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Fermeuse Offshore Marine Base Environmental Protection Plan (EPP)

Project: “Fermeuse Offshore Marine Base – Registration #1773”

Proponent: Fermeuse Enterprises Limited

November 28, 2022



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1. INTRODUCTION

1.1. Background

Fermeuse Enterprises Ltd. (FEL) is proceeding with the development of an offshore marine base to service the offshore oil and gas industry in Newfoundland and Labrador out of Fermeuse Harbour. The project is referred to as the “Fermeuse Offshore Marine Base Project”.

The project was registered with the Department of Environment and Conservation in November 21, 2014 based on the requirements defined under the Newfoundland and Labrador Environmental Protection Act and a decision rendered by the Minister on January 18, 2017 releasing the project from the Environmental Assessment process, pending successful completion of an Environmental Protection Plan (EPP). This document is submitted in response to this requirement.

1.2. Purpose

This EPP is a field-ready document describing applicable environmental protection measures associated with activities at Fermeuse Offshore Marine Base Project during the construction phase. It is intended to be a reference document for project personnel for the planning and execution of project-specific activities, as well as a guidance document for contingency planning.

The specific purposes of the EPP are to:

- Document environmental concerns and appropriate protection measures;
- Provide concise and clear instructions to project personnel regarding procedures for protecting the environment;
- Provide a reference document for personnel when planning and/or conducting specific activities and working in specific areas;
- Communicate changes in the program through the revision process; and,
- Provide a reference to applicable legislative requirements and guidelines.

This EPP describes the procedures, responsibilities, and control actions to be taken by FEL personnel in achieving the safe and environmentally sound completion of the work described. The EPP is to be available to all relevant staff and subcontractors to ensure that each is aware of their responsibilities and of the procedures to be used in the management of this work.

This will result in open communication at all levels and serve as a means to achieve continuous improvement. The environmental protection procedures outlined in the following subsections shall be followed, together with those detailed in the conditions of all permits and approvals. In the case of a conflict between these, the order of priority shall be: 1) permit/approval conditions; followed by 2) conditions outlined in the current version of the EPP. In other words: where a provision, statement or any correspondence made under this EPP is inconsistent or conflicts with a provision, term or condition of NL or federal legislation, policy or guidelines, the provision, term or condition of NL or federal legislation, policy or guidelines shall have precedence over the provision, statement or any correspondence made under this EPP.

This EPP is a living document and may not address all of the environmental situations that arise on an individual project. Revisions may be made during the course of a project to reflect unforeseen circumstances or improvements as the result of a process review.

1.3. Organisation Of EPP

The EPP is organized as follows;

- Section 1 – Introduction/Purpose and Description of Activities
- Section 2 – Environmental Protection Procedures
- Section 3 – Contingency Plans
- Section 4 – Contact List
- Appendix A – Description of Fish, Invertebrates and Marine Mammals

1.4. Scope of Application

Environmental Protection Plans developed for each Project phase (e.g. construction, operations, decommissioning, and post-decommissioning) are the foundations that support the Project's overall environmental management system. EPP's are critical for communicating environmental protection procedures and serve as an important reference for those that implement environmental protection measures.

The scope of this EPP is intended for only the site development and construction phases of the Project. EPP's for other major Project phases (e.g. Operations and Decommissioning) will be developed throughout the life of the Project in advance of each phase.

1.5. Environmental Orientation and responsibility

This EPP will be developed and implemented by an Environmental Management Team comprised of FEL resources and the Engineering, Procurement, Construction Management (EPCM) contractor employees.

The successful implementation of an EPP is the responsibility of each FEL employee, as well as all partners, sub-contractors and suppliers. FEL has adopted this approach as a corporate commitment to achieving environmental protection and will provide appropriate resources in the form of personnel, equipment, and materials.

To facilitate implementation of the EPP, FEL has established an Environmental Management Team (EMT) within its overall project organizational structure. The EMT is mandated to provide direction and guidance to ensure that the project is planned, designed and constructed in a manner that is consistent with the environmental policy. The team will be led by the EPCM HSEQ Manager, with input from the EPCM Environment Manager. The HSEQ Manager will function as part of the Project Management Team and coordinate directly with Project Management on all matters pertaining to the implementation of all HSEQ-related plans, including the EPP. In addition to the HSEQ Manager and Environment Manager, the EMT will include a HSE Advisor. The HSE Advisor will be responsible for ensuring that environmental protection and mitigation measures are properly implemented and maintained.

Engineering, Procurement, Construction Management (EPCM) Project Manager is SNC Lavalin. They will be responsible for managing the EPCM contract, including the Project's environmental management system, and reporting directly to the FEL's Project Manager.

EPCM Construction Manager will be located on site and responsible for overseeing construction management and Project development. The Construction Manager will report directly to the EPCM Project Manager.

HSE Supervisor will be an FEL employee who will report directly to FEL's Project Manager. The Supervisor will work closely with the EPCM toward the implementation of this EPP for Site Development and Construction Phase, initiate/participate in team meetings, be involved in obtaining required environmental permits and authorizations, and will be responsible for site environmental monitoring.

The HSE Supervisor has the authority to provide direction to contractors, including issuance of stop work orders where contractors are not in compliance with approved health, safety or environmental procedures. He/she will be a resource to the Project Manager and Construction Manager and contractors and provide advice on all environmental matters as they arise.

Contractors will be called on to undertake the construction of the Project. The contractors are responsible for implementing environmental protection procedures as outlined in this EPP, and shall comply with all relevant regulations, guidelines, permits, approvals and authorizations. This EPP will be one of several Project documents that will be used to evaluate the contractors' environmental performance.

1.6. Description of Activities

The construction of the marine base involves demolition of the existing wharf structures in Lumley Cove. Following the demolition and removal of these structures the contractor will begin site clearing, excavation and backfilling, as well as phased construction of the new wharf structures. Clearing and excavation onshore will occur only when absolutely necessary to maintain construction schedule and will be kept within the project footprint.

The activities related to construction include:

- Tree cutting, grubbing and clearing in areas near the existing plant, or in areas to be developed such as Sheep's Head;
- Top soil stripping and site leveling;
- Construction of site road;
- Construction of a Marginal Wharf;
- Infill behind wharf structures;
- Installation of site services, e.g., water, sewer, electrical, fuel, etc.;
- Installation of new site buildings, e.g., administration, warehouses, fabrication shops, etc.;
- Paving and landscaping

The project will be carried out in a number of construction phases over 5 to 10 years depending on demand from the offshore and other industrial customers as follows;

- i 2022 will finalize focus on optimization of concept design for marine structures and, in particular, will quickly move to an onsite geotechnical program to enable completion of detailed design. This geotechnical program was originally planned for 2021 but was suspended for operational challenges secondary to COVID-19 limitations.
- ii 2023 will involve start of site clearing, preparations for the demolition of existing marine infrastructure in Lumley Cove, and the completion of detailed design.
- iii 2023-2024 will involve a site leveling construction contract. This will involve the excavation and removal of overburden material to enable the development of an upland area. This phase will also involve the construction of the access road to the wharf and the commencement of marine terminal construction.
- iv 2025 will involve the completion of access road and the first phase of the marine terminal construction.
- v 2026 will involve installation of site utilities and foundations for buildings supporting Phase 1 development.
- vi 2027 will involve site paving and completion of Phase 1 development.
- vii 2028 Operations (covered under separate EPP)

1.7. Environmental Policy

FEL is committed to conducting all activities in a manner that limits adverse effects on the physical and social environment through the respectful use of the Environment. FEL's Environmental Policy ensures that environmental objectives, targets, and policies are communicated and adhered to by all employees, suppliers, contractor, sub-contractors and site visitors.

It is the intention of FEL to minimize any affects our activities may have on the environment, and to work in accordance with this established EPP process and all applicable environmental legislation. FEL commits to the following parameters:

- As part of its commitment, FEL will meet or exceed applicable laws, regulations, and other requirements.
- FEL commits to environmental awareness, action, strong communications and continuous improvement in environmental practices.
- FEL has incorporated environmental considerations into project planning and operating practices, as required under this EPP.
- FEL is committed to promote sustainable development through pollution prevention and recycling, wherever possible.
- FEL will reduce the amount of waste to the lowest amount reasonably possible;
- Disposing of all waste, both hazardous and non-hazardous, will be in accordance with environmental legislation;
- Providing employees, contractors and sub-contractors, as well as site visitors, with information on FEL's environmental goals and relevant issues;
- Conducting environmentally sensitive work practices so that the surrounding environment is protected;
- Reusing and/or recycling all possible products at the workplace; and

- Where environmental hazards are identified, these shall be assessed, and appropriate controls implemented.
- FEL's policy shall be fully implemented into all aspects of project development and reviewed on an annual basis.

2. ENVIRONMENTAL PROTECTION PROCEDURES

2.1. Introduction

An environmental impact is a change to the environment, positive or negative. For the purposes of this EPP, negative impacts resulting from project activities are the primary concern. Project staff and site crews shall possess an understanding of the sensitive site environmental components that could be impacted as a result of the project's activities, including, but not limited to:

- Wildlife and wildlife habitat, including migratory and breeding birds,
- Historic resources;
- Vegetation;and
- Fish and fish habitat

As part of FEL's Environmental Preview certain potentially sensitive areas have been identified, e.g., historic resources, in consultation with the Department of Tourism, Culture and Recreation, Provincial Archaeology Office (PAO). FEL will not carry out destructive land developments without due care and completion of any recommended investigative processes.

Each phase of construction includes similar materials and construction methodology is similar. The main changes in each phase is location and magnitude of construction.

For each of these areas, environmental guidance is provided below for the activities that are anticipated during construction.

2.2. Survey Right-of-Way and Site Vegetation Clearing

Potential Impact: Vegetation clearing (eg. Trees, shrubs and ground cover) will be required for site development and access road construction. Potential environmental concerns include the loss of habitat, the sedimentation of watercourses, uncontrolled burning of slash, stockpiling vegetation in or near watercourses, and disturbance or destruction of historic resources.

Mitigation Measures:

- Clearing or removal of trees, shrubs and ground cover will be restricted to only those areas required for the work;
- Clearing activities will comply with the requirements of all applicable permits;
- Clearing will consist of cutting as close to the ground as possible, with stump heights not exceeding 10cm, and disposing of all standing trees, as well as removing all shrubs

and ground cover, debris and other perishable materials will be removed from the area and transported to an approved disposal site;

- An excavator equipped with a mulcher, chain saws or other hand-held equipment will be used in clearing vegetation except where alternative methods or equipment are approved. The use of mechanical clearing methods, such as bulldozers, will not occur except where it can be demonstrated that there is no merchantable timber, and where the resulting terrain disturbance and erosion will not result in the loss of topsoil or the sedimentation of nearby waterbodies. All chainsaw operators will be equipped with an adequate fire extinguisher, as well as shovels and axes;
- Merchantable or usable wood will be removed by a local contractor or given to locals for firewood;
- There will be no burning on site;
- Slash and any other construction material or debris will not be permitted to enter any waterbody, and stored at a safe distance for later disposal;
- Cleared vegetation will be used to restore habitat where practical;
- Employees will not destroy or disturb any features indicative of a cultural or archaeological site. Such features will be avoided until a report has been made to the Provincial Archaeology Office and clearance to proceed has been received.

2.3. Fuel and Hazardous Materials

Potential Impact: A variety of potentially hazardous materials will be used during project activities, e.g. fuel, hydraulics, etc. The primary concern regarding the use and storage of fuel or other hazardous materials is the uncontrolled or accidental release into the environment. Bay Bulls Properties Ltd. recognizes the potential for negative impacts as a result of accidental releases to the environment, including adverse effects on terrestrial and aquatic habitat and species, soil, surface and groundwater quality, and human health and safety.

Mitigation Measures: The storage, transportation and use of fuel and other hazardous materials is regulated by The Storage and Handling of Gasoline and Associated Products (GAP) Regulations and Amendments, Transportation of Dangerous Goods Act and Dangerous Goods Transportation Act. In addition to those conditions set forth by the above regulations, FEL will mandate the following:

- Any soil contaminated by small leaks of fuel, oil or grease from equipment will be cleaned up and disposed of in accordance with the applicable regulations, under the provincial Environmental Protection Act and Used Oil Control Regulation. The Used Oil Control Regulation will be used as a guideline to the Department of Environment and Climate Change (DOEC) requirements for such disposal;
- Smoking will not be permitted except in designated areas and not within 10 meters of fuel or hazardous material storage areas;
- A complete inventory of the hazardous materials on the job site will be maintained according to the Workplace Hazardous Materials Information System (WHMIS) Regulations and will be made available to regulatory agencies upon request or in case of any emergency;

- All sub-contractors will be required to observe strict compliance with the requirements of WHMIS regarding employee training, use, handling, storage, and disposal of hazardous materials and regarding labeling and provision of Material Safety Data Sheets, as required by WHMIS legislation;
- All persons handling dangerous goods will show proof of certification of training in the transportation of dangerous goods as required under the Transportation of Dangerous Goods Act (1992) and Dangerous Goods Transportation Act (2006). Contractor staff will be trained in the requirements of the Acts;
- Tanks will be located in areas where spills, should they occur, are not likely to flow directly to watercourses, water bodies, ditches or the ocean;
- Oils, grease, gasoline, diesel or other fuels or any material deemed to be hazardous will be stored at least 100 meters from any watercourse or the ocean;
- Temporary fuelling or servicing of mobile equipment will not be allowed within 30 meters of watercourses, water bodies, drainage systems or ecologically sensitive areas. For equipment of limited mobility where the 30 meters buffer zone cannot be practically achieved, adequate drip and spill containment will be provided during the refueling operation;
- Fuel and other hazardous materials storage areas and non-portable transfer lines will be clearly marked or barricaded to protect against damage by moving vehicles. The markers will be visible under all weather conditions. Barriers will be constructed in compliance with the provincial Storage and Handling of Gasoline and Associated Product Regulations (58/03);
- Storage areas will be equipped with appropriate firefighting equipment;
- Waste oils, lubricants and other used oil shall be retained in a tank or closed container and will be disposed of regularly under contract with a licensed used oil collector in accordance with the Used Oil Control Regulations (82/02);
- Greasy or oily rags or other materials at risk of spontaneous combustion will be deposited and stored in an appropriate receptacle. This material will be removed from the work site on a regular basis and shall be disposed of in an approved existing waste disposal facility. Removal of these materials from the job site is regulated under the Transportation of Dangerous Goods Act;
- All hazardous materials will be handled according to the provincial Environmental Protection Act (2006) and disposed of in accordance with government laws and regulations at an approved off-site hazardous waste disposal facility;
- Regular inspections of hydraulic and fuel systems on machinery will be done, and leaks shall be repaired immediately upon detection. Worn or damaged hoses, seals and fittings will be promptly repaired or replaced.
- Fuelling, routine maintenance activities, and lubrication of vehicles and mobile equipment will occur in designated and approved locations. Fuelling and lubrication of equipment will occur in such a manner as to minimize the possibility of contamination to soil or water;
- When fuelling equipment, operators will:
 - Be in attendance for the duration of the operation;

- Use leak-free containers and reinforced rip and puncture-proof hoses and nozzles;
 - Use hoses that have a design pressure rating of at least 150% of the maximum head of the system; ○ Lock out all tank nozzle valves except the valve currently in use; ○ Seal all storage container outlets except the outlet currently in use;
 - Ensure drip pans, and other precautionary measures as required, are in place prior to the start of refueling activities;
- Fuel unloading facilities will be equipped with drip pans to collect hose drainage and drips. Hoses or pipes used for fuel transfer will be equipped with properly functioning and approved check valves, spaced to prevent backflow of fuel in the case of failures.
 - Any soil contaminated by small leaks of fuel, oil or grease from equipment will be cleaned up and disposed of in accordance with the applicable regulations, under the provincial Environmental Protection Act (2006) and Used Oil Control Regulation (82/02). The Used Oil Control Regulation (82/02) will be used as a guideline to the DOEC requirements for such disposal.
 - All necessary precautions will be implemented to prevent the spillage, misplacement, and loss of fuels and other hazardous materials used during the construction phase.
 - A fuel and other hazardous materials spill contingency plan, and appropriate emergency spill equipment, will be in place on site (Section 3.2).
 - All spills of fuel and hazardous materials will be reported immediately to the HSE Advisor. Any spill to the marine environment or spills of 70 L or more on land will be reported immediately in accordance with provincial regulation.
 - Any spill on land regardless of size that may enter a waterbody frequented by fish will be reported immediately to Canadian Coast Guard Environmental Emergencies: (709) 772- 2083 or 1-800-563-9089, as required by the Fisheries Act and Section 201 of Canadian Environmental Protection Act (CEPA). All such spills will also be reported immediately to the HSE Advisor.
 - Small quantities of hazardous material (drums, jerry cans and other containers under 20 L) will be stored in a secure location protected from weather and freezing, as well as vehicle traffic. Where hazardous materials are to be stored outdoors, a designated area will be established and fitted with appropriate secondary containment. If required, a hazardous waste storage area will be constructed in compliance with all applicable federal and provincial legislation.
 - Concrete additives and form release agents will be stored in approved containers and transferred and used in a manner that avoids loss of material to the environment;
 - Before installing fuel storage tanks, the necessary approvals and permits under The Storage and Handling of Gasoline and Associated Products Regulations (58/03) will be obtained;
 - All bulk storage of fuel products and other hazardous materials on site will be stored in aboveground, self-dyked tanks in compliance with The Storage and Handling of Gasoline and Associated Products Regulations (58/03);

- Tanks for fuels and other hazardous materials will be self-dyked or will be positioned over an impervious mat, surrounded by an impervious dyke of sufficient height to contain:
 - Where a dyked area contains only one storage tank, the dyked area will retain not less than 110% of the capacity of the tank; and
 - Where a dyked area contains more than one storage tank, the dyked area will retain not less than 110% of the capacity of the largest tank or 100% of the capacity of the largest tank plus 10% of the aggregate capacity of all the other tanks, whichever is greater.
- All storage facilities will be located away from construction activity, with secondary containment, and inspected on a regular basis in compliance with government laws and regulations; and
- While there is no expectation that hazardous substances used throughout the duration of this project will be in quantities or volumes that will trigger action under the Environmental Emergency Regulations under Section 200 of Canadian Environmental Protection Act, 1999 (CEPA), it is important to note that certain substances (eg. propane, gasoline, etc) are listed in Schedule 1 of these Regulations and, therefore, should be consulted prior to bringing these substances to site.

2.4. Sewage and Solid Waste Disposal

Potential Impact: solid waste (e.g. domestic waste), as well as sewage must be properly disposed of, or risk becoming a hazard to human health and safety. Improperly disposed of waste may also attract wildlife and result in human-wildlife conflicts.

Mitigation Measures:

- All activities associated with the current contract are subject to the Waste Management Regulations, under the Environmental Protection Act.
- Waste accumulated on site prior to disposal will be confined so that it does not pose an environmental or health hazard. Waste receptacles will be installed at all active work areas for use by workers. Waste receptacles will be bear-proof and secured to prevent movement under severe weather conditions.
- Work areas will be kept clear of debris, waste and litter to reduce the potential for attracting wildlife and reducing potential interactions with wildlife.
- Construction and demolition debris are to be covered to prevent blowing dust and debris.
- No waste material will be deposited in or within 100 meters of a watercourse.
- Burning of waste is strictly not permitted.
- Any vehicles carrying waste offsite will be secured to prevent windblow or other loss of load during transportation.
- Regular inspections of the work site will be undertaken to confirm it is left rubbish free at all times.

- Sewage will be handled by temporary portable toilets or washcars located around the construction site and will comply with all health and safety regulations, the Department of Health guidelines, the Environmental Protection Act (2006), and Environmental Control Water and Sewage Regulations, 2003 (65/03); and
- Sewage waste will be trucked off-site by a licensed waste management firm for treatment and disposal.

2.5. Equipment Movement

Potential Impact: environmental concerns associated with the operation and use of construction equipment, including atmospheric emissions, noise, accidental spills and chronic leaks, etc. Emissions, spills and direct physical disturbances as a result of equipment can adversely affect surrounding resources.

Mitigation Measures:

- Equipment delivered to the worksite will be in good operating condition and kept in proper operating condition.
- Equipment will be routinely inspected for leaks and mechanical conditions that have the potential to result in spills of fuel, lubricating oils, or hazardous materials.
- Fuelling and routine maintenance operations will be conducted in accordance with appropriate standards and guidelines.
- Equipment maintenance and fuelling activities will be performed by a qualified person at a designated site located away from any water body or wetland.
- Equipment use will be limited to approved locations.
- Fuel will not be stored near generators or located adjacent to water bodies and drip pans will be placed under equipment located near water bodies.
- Spill kits will be maintained on site. Each piece of equipment will have a portable spill kit on board. In addition, drum spill kits will be strategically located near working areas.
- Equipment working in or very near the marine environment (eg. long-reach excavator for wharf construction) shall be equipped with environmentally friendly hydraulics as appropriate; and
- Maintenance and inspections will be documented, and records stored on site under the auspices of the HSE Advisor.

2.6. Stream Crossing

Potential Impacts: The installation of watercourse crossings has the potential to impede or block fish migration and destroy fish populations or fish habitat. Culvert installations if improperly installed can create structural and flow velocity barriers to the passage of fish. The installation of bridges, culverts, and fording sites if improperly carried out can result in siltation and pollution which can kill fish or incubating eggs and ruin spawning locations.

Mitigation Measures:

- The installation of watercourse crossings in areas of fish habitat should be scheduled to avoid instream work during periods of high environmental sensitivity such as fish migration, spawning, fish egg incubation and fry emergence. The installation should not impede fish migration or effect fish or incubating eggs.
- The Federal Fisheries Act contains clauses which govern the alteration of fish habitat. Therefore, approval from Fisheries and Oceans, Canada, may be required in addition to approval from the Department of Environment and Climate Change (DOEC).

2.7. Grubbing and Disposal of Unsuitable Material

Potential Impact: The principal concerns associated with grubbing and disposal of related debris are the potential adverse effects on historic resources, as well as terrestrial ecosystems and water quality, including destruction of terrestrial habitat and potential for siltation, erosion and run-off.

Mitigation Measures:

- Grubbing of the organic vegetation mat and/or the upper soil horizons will be restricted to the minimum area required.
- The organic vegetation mat and upper soil turf material that has been grubbed will be spread in a manner to cover inactive exposed areas where there will be no further development.
- Any surplus of such material will be stored or stockpiled for site rehabilitation and revegetation purposes in landscaped areas. Grubbed material will be buried with two feet of soil cover to prevent erosion and loss of nutrients.
- Measures will be implemented to reduce and control runoff of sediment-laden water during grubbing, and the re-spreading and stockpiling of grubbed materials. Erosion control measures will be implemented in areas prone to soil loss.
- Grubbing activities will adhere to buffer zone requirements.
- During grubbing, care will be taken to ensure that grubbed material will not be pushed into areas that are to be left undisturbed; and
- Discovery of historic resources will be handled according to the procedures outlined in contingency plans, Section 3.4.

2.8. Excavation Backfill and Grading

Potential Impact: The principal concerns for excavation backfilling and grading include the potential for impacts on aquatic systems, loss of terrestrial habitat and potential impact to historic resources.

Mitigation Measures:

- Excavation and backfilling activity shall be undertaken in compliance with good construction practice and shall comply with all other relevant regulations.

- Excavation areas shall be developed in a controlled manner to minimize any environmental impacts. The following protection procedures shall be implemented to minimize disturbance and facilitate rehabilitation:
 - A buffer zone of undisturbed vegetation shall be maintained between excavations and watercourses, waterbodies, and ecologically or historically sensitive areas.
 - The area to be excavated shall be clear cut of all vegetation prior to grubbing, excavation, or removal of any material.
 - All stumps, organic matter and topsoil shall be stripped from the area to be excavated and stockpiled away from uncleared areas or removed from site; stockpiles shall be kept away from the area of excavation.
 - Separate overburden piles shall be developed where this material is present; topsoil and the underlying overburden shall not be mixed if possible.
 - Upon completion of excavation, no excavated rock faces or benches shall be left at a height of greater than 10 meters.
- To prevent sedimentation of waterbodies, watercourses, and ecologically sensitive areas, sediment control measures (silt fence, etc) shall be established.
- Erosion control elements shall be cleaned on a regular basis to ensure that the retention capacity is always maintained.
- If these measures are deemed inadequate, additional measures, including but not limited to, a sedimentation pond, collection ditches, swales, check dams, sumps, and pumps, will be installed as needed.
- The Total Suspended Solids (TSS) content of construction-altered water that is released into a natural waterbody shall not exceed 30 milligrams per litre.
- Dust from earth from earth moving operations, storage, and handling shall be controlled with water as required during times when temperatures are above freezing.

2.9. Drilling and Blasting

Potential Impact: If required blasting activities can lead to destruction of vegetation, noise disturbances to wildlife, and the potential effects on fish, aquatic animals, and historic resources.

Mitigation Measures:

- All blasting work will be conducted in compliance with the appropriate permits and/or approvals and authorizations.
- The handling, transportation, storage and use of explosives will be conducted in compliance with all applicable laws, regulations, orders of the Newfoundland and Labrador Department of Government Services (NLDGS) and Newfoundland and Labrador Department of Natural Resources (NLDNR), and the Dangerous Goods Transportation Act (2006).
- All personnel will comply with site-approved safe blasting procedures.

- Blasting activities will be coordinated and scheduled to minimize the number of blasts required. To minimize the seismic effect, blasting patterns and procedures will be used to reduce the shock wave and noise.
- Blasting will not occur in the vicinity of fuel storage facilities.
- Use of explosives will be restricted to authorized personnel who have been trained in their use.
- Explosives and auxiliary materials will be stored as stipulated in relevant legislation, in compliance with all permits.
- Explosives will be used in a manner that will minimize damage to surrounding objects by controlling, through the best methods possible (including time-delay blast cycles), the scatter of blasted material beyond the limits of activity.
- Historic resources and features will not be disturbed during blasting. and
- A pre-blast check of all artesian wells and basements of houses in the local area will be completed prior to any blasting activity; and
- Where blasting activities will take place near a water body, all blasting activities shall follow the “Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters” (Wright and Hopky, 1999)

2.10. Pumps and Generators

Potential Impact: accidental spills of fuel or lubricating oil, as well as chronic leaks, may contaminate water bodies or surface soils.

Mitigation Measures:

- Fuel will not be stored near generators or adjacent to water bodies.
- Drip pans will be placed under all generators, light plants, etc.
- Hoses and connections on all equipment will be inspected daily for leaks and drips; and
- All leaks and spills will be reported immediately to FEL’s HSE Advisor.

2.11. Noise

Potential Impact: Project activities have the potential to generate noise from the use of heavy equipment and the handling of various construction materials. Noise generation has the potential to disturb nearby residents, as well as cause negative effects on wildlife in the area.

Mitigation Measures:

- FEL will adhere to all permits and approvals, and comply with the relevant legislation with respect to noise.
- All equipment will be fitted with standard and well-maintained noise suppression devices.
- All vehicles and generators will have exhaust systems and noise abatement equipment regularly inspected and operating properly.
- All materials handling will be carried out in such a way as to avoid unnecessary generation of noise; and
- Idling of construction vehicles will be kept to a minimum.

2.12. Vessel Operations

Potential Impact: The main concerns arising from construction activities occurring in or near the marine environment include noise (eg. seabird avoidance, human nuisance) and the potential for disturbances to fish and fish habitat, (eg. fuel spill).

Mitigation Measures:

- Noise mitigation measures are covered in Section 2.11 Noise.
- All land-based equipment will be serviced and fuelled on land at least 100 meters from the marine environment or in designated areas designed for spill containment.
- Regular mechanical inspections of equipment working in or near the marine environment will be made and where required, repairs undertaken immediately.
- As appropriate, heavy equipment in proximity to the marine environment (eg. long reach excavator) shall be equipped with environmentally friendly hydraulics. If alternate equipment is used (eg. crane equipped with clam), the suitability of environmentally friendly products shall be reviewed and used wherever possible.
- Emergency spill equipment will be available onsite, including portable spill kits on all equipment and drum spill kits strategically located around site.
- Any disturbed areas along the shoreline will be immediately stabilized to prevent erosion and siltation. Shoreline protection will be provided as required.
- Stockpile laydown areas adjacent to the marine environment shall be greater than 15 meters from the high-water mark.
- Boats, barges or other vessels used to support in-water works will be inspected for sea worthiness prior to use. A daily log of inspections for sea worthiness and mechanical soundness will be maintained for each vessel; and
- Any effluent discharged into receiving waters must comply with the Environmental Control Water and Sewage Regulations; and
- On-water operations will be suspended when weather conditions exceed vessel/equipment capabilities.

2.13. Sediment and Erosion Controls

Potential Impact: Construction activity near shorelines, as well as equipment/vehicle traffic, have the potential to cause surface soil erosion and result in the deposition of fines into the marine/aquatic environment, leading to negative effects on fish and fish habitats.

Mitigation Measures:

- All work areas will be monitored for erosion and appropriate repair action taken as necessary.
- All work will be performed in such a manner that deleterious substances including, but not limited to, sediment, fuel, and oil do not enter water bodies adjacent to the development site.
- Siltation control structures (i.e., silt curtains, cofferdams, and/or sediment fences) will be constructed prior to beginning any activities involving work along the shoreline or near areas of high runoff potential. The necessary and appropriate measures will be determined on site. Accumulated sediment will be removed from control structures to maintain the effectiveness of the systems.
- Inspections and maintenance of erosion and sediment controls will be undertaken on a regular basis and following significant rain events; and
- Construction activities will be coordinated to avoid periods of extreme precipitation and not coincide with sensitive periods for fish as identified by DFO.

2.14. Buffer Zones

Potential Impact: Improper use or compliance with required buffer zones could allow erosion due to construction activities to enter water bodies resulting in damage to water quality, fish, and fish habitat. It could also endanger potential historic resource sites.

Mitigation Measures:

- Temporary fuelling or servicing of mobile equipment will not be allowed within 100 meters of watercourses, water bodies, drainage systems or ecologically sensitive areas;
- Stockpile laydown areas adjacent to the marine environment shall be greater than 15 meters from the high water mark; and
- For equipment of limited mobility where the 100 meters buffer zone cannot be practically achieved, adequate drip and spill containment will be provided during the refueling operation.
- Buffer zones will be established to protect potential historic sites. Note the project has established a 20 meter buffer around the western portion of CfAf-37 as identified in the Historic Resources survey as part of the Environmental Assessment
- Section 3.4 provides Contingency Plans for dealing with potential Historic Resource sites.

2.15. Dust Controls

Potential Impact: Dust generation related to construction activities may result in human health effects, as well as negative impacts on freshwater ecosystems and vegetation.

Mitigation Measures:

- Equipment will have the required dust and emission control measures.
- Material stockpiles will be sheltered from the wind or otherwise maintained (e.g. sprayed with water) to prevent generation of air-borne particulates and placed in locations that consider the prevailing wind directions and locations of sensitive receptors;
- Dust control will be provided for unsealed roads, construction activities and open soil areas using water or other suitable method.
- Care will be taken to maintain dust suppression near sensitive areas.

2.16. Vehicle Traffic

Potential Impact: proposed construction activities will be supported by vehicles ranging in size from light trucks to heavy equipment, all of which can result in direct physical disturbances that can impact air quality and terrestrial and aquatic environments.

Mitigation Measures:

- Appropriate speed limits and road signage will be established and enforced to minimize environmental disturbance and accidents.
- Equipment and vehicles will yield the right of way to wildlife.
- All project vehicles will be properly inspected and maintained in good working order, including all exhaust systems, mufflers and any other pollution control device.
- Travel in areas outside designated work areas will not be permitted.
- Dust control will be undertaken in accordance with Section 2.15; and
- Site roads will be maintained as appropriate and monitored for signs of erosion; appropriate action will be taken to repair roads as necessary.

2.17. Waste Management Plan

The objectives of the WMP are to:

- Protect the health and safety of all site personnel.
- Ensure compliance with all applicable acts, regulations, and standards.
- Prevent adverse impacts to the environment; and
- Promote the 4 R's (reduce, reuse, recycle, recovery) in an effort to reduce the volumes of waste generated and ensure they are disposed of properly.

2.17.1. Waste Classification and Handling

2.17.1.1. General

All wastes generated shall be handled, stored, transported, and disposed of in accordance with the *Environmental Protection Act* and all applicable regulations and guidelines, as well as contract requirements and Section 2.4, Waste Management, of the contract-specific Environmental Protection Plan.

- All non-industrial, non-hazardous waste shall be placed in closed containers and, on at least a weekly basis, removed from the Site for disposal at an approved facility; and
- Hazardous industrial waste shall be disposed of by a licensed operator at an authorized waste disposal site;

Waste *disposal* will only be through approved waste contractors.

2.17.1.2. Non-Hazardous Waste

It is estimated that non-hazardous waste generated as a result of this will include typical civil construction including, but not limited to:

- Scrap metal, concrete debris, timber, etc.;
- Packaging waste: cardboard, plastic, pallets, etc;
- Office and lunch room waste; and
- Miscellaneous waste: equipment tires, aerosol cans, etc.

Where possible, waste shall be removed from site for reuse. If necessary for repairs or maintenance, some waste materials may be stored on site in a designated area (e.g. laydown area). Materials that cannot be recycled or reused shall be transported directly to a landfill site approved for the handling of construction waste.

All other non-hazardous waste material, including office and lunchroom waste, shall be separated based on the potential for recycling and the need for segregation for final disposal at the nearest sanitary landfill. Recyclable materials shall be placed in appropriate, clearly marked bins. Opportunities shall be explored to expand the list of recyclables, particularly for wastes generated in large quantities. All food waste shall be collected and disposed of using covered collection bins to minimize the attraction of wildlife.

Mitigation measures;

- Waste receptacles will be installed at all active areas for use by construction personnel.
- Waste management procedures will comply with federal, provincial and municipal waste management regulations, as well as additional municipal and disposal facility requirements.
- Waste generated will be handled, stored, transported and disposed of in accordance with all applicable acts, regulations and guidelines.
- Solid wastes will be sorted at the facility into recyclable/reusable and non-recyclable.

- Material not deemed acceptable for recycling/re-use will be disposed of in an acceptable manner at an approved landfill site.
- Certified contractors will be retained for safe transport of solid waste to the approved facility.
- Recyclable material will be collected and transported to a licensed recycling facility using local services authorized by FEL.
- An effort will be made to minimize the amount of waste generated by application of the 4-R principals (reduce, reuse, recycle, recover) to the extent practical.
- Domestic waste will be gathered daily and stored in closed containers until disposed of at an approved waste disposal site.
- Food waste will be stored in a manner that ensures that wildlife will not be attracted.
- Appropriate receptacles will be placed in designated smoking areas for the disposal of cigarette butts; and
- Waste containers will be covered to prevent the escape of windblown debris and will be clearly labelled.

2.17.1.3. Hazardous Wastes

Hazardous wastes include all liquids or solids designated as hazardous wastes under federal or provincial regulations, including contaminated soil, waste hydrocarbon liquids (e.g. fuel, used oil and grease), coolants, solvents, and a wide variety of other materials, as well as any containers, etc. with residual amounts of hazardous materials. In addition, waste chemicals or materials of unknown properties shall be considered hazardous waste unless it can be shown otherwise.

All transport, handling, temporary storage, and disposal of hazardous waste shall comply with the appropriate legislation, including Used Oil Control Regulations (82/02), The Storage and Handling of Gasoline and Associated Products Regulations (58/03), Transportation of Dangerous Goods Act (1992), Dangerous Goods Transportation Act (2006) and Environmental Protection Act (2006).

Spills, leaks, or incidents involving hazardous wastes shall be cleaned up and reported as per Section 3.2, Fuel and Hazardous Materials Spills Contingency Plan of the Environmental Protection Plan.

Greasy or oily rags and other materials at risk of spontaneous combustion shall be deposited and stored in an appropriate receptacle. This material shall be removed on a regular basis and disposed of at an approved waste disposal facility.

Contaminated soil resulting from small leaks of fuel, oil, or grease shall be cleaned up and disposed of at an approved facility and in accordance with applicable regulations.

Handling, storage, and disposal of waste oils and lubricants will be in compliance with the NL Used Oil Control Regulations and will include the installation on site of a vacuum-sealed, double walled containment unit, as well as development of a waste oil contingency plan (exact unit and site location to be determined upon full mobilization, as well as submission of the associated permit). Waste oil will be collected and disposed of by an approved waste collection and disposal company.

2.17.1.4. Other Wastes

Washroom facilities with established plumbing, sewage management and hot/cold water, including shower facilities, are available at FEL's offices on site. In the event those established facilities become unavailable, portable bathroom/washcar facilities shall be established to take their place. In that case, human waste shall be collected using a licensed removal service and sent to a licensed disposal facility in St. John's, NL.

2.17.1.5. Training

Components of the WMP shall be reviewed regularly at site during Tool Box Talks, site meetings, etc. These sessions shall be used to inform crew of: 1) FEL and Contractor commitments to waste management, and 2) individual responsibilities when it comes to waste management on site. In addition, these sessions shall be used to provide updates on the WMP. All crew shall be encouraged to contact their supervisor with any questions or comments they have throughout the job.

All workers on site shall be made aware of the location of collection bins and their intended use (i.e. recycling, hazardous waste, etc). The bins shall be placed in an appropriate location so that run-off or contamination is not an issue.

3. CONTINGENCY PLANS

3.1. Introduction

Contingency plans have been developed to address accidents and unplanned incidents that may occur on the project during the Construction Phase. These contingency plans will be modified as required throughout the life of the project.

The following contingency plans have been developed for this project:

- Fuel and Hazardous Materials Spills
- Forest Fires
- Wildlife Encounters
- Discovery of Historic Resources
- Discovery of a Species At Risk

FEL supports preventative measures as the first line of defence against the possibility accidental incidents and the project site team will have active control measures in place.

3.2. Fuel and Hazardous Material Spills

Spills or leaks of fuel and other hazardous materials have the potential to be damaging to vegetation, soil, surface water, groundwater, wildlife, marine organisms, historic resources and human health and safety.

FEL shall take all necessary precautions to prevent the spill of fuel or other hazardous materials at the site including, but not limited to, the following:

- Implementing the WHMIS program throughout the site in accordance with the Newfoundland Occupational Health and Safety Act and regulations governed by the Workplace Health, Safety and Compensation Commission of Newfoundland;
- Ensuring all employees involved with hazardous materials are appropriately trained; and
- Ensuring fuel storage at the site is undertaken in compliance with applicable provincial and federal regulations, codes and guidelines.

FEL will lead and coordinate any field response to environmental incidents related to their activities. During the construction phase it is anticipated that if an accidental spill occurred the spilled material will likely be fuel, lube/oil, and hydraulic fluid originating from equipment wear and tear and/or malfunction.

In the event of an accidental spill, procedures for responding to hydrocarbon spills outlined herein, shall apply in order of priority:

1. Assess the situation (Safety First). Personnel shall not approach the spill area without appropriate Personal Protective Equipment.
2. Identify priorities while considering the threat to people, property, and the environment.

3. Initiate the appropriate response actions:
 - a. The individual who discovers the leak or spill shall make a reasonable attempt to immediately stop the leakage and contain the flow, where safe to do so.
 - b. Contact emergency personnel and request additional support if necessary.
 - c. Reporting: spill location, type of product, estimated volume and terrain condition at the spill site will be determined and reported immediately to FEL's HSE Advisor for further reporting to authorities, as appropriate.
 - d. Initiate the containment and recovery of any free product and/or contaminated material.
4. Dispose of all waste material in the appropriate manner.
5. Restore the site to the satisfaction of the Project representative or governing regulatory body.
6. Document and investigate as required. Reportable spills include:
 - a. A spill or leak greater than 70 litres on land;
 - b. A spill or leak on land, regardless of quantity, that has the potential to contaminate nearby property or enter a water body or sewer; or
 - c. A spill or leak in the water, regardless of quantity.

Spills meeting the above criteria shall be reported immediately to regulatory authorities via the Environmental Emergency Report Line at (709) 772-2083 or 1-800-563-9089.

The following criteria shall be used to make decisions on containment and clean-up procedures:

1. Minimize danger to persons;
2. Minimize pollution of watercourses;
3. Minimize area affected by spill;
4. Minimize the degree of disturbance to the area and watercourses during cleanup.

FEL will take all necessary precautions to prevent a reoccurrence of the incident and the HSE Advisor shall prepare a written report as required.

All fuel-powered equipment shall contain appropriately sized spill kits (23 Litres). In addition, 45-gallon drum spill kits shall be strategically placed throughout the site and moved as required to effect progress along the access road. In addition, a sea-can clearly marked as "Spill Response Equipment" shall be located in the lay down area. The contents of spill kits shall be routinely inspected and supplies replenished as necessary.

3.3. Wildlife Encounters

Wildlife encounters pose a potential risk for stress or injury to both the wildlife and site personnel. To reduce the risk to both wildlife and humans, the following measures will be implemented:

- Hunting, trapping or fishing by Project personnel is not permitted on site.
- Site and working areas will be kept clean of food scraps and garbage.

- Wildlife protected disposal containers will be used and will be regularly emptied and transferred to the local landfill
- No personal pets, domestic or wild, will be allowed on the site.

In addition to the above protection measures, the following protocol will be followed in the event of a wildlife encounter:

- Workers shall not attempt to chase, catch, divert, follow or otherwise harass wildlife by vehicle or on foot within the project site.
- Equipment and vehicles shall yield the right-of-way to wildlife.
- Wildlife sightings or encounters shall be reported to the HSE Advisor. All actions in response to nuisance animals, in the project area, shall be the responsibility of FEL.
- If the nest of any bird is encountered during construction activities, work around the nest will be immediately stopped and the HSE Advisor notified; and
- Any incidents that result in the displacement or killing of wildlife shall be reported to HSE Advisor, complete with details on the incident and the names (and contact information) of the persons involved, for reporting as required.

3.4. Historic Resources

Historic resource material that is disturbed, destroyed, or improperly removed from a site represents a cultural loss of information and history that could otherwise be handled and interpreted in an efficient and appropriate manner.

Procedure:

- When potential historic resource material is identified, stop all work in the immediate area of the discovery until authorized personnel (FEL's HSE Advisor), having consulted with the Provincial Archaeologist, permit resumption of the work.
- Report the find immediately to FEL's HSE Advisor.
- Mark the site's visible boundaries. Personnel will not move or remove any artifacts or associated material unless advised to do so by the Provincial Archaeology Office.
- FEL will report the find with the following information to the Provincial Archaeology Office, Culture and Heritage Division, Department of Tourism, Culture, and Recreation, St. John's, and comply with the instruction provided:
 - nature of the find;
 - precise descriptive and map location and the time of the find;
 - nature of the activity resulting in the find;
 - identity of the person(s) making the find;
 - present location of the material and any protective measures initiated for the material and the site; and,
 - extenuating circumstances.

3.5. Forest Fires

Construction activities may increase the risk of fire in the natural environment. Fires may spread to the surrounding area and forest. The primary concern is human health and safety, however minimizing damage to vegetation, wildlife, and air and water quality are also priorities.

FEL shall take all necessary precautions to prevent fire hazards when working at the site including, but not limited to, the following:

- Adhering to appropriate permits, including operating permits.
- Storing, handling and disposing of flammable materials and waste appropriately.
- Smoking in designated areas only.
- Providing fire-fighting equipment that is in proper operating condition, in compliance with manufacturer standards, and in sufficient quantities; and
- Training project personnel, as required, in the use of appropriate fire-fighting equipment.

If a fire is encountered, the following protocol shall be followed:

- The individual who discovers the fire shall sound the alarm.
- Personnel trained in firefighting and the use of appropriate equipment shall take immediate steps to contain or extinguish the fire.
- Fires shall be reported immediately to the HSE Advisor for further reporting to the local authorities. The following information shall be provided:
 - name and telephone number
 - time of detection
 - size of fire
 - location of fire
 - weather conditions (rain, sun, wind direction and speed, etc.).

FEL's Emergency Preparedness and Response Plan will address Forest Fires.

3.6. Avifauna Management Plan

Migratory birds, their eggs, nests, and young are protected under the Migratory Birds Convention Act (MBCA). Migratory birds protected by the MBCA generally include all seabirds except cormorants and pelicans, all waterfowl, all shorebirds, and most landbirds (birds with principally terrestrial life cycles).

Under Section 6 of the Migratory Birds Regulations (MBR), it is forbidden to disturb, destroy or take a nest or egg of a migratory bird or to be in possession of a live migratory bird, or its carcass, skin, nest or egg, except under authority of a permit. It is important to note that under the current MBR, no permits can be issued for the incidental take of migratory birds caused by development projects or other economic activities.

Furthermore, Section 5.1 of the MBCA describes prohibitions related to deposit of substances harmful to migratory birds:

5.1 (1) No person or vessel shall deposit a substance that is harmful to migratory birds, or permit such a substance to be deposited, in waters or an area frequented by migratory birds or in a place from which the substance may enter such waters or such an area. (2) No person or vessel shall deposit a substance or permit a substance to be deposited in any place if the substance, in combination with one or more substances, results in a substance — in waters or an area frequented by migratory birds or in a place from which it may enter such waters or such an area — that is harmful to migratory birds.”

The construction and operation of the project may affect Migratory Birds and their habitat. The following measures will be put into place to ensure that the Project does not pose a threat to migratory birds:

- No one shall approach concentrations of seabirds, sea ducks or shorebirds.
- All vessels shall use the main navigation channels to get to and from the site and shall have well muffled vessels and machinery.
- Additional care shall be taken to ensure that food scraps and other garbage is properly disposed of along coastal areas to avoid attraction of potential predators.
- No one shall disturb, move, or destroy migratory bird nests. If a nest or young birds are encountered, work will cease in the immediate area of the nest. Work will not continue in the area until the nest is no longer occupied, otherwise the work plan will be modified to avoid nest sites.
- Personal pets shall not be brought to the construction site.
- Buffers will be established around known nests (species-specific, as per last paragraph), however staff and crew shall be made aware of the possibility of undiscovered nests.
- When one or more of the indicators below are noted, notifications shall be made as appropriate. An active nest can be identified by:
 - the presence of birds or eggs in a nest.
 - adult birds carrying food or nesting materials to a specific location; or
 - adult birds defending territory, through singing, screeching or diving.
- Stockpiles shall be covered where possible, or other deterrents applied, to discourage the nesting of migratory birds in stockpiles left unattended. If migratory birds take up occupancy in stockpiles, industrial activities may cause disturbance to these migratory birds and inadvertently cause the destruction of nests and eggs. Alternate measures will then need to be taken to reduce potential for erosion, and to ensure that nests are protected until chicks have fledged and left the area. CWS will be contacted for advice on appropriate measures;
- All precautions shall be taken to prevent fuel leaks from equipment, as described in Section 2.3. Staff and crew are aware that under the MBR, “no person shall deposit or permit to be deposited oil, oil wastes or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds”.
- Biodegradable fluids shall be considered for use in place of petroleum products whenever possible.

- Fuelling and servicing of equipment should not take place within 30 meters of environmentally sensitive areas, including shorelines and wetlands.
- It is anticipated at this time that nighttime activities will be limited to crushing. Therefore, to minimize risk of incidental take of migratory birds due to human-induced light, the following measures shall be implemented:
 - The use of solid-burning or slow pulsing warning lights at night shall be avoided.
 - Lighting for the safety of the employees shall be shielded to shine down and only to where it is needed, without compromising safety; and
 - The minimum number of lights possible will be used, while still ensuring the safety of crews working at night.
- If there is any noticeable change in seabird numbers or distribution at the location during operations, EC-CWS shall be notified.

The presence of birds will be determined based on visual and auditory cues. Birds will be considered resident breeders if,

- 1) nests are found,
- 2) fledgling birds are present, or
- 3) adults are observed delivering food to a suspected nest site.

Confirmed nest sites will be marked in the field so that a species-specific buffer can be established (e.g. 1 – 5 meters for song birds). Active nests will not be identified by flagging tape at the exact location of the nest, as this will increase predation risk (some predators learn to associate flagging tape with eggs). Markers for nests will be placed using a consistent method that does not directly pin-point the location of the nest, e.g. flagging consistently placed 5 meters to the north of a nest. This flagging method, along with all survey methods, will be determined by the biologist conducting the surveys and outlined in a separate report supplied to Bay Bulls Properties upon completion of the survey.

4. EMERGENCY CONTACT LIST

Title	Name	Contact Information
Construction Manager	TBD	
Project Engineer	TBD	
Site Environmental Coordinator	TBD	
FEL Project Manager	Bradford B. CHAULK, P.Eng.	(587) 228-3003
FEL Site Safety Coordinator	Michael A. Rose	(709) 746-3410
FEL Board Representative	L. Michael Rose	(709) 765-1000
Fermeuse-Port Kirwan Harbour Authority		
Chair	Eugene Brothers	(709) 363-7077
Vice-chair	Perry Oates	(709) 363-7447
Town of Fermeuse		
Mayor	Jerome Kenney	(709) 363-8983
Administration (Town office)	Marsha Kenney	(709) 363-2400
Fermeuse Fire Department	Fermeuse Fire Department	(709) 363-2222
Regulators		
NL Department of Environment and Climate Change		(709) 729 4211 1 800 563 6181
24 hr Environmental Emergency Numbers		(709) 772 2083 1 800 563 9089
24 hr Forest Fire Emergency	Department of Forest Resources and Agrifoods Fire Patrol	1 800 898 4528
Discovery of Contaminated or Hazardous Material	Service NL	(709) 729-2550
Department of Tourism, Culture and Recreation	Provincial Archaeology Office	(709) 729-2462
Environment Canada Environmental Protection	Operations	(709) 772-2126
Environment Canada Canadian Wildlife Service		(709) 772-2154
Transport Canada Emergency Centre (dangerous goods emergencies)		
CANUTEC		1-613-9967-6666 *666 (from cellular)
Hazardous Waste Service Providers		
Crosbie Industrial Services		(709) 722-8212
Pardy's Waste Management		(709) 368-4350
Newalta		(709) 834-7350

APPENDIX A – DESCRIPTION OF FISH, INVERTEBRATES AND MARINE MAMMALS

A1. Introduction

FEL carried out an extensive marine habitat study as part of the Environmental Assessment requirements for the project. The report identifies and characterizes the marine fish habitat occurring within the area. The study commissioned by FEL is known as “Marine Habitat Characterization Survey for Fermeuse Enterprises Limited’s Offshore Marine Base Harbour Development Project in Fermeuse, NL, Sarah N. Penney-Belbin and John Christian, LGL Ltd., Environmental Research Associates, 2015.”

A2. Marine Habitat

The observed biota, typical for coastal Newfoundland, included various types of algae, hydroids, blue mussels, barnacles, sea anemones, sea stars, sea urchins, sea cucumbers, rock crabs, gastropods, and finfishes. These species would be expected to be encountered year around.

No Marine Species at Risk were encountered during the survey.

No Marine Mammals were encountered in the study area.

A detailed description is given in table 3.1 of the report and summarized in the following table.

Description of year-round Marine Flora and Fauna presence at Lumley Cove, i.e., FEL’s Fermeuse Harbour project site.		
Location	Depth Range (meters)	Detailed Description of Biota
Southeast Area of Lumley Cove (along Sheep’s Head)	Less than 1 to less than 20	<p>Flora:</p> <ol style="list-style-type: none"> 1. Coralline algae. 2. Coralline algae (rhodolith) (<i>Lithothamnion glaciale</i>) 3. Brown algae (<i>Laminaria</i> sp.) 4. Brown filamentous algae (<i>Phaeophyceae</i>) 5. Sea colander (<i>Agarum cribrosum</i>) <p>Fauna:</p> <ol style="list-style-type: none"> 1. Hydroid (<i>Eudendrium</i> sp.). 2. Blue mussel (<i>Mytilus edulis</i>). 3. White barnacles. 4. Frilled anemone (<i>Metridium senile</i>). 5. Blood star (<i>Henricia</i> sp.) 6. Northern sea star (<i>Asterias vulgaris</i>). 7. Orange-footed sea cucumber (<i>Cucumaria frondosa</i>) 8. Gastropod - Periwinkle (<i>Littorina littorea</i>)
Northeast Area of Lumley Cove (along Sheep’s Head)	Less than 1 to less than 15	<p>Flora:</p> <ol style="list-style-type: none"> 1. Coralline algae. 2. Coralline algae (rhodolith) (<i>Lithothamnion glaciale</i>) 3. Brown algae (<i>Laminaria</i> sp.) 4. Brown filamentous algae (<i>Phaeophyceae</i>) 5. Sea colander (<i>Agarum cribrosum</i>)

		<p>Fauna:</p> <ol style="list-style-type: none"> Hydroid (Eudendrium sp.). White barnacles. Blood star (Henricia sp.) Northern sea star (Asterias vulgaris). Green Sea Urchin (Strongylocentrotus droebachiensis) Orange-footed sea cucumber (Cucumaria frondosa) Rock Crab (Cancer irroratus) Labridae – Cunner (<i>Tautogolabrus adspersus</i>)
North Central Area Lumley Cove (along Sheep's Head)	Less than 5 to less than 15	<p>Flora:</p> <ol style="list-style-type: none"> Coralline algae. Coralline algae (rhodolith) (Lithothamnion glaciale) Brown algae (Laminaria sp.) Brown filamentous algae (Phaeophyceae) Sea colander (Agarum cribrosum) <p>Fauna:</p> <ol style="list-style-type: none"> Hydroid (Eudendrium sp.). White barnacles. Frilled anemone Metridium senile) Blood star (Henricia sp.) Northern sea star (Asterias vulgaris). Green Sea Urchin (Strongylocentrotus droebachiensis) Orange-footed sea cucumber (Cucumaria frondosa) Rock Crab (Cancer irroratus) Cunner (<i>Tautogolabrus adspersus</i>)
North Central Area Lumley Cove (along Sheep's Head)	Less than 5 to less than 15	<p>Flora:</p> <ol style="list-style-type: none"> Coralline algae. Coralline algae (rhodolith) (Lithothamnion glaciale) Brown algae (Laminaria sp.) Brown filamentous algae (Phaeophyceae) Sea colander (Agarum cribrosum) <p>Fauna:</p> <ol style="list-style-type: none"> Hydroid (Eudendrium sp.). White barnacles. Frilled anemone (Metridium senile) Blood star (Henricia sp.) Northern sea star (Asterias vulgaris). Green Sea Urchin (Strongylocentrotus droebachiensis) Orange-footed sea cucumber (Cucumaria frondosa)
Lumley Cove Mouth	Less than 5 to less than 15	<p>Flora:</p> <ol style="list-style-type: none"> Coralline algae. Coralline algae (rhodolith) (Lithothamnion glaciale) Brown algae (Laminaria sp.) Brown filamentous algae (Phaeophyceae) Sea colander (Agarum cribrosum) <p>Fauna:</p> <ol style="list-style-type: none"> Hydroid (Eudendrium sp.). White barnacles. Frilled anemone Metridium senile) Blood star (Henricia sp.) Northern sea star (Asterias vulgaris). Sun Star (Crossaster papposus)

		7. Green Sea Urchin (<i>Strongylocentrotus droebachiensis</i>) 8. Orange-footed sea cucumber (<i>Cucumaria frondosa</i>) 9. Cunner (<i>Tautoglabrus adspersus</i>)
Lumley Cove	Less than 5 to less than 15	<p>Flora:</p> 1. Coralline algae. 2. Coralline algae (rhodolith) (<i>Lithothamnion glaciale</i>) 3. Brown algae (<i>Laminaria</i> sp.) 4. Brown filamentous algae (<i>Phaeophyceae</i>) 5. Red Fern (<i>Ptilota</i> sp.) 6. Sea colander (<i>Agarum cribrosum</i>) 7. Bladder wrack (<i>Fucus vesiculosus</i>)
<p>Fauna:</p> 1. Hydroid (<i>Eudendrium</i> sp.). 2. White barnacles. 3. Frilled anemone <i>Metridium senile</i>) 4. Blood star (<i>Henricia</i> sp.) 5. Northern sea star (<i>Asterias vulgaris</i>). 6. Polar Sea Star (<i>Leptasterias Polaris</i>) 7. Green Sea Urchin (<i>Strongylocentrotus droebachiensis</i>) 8. Orange-footed sea cucumber (<i>Cucumaria frondosa</i>) 9. Rock Crab (<i>Cancer irroratus</i>) 10. Cunner (<i>Tautoglabrus adspersus</i>)		
<p>The LGL study concluded (pg. 13): “The various marine biota and surficial substrate types observed within the Primary Survey Area during the ROV survey are very typical of the Newfoundland coastal region. No marine species at risk were observed.”</p>		

In recognition of its intentions to work toward water-based construction activities, FEL has initiated a Request for Review by DFO under the fish and fish habitat protection provisions of the *Fisheries Act*.

