

Engagement Plan

Norman Wells Soil Treatment Facility

Sahtu Land and Water Board Class B Licence

Renewal Application



NORMAN WELLS SOIL TREATMENT FACILITY

Engagement Plan
Norman Wells Soil Treatment Facility Renewal
Version Number 1.0

May 2023

Table of Contents

Plain Language Summary	3
1.0 Introduction	4
1.1. KBL Environmental Ltd.	4
1.2. Soil Treatment Facilities	4
2.0 Identification of Affected Parties.....	4
3.0 Purpose of Engagement	5
4.0 Pre-Submission Engagement.....	5
4.1. Initial Engagement.....	5
4.2. Notice of Project.....	5
4.3. Community Meeting/Project Information Session – Norman Wells.....	Error! Bookmark not defined.
4.4. Other Meetings.....	5
5.0 Life of Project Engagement.....	6

PLAIN LANGUAGE SUMMARY

This Plan identifies who KBL Environmental Ltd. (KBL) is seeking to engage through communication in support of our application to construct and manage a soil treatment facility in Norman Wells, NT. KBL has and will continue to communicate with the Sahtu Land and Water Board, the Government of the Northwest Territories Environment and Natural Resources and the Town of Norman Wells in the preparation of this document.

Through initial discussion with the above, KBL has identified the following parties to engage and consult with, who may have an interest in the proposed project:

- Sahtu Secretariat Incorporated
- Fort Norman Metis Nation Local #60 Land Corporation
- Tulita District Land Corporation
- Fort Norman Renewable Resource Council
- Norman Wells Land Corporation
- Norman Wells Renewable Resources Council
- Hamlet of Tulita
- Town of Norman Wells
- Government of Northwest Territories
- Sahtu Health and Social Services
- Sahtu Land Use Planning Board
- Sahtu Renewable Resource Board
- Sahtu Land and Water Board
- Tulita Band Council
- Tulita Land Corp.

1.0 INTRODUCTION

The purpose of this Engagement Plan (the Plan) is to describe how KBL Environmental Ltd. (KBL) proposes to engage parties who may have an interest in KBL's upcoming application to the Sahtu Land and Water Board (SLWB) for a Type B Water Licence. The application will be in support of KBL's project proposal to construct a Soil Treatment Facility (STF) in the Town of Norman Wells Upper Industrial Area.

1.1. KBL Environmental Ltd.

Established in 2006, KBL is a privately owned and operated northern business providing our clients located in each of Canada's territories, British Columbia, and Alberta with waste management services and systems. The organization has proudly developed a reputation for innovation and best in class service with unsurpassed safety of operations. KBL presently operates six facilities in the Northwest Territories, Nunavut, and Yukon, with an additional facility that is in the construction stage. KBL staff and owners are committed to the communities in which we live and work, and we recognize and value our relationships with neighbors, land users and the community. We encourage open and ongoing communication throughout the life of all of our projects.

1.2. Soil Treatment Facilities

Soil treatment facilities are utilized for receipt of contaminated soils that can be treated to meet regulatory criteria to allow for beneficial re-use. Prior to soil acceptance, soil composition and contaminant analysis data is review by KBL to ensure that treatment criteria can be achieved. Once soil is received at an STF, it is either managed for disposal or treated. Soil treatment in northern climates is primarily during the summer months which offer more conducive conditions for material handling and increased promotion of hydrocarbon degradation. Facilities are generally located adjacent or near municipal solid water disposal facilities so that treated soils can be reused as daily cover for low density municipal solid waste.

2.0 IDENTIFICATION OF AFFECTED PARTIES

The following parties were identified as potentially affected by the Project based on preliminary project planning local knowledge, and conversations with the SLWB.

- Sahtu Secretariat Incorporated
- Fort Norman Metis Nation Local #60 Land Corporation
- Tulita District Land Corporation
- Fort Norman Renewable Resource Council
- Norman Wells Land Corporation
- Norman Wells Renewable Resources Council
- Hamlet of Tulita
- Town of Norman Wells
- Government of Northwest Territories
- Sahtu Health and Social Services

- Sahtu Land Use Planning Board
- Sahtu Renewable Resource Board
- Sahtu Land and Water Board
- Tulita Band Council
- Tulita Land Corp.

3.0 PURPOSE OF ENGAGEMENT

Pre-submission engagement involves implementation of this Plan prior to submission of an application for a Type B Water Licence to the SLWB. The purpose of pre-submission engagement is to:

- 1) Identify parties potentially affected by development of a soil treatment facility in Norman Wells;
- 2) Inform the parties of the Project rationale and proposed design; and
- 3) Seek to understand affected parties' interests and concerns, and to use that information to advance the project planning and inform the final engineering design of the facility.

4.0 PRE-SUBMISSION ENGAGEMENT

4.1. Initial Engagement

Beginning in May of 2023, KBL will initiate an engagement and consultation initiative to engage the parties identified, and involve any additional parties that may be identified as the engagement initiative is advanced. Pre-submission engagement will start with verbal contact by telephone with the Sahtu Land and Water Board, and then electronically with other potentially affected parties. Following initial contact and understanding of parties' desire to engage, ongoing communication will vary based on the preferences of the parties and may include phone calls, emails, and letter mail. Each engagement, including all attempts to engage are documented in the Project Pre-Submission Engagement Record.

4.2. Notice of Project

KBL will issue an electronic copy of the Notice of Project (NOP) to all interested parties following the initial contact and confirmation of engagement. An abbreviated Notice of Project will also be advertised in the News North, directing interested parties to a KBL contact to obtain the entire Notice. The NOP will include a description of the project and its associated activities, a discussion of the project setting (natural environment), a conceptual design of the STF, a discussion of potential effects and the mitigative measures proposed to avoid them, and the proposed project schedule. The anticipated permit requirements will also be discussed.

The information, comments and questions that are received after the issue of the Notice of Project will be documented in the Pre-Submission Engagement Record and will be used to help form the Project planning prior to the submission to the SLWB.

4.3. Other Meetings

KBL will accommodate meeting requests with interested parties through teleconference discussions and through face to face meetings. Face to face meetings will be scheduled to coincide with the community

meeting date. If additional efforts to hold face to face meetings are required, KBL will make every effort to accommodate the interested parties in a reasonable and cost-effective manner.

5.0 LIFE OF PROJECT ENGAGEMENT

KBL will apply a life-of project engagement approach throughout the Project to continue to inform affected parties in advance of key milestones such as application for licence amendment, renewal, or project closure. The purpose of life-of-project engagement for the Project is to:

- 1) Re-engage parties potentially affected by changes to water licence terms and conditions associated with the Project;
- 2) Describe rationale and nature of the proposed changes; and
- 3) Seek to understand affected parties' interests and concerns.

Life-of-project engagement will typically occur via email and may include notification and/or inclusion of regulatory filings, depending upon the interest and preferences of the affected parties.

Pre-Submission Engagement Log

Engagement Date	Communication With	Method of Engageme	Communication From	Reason/Topic	Comments; Resolution	Follow Up Method (Correspondence, Meeting Notes, Meeting Minutes)
May 11, 2023	Ayoni Keh Land Corporation	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery receipt.
May 11, 2023	Bedzi Ahda First Nation	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery receipt.
May 11, 2023	Colville Lake ʔehdzo Got'Inę	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery receipt.
May 11, 2023	DélInę Got'Inę Government	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery and read receipt.
May 11, 2023	Saoyú-ʔehdacho National Historic Site	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery receipt.
May 11, 2023	DélInę ʔqhdake Council	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery and read receipt.
May 11, 2023	Fort Good Hope Métis Local #54 Land Corporation	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery receipt.
May 11, 2023	Fort Good Hope ʔehdzo Got'Inę	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery receipt.
May 11, 2023	K'ásho Got'Inę Community Council	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery receipt.
May 11, 2023	Yamoga Land Corporation	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	2023-07-11, Requested a call with KBL.	Telephone discussion on Sep 11, 2023 with President, Edwin Erutse. No further questions or concerns at this time.
May 11, 2023	Nę K'ə Dene Ts'Ilı Forum	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery receipt.
May 11, 2023	Norman Wells Land Corporation	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery receipt.
May 11, 2023	Norman Wells Renewable Resources Council	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery receipt.
May 11, 2023	Town of Norman Wells	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery receipt.
May 11, 2023	Conference of Management Authorities on Claire Singer	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery and read receipt.
May 11, 2023	Indigenous Leadership Initiative	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery receipt.
May 11, 2023	Sahtú Dene Council	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery and read receipt.
May 11, 2023	Sahtu Land and Water Board	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery receipt.
May 11, 2023	Sahtu Land Use Planning Board	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery receipt.
May 11, 2023	Sahtú Secretariat Incorporated	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery and read receipt.
May 11, 2023	ʔehdzo Got'Inę Gots'ę Nákedı Sahtú Renewable Resources Board	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	Special advisor James McPherson responded that "but I do not think I can be of any help to this project" Assistant Executive Director Catarina Owen requested a meeting with KBL	Meeting and presentation on May 24, 2023. Attendees include Catarine Owen, Janathan Yakeleya, and Leon Andrew.
May 11, 2023	Nááts'Ich'oh National Park Reserve	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery and read receipt.
May 11, 2023	Fort Norman Métis Local #60	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery receipt.
May 11, 2023	Tulita District Land Corporation	Electronic	K. Haywood-Farmer, KBL	Notice of project renewal	No response.	Delivery receipt.

KBL Environmental Ltd. - Norman Wells STF Renewal - Sahtu Land and Water Board

Pre-Submission Engagement Log

[illegible]

From: [Katie Oliver](#)
To: [Leon Andrew](#); [Jonathan Yakeleya](#); [Catarina Owen](#)
Cc: [KBL Regulatory](#); [Kelly Haywood-Farmer](#)
Subject: RE: [EXT]RE: [EXT]KBL Environmental Ltd. Notice of License Renewal
Date: May 24, 2023 3:45:53 PM

Hi Catarina, Leon and Jonathan;

It was nice meeting each of you today and I appreciate your comments and questions on the Normal Wells Soil Treatment Facility.

Further to your questions on possible water fowl being attracted to the facility, I confirmed that due to the small size of the pond, the industrial location, and lack of vegetation it is unlikely that the pond would attract waterfowl. The pond will be kept free of vegetation to discourage waterfowl from frequenting the pond. The pond will be regularly visually monitored for the presence of waterfowl during our inspections to confirm that the pond is not attracting waterfowl. In addition, if we see that birds or water fowl are being attracted to the pond, we will work with NWT – ECC to determine the best bird deterrent to install at the site, such as reflective tape or decoys. Should any bird be observed in proximity to the pond showing signs of distress, the facility operator will contact NWT – ECC for guidance or assistance in managing the distressed bird.

Please let me know if you have any other questions or comments from the presentation and our discussions.

Have a great evening;

Thank you | Merci | Mársı | Kinanāskomitin | Hąı' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi



Katie Oliver, MBA, CET, PMP

General Manager, Environmental Consulting

m: 780.893.3305

d: 587.601.5736

p: 780.452.7779

f: 866.316.7991

3909, 68 Avenue
Leduc, AB T9E 0Z4

kblenv.com

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From: Catarina Owen <eas@srrb.nt.ca>
Sent: Thursday, May 11, 2023 1:24 PM
To: Kelly Haywood-Farmer <Khaywoodfarmer@kblenv.com>
Cc: KBL Regulatory <regulatory@kblenv.com>
Subject: RE: [EXT]RE: [EXT]KBL Environmental Ltd. Notice of License Renewal

Oh geez, no wonder I didn't anything for the 22nd!
I can do 10 am on the 24th if that works for you I will send a scheduler with zoom meeting details.

From: Kelly Haywood-Farmer <Khaywoodfarmer@kblenv.com>
Sent: Thursday, May 11, 2023 4:10 PM
To: Catarina Owen <eas@srrb.nt.ca>
Cc: KBL Regulatory <regulatory@kblenv.com>
Subject: [EXT]RE: [EXT]KBL Environmental Ltd. Notice of License Renewal

Hi Catarina,

Thank you for reaching out. Monday the 22nd is a STAT holiday, but we can make anytime on the 23rd or 24th work if you are available on those days instead.
Let me know what would be preferable to you.

Thanks!



Kelly Haywood-Farmer

Operations Administrator,
Consulting

D 587 601 5854

O 867 873-5263

khaywoodfarmer@kblenv.com

kblenv.com

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From: Catarina Owen <eas@srrb.nt.ca>
Sent: Thursday, May 11, 2023 11:41 AM
To: Kelly Haywood-Farmer <Khaywoodfarmer@kblenv.com>
Cc: KBL Regulatory <regulatory@kblenv.com>
Subject: RE: [EXT]KBL Environmental Ltd. Notice of License Renewal

Hi Kelly, are you available to meet our team (virtual) on Monday May 22 at 10 am MT?
Thanks! Catarina

From: Kelly Haywood-Farmer <Khaywoodfarmer@kblenv.com>
Sent: Thursday, May 11, 2023 2:27 PM
Cc: KBL Regulatory <regulatory@kblenv.com>
Subject: [EXT]KBL Environmental Ltd. Notice of License Renewal

Good morning,

Attached is a Notice of Project for a proposed renewal of our SLWB Water licence S18L1-002 for a soil treatment facility within the existing Norman Wells Upper Industrial Park area. Your organization has been identified as potentially having an interest in the project.

KBL Environmental Ltd. will be submitting an application to the Sahtu Land and Water Board (SLWB) for renewal of Class B Water Licence S18L1-002 to construct and operate a soil treatment facility, dedicated to the treatment of petroleum hydrocarbon contaminated soils which would then be re-used as daily cover for the Norman Wells landfill.

The Notice of Project document includes an introduction to KBL Environmental Ltd. whose headquarters are in Yellowknife, a description of the proposed undertaking, preliminary discussion on potential project effects and proposed mitigation measures, and the project schedule.

The application to the SLWB will include an update on the detailed effects and mitigation discussion, a facility Operations and Maintenance Plan, a Spill Contingency Plan and a Waste Management Plan.

If you have any questions or concerns about the proposed project, please contact me. We welcome the opportunity to discuss the project with you and are available for a teleconference discussion at your convenience.

Thank you;

Kelly Haywood-Farmer

Operations Administrator,



Consulting

D 587 601 5854

O 867 873-5263

khaywoodfarmer@kblenv.com

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From: [Katie Oliver](#)
To: president@yamoga.ca
Cc: [Jacinta Grandjambe](#)
Subject: RE: KBL Environmental Ltd. Notice of License Renewal
Date: September 11, 2023 10:14:00 AM

Hi Edwin;

It was very nice talking to you this morning to discuss the renewal of our facility license. As discussed, I will be submitting the renewal to the water board shortly and if any additional questions or concerns arise, would be interested in meeting with you again to discuss the facility further.

Thank you;

Thank you | Merci | Mársi | Kinanāskomitin | Hą́ı' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsı



Katie Oliver, MBA, CET, PMP

Director, Corporate Development

m: 780.893.3305

d: 587.601.5736

p: 780.452.7779

f: 866.316.7991

3909, 68 Avenue
Leduc, AB T9E 0Z4

kblenv.com

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From: Jacinta Grandjambe <jgrandjambe@yamoga.ca>
Sent: Monday, July 10, 2023 9:19 AM
To: Katie Oliver <koliver@kblenv.com>
Subject: RE: KBL Environmental Ltd. Notice of License Renewal

I just sent a message to Edwin and he will give you a call.

Thank you

jacinta

From: Katie Oliver <koliver@kblenv.com>

Sent: Friday, July 7, 2023 3:50 PM

To: Kelly Haywood-Farmer <Khaywoodfarmer@kblenv.com>; Jacinta Grandjambe <jgrandjambe@yamoga.ca>

Subject: RE: KBL Environmental Ltd. Notice of License Renewal

Hi Jacinta;

I just left you a voicemail. Kelly is on vacation for the next week, but please feel free to give me a call at 780.893.3305

Thank you;

Thank you | Merci | Mársi | Kinanāskomitin | Hą́ı' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi



Katie Oliver, MBA, CET, PMP

General Manager, Environmental Consulting

m: 780.893.3305

d: 587.601.5736

p: 780.452.7779

f: 866.316.7991

3909, 68 Avenue
Leduc, AB T9E 0Z4

kblenv.com

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From: Kelly Haywood-Farmer <Khaywoodfarmer@kblenv.com>

Sent: Thursday, July 6, 2023 9:21 PM

To: Katie Oliver <koliver@kblenv.com>

Subject: FW: KBL Environmental Ltd. Notice of License Renewal

FYI



Kelly Haywood-Farmer

Operations Administrator,
Consulting

D 587 601 5854

O 867 873-5263

khaywoodfarmer@kblenv.com

kblenv.com

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From: Jacinta Grandjambe <jgrandjambe@yamoga.ca>

Sent: Thursday, July 6, 2023 3:45 PM

To: Kelly Haywood-Farmer <khaywoodfarmer@kblenv.com>

Subject: RE: KBL Environmental Ltd. Notice of License Renewal

Kelly

We are trying to call the numbers listed but there is no answer. Please call me at 867-598-2519.

From: Kelly Haywood-Farmer <khaywoodfarmer@kblenv.com>

Sent: Thursday, May 11, 2023 11:27 AM

Cc: KBL Regulatory <regulatory@kblenv.com>

Subject: KBL Environmental Ltd. Notice of License Renewal

Good morning,

Attached is a Notice of Project for a proposed renewal of our SLWB Water licence S18L1-002 for a soil treatment facility within the existing Norman Wells Upper Industrial Park area. Your organization has been identified as potentially having an interest in the project.

KBL Environmental Ltd. will be submitting an application to the Sahtu Land and Water Board (SLWB)

for renewal of Class B Water Licence S18L1-002 to construct and operate a soil treatment facility, dedicated to the treatment of petroleum hydrocarbon contaminated soils which would then be re-used as daily cover for the Norman Wells landfill.

The Notice of Project document includes an introduction to KBL Environmental Ltd. whose headquarters are in Yellowknife, a description of the proposed undertaking, preliminary discussion on potential project effects and proposed mitigation measures, and the project schedule.

The application to the SLWB will include an update on the detailed effects and mitigation discussion, a facility Operations and Maintenance Plan, a Spill Contingency Plan and a Waste Management Plan.

If you have any questions or concerns about the proposed project, please contact me. We welcome the opportunity to discuss the project with you and are available for a teleconference discussion at your convenience.

Thank you;



Kelly Haywood-Farmer

Operations Administrator,
Consulting

D 587 601 5854

O 867 873-5263

khaywoodfarmer@kblenv.com

kblenv.com

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From: [Kelly Haywood-Farmer](#)
Cc: [KBL Regulatory](#)
Subject: KBL Environmental Ltd. Notice of License Renewal
Date: May 11, 2023 11:27:05 AM
Attachments: [20230519_NW_STF Notice of License Renewal.pdf](#)

Good morning,

Attached is a Notice of Project for a proposed renewal of our SLWB Water licence S18L1-002 for a soil treatment facility within the existing Norman Wells Upper Industrial Park area. Your organization has been identified as potentially having an interest in the project.

KBL Environmental Ltd. will be submitting an application to the Sahtu Land and Water Board (SLWB) for renewal of Class B Water Licence S18L1-002 to construct and operate a soil treatment facility, dedicated to the treatment of petroleum hydrocarbon contaminated soils which would then be re-used as daily cover for the Norman Wells landfill.

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If you have any questions or concerns about the proposed project, please contact me. We welcome the opportunity to discuss the project with you and are available for a teleconference discussion at your convenience.

Thank you;



Kelly Haywood-Farmer

Operations Administrator,
Consulting

D 587 601 5854

O 867 873-5263

khaywoodfarmer@kblenv.com

kblenv.com

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Norman Wells Soil Treatment Facility



Notice of License Renewal

KBL Environmental Ltd.
May 9, 2023

TABLE OF CONTENTS

1.0	INTRODUCTION.....	2
1.1	Project Introduction.....	2
1.2	Organizational Profile.....	2
1.3	Soil Treatment Facilities.....	2
2.0	PURPOSE OF THE SOIL TREATMENT FACILITY	2
3.0	PURPOSE OF ENGAGEMENT	3
4.0	SITE LOCATION.....	3
5.0	PROJECT DESCRIPTION	3
5.1	Facility Design.....	3
5.2	Facility Operations.....	4
5.3	Inspections.....	5
6.0	SURFACE WATER MANAGEMENT	5
6.1	Water Retention Pond.....	5
6.2	Water Storage Tanks	6
6.3	Portable Water Treatment Plant.....	7
7.0	GROUNDWATER MONITORING PROGRAM	7
8.0	WIND EROSION MITIGATION	7
9.0	CONTAINMENT OF IMPACTED SOIL.....	8
10.0	SCHEDULE OF PROPOSED ACTIVITIES.....	8

ATTACHMENTS

Attachment A	– Aerial Photos	10
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1.0 INTRODUCTION

1.1 Project Introduction

KBL Environmental Ltd. (KBL) is proposing to renew the approved Type B Water License #S1861-002, through the Sahtu Land and Water Board (SLWB) to construct and operate a soil treatment facility (STF). There have been no changes to the original scope of work, originally proposed to the SLWB in July of 2018. The STF will be located within the existing Norman Wells Upper Industrial Park area, which is zoned as Industrial. This Notice of License Renewal includes information about KBL Environmental Ltd, a description of the proposed project, a preliminary discussion of potential effects of the project and proposed measures to mitigate the effects.

1.2 Organizational Profile

Established in 2006, KBL is a privately owned and operated northern business based in Yellowknife, NT. KBL provides waste management services and systems to clients in each of Canada's territories and the western provinces. The organization has proudly developed a reputation for innovation and best in class service with unsurpassed safety of operations. KBL presently operates five facilities in the Northwest Territories, Nunavut and the Yukon. Of these facilities, there are four STFs, one located near the Yellowknife landfill, one located in Cambridge Bay, NU, one in Dawson City, and the other in Inuvik. Our facilities are operated in accordance with permits issued by regulatory oversight bodies.

KBL staff and owners are committed to the communities in which we live and work, and we recognize and value our relationships with neighbours, land users and the community. We encourage open and ongoing communication throughout the life of all our projects.

1.3 Soil Treatment Facilities

Soil treatment facilities are used for receiving petroleum hydrocarbon contaminated soils resulting from fuel spills that can be treated to allow for beneficial re-use, typically in landfill operations. Jurisdictional regulations govern requirements of the facility engineering and operations (including treatment criteria) through formal permitting processes. Facilities are generally located adjacent or close to municipal solid waste disposal facilities so that treated soils can be reused as daily cover (DC) for low-density municipal solid waste. Once soil is received at an STF, it is either managed for disposal or treated. Soil treatment in northern climates is primarily during the summer months which offer more conducive conditions for material handling and increased promotion of hydrocarbon degradation.

2.0 PURPOSE OF THE SOIL TREATMENT FACILITY

There are currently no local operational contaminated soil and snow handling and treatment facilities in the Norman Wells area. By constructing and operating the STF in Norman Wells there will be improved accessibility to local petroleum hydrocarbon contaminated soil and snow waste management services. The reduction in transport distances results in: less congestion of primary highways; and, reduced opportunity for safety or environmental incidents.

There will be short-term and long-term economic inputs for the Town of Norman Wells, including the hiring of qualified local contractors for facility construction and during the life of the facility (seasonal soil treatment events and soil segregation activities). Additionally, there will be an economic benefit for the Town with respect to operating costs at the landfill. The soil treated at the STF will be transferred to the landfill for use as daily cover material reducing costs associated with acquiring daily cover material. KBL will advertise any employment opportunities in the community. It is presently anticipated that facility staffing will consist of one full time technician.

3.0 PURPOSE OF ENGAGEMENT

Pre-submission engagement involves the implementation of the project Engagement Plan prior to the submission of an application for a Type B Water License to the Sahtu Land and Water Board. The purpose of pre-submission engagement is to:

- 1) Identify parties potentially affected by the development of a soil treatment facility in Norman Wells.
- 2) Inform the parties of the Project rationale, benefits, and proposed design, risks and mitigation strategies.
- 3) Seek to understand affected parties' interests and concerns, and to use that information to advance the project planning and inform the final engineering design of the facility.

4.0 SITE LOCATION

The proposed site for the Norman Wells STF is within the existing Norman Wells Upper Industrial Park area (Lot: 2195/2194/2205/2206 Plan: 3966). The footprint of the proposed Facility area will measure approximately 1.256 hectares. Site location figure and a conceptual drawing showing the proposed location and layout of the facility in relation to the Town of Norman Wells, and the location and approximate dimensions of the facility can be found in *Attachment A*.

The site is located approximately 530 meters north from the nearest surface water body (Sherwood Lake).

5.0 PROJECT DESCRIPTION

KBL is applying for the renewal of its approved Type B Water License #S18L1-002, to the Sahtu Land and Water Board for the construction and operation of a soil treatment facility within the existing Norman Wells Upper Industrial Park area.

5.1 Facility Design

The facility will consist of one engineered treatment cell which will be surrounded by a soil berm. The treatment cell will be constructed completely above ground and graded to direct precipitation to a water retention pond. The STF will include the following elements:

- A high-density polyethylene (HDPE) or equivalent liner to prevent contaminant migration from the STF to the surrounding soil and groundwater;

- Soil berms surrounding the entire STF to prevent soil and precipitation from leaving the STF and preventing run on of surrounding surface water;
- An HDPE lined water retention pond for the collection of precipitation which falls on the STF area, and to hold any impacted snow during winter months;
- Tank area for the storage water from the retention pond;
- A mobile water treatment system to allow for treatment of stored water; and
- Groundwater monitoring wells to be located both up gradient and down gradient from the STF to monitor for changes to existing groundwater conditions.

5.2 Facility Operations

The STF will be designed to treat petroleum hydrocarbons in soil for use as daily cover at the Norman Wells landfill. Daily cover is required in landfills for the purpose of covering the material deposited in the landfill at the end of each day.

Soil received at the STF for treatment, and soil transferred from the STF post-treatment for use as daily cover at the Norman Wells landfill will be subject to specific soil quality criteria which will be established in the STF operating license.

During the winter season, operations at the STF will consist of receiving soil and snow that meets acceptance criteria and regularly scheduled inspections. Operations during the summer season will include receiving contaminated material, biotreatment of soil, and transfer of treated soil for re-use at the landfill.

Material accepted for treatment at the STF will originate from off-site sources including residential, commercial and industrial properties where a hydrocarbon release has occurred. During the winter months, contaminated snow may also be received at the STF; the snow would be stored in the lined water retention pond until thaw conditions. Prior to acceptance at the STF, the generator (point of origin of the release) will be required to provide analytical results from an accredited laboratory to confirm suitability for treatment.

Incoming soil will be segregated and tracked through a unique assigned number. Soil from each project will be managed and treated separately. There will be no co-mingling of soil from different projects, nor any dilution of contaminated soils with less contaminated soils.

Bioremediation is a method proven to be effective for the treatment of petroleum hydrocarbons in soil. The process is completed using equipment such as excavators and mechanical screening equipment depending on soil volumes and contaminant concentrations. Bioremediation occurs by promoting naturally occurring microbial activity in the soil which accelerates the degradation of the contaminants. This may be achieved by:

- Application of nutrients: addition of fertilizers with nitrogen and phosphorous at calculated dosing ratios based on chemical analysis of soils with application frequency determined by soil and contaminant characteristics;

- Air circulation: soil turning to enable air movement within the soil pile providing oxygen to micro-organisms;
- Application of bulking agents: for fine grain and dense soils such as clay, small amounts of wood chips or compost can be added to increase porosity increasing air, water and nutrient availability to microbes;
- Application of water from the retention pond or above ground storage tanks to maintain optimum soil moisture content. Moisture will be assessed by reviewing laboratory analytical results. Water application will be aimed at achieving a water filled pore space of between 0.3 to 0.6; and
- Application of chemical oxidants or surfactants¹.

Typically, two to three treatment events are conducted over the summer/fall season. Once the bioremediation process is complete, the soil will be laboratory tested to confirm it meets re-use criteria for landfill daily cover. The testing results will be provided to the Town representatives and Government of Northwest Territories' Department of Environment and Natural Resources (ENR) prior to removal from the treatment pad. Soil movement from the STF to the landfill for will be documented and kept on site. Soil not meeting re-use criteria will be transported off-site by KBL for disposal at an approved receiving facility.

Records, including certificates of analysis, documented inspections and movement documents (inbound and outbound) will be kept on file; electronic copies will be stored with KBL. All supporting documentation and laboratory certificates of analysis will be included in the STF annual report, or provided when required.

5.3 Inspections

Regularly scheduled (monthly) STF inspections will occur during snow-free months (May to October) and include a visual assessment for erosion, subsidence, exposure of liner, leakage, pond volume, wildlife disturbance, fencing and security breach. Brief daily inspections will be completed during routine work and additional site visits will be completed during periods of increased precipitation. Inspections will be conducted by trained personnel (on-site operator). Inspection logs will be maintained on site.

6.0 SURFACE WATER MANAGEMENT

6.1 Water Retention Pond

The water retention pond will be engineered to collect and store precipitation runoff from the biotreatment pad and contaminated snow. The water retention pond capacity will be based on the final engineering design to accommodate the surface water runoff and allow for required

¹ Sourcing and application of any oxidants or bio-surfactants will be reviewed with GNWT-ENR prior to application. Amendments selected for use may be stored within appropriate containers at the site.

freeboard (to be specified in the operating license). The volume will be calculated based on the normal volume of expected precipitation as well as extreme weather events. KBL will monitor daily the volume in the water retention pond during summer operations and during regularly scheduled inspections in the winter season at the STF. More frequent water level monitoring will occur when freeboard begins to decrease or in the event of heavier than normal precipitation events. During periods of precipitation when there is no work occurring at the STF, a KBL representative will be dispatched to ensure sufficient retention pond freeboard. If less than the required amount of freeboard is present or this condition is imminent, a vacuum truck or pumps will be dispatched to remove water from the retention pond.

Drainage patterns from the biotreatment pad will be assessed as part of the regular inspections to ensure that runoff water is diverted to the retention pond as per the design. Should it be determined that drainage is not occurring efficiently or that water is ponding on the treatment pad, equipment will be used to reconfigure soil piles to improve drainage.

Water held in the retention pond will be analyzed and compared with the environmental quality criteria (EQC) that will be specified in the operating license. The retention pond water management approach is determined by laboratory analytical results as detailed below:

- If the water meets all EQC parameters, it may be discharged on-site;
- If the water exceeds EQC criteria but analytical results are determined to be suitable for contaminant treatment using KBL's mobile water treatment plant, the water will be treated and water quality will be re-analyzed; and
- If the water exceeds EQC for contaminants, and is beyond the treatment capacity of KBL's water treatment plant, the water will be stored in tanks on site and then transported off-site to an approved receiving facility for disposal.

Retention pond water may also be utilized for application within the biotreatment pad for the provision of moisture to the soil. Moisture is an integral part of promoting microbial activity which enhances the degradation of petroleum hydrocarbons. Water application for biotreatment is permissible provided the water is not hazardous as defined by Guideline for the General Management of Hazardous Waste in the NWT (1998).

6.2 Water Storage Tanks

Two aboveground storage tanks will be located on-site. The storage tanks will be used to store excess water from the water retention pond in the event water levels increase above optimal freeboard. One storage tank will remain empty and dedicated for use as a holding tank if water removal from the retention pond is required. If it is anticipated that the existing tanks are unable to accommodate estimated retention pond removal volumes, the KBL will mobilize vacuum trucks and/or additional storage tanks as required.

The retention pond water may be pumped into the storage tanks as required for temporary storage until the time that treatment of the water can occur or analytical results determine that the water can be discharged on-site. If draining the pond is required for maintenance or inspection, the

water can be temporarily stored in the tanks. ENR representatives will be provided with notification of the intent to discharge along with the required analysis 10 days prior to the event.

A record of all water removal, treatment, disposal or discharge will be kept at the STF (and stored electronically at KBL) and summarized in the annual report.

6.3 Portable Water Treatment Plant

The portable water treatment plant consists of a series of inline bag filters designed to remove sediment and suspended solids. Following the filter bag train, effluent enters the bottom of treatment vessels which contain granular activated carbon and an organoclay. Treated water would be stored in one of the two storage tanks and sampled for comparison against the parameters specified in the STF's operating license. Sampling prior to, and after discharge will be mandatory to confirm treatment efficacy. ENR will be provided with analytical water quality results prior to discharge, disposal or re-use of water from the storage tanks or the retention pond.

KBL will provide a water treatment plant for treatment of retention pond water during the summer operating season. A final treatment event at the close of the summer season will be scheduled to provide maximum storage capacity in the retention pond through the winter and early spring.

7.0 GROUNDWATER MONITORING PROGRAM

A groundwater monitoring program (GMP) will be in place to detect any change in groundwater quality or quantity. The GMP will include bi-annual monitoring of the groundwater wells to be constructed as part of the undertaking; four groundwater monitoring wells will be installed at both up gradient and down gradient locations at the perimeter of the STF; water quality in the biotreatment pad water retention pond will also be monitored at the same frequency as the groundwater. Groundwater samples are analyzed for comparison to the Federal Interim Groundwater Quality Guidelines along with Alberta Tier 1 Groundwater Remediation Guidelines for historical comparison. Results from the spring and fall sampling events will be issued in the annual report along with accompanying laboratory certificates of analysis.

8.0 WIND EROSION MITIGATION

Strong winds can carry soil from stockpiles to areas outside the biotreatment pad. A contingency plan is required to mitigate soil erosion and the potential spread of contaminants. The main factors influencing wind erosion from soil stockpiles are the threshold wind speed, stockpile contents and surrounding conditions.

Wind erosion can be effectively controlled by maintaining moisture content within soil piles. Moisture is also an important factor in the bioremediation process therefore it is necessary to maintain adequate moisture content for microbial activity. Wind erosion control through moisture control will be satisfied by topical applications of water from the retention pond. As required, water from the pond will be sprayed over the soil stockpiles at a rate sufficient to minimize erosion by wind and minimal enough so as not to create ponding within the biotreatment pad.

If wind conditions are such that substantial dust is created during soil handling and treatment, activities will be shut down until conditions stabilize. Where possible, operations may shift to another area within the biotreatment pad that is more sheltered.

9.0 CONTAINMENT OF IMPACTED SOIL

Equipment working in and around the biotreatment pad presents a risk of spreading contaminated material from machinery tracks or tires as equipment is moving at the edges of the biotreatment pad or when soil is being handled for discharge. In addition, other conditions may also result in soil moving beyond the biotreatment pad such as unstable piles and inadequate soil berms. To prevent tracking of impacted soil, the following measures will be taken:

- 1) Operators of track mounted equipment working in the biotreatment pad will be required to shovel/remove soil off the tracks prior to leaving the area.
- 2) Trucks delivering contaminated soil to the Facility will be required to use a spotter or other indicator to ensure they are not backing into the treatment pad further than necessary.
- 3) Soil piles and windrows should be stably built with piles at or near the angle of repose.
- 4) Soil berms should be high enough and at an adequate distance to prevent soil which has rolled off piles from leaving the biotreatment pad.
- 5) Any soil tracked or dropped outside the treatment cell will be immediately scraped up and put back into the biotreatment pad.

10.0 SCHEDULE OF PROPOSED ACTIVITIES

Below is the proposed schedule of activities for the application, construction, and operation of the STF.

Month	Scope
April 2023	Begin engagement to identify potentially affected parties
June 2023	Host community information sessions and meetings with potentially affected parties. Respond questions or concerns
August 2023	Submit Type B Water License Application to SLWB
	Respond to SLWB comments and questions
January 2024	Finalize construction details
	Tender construction
	Recruitment for staff

April 2024	Begin and complete construction
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Should you have any questions or to identify any concerns please contact:

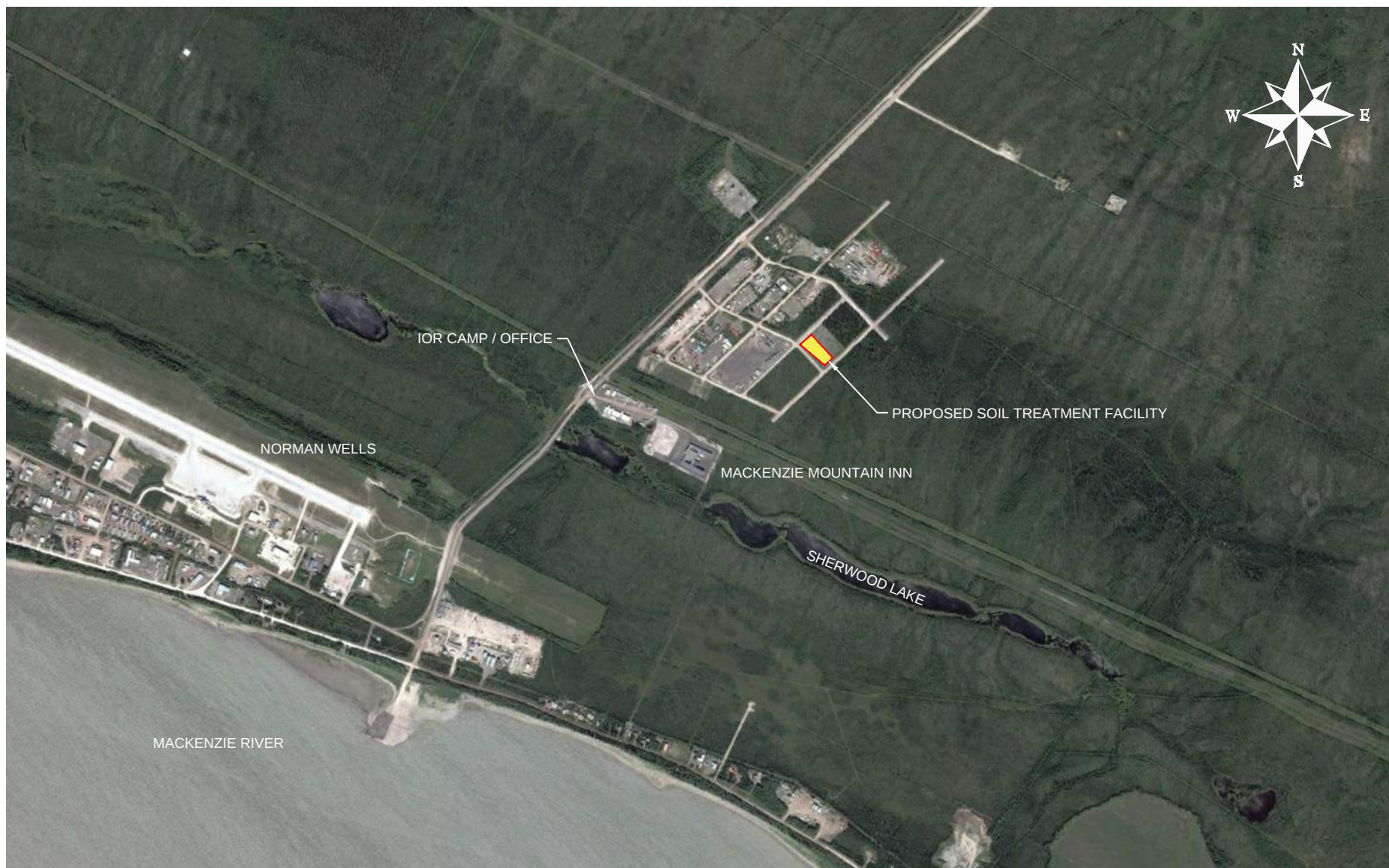
Katie Oliver, General Manager of Consulting

(tel) 780.452.7779; (fax) 877.316.7991

Email: koliver@kblenv.com

APPENDIX A

Aerial Photos



2016 SATELLITE AERIAL PHOTO SOURCE: GOOGLE EARTH

0 250 500 1000m
Scale 1 : 20 000

AERIAL OVERVIEW



Date:	14-MAY-18
File name:	16-161_18STF-B.dwg

Drawn:	LH
Approved:	DRAFT

KBL ENVIRONMENTAL LTD.
SOIL TREATMENT FACILITY - NORMAN WELLS

Figure:

1



2016 SATELLITE AERIAL PHOTO SOURCE: GOOGLE EARTH

0 25 50 100m
Scale 1 : 2500

PROPOSED SOIL TREATMENT FACILITY LOCATION



Date: 14-MAY-18	Drawn: LH	KBL ENVIRONMENTAL LTD. SOIL TREATMENT FACILITY - NORMAN WELLS	Figure: 2
File name: 16-161_18STF-B.dwg	Approved: DRAFT		