration activities undertaken in the northeast Grand Banks, the Laurentian Subbasin and the Orphan Basin.
- Government provides oversight and their data archives are the ultimate beneficiaries.
- Site-specific EAs typically provide reviews of all relevant data and in some cases also provide original data (e.g., benthic surveys).
- Generally applicable information such as sound propagation modeling may be done through government and industry partnerships (e.g., ESRF, PRAC, PERD).
- Oil spill trajectory modeling (and potentially drill cuttings deposition modeling) during the site-specific EA process.

5.4 Planning Considerations

5.4.1 Important Invertebrate/Fish Spawning and Nursery Areas

One of the primary findings of this SEA was the potential need for special planning in the vicinity of the key spawning area for Atlantic cod (Cod Spawning Area off Cape St. George), the key spawning and nursery areas for American lobster in Unit Areas 4Rbc, and The Hole off Port au Choix (see Figure 5.1.). The C-NLOPB may require special restrictions on activities in these areas.

5.4.2 Shallow Subtidal/Intertidal Areas

Various shore types exist along the west coast of Newfoundland, some more sensitive than others to potential impact from oil and gas activities. For example, more unique shore type habitats (e.g., salt marsh, tidal flats, sandy beaches) would likely retain spilled oil for a longer period than more exposed shore types if cleanup were left to natural processes. Therefore, spill prevention and response are very important issues in the Study Area. The other issue that is further complicated by shallow water is acoustics. Sound propagation is complex in deepwater areas but is further complicated in shallow water. Sufficient acoustic modelling may be required to better predict the propagation of sound from sources such as seismic surveying.

5.4.3 Available Mitigations

Operators will be required by the C-NLOPB to comply with all applicable legislation and guidelines, including the C-NLOPB guidelines (e.g., *Geophysical, Geological, Environmental and Geotechnical Program Guidelines-C-NOPB 2004*; *Offshore Waste Treatment Guidelines – NEB et al. 2002*; *Offshore Chemical Selection Guidelines – NEB et al. 1999*)

Mitigations have been discussed throughout the SEA.

For seismic exploration (including vertical seismic profiling or VSP), mitigations employed by operators include:

- Ramping up ('soft start') of airguns at the start of survey,
- Monitoring of marine mammals and sea turtles,
- Communication with the fishing industry,
- Notice to mariners and fisheries broadcasts,
- Use of fisheries guard vessels and observers (FLOs) to help avoid conflicts with fishing vessels and gear,
- Compensation for gear losses attributable to seismic survey activity,
- Design/selection of equipment to optimize source levels,

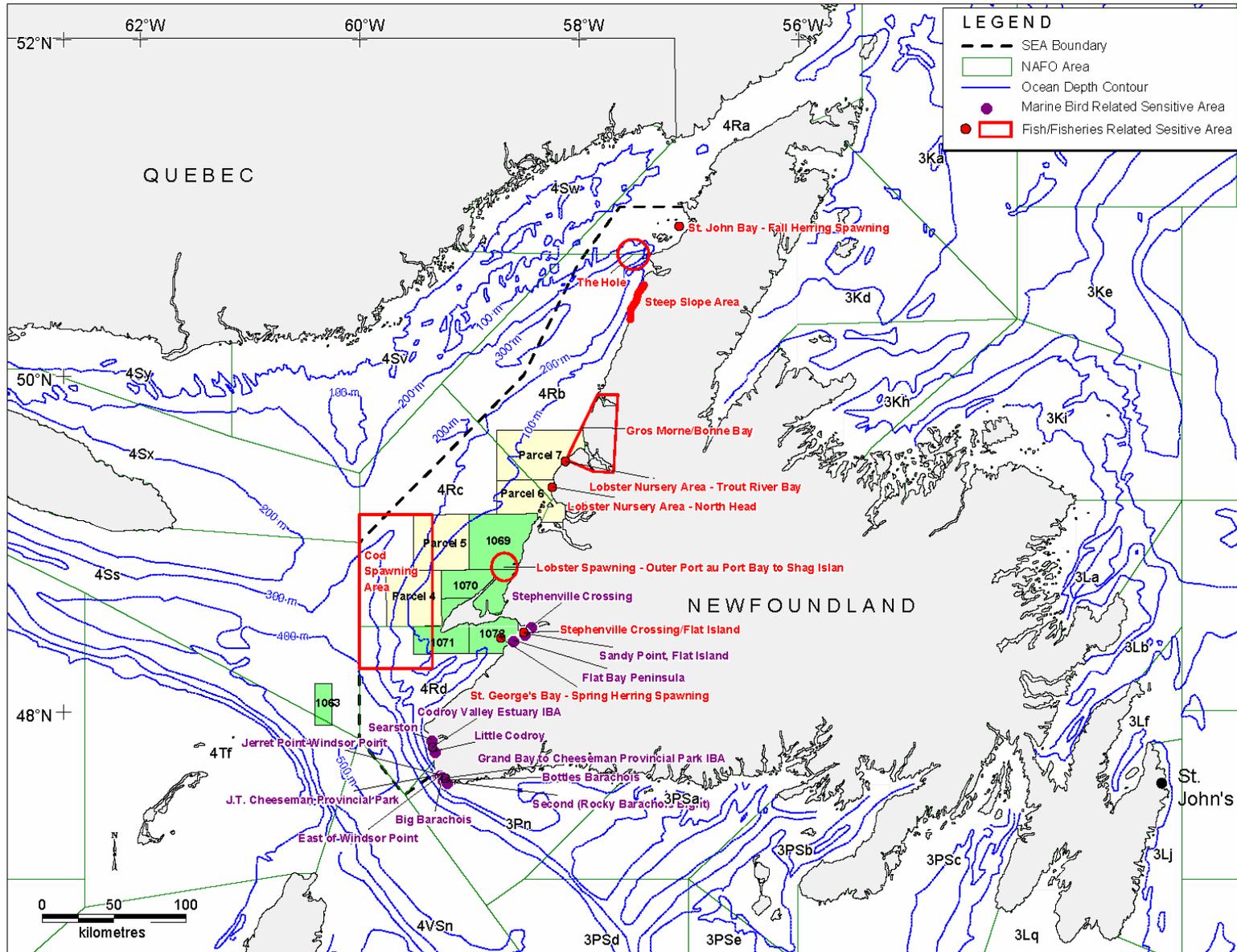


Figure 5.1. Potentially Sensitive Areas within the Study Area.

- Avoidance of sensitive areas and/or times (e.g., spring cod spawning within off Port au Port Peninsula; key lobster spawning and nursery areas, herring spawning in St. George's Bay (spring) and St. John Bay (fall), and
- Shutdowns if certain sensitive species of marine mammals and sea turtles (e.g., Schedule 1 SARA species) are within a pre-determined safety zone.

These mitigations are now more or less standard practice on the East Coast, including Newfoundland and Labrador waters.

Mitigations for exploratory drilling activity include

- Adherence to *OWTG* limits on discharges,
- Screening and selection of chemicals used in drilling,
- Design and implementation of a Waste Management Plan (WMP) to be approved by the C-NLOPB,
- Use of environmental criteria (to minimize emissions) in selection of any new equipment to be installed,
- Well abandonment procedures to be approved by C-NLOPB (mechanical procedures are much preferred over explosive means; if explosives are used, safety zones, appropriate marine mammal and sea turtle monitoring, and restrictions on timing, type, placement and shape of charges may be imposed),
- Selection of supply vessel and aircraft routing to avoid sensitive areas and/or times,
- Communication with fishing industry and other mariners in regard to vessel routing and safety zone, and other issues that may arise,
- Use of seabird observers (also to record marine mammals and sea turtles) on drilling rigs,
- Implementation of a fishing gear compensation program in the event that gear is damaged by an operator.

Mitigations for oil spills include:

- Emphasis on prevention through education, procedures and policies,
- Design and implementation of an Oil Spill Response Plan (OSRP) to be approved by C-NLOPB,
- Immediate spill response material (e.g., absorbents and booms) on the drill rig and/or attendant vessels,
- Fishery compensation programs for damaged gear and lost markets in the event of damage attributable a major spill or blow out,
- Construction of impermeable berm around the drill rig area of an onshore to offshore directional drilling operation.

In addition, existing and future research under ESRF, PRAC, PERD, and others will assist in refining mitigations by filling data gaps (e.g., acoustical environment).

5.5 Conclusion

The Western Newfoundland and Labrador Strategic Environmental Assessment Report concludes that petroleum exploration activity generally can proceed in the Western Newfoundland and Labrador Offshore Area with the application of standard mitigation measures currently applied to offshore exploratory activities elsewhere in the NL offshore. However, the SEA Report identifies sensitive fish habitat in the Study Area. The implementation of non-standard mitigations or restrictions on activities would likely be required in the following areas:

- The Cape St. George Spawning Area off the Port au Port Peninsula – within or adjacent to Parcels 4 and 5 and EL 1071
- The North Head Lobster Nursery Area – within the nearshore area of Parcel 6
- The Trout River Lobster Nursery Area – within the nearshore area of Parcel 7
- The St. George’s Bay Spring Herring Spawning area – within EL 1072
- The outer Port au Port Bay - Shag Island lobster spawning area – within the nearshore area of ELs 1069 and 1070
- The St. John Bay fall herring spawning area – within or adjacent to the northern portion of the Study Area.

The sensitivity of marine-associated birds in the Study Area is also an important issue. There are times and locations throughout the Study Area when and where seabirds, coastal waterfowl and shorebirds are most vulnerable to perturbation, particularly oil spills.

A project-specific environmental assessment will determine the nature and extent of these restrictions or non-standard mitigations for each activity proposed in each area. If it is determined during an assessment process that baseline information is required in order to assess impact predictions, the operator may then be required to undertake data collection. It is likely that during the early exploration phase such data collection can be conducted opportunistically as part of ongoing industry activity. In the event that petroleum resources with development potential are discovered, the C-NLOPB will consult with the appropriate operator, government agencies and interested parties in the public to determine the specifics of data collection effort that would be required to support a future development application.