



Independent Environmental Monitoring Agency

P.O. Box 1192, Yellowknife NT, X1A 2R2 ▪ Phone (867) 669-9141 ▪ Fax (867) 669-9145
www.monitoringagency.net ▪ E-mail: monitor1@monitoringagency.net

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Heather Scott
Senior Technical Advisor
Mackenzie Valley Land and Water Board
4922 - 48th Street
7th Floor YK Centre Mall
Yellowknife, NT. X1A 2P6

Dear Ms. Scott,

Guideline for the Design, Operation, Monitoring, Maintenance and Closure of Hydrocarbon Contaminated Soil Treatment Facilities in the Northwest Territories – Draft Guidance Document

The Independent Environmental Monitoring Agency (Agency) has reviewed the draft Guideline for the Design, Operation, Monitoring, Maintenance and Closure of Hydrocarbon Contaminated Soil Treatment Facilities in the Northwest Territories (the guidance document). The Agency appreciates the opportunity to comment on the guidance document and provides the following comments for your consideration.

General

The guidance document is generally well-written, clear and concise. The Agency commends the Government of the Northwest Territories and Land and Water Boards of the Mackenzie Valley and Inuvialuit Settlement regions for working collaboratively in the development of this guidance document. When adopted, it will provide consistent and predictable advice and standards for the design, construction and operation of hydrocarbon contaminated soil treatment facilities in the Northwest Territories – a welcome addition to the existing environmental management regime.

Guidance Document – Main Body

Section 2.0 – Purpose

The last paragraph (p. 2) states “*Because the Guideline has been developed to include all possible best practices for the siting, design, operation and closure details for large-scale commercial (underline added) HCSTFs, an owner or operator may propose alternative methods to those proposed in this Guideline*”. A definition of ‘large-scale commercial HCSTF’ is not provided by the guidance document. Is there a minimum facility design capacity which, when surpassed, classifies the facility as being ‘large-scale’? The guidance document clearly applies to commercial, or for-profit, facilities. Do treatment facilities which are not commercial in nature and are owned or operated by federal, territorial, Aboriginal or municipal governments or Crown Corporations fall within the scope of the guidance document?

Recommendation: Clarify the term ‘large-scale commercial HCSTF’ with respect to minimum treatment facility design capacity and applicability of the guidance document to non-commercial government and Crown Corporation owners and operators.

Section 4.2 – Constraint Map Development

Table 4.3 describes minimum set-back zones for natural features, potable water sources and other sensitive areas. Under the category of ‘Sensitive Areas’, a 500 m set-back is provided from park boundaries, areas designated as habitat for sensitive species and culturally important, heritage or archeological sites. The Agency notes the absence of wetlands from the description of a sensitive area feature. Alternatively, are wetlands included within the interpretation of surface water body?

Recommendation: Clarify whether wetlands are restricted zones within the meaning of constraint map development and if they are, explicitly identify this site feature within Table 4.3.

Section 4.3.2 – Underlying Geology/Native Soils

The last paragraph in section 4.3.2 states that “*Baseline soil samples are required to be collected in a grid pattern across the proposed site footprint*”. The Agency notes that minimum standards for the required grid pattern are not provided. Examples within the guidance document where minimum standards are provided include section 4.3.3 (Hydrogeology); section 6.1 (Contaminant Type and Concentration Restrictions on Incoming Soils); and section 7.3 (Underlying Soil Testing). The Agency is concerned that inconsistencies in the site characterization and field assessment of potential treatment facility locations could result from the absence of definition as it pertains to the required geology and native soil baseline investigation.

Recommendation: Describe the minimum standard grid pattern for the characterization and assessment of geology and native soils during the initial site investigation. Alternatively, specify that the grid pattern is to be determined by a qualified professional following visual inspection of the site.

Section 5.0 – Design and Construction

The reference to Figure 2 in the introductory paragraph is incorrect.

Recommendation: Provide the corrected reference to a conceptual design of a treatment facility.

Section 5.5 – Qualifications for Design Contractors

Section 5.5 describes the minimum qualifications and requirements for design contractors including the maintenance and availability of all construction records. Although it is clear that these records must be provided upon request, it is unclear how long the records must be retained (i.e., end of construction, active operations or site closure and reclamation). The Agency suggests that final design drawings stamped and signed by a Professional Engineer should be retained at the treatment facility by the owner and operator until the facility has been successfully closed and reclamation has been completed.

Recommendation: Clarify the time period that final design drawings are to be retained at the treatment facility by the owner and operator.

The guidance document currently does not address the possibility that significant modifications to approved facility designs may be encountered. It is not unusual for design changes to occur during the construction of major capital projects due to previously unforeseen circumstances. The Agency believes the guidance document should address this possibility by requiring any changes in design to be documented and submitted to the applicable regulator as modified design drawings stamped and signed by a Professional Engineer.

Recommendation: Address the possibility that modifications to previously-approved final design drawings may be proposed during construction of the treatment facility.

Section 5.6 – Site Security

Section 5.6 establishes a requirement for fencing or barriers designed to limit public or wildlife access to the overall treatment facility site. The Agency supports this site security requirement. However, we note the absence of a similar requirement to deter waterfowl from coming into contact with hydrocarbon that has collected on internal storm water, freshet or other surface water within the containment berm and Surface Water Management Structure.

Recommendation: Include a requirement to deter waterfowl from coming into contact with hydrocarbon that may collect on surface water within the treatment facility.

Section 6.1 – Contaminant Type and Concentration Restrictions on Incoming Soils

The guidance document proposes to restrict the owner and operator of the treatment facility from accepting contaminated soil where total extractable hydrocarbon (TEH) concentrations exceed 30,000 ppm, or if soils are saturated to where free product is visible. While the guidance document is clear that the owner or operator is liable for untreatable materials accepted for treatment at the facility in all cases, no rationale is provided for this restriction.

The ability to remediate hydrocarbon contaminated soil is impacted by several factors including soil temperature, moisture content, soil type (affecting presence of oxygen), hydrocarbon concentration and type of hydrocarbon. With respect to the type of hydrocarbon, with all other factors being equal, it is a more difficult and prolonged process to remediate soil containing heavier F3 and F4 fractions than it is to remediate soil containing lighter F1 and F2 fractions. The restriction on accepting soil containing TEH concentrations that exceed 30,000 ppm currently applies to any of the hydrocarbon fractions.

Recommendation: Provide rationale for restricting soils contaminated with TEH that exceeds 30,000 ppm or soils saturated to where free product is visible from acceptance to a treatment facility.

Section 6.1 and several other sections (i.e., sections 6.5, 6.6.1, 7.3) establish confirmatory sampling and analysis that is to be undertaken, in this case before contaminated soil can be transported to the treatment facility. However, no guidance is provided in any of these sections on what level of accreditation the analytical laboratory should maintain. Is field screening of samples with portable instruments that provide relative results considered acceptable?

Recommendation: All chemical analysis for contaminant concentrations that is used for final verification purposes should be undertaken by a laboratory that is accredited by the Canadian Association of Environmental Analytical Laboratories (CAEAL) for the specific analysis being undertaken.

Section 6.9.4 – Annual Reports

Records specific to the operation and maintenance of the treatment facility are to be retained and made available upon request by the applicable regulator. Similar to the Agency's comment on Section 5.5 (Qualifications for Design Contractors), it is unclear how long the operation and maintenance records must be retained (i.e., end of construction, active operations or site closure and reclamation). The Agency suggests the records should be retained at the treatment facility by the owner and operator until final closure and reclamation of the facility has been successfully completed and verified.

Recommendation: Clarify the time period that operation and maintenance records are to be retained at the treatment facility by the owner and operator.

Section 7.1 – Closure Plan

It is anticipated that a treatment facility will be in operation for several years because natural attenuation and enhanced bioremediation of hydrocarbon contaminated soil in Canada's North is a lengthy process. Section 7.1 stipulates that a 'Closure Plan' for the treatment facility should be submitted upon the owner or operator receiving authorization from the regulator to construct the facility. The Agency agrees that developing a closure plan for approval by the regulator is critical to the success of final closure and reclamation. However, it may not be realistic to anticipate that a closure plan prepared during the construction phase will not need to be updated through the operational life of a treatment facility. The guidance document currently does not distinguish between an initial 'interim closure plan' and a 'final closure plan'.

Recommendation: The operator provide an 'interim closure plan' to the regulator for approval upon receiving authorization to construct the facility and a 'final closure plan' to the regulator for approval in advance (i.e., two years) of the planned closure of the treatment facility.

Section 7.3 – Underlying Soil Testing

The guidance document suggests a 26 x 26 m grid square be established as the basis for testing underlying soil once the liner has been removed during closure. It goes on to suggest that *"In each grid square, a composite sample comprised of 5 grab samples taken from each corner and from the centre should be collected"*. The Agency finds these sampling instructions to be confusing and a single composite sample every 676 m² inadequate. An example of the confusion is where grid squares are located adjacent to each other, obtaining soil samples 'from each corner' would be redundant as the sample locations are essentially the same. An alternative method would be to establish a simple square grid pattern (i.e., 13 x 13 m) and obtain a grab sample at each intersecting point.

Recommendation: Reconsider the current requirement for sampling underlying soil once the treatment facility liner has been removed during closure.

New Section – Final Closure Report

The MVLWB/AANDC Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories requires owners and operators of advanced mineral exploration and mine sites to provide a Reclamation Completion Report and Performance Assessment Report to the regulator. The purpose of these reports is to provide details on the site decommissioning activities; confirmation that no residual environmental risks remain on-site; and a comparison of site conditions to appropriate closure objectives and criteria. Similar post-closure reports are currently not a requirement under the guidance document.

The Agency believes information contained in these reports is critical for regulators to determine the acceptability of closure activities at treatment facilities and recommend relinquishment of any posted financial securities.

Recommendation: The guidance document require the owner and operator to provide a report following closure and reclamation of a treatment facility that details the site decommissioning activities; confirms that no residual environmental risks remain on-site; and compare site conditions to appropriate closure objectives and criteria.

Should you have any questions concerning these comments, the Agency is pleased to discuss these at your convenience.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jaida Ohokannoak", with a long horizontal flourish extending to the right.

Jaida Ohokannoak
Chairperson

Cc: Dominion Diamond– April Hayward
Tłıchq Government – Jessica Hum
Yellowknives Dene First Nation – Johanne Black
Łutsel K'e Dene First Nation – Ray Griffith
North Slave Metis Alliance – Nicole Goodman
Kitikmeot Inuit Association – Geoff Clark
Government of the Northwest Territories – Laurie McGregor
Indigenous and Northern Affairs Canada – Michael Roesch