Environment Canada **Environnement Canada**

Environmental Protection Operations Directorate
Suite 301, 5204 - 50th Avenue
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September 20, 2007

Joe Murdoch
Northwest Territories Water Board

Our file:

Via email:

Re: Camp Farewell – 2006 Environmental Site Assessment and Interim Abandonment and Restoration Plan

On behalf of Environment Canada (EC), I have reviewed the information submitted with the above-mentioned documents. The Canadian Wildlife Service of EC also reviewed the information and provided comments which are included here. The following comments are provided pursuant to Environment Canada's mandated responsibilities for the enforcement of the *Canadian Environmental Protection Act*, Section 36(3) of the *Fisheries Act*, and the *Migratory Birds Convention Act.*

Camp Farewell was established in the winter of 1970 primarily as a staging and storage site for Shell's Delta Drilling Program. The lease is currently under the stewardship of Shell Canada Limited and the Camp is used as a staging site for seismic operations, preliminary development assessment work and drilling operations within the Kendall Island Bird Sanctuary. Camp Farewell is located within the Kendall Island Bird Sanctuary in the Mackenzie Delta on an outwash plain bordered to the west and southwest by the Mackenzie river and to the east, north and south by shallow lakes and intermittent ponds. The depth to active layer is typically less than 1 m in an area of discontinuous permafrost.

2006 Environmental Site Assessment, Camp Farewell, NT

Background Sampling Protocol

1. The ESA report refers to the selection of two background soil samples that were taken to the north-east of the site "in areas not likely to have been affected by the facility". The Environmental Site Assessment report further states that the "hydrocarbons reported in these background samples are considered to represent natural organic material rather than facility related hydrocarbon impact". Also, the conclusion in the ESA report seems to be that the PHCs encountered at the background sites originated in the top rich organic layer and not at depth. Is this an accurate interpretation of information in the report? EC has some reservations that naturally occurring PHCs (fractions 2, 3 and 4) would be present in the organic soils of this Mackenzie Delta area.

2. There appears to be insufficient information to conclude that these test locations were not impacted by facility activities. Considering the long history of use (diesel fuel spills, burn pits, above ground tanks, camp housing, home heating fuel, vehicle storage, fuel storage, vehicle lubricants, pipe lubricants etc) at this facility, there is a possibility that the petroleum hydrocarbons detected in test locations S06-1 and S06-2 are the result of human activities. Please note that the CCME provides guidance (*Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I: Main Report* and *Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume II: Analytical Method Summaries*) on properly selecting sites for accurate background sampling.

3. The ESA report also refers to a 95% confidence interval and mean that was calculated based on the two background soil locations sampled. Given the small sample size (2), this isn't very robust statistically. This analysis seems to form the basis in determining the likelihood of naturally occurring PHCs in other areas of

the site, e.g., the burn pit. Please note that EC does not consider this to be reliable information. A larger sample size with appropriate background locations chosen is recommended.

4. The ESA report also states that elevated selenium was found in one background sample but nowhere else. EC recommends investigating this further in order to determine if indeed selenium is naturally occurring in background soil at this location. With respect to the appropriate guideline to use for selenium at this site, please note that if the site will be left in a natural state in future, then using the regulatory guideline for residential parkland is the appropriate guideline.

Other

5. In the area of the historic spill of 800 000 L in 1981, a number of locations were sampled with a goal of delineating the area of impacted soil. Is the proponent confident that the area impacted has been accurately and completely delineated? Accurate delineation will drive many of the remediation activities in the future.

6. A number of other sites were sampled for hydrocarbons in soil at Camp Farewell, e.g., burn pit area, tank farm, gravel pad, above ground fuel storage tanks (ASTs) etc. Is the proponent confident that all hydrocarbon contaminated soil has been identified in these areas?

7. Please note that the presence of toluene in piezometer P06-2 should be further investigated. The source should be identified and the extent of contamination should be determined with a goal to remediate the contaminated area.

8. *Also, please note that a comprehensive Environmental Site Assessment will often direct restoration activities at a site. EC encourages the proponent to address areas that are lacking sufficient information in this current ESA such that site characterisation is better known and will therefore be better able to inform a more comprehensive A & R Plan.*

Interim Abandonment and Restoration Plan, Camp Farewell, NT

1. The report states that the permit issued to Shell Canada "allows its personnel and/or delegates to enter and conduct activities in the sanctuary". In fact, the permit is issued to Shell Canada alone and does not apply to delegates. Please note that a separate permit is required by delegates to conduct activities in the sanctuary

2. Please note the following for any activities associated with this Interim or any subsequent A & R Plan for this site:
    - The proponent shall not deposit, nor permit the deposit of chemicals, sediment, wastes, or fuels associated with the project into any water body. According to the Fisheries Act, Section 36 (3), the deposition of deleterious substances of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any deleterious substance that results from the deposit of the deleterious substance, may enter any such water, is prohibited.

3. It is understood that the A & R Plan submitted is an interim one and as such lacks significant detail on final restoration activities. Please note some conditions whereby an updated A & R Plan may need to be submitted:
    - If the facility activities lead to expansion that hasn't been contemplated in the existing Plan
    - If there is a change (or proposed change) in reclamation procedures
    - If there are unforeseen or significant hazards as well as operational changes identified.

    EC recommends that Shell ensure that A & R / Closure and Reclamation Plans are updated as required through the life of this project.

4. Some metal concentrations (cadmium, copper and iron) in groundwater were above CCME MAL and FWAL. Why was this attributed to background water concentrations? Please note that appropriate background groundwater samples should be taken at locations known to not have been impacted by facility operations.

5. Sampling of the sewage lagoon showed toluene concentrations of 0.94 mg/kg. Was additional sampling carried out to determine the origin and any possible impacts to the receiving environment via out-

migration? The report also states that the lagoon sludge will be dewatered and dried before being released to the environment. Is there a contingency plan in place in the event the sludge isn't adequately dry at the end of the season or if the sludge is considered harmful to the receiving environment? Is there adequate and appropriate storage (i.e., containment) in the event the sludge is not ready to be released to the environment? Please note that steps should be taken to ensure no further releases of toluene or other harmful chemicals are made to the lagoon or receiving environment. Please consider as well steps to be taken to remediate any environmental damage caused by toluene at this site.

6. The Interim Abandonment & Restoration Plan indicates that a 65 x 50 m conductivity anomaly located within or under the gravel pad was likely due to buried metal. Has Shell proposed any further investigations to determine the exact nature of this anomaly and the amounts and nature of any buried metals causing it? Also, this Plan does not indicate the number or nature of buried landfills that are likely at this site. Has the proponent conducted testing to determine the number, contents and volume of these landfills? EC also recommends the monitoring of any future landfills to ensure the contents are known and are safe for the environment.

7. It does not appear that there has been a waste inventory or audit completed that outlines the nature, extent and eventual fate of all waste materials brought to, used and generated at this site. EC recommends the development of such a Plan. Such a waste management plan should include, but not be limited to:
    - Purchasing policies that focus on reduced packaging,
    - A hazardous materials management plan for the site that ensures that all hazardous wastes, including waste oil, receive proper treatment and disposal at an approved facility
    - On-site diversion and segregation programs (i.e. the separation of non-food waste items, non-combustible solid wastes etc. suitable for storage and subsequent transport and disposal or recycling). The proponent is encouraged to make use of recycling facilities for all recyclable materials.
    - If incineration is required, ensure diligent operation and maintenance of the incineration device and ensure appropriate training is provided to the personnel operating and maintaining the incinerator. The proponent is encouraged to develop an incineration management plan in consultation with EC and the GNWT. This would include a submission of an annual incineration management report that provides the following details:
        - Recycling/segregation waste program
        - Incineration technology selected
        - Waste audit – amount and types of waste incinerated
        - Operational and maintenance records
        - Operator training
        - Incineration ash disposal
        - How will the Proponent demonstrate compliance with the Canada Wide Standards for Dioxins & Furans and Mercury?

8. Also, with respect to the large spill of 800 000 L in 1981, has any progressive reclamation been considered? Progressive reclamation is continuous reclamation and rehabilitation of facility property as operations continue. Progressive reclamation has the advantages that terminal closure liability is reduced, closure technology can be demonstrated and the potential of discovering hidden problems and correcting them, prior to final closure, is increased. The risk to both the current operator and the successor custodian is also reduced. Final reclamation is conducted after facility operations have ended. Progressive reclamation dramatically reduces the amount of final reclamation at the end of an operation.

9. Given the location of the spill, EC would encourage Shell to accurately delineate and begin progressive reclamation measures of contaminated soil in the near future. Please clarify whether the 2495 m^3 of 'impacted soil' includes the actual berms around the tanks? Also, under Treatment Options, the report states that the preferred option for the excavated base pad material is to treat and reuse because of its scarcity in the Mackenzie Delta. Could the proponent clarify why this approach, i.e., leaving the exposed natural surface, satisfactory here, but elsewhere the report recommends that the gravel pad be left in place to protect the underlying permafrost? This approach would seem to imply that the treated gravel from the 1981 spill area should be placed back over the exposed natural surface.

10. The report states that the vegetation in tundra areas around the base pad "is healthy and appears to be unaffected by the presence of hydrocarbons". Was this assessment based on detailed assessment of the vegetation in these areas compared to similar vegetation types well removed from Farewell (i.e., appropriate background sites)?

11. Also, very little information has been presented that concretely outlines how petroleum hydrocarbon contaminated soils will be treated, whether on or off site. The ESA should have provided accurate volumes of soil that are currently contaminated onsite yet the A&R Plan does not provide a timeframe for addressing this contamination. The A & R Plan should give more details on *in situ* and *ex situ* reclamation measures and information on the likelihood of which method(s) will be adopted for the various locations within this site.

12. EC requests clarification on a number of points relative to the reclamation of PHC contaminated soils. The Interim A & R Plan recommends leaving the existing gravel pad in place in order to retain the underlying permafrost and prevent possible ponding. In a later section, the report states that removal of some of the gravel may be beneficial given the scarcity of it in the area. This appears to be contradictory. Does the proponent know how much gravel (i.e., to what depth) can be removed before there will be degradation of the underlying permafrost?

13. The Interim A & R Plan also states that if the existing gravel pad were retained in its entirety it could be covered with a "thin lift of alluvial soils to match the surrounding soil conditions". Please clarify whether this a proven technique in this environment. And what would be the source of the above-mentioned alluvial soils? The Reclamation Plan also implies that the site (e.g., gravel pad) could be re-vegetated with an appropriate mixture of plant species. Please note that Shell will need to provide an exact species list of plants being contemplated and the proposed methods to be used (i.e., whether re-seeding or planting). Have any of these revegetation techniques been proven in this environment? Given that the other alternative being considered is light scarification and natural re-vegetating, the Reclamation Plan should provide more detail on the expected outcome of this approach should it be adopted.

Please note the following regarding a Spill Response Plan that should already be in place for Camp Farewell.

14. Please note that there should be a site specific Spill Response Plan that provides a clear path of response in the event of a spill and that indicates how the proponent will meet the requirements of prevention, preparedness, response and recovery.
    - The plan should provide a map of the campsite, indicating the location fuel storage areas and spill kits.
    - The Plan should provide contact information for individuals on site who should be notified if a spill occurs, as well as contact information for relevant government agencies that should be notified.
    - The appropriate contact information for Environment Canada is included below:
        - The 24 hour Emergency Pager, monitored by Environment Canada Emergencies personnel; Tel: 867-920-5131.

15. **All spills** shall be documented and reported to the 24 hour Spill Line at (867) 920-8130. The Plan should provide a copy of the NWT/NU Spill Reporting Form and contact number for the Spill Line (867-920-8130).

16. Drip pans, or other similar preventative measures, shall be used when refueling equipment on site.

17. The Spill Contingency Plan should provide direction regarding response actions for spills on various types of terrain (ex. spills on land, water, snow/ice, muskeg, etc...).

18. The Spill Contingency Plan should provide an inventory of spill response resources, and clearly indicate where these resources are located.

Please note the following in the event this site will be using large quantities of fuel or the use of fuel tanks rather than barrels:

Environment Canada intends to repeal the existing *Registration of Storage Tank Systems for Petroleum Products and Allied Petroleum Products on Federal Lands and Aboriginal Lands Regulations* and replace it with a regulation that has a broader scope of application, *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations*. The proposed regulations under the *Canadian Environmental Protection Act* (1999), Part 9

will incorporate mandatory technical requirements (secondary containment, leak detection, corrosion protection, overfill, spill containment) and be more in line with those regulations that already exist in most provincial and territorial jurisdictions. Compliance with the proposed regulations will be mandatory, and EC will conduct inspections to ensure compliance with the regulations. The technical requirements of these proposed regulations are based on the 2003 CCME Guidance document PN 1326 "Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products". Environment Canada encourages Shell Canada Ltd. to consult this document and ensure that the existing tanks and related containment system are designed and operated in accordance with it. For further information on EC's proposed regulations please visit http://www.ec.gc.ca/st-rs.

Please do not hesitate to contact me with any questions or comments with regards to the foregoing at (867) 669-4708 or by email at ivy.stone@ec.gc.ca.

Sincerely,

Original signed by

Ivy Stone
Environmental Assessment / Contaminated Sites

cc: Carey Ogilvie (Head, Environmental Assessment North, EPOD, Environment Canada, Yellowknife, NT)
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