Qikiqtaaluk environmental

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ABANDONMENT AND REMEDIATION PLAN

ENVIRONMENTAL WASTE PROCESSING FACILITY

Document presented to

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1. INTRODUCTION

In August 2014, Qikiqtaaluk Environmental (QE) obtained a Water Licence for the operation of a water treatment system in Iqaluit. The system manages and treats hydrocarbon impacted water, typically resulting from spills and fuel tank clean-up activities. When spills occur while snow is still present, impacted snow and ice must be containerized and properly stored, treated only once it has melted, and then discharged. Snow and water during spills must be properly managed and removed from the environment to minimize additional impacts to the soils.

A Water Licence Amendment Application and Nunavut Impact Review Board (NIRB) application are submitted to address additional activities to be undertaken at the facility in Iqaluit. These additional activities include an increase in the types of contaminants to be removed from impacted water, the construction of a water holding pond and the addition of a hydrocarbon impacted soil treatment facility. The present abandonment and restoration plan will also include any waste stored on-site to be shipped south for disposal.

2. ABANDONMENT AND REMEDIATION PLAN OBJECTIVES

The general abandonment and remediation goals of this plan are to:

- Ensure the long-term physical and chemical stability of the project area(s) so as to protect the public's health and safety;
- Enhance natural recovery of the disturbed area(s) to a state that is compatible with original conditions to allow for future use by people and wildlife;
- Ensure that the requirement for long-term maintenance and monitoring is minimized.

The purpose of the present Abandonment and Remediation (AR) Plan is to address all project-related activities.

3. PROJECT DESCRIPTION

An application for a Water Licence Amendment and NIRB Application are being submitted for the additional activities, which QE anticipates implementing as soon as the Amended License(s) are granted.

3.1 Water Treatment

The water treatment system will continue to be powered by electricity. Petroleum products recovered from water treatment are incinerated in a waste oil furnace or placed in drums, labelled and shipped to an authorized disposal facility in southern Quebec. The treated water effluent is tested for water quality parameters and disposed of at a pre-approved discharge location, following compliance with discharge criteria.

3.2 Soil Treatment

Petroleum hydrocarbon contaminated soils will be treated on-site using biological, chemical, and physical treatment techniques.

Contaminated soils will be temporarily stockpiled in a lined and bermed processing area. The processing area will also be used for the physical treatment of soils and will involve soil screening, to remove coarse materials, followed by washing of the screening rejects. Water from the washing process will be redirected to the water treatment facility.

Contaminated soils will be treated using biological degradation methods (landfarming or biopiles) in a lined and bermed treatment area. Biotreatment is effective for the elimination of PHC F1[1] and PHC F2[2] and to a lesser degree PHC F3[3]. Soil treatment by chemical oxidation using an oxygen source (e.g., hydrogen peroxide solution, sodium persulfate, sodium percarbonate) may also be carried out in the treatment area. Treatment by chemical oxidation is effective for the elimination of PHC F3.

3.3 Hazardous Waste Management

Hazardous waste management activities conducted at the waste transfer station include:

- Waste identification, segregation and consolidation;
- Volume reduction;
- Waste packaging and labelling;
- Temporary safe storage inside marine containers.

Annually, stored waste containers are shipped south to an authorized facility for final disposal.

1. Petroleum hydrocarbon Fraction 1 (C_6 to C_{10})
2. Petroleum hydrocarbon Fraction 2 (> C_{10} to C_{16})
3. Petroleum hydrocarbon Fraction 3 (> C_{16} to C_{34})

4. FINAL ABANDONMENT

Should QE's treatment systems no longer be functional or in the event QE decides to cease these activities and/or withdraw from this market, the water and soil treatment systems will be dismantled and removed from the site.

Any spent water treatment filtration media will be containerized and shipped south for disposal in an authorized facility. If any untreated water or soils remain once the activities are ceased, they will be transferred into drums or larger containers, and shipped south for disposal in an authorized facility.

Upon final abandonment, soils at the following locations will be sampled and analyzed to assess quality and determine management options:

- Treated water discharge point;
- Area beneath the impacted soils storage and processing area;
- Area beneath the soil treatment area;
- Hazardous waste storage and processing areas;
- Sediments at the bottom of the water holding ponds.

The sediments at the bottom of the water holding ponds will be sampled and analyzed. If contaminated soils or sediments are present, they will be excavated, containerized and shipped south for disposal at an authorized facility.

All stored hazardous waste containers will be shipped south to an authorized facility for final disposal. The empty hazardous waste storage containers will be cleaned, and, if required, decontaminated prior to removal from the site.

All other structures, including trailers and containers, will also be removed from the site.

5. MONITORING

Once activities on the site have ceased and all stored waste, contaminated water and contaminated soils have been removed from the site, no further monitoring will be carried out, as there will no longer be a source of contamination on the site.