

Review Comment Table

Board:	WLWB
Review Item:	Community Government of Behchoko - Operation and Maintenance Plan - Landfarm (W2014L3-0002)
File(s):	W2014L3-0002
Proponent:	Community Government of Behchoko
Document(s):	Landfarm Operation and Maintenance Plan (3 MB)
Item For Review Distributed On:	Jan 25 at 09:02 Distribution List
Reviewer Comments Due By:	Mar 1, 2017
Proponent Responses Due By:	Mar 15, 2017
Item Description:	The Wek'eezhii Land and Water Board received Version 1.0 of the Community Government of Behchoko's Landfarm Operation and Maintenance Plan on December 11, 2016 as per Part H, Condition 2 of the Water Licence for Board approval. The purpose of the Plan is to describe how present and future contaminated soils will be managed, remediated, and their associated timelines.
General Reviewer Information:	Reviewers are asked to provide comments and recommendations on the Landfarm Operation and Maintenance Plan via the WLWB Online Review System.
Contact Information:	Jessica Pacunayen 867-765-4591 Roberta Judas 867-713-2500 Sarah Elsasser 867-765-4583

Comment Summary

Environment and Climate Change Canada: Gabriel Bernard-Lacaille				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	General	<p>Comment ECCC has reviewed the Operation and Maintenance Plan in accordance with its mandate and doesn't have any comments at this time.</p> <p>Recommendation Not applicable.</p>		
GNWT - ENR: Central Email GNWT				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
11	General File	<p>Comment (doc) ENR Letter with Comments and Recommendations</p> <p>Recommendation</p>		
1	Topic 1: Land Farm Previous and Current Operation Status	<p>Comment Appendix A of the Operation and Maintenance Plan (O&M Plan) describes the past operational status of the Behchoko land farm from 2004 to 2009. In 2013, BlueMetric Environmental noted strong odours, sheens and possible free phase products in multiple</p>	<p>Mar 16: It should be noted that the foreign materials have been removed from the site. The area has been 'sealed off' with snow fence to eliminate further dumping, and the CG of Behchoko` has no intention of continued land farming. Our long-term intention is to remediate the site and close the site to any further land farming. Recommendations Accepted.</p>	

	<p>test pits, and detected elevated concentrations of PHC in both the north and south areas of the land farm. Past inspection reports requested removal of a barrel of foreign material and hydrocarbon-impacted adsorbent material in 2014, and noted that enforcement actions may be required as further misuse of the land farm facility was observed with non-soil waste being deposited at the land farm (October 2016). Past studies reported that the Behchoko land farm has exceeded its design capacity, and that no additional material should be added to the land farm until there was sufficient space to manage it effectively. Recent inspection reports indicated that no soils were removed from the land farm, and that no effluent was discharged from the land farm. In a recent meeting (February 2017) with MACA and ENR inspectors, the community indicated that they had no intention of doing further land</p>		
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	<p>farming. Page 1 of the O&M Plan specifies that operation of the Behchoko land farm should be continued for a minimum of two (2) years during which time the land farm treatment performance would be evaluated - and a future course of action determined. A land farm O&M Plan has been circulated through the Land and Water Board process for review. ENR recognizes that the Behchoko land farm is not expected to be operated in the future; however, ENR is providing the following comments regarding best land farming operations and maintenance practices in the event that land farming continues in Behchoko and the O&M Plan is put into practice.</p> <p>Recommendation 1) ENR recommends that the Behchoko land farm O&M Plan should reflect best management practices to minimize liability risks to the community, as well as minimize the environmental risks of</p>		
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		incomplete treatment of contaminated soils.		
2	Topic 2: Important Screening Acceptance Procedures	<p>Comment An O&M Plan is intended to provide operation/site specific information to provide staff with the information they require to properly operate the land farm facility. An important step when considering whether to accept soils for treatment at a land farm facility is to properly assess the extent and type of the contamination present in the materials before acceptance. Section 1.0 of the plan specifies that Behchoko land farm facility is to treat hydrocarbon-impacted soils only. The liability of accepting contaminated soils that cannot be treated through land farming procedures falls on the facility owner. In the current case, it is the Community of Behchoko's responsibility to ensure that proper analysis of the soils considered for treatment is conducted to ensure that contaminants other than petroleum</p>	<p>Mar 16: Behchoko` will proceed with the aeration process during the Spring & Summer of 2017 as planned and, based on the soil analysis at the end of the season, the plan will be reviewed.</p>	

	<p>hydrocarbons (or mixtures) are not received and placed within the land farm facility. While Behchoko Land farm facility is to treat hydrocarbon-impacted soils only, the plan does not clarify the level or nature of contamination present, such as lightly to mid-range hydrocarbons, in the impacted soils that can be accepted for treatment. As such, land farming activities are generally considered ineffective and unsuitable for soils contaminated with petroleum hydrocarbons >30,000 parts per million (PPM), as measured by assessing Total Petroleum Hydrocarbon (TPH) or Total extractable hydrocarbon (THE), or if the soil is saturated to point of visible free product) (Yukon Contaminated Site Regulations, 2011). Adequate screening to determine acceptance is an important step, not only to prevent unnecessary liability to the community, but also to prevent certain contaminants (such as</p>		
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		<p>metals) from entering the land farming processes, and subsequently being re-introduced at the disposal location (SWF), with the potential of creating further impacts to surrounding land and water.</p> <p>Recommendation 1) ENR recommends Behchoko Land farm O&M Plan be updated to specify which type of hydrocarbon-impact contaminated soils are accepted at the land farm (light to mid-range petroleum contaminated soils), and which hydrocarbon-impacted soils are not accepted at the facility.</p>		
3	None	<p>Comment None</p> <p>Recommendation 2) ENR recommends hydrocarbon concentration limits be specified to help discriminate heavily impacted soils from their less-impacted counterparts.</p>		
4	None	<p>Comment None</p> <p>Recommendation 3) In order to best assist staff evaluate whether to accept or refuse</p>	Mar 16:	

		contaminated soils for treatment, the O&M Plan should further specify which other types of contaminated soils are not be accepted at the facility, such as metal-impacted soils.	No additional soil will be added. The intentio is to remediate the soil and close the facility at the end of the remediation cycle.	
5	None	Comment None Recommendation 4) Finally, ENR recommends the O&M Plan specify which parameters will be analyzed to determine whether contaminated soils will be accepted at the facility. ENR expects that the list of parameters evaluated for acceptance would be broader than the ones assessed for soil quality criteria in Item D. 20 of the W2014L3-0002 Water Licence. Metals should be included amongst the parameters to be tested at the acceptance stage of the process.	Mar 16: The Community Government of Behchoko` will review at the of the season.	
6	Topic 3: Soil Management Procedures â€“ Liner Integrity	Comment Section 3.3 on Aeration specifies that the contaminated soils should be tilled every 3 weeks from June to October. It also specifies that impacted soil should be	Mar 16: Remediated soil will be used for land fill cover as both the old and new land fills are adjacent to the land farm site.	

		<p>divided in equal size squares of approximately 2 m by 2 m, and that the soils should be tilled to a depth of approximately 2 m or until the clay liner is encountered. It is unclear in the plan what precautions are taken to protect the integrity of the clay liner layer during soils manipulation of windrow placement. SNP 2014-5 was established to monitor potential impacts to groundwater and surface water surrounding the Solid Waste Facility and Land farm. ENR notes however, that there is currently no groundwater SNP station(s) to monitor the liner's integrity and/or assess potential impacts to groundwater.</p> <p>Recommendation 1) ENR recommends that procedures for protecting the land farm clay liner be outlined in the O&M Plan.</p>		
7	None	<p>Comment None</p> <p>Recommendation 2) If contaminated soils will continue to be treated at the</p>	Mar 16:	

		Behchoko land farm, ENR recommends that SNP groundwater monitoring stations be installed.	The intention is to close this facility and NOT extend the life of the facility.	
8	Topic 4: Land Farm Access	<p>Comment Section 3.1 of the plan specifies that access to the site should be restricted to authorized personnel. However, the land farm is located in close proximity and within the limits of the Solid Waste Facility.</p> <p>Recommendation 1) ENR recommends the plan to identify access control measures (eg. gate, fence, etc) that will be provided for the facility.</p>	<p>Mar 16:</p> <p>Fencing and a gate has been installed to restrict and discourage access to the area and restrict access to dumping at the land farm site.</p>	
9	Topic 5: Land Farm Personnel Names and Contact Information	<p>Comment ENR notes that the name and contact information of the land farm staff were not provided within the O&M Plan.</p> <p>Recommendation 1) ENR recommends the name(s) and contact information of the land farm staff be provided within the current O&M Plan.</p>	<p>Mar 16:</p> <p>Signage will be added to the site this Spring as per recommendation.</p>	
10	None	<p>Comment None</p> <p>Recommendation 2) ENR recommends the O&M Plan</p>	<p>Mar 16:</p>	

		provides details on past or planned operator training (specific to land farming) offered to the community staff working at the land farm facility.	Selected Public Works staff will be trained by BluMetric	
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WLWB: Jessica Pacunayen

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	Landfarm Assessment	<p>Comment Part H, Item 3 of the Licence states that “prior to the placement of any additional contaminated soils into the Landfarm, the Licensee must demonstrate to the Board that the Landfarm is suitable for ongoing operation... [and] submit an updated Landfarm Operation and Maintenance Plan.” Board staff also note that in 2013, the CGB received an assessment of the landfarm with recommendations to “expedite soil treatment, prevent further contamination of the surrounding area and facilitate decommissioning of the land farm facility.”</p> <p>Recommendation Board staff recommend the Community</p>	<p>Mar 16:</p> <p>No Coment</p>	

		Government of Behchoko to describe if and how it has responded to the recommendations in the assessment and indicate how the recommendations have been incorporated into the Landfarm Operations and Maintenance Plan?		
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March 1, 2017

Violet Camsell-Blondin
Chair
Wekeezhii Land and Water Board
#1-4905 48th Street
Yellowknife, NT
X1A 3S3

Dear Ms. Camsell-Blondin,

**Re: Community of Behchoko
Water Licence – W2014L3-0002
Operation and Maintenance Plan – Land Farm
Request for Review and Comments**

The Department of Environment and Natural Resources (ENR), Government of the Northwest Territories has reviewed the plan at reference based on its mandated responsibilities under the *Environmental Protection Act*, the *Forest Management Act*, the *Forest Protection Act*, the *Species at Risk (NWT) Act*, the *Waters Act* and the *Wildlife Act* and provides the following comments and recommendations for the consideration of the Board.

Topic 1: Land Farm Previous and Current Operation Status

Comment(s):

Appendix A of the Operation and Maintenance Plan (O&M Plan) describes the past operational status of the Behchoko land farm from 2004 to 2009. In 2013, BlueMetric Environmental noted strong odours, sheens and possible free phase products in multiple test pits, and detected elevated concentrations of PHC in both the north and south areas of the land farm. Past inspection reports requested removal of a barrel of foreign material and hydrocarbon-impacted adsorbent material in 2014, and noted that enforcement actions may be required as further misuse of the land farm facility was observed with non-soil waste being deposited at the land farm (October 2016).

Past studies reported that the Behchoko land farm has exceeded its design capacity, and that no additional material should be added to the land farm until there was

sufficient space to manage it effectively. Recent inspection reports indicated that no soils were removed from the land farm, and that no effluent was discharged from the land farm. In a recent meeting (February 2017) with MACA and ENR inspectors, the community indicated that they had no intention of doing further land farming. Page 1 of the O&M Plan specifies that operation of the Behchoko land farm should be continued for a minimum of two (2) years during which time the land farm treatment performance would be evaluated - and a future course of action determined.

A land farm O&M Plan has been circulated through the Land and Water Board process for review. ENR recognizes that the Behchoko land farm is not expected to be operated in the future; however, ENR is providing the following comments regarding best land farming operations and maintenance practices in the event that land farming continues in Behchoko and the O&M Plan is put into practice.

Recommendation(s):

- 1) ENR recommends that the Behchoko land farm O&M Plan should reflect best management practices to minimize liability risks to the community, as well as minimize the environmental risks of incomplete treatment of contaminated soils.

Topic 2: Important Screening Acceptance Procedures

Comment(s):

An O&M Plan is intended to provide operation/site specific information to provide staff with the information they require to properly operate the land farm facility. An important step when considering whether to accept soils for treatment at a land farm facility is to properly assess the extent and type of the contamination present in the materials before acceptance. Section 1.0 of the plan specifies that Behchoko land farm facility is to treat hydrocarbon-impacted soils only.

The liability of accepting contaminated soils that cannot be treated through land farming procedures falls on the facility owner. In the current case, it is the Community of Behchoko's responsibility to ensure that proper analysis of the soils considered for treatment is conducted to ensure that contaminants other than petroleum hydrocarbons (or mixtures) are not received and placed within the land farm facility. While Behchoko Land farm facility is to treat hydrocarbon-impacted soils only, the plan does not clarify the level or nature of contamination present, such as lightly to mid-range hydrocarbons, in the impacted soils that can be accepted for treatment. As such, land farming activities are generally considered ineffective and unsuitable for soils contaminated with petroleum hydrocarbons >30,000 parts per million (PPM), as measured by assessing Total Petroleum Hydrocarbon (TPH) or Total extractable hydrocarbon (THE), or if the soil is

saturated to point of visible free product) (Yukon Contaminated Site Regulations, 2011).

Adequate screening to determine acceptance is an important step, not only to prevent unnecessary liability to the community, but also to prevent certain contaminants (such as metals) from entering the land farming processes, and subsequently being re-introduced at the disposal location (SWF), with the potential of creating further impacts to surrounding land and water.

Recommendations:

- 1) ENR recommends Behchoko Land farm O&M Plan be updated to specify which type of hydrocarbon-impact contaminated soils are accepted at the land farm (light to mid-range petroleum contaminated soils), and which hydrocarbon-impacted soils are not accepted at the facility.
- 2) ENR recommends hydrocarbon concentration limits be specified to help discriminate heavily impacted soils from their less-impacted counterparts.
- 3) In order to best assist staff evaluate whether to accept or refuse contaminated soils for treatment, the O&M Plan should further specify which other types of contaminated soils are not be accepted at the facility, such as metal-impacted soils.
- 4) Finally, ENR recommends the O&M Plan specify which parameters will be analyzed to determine whether contaminated soils will be accepted at the facility. ENR expects that the list of parameters evaluated for acceptance would be broader than the ones assessed for soil quality criteria in Item D. 20 of the W2014L3-0002 Water Licence. Metals should be included amongst the parameters to be tested at the acceptance stage of the process.

Topic 3: Soil Management Procedures – Liner Integrity

Comment(s):

Section 3.3 on *Aeration* specifies that the contaminated soils *should* be tilled every 3 weeks from June to October. It also specifies that impacted soil *should* be divided in equal size squares of approximately 2 m by 2 m, and that the soils should be tilled to a depth of approximately 2 m or until the clay liner is encountered.

It is unclear in the plan what precautions are taken to protect the integrity of the clay liner layer during soils manipulation of windrow placement. SNP 2014-5 was established to monitor potential impacts to groundwater and surface water surrounding the Solid Waste Facility and Land farm. ENR notes however, that there

is currently no groundwater SNP station(s) to monitor the liner's integrity and/or assess potential impacts to groundwater.

Recommendations:

- 1) ENR recommends that procedures for protecting the land farm clay liner be outlined in the O&M Plan.
- 2) If contaminated soils will continue to be treated at the Behchoko land farm, ENR recommends that SNP groundwater monitoring stations be installed.

Topic 4: Land Farm Access

Comment(s):

Section 3.1 of the plan specifies that access to the site *should* be restricted to authorized personnel. However, the land farm is located in close proximity and within the limits of the Solid Waste Facility.

Recommendations:

- 1) ENR recommends the plan to identify access control measures (eg. gate, fence, etc) that will be provided for the facility.

Topic 5: Land Farm Personnel Names and Contact Information

Comment(s):

ENR notes that the name and contact information of the land farm staff were not provided within the O&M Plan.

Recommendations:

- 1) ENR recommends the name(s) and contact information of the land farm staff be provided within the current O&M Plan.
- 2) ENR recommends the O&M Plan provides details on past or planned operator training (specific to land farming) offered to the community staff working at the land farm facility.

Comments and recommendations were provided by ENR technical experts in the Water Resources Division and the North Slave Region and were coordinated and collated by the Environmental Impact Assessment Section, Conservation, Assessment and Monitoring (CAM).

Should you have any questions or concerns, please do not hesitate to contact Patrick Clancy, Environmental Regulatory Analyst at (867) 767-9233 Ext: 53096 or email patrick.clancy@gov.nt.ca.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Clancy', written in a cursive style.

Patrick Clancy
Environmental Regulatory Analyst
Environmental Assessment and Monitoring Section
Conservation, Assessment and Monitoring Division
Department of Environment and Natural Resources
Government of the Northwest Territories