

# **Environmental Protection Plan**

## **Cambridge Bay Soil and Water Treatment Facility**

### **Kitikmeot Environmental Ltd.**



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#### **ENVIRONMENTAL PROTECTION PLAN**

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**FINAL**

Cambridge Bay Soil and Water Treatment Facility  
V.2.1  
4300CBSTF

December 2022

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## EXECUTIVE SUMMARY

This Plan outlines what Kitikmeot Environmental Ltd. (KEL) will do to protect the environment during operation of the soil and water treatment facility (SWTF). Before starting operations, KEL assessed baseline conditions as required, and collected samples of soil and groundwater in the footprint of the treatment facility to measure existing conditions. Monitoring wells were installed to monitor shallow groundwater during operations. While the SWTF is in operation, groundwater is sampled once annually to ensure that no impacts are present. When it is time to close the facility, KEL will sample the soil again to confirm there are no ongoing impacts to soil quality, along with final groundwater monitoring and sampling.

### REVISION HISTORY

DATE	DOCUMENT VERSION	SUMMARY OF CHANGES MADE	AUTHOR	APPROVER
June 2016	Ver. 1	Initial Draft	JF	
January 2017	Ver. 1	Initial Final Issue	JF	
December 2022	Ver.2.1	Ownership Change, Contacts & Date Updates	KHF	

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## 1.0 INTRODUCTION

Kitikmeot Environmental Ltd. (KEL), operates a soil and water treatment facility (the Facility) in Cambridge Bay, NU. The Facility is located adjacent to the Hamlet of Cambridge Bay sewage lagoon. KEL provides the expertise to manage the facility design, comply with the Nunavut Water Board (NWB) approval requirements, keep the facility in compliance and manage treatment operations. KEL will provide the Facility land, contracting services, and necessary equipment to treat contaminated soil and water.

Coordinates for the Facility are:

69° 07' 40.52"N      105° 02' 35.29"W

The site is accessible by road, from an access road off Natick Street.

Facility operations and maintenance contacts:

**Corporate Office:**

Kitikmeot Environmental Ltd.  
30 Mitik Street  
Cambridge Bay, NU  
X0B 0C0

**Operator Contacts:**

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**Primary Contact**

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KBL Environmental Ltd.  
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780.893.3305 (cell)  
**Secondary Contact**

The effective date for this *Environmental Protection Plan* (the Plan) is January 1, 2023. The Plan is effective for the duration of the lease and the life of the facility, a period of five (5) years, after which it is reviewed for renewal.

## 2.0 ENVIRONMENTAL POLICY

Our commitment to the protection of the environment needs to be demonstrated in how we conduct our day-to-day business operations. The highest standards of care are to be taken by all employees to minimize the environmental impact of all operations. The company management team has the responsibility to take a leadership role and develop policies and procedures that minimize environmental effects. Employees have the responsibility to bring to the attention of their immediate supervisor those procedures and incidents which may impair the environment. Our policy is to:

- 1) Comply with all applicable government regulations.
- 2) Consider the environmental effects of our operations.
- 3) Provide staff with all the necessary information, training and equipment.
- 4) Develop processes, policies and procedures that minimize the occurrence and consequences of environmental incidents.

Our corporate environmental goal is to minimize the environmental impact of our operations.

## 3.0 PROJECT OBJECTIVES AND SCOPE OF WORK

The purpose of this Plan is to describe environmental baseline conditions and outline monitoring activities that will occur to ensure that impacts to the aquatic and terrestrial environment associated with Facility operation are avoided. The scope of this Plan includes operation and maintenance of the Facility.

KEL will manage the program operations responsibly and will comply with all licenses, permits and applicable territorial and federal laws and regulations related to waste management specific to Facility operation.

### 3.1. Project Description

The purpose of this project is to operate a permanent SWTF in Cambridge Bay, NU. The site of the facility is located at 69° 07' 40.52"N 105° 02' 35.29"W. The permanent facility includes an engineered cell to receive petroleum hydrocarbon-contaminated snow and water. Water is treated on site by a package treatment plant. Treated water is stored in a tank until it is confirmed that the water meets discharge criteria, after which it is reused on site or released to the surrounding environment. Following bioremediation, treated soil meeting license criteria is beneficially reused off site at the Hamlet landfill or as otherwise permitted. Soil and water not meeting discharge/reuse criteria is transported off site for disposal at a suitable facility. The facility also includes an area of the treatment pad designated for storage of hazardous wastes awaiting transportation to authorized facilities.

The permanent facility, as illustrated in Appendix A, includes one engineered cell consisting of three sub-

cells: one cell 50 m x 40 m, for receipt, storage and treatment of petroleum hydrocarbon-contaminated soil; one cell designed for storage of up to 170 m<sup>3</sup> of petroleum hydrocarbon-contaminated snow and water; one cell 19 m x 14 m designed for storage of hazardous waste awaiting shipment; one small package treatment plant to treat petroleum hydrocarbon-contaminated water; one or two above ground storage tank(s) (AST) for treated water storage; one small shed for storage of supplies, documentation and health and safety equipment.

The permanent facility is intended to continue to operate for a duration of five (5) years commencing in January 2023, after which it is anticipated that the agreement with the Hamlet is reviewed.

## 4.0 ENVIRONMENTAL SETTING

Cambridge Bay, including the Facility, is situated within the Northern Arctic ecozone (NAE 2008). In this ecoregion, the landscape predominantly consists of low rolling plains covered with soil and rock debris left by glaciers. Many coastlines are characterized by wide flat plains with perennially frozen ground (permafrost). Mean annual temperatures range from -30 to -35°C in winter and from 5°C to 10°C in summer. Mean annual precipitation is 100-200 mm, with snow potentially falling during any month. Much of the region is devoid of plants, with the exception of some coastal lowlands and nutrient rich sheltered valleys. Muskox, Caribou, Arctic Fox and Polar Bear are the three dominant large mammals in the area, with the Collared Lemming being the only small mammal. Birds including Snowy Owl, Snow Geese, Canada Geese, and Horned Larks are also common to the region (NAE 2008).

## 5.0 ENVIRONMENTAL EFFECTS

### 5.1. Heritage Resources

The Facility has been constructed and is operating in an existing industrial area. No land clearing will occur nor will any new disturbance to the surrounding lands. The Facility is expected to have no impacts on heritage resources in the project area, as shown by results from a site data requisite sent to Government of Nunavut Department of Culture and Heritage (Appendix C).

## 5.2. Terrestrial Environment

The Facility is operating in an existing industrial area. No land clearing will occur nor will any disturbance to the surrounding lands. Any waste generated on site is managed in accordance with the Cambridge Bay Soil and Water Treatment Facility Waste Management Plan (KEL 2022), including appropriate containment and disposal, thus minimizing the potential to attract wildlife. Accordingly, the Facility is expected to have no impacts on vegetation or terrestrial wildlife in the vicinity of the project area.

As described in Appendix B, a baseline soil and groundwater sampling program did occur prior to Facility operation to document existing surficial material quality. The existing and planned facility both possess an engineered liner (refer to the Cambridge Bay Treatment Facility Operations and Management Plan (KEL 2022) for a detailed description). Routine liner and facility inspections, and in the event of a tear, immediate liner repair, will occur. At the time of closure or lease transfer, soil sampling will occur to document surficial material quality and to confirm that there are no existing or ongoing impacts from the Facility on soil quality. Accordingly, impacts to soil quality in the project area are considered to be negligible.

## 5.3. Aquatic Environment

Treated effluent from the water treatment plant which meets discharge criteria (refer to Cambridge Bay Treatment Facility Operations and Management Plan (KEL 2022) for criteria) is discharged to the environment, following exhaustion of effluent reuse opportunities. Treated effluent is batch discharged to the ground surface through a dedicated hose wherein the water will flow overland to natural drainage.

Prior to beginning operations, shallow groundwater wells were installed to monitor quantity and quality of groundwater in the area of the planned SWTF. During operations, groundwater is sampled once annually to ensure no changes occur to groundwater quality. Locations of groundwater wells were determined prior to construction of the SWTF.

## 5.4. Air and Noise

Operation of the bioremediation pad such that remediation is efficient and effective involves maintaining a certain degree of soil moisture during the frost-free portion of the year. Maintaining this moisture content in the soil also serves to suppress dust and avoid migration of soil off site as dust. Accordingly, impacts to air quality as well as impacts to terrestrial vegetation adjacent to the site resulting from dust deposition are considered negligible.

The Facility was constructed and operating in an existing industrial area. The main activities occurring at the site, bioremediation, are largely passive. Any activities that may generate noise such as tilling soil and pumping effluent is periodic during summer months, of short duration, will occur during daytime hours and is lower in volume and frequency than other activities that concurrently occur in the industrial area. The Facility is expected to have negligible impacts on ambient noise levels in the project area.

## 6.0 BASELINE SAMPLING PROGRAM

Baseline sampling included collection of soil samples prior to construction of the facility along with installation of shallow groundwater monitoring wells. The locations of groundwater monitoring wells were determined prior to construction and confirmed with all stakeholders. Refer to Appendix B for the completed baseline soil and groundwater sampling program.

## 7.0 DOCUMENTATION AND REPORTING

An annual report is submitted to the Nunavut Water Board in compliance of the issued water license. Copies of all reports is submitted GN Department of Environment (DOE), Indigenous and Northern Affairs (INAC) and the Nunavut Water Board (NWB) in accordance with the terms and conditions of the license approval and permits assigned to the Facility. In conjunction with annual reporting, this Plan is to be reviewed annually and updated as needed to maintain compliance. Analytical test results, as required under the anticipated water license, is submitted to all parties. A copy of all licenses and permits is maintained on site.

## 8.0 REFERENCES

Anderson, John et al. *Northern Arctic Ecozone (NAE) Ecological Framework of Canada* (2008). April 8, 2016 <ecozones.ca>

Kitikmeot Environmental Ltd. (KEL). 2022. Cambridge Bay Soil and Water Treatment Waste Management Plan.

Kitikmeot Environmental Ltd. (KEL). 2022. Cambridge Bay Soil and Water Treatment Facility Operation and Maintenance Plan.



# APPENDIX A

Facility Design Drawing





- REDUCED

## SITE PLAN AND SECTION

# APPENDIX B

## Baseline Sampling Program

Baseline Soil Sample Locations	Analysis Parameters
Beneath each quadrant of Cell	BTEX F1-F4, Total Metals
Upgradient of Cell	
Downgradient of Cell	

Baseline Groundwater Sample Locations	Analysis Parameters
CST-2, CST3, and CST-4	BTEX F1-F4, Total Metals, Total Extractable Hydrocarbons (TEH), Total Lead



# APPENDIX C

Department of Culture and Heritage Letter





# APPENDIX D

Site Location of Soil and Water Treatment Facility

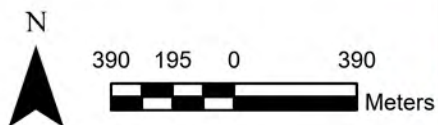






## LOCATION PLAN

Source: ESRI



Scale:	1:24000
Date:	2020-08-07
File #:	4300
Drawn By:	DLS
Designed By:	DLS
Reviewed By:	KO

KBL Environmental LTD.

Cambridge Bay

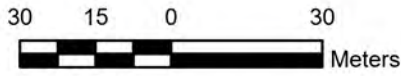
Soil Treatment Facility





Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

# SITE MAP



Source: ESRI



Scale:	1:1500
Date:	2020-08-07
File #:	4300
Drawn By:	DLS
Designed By:	DLS
Reviewed By:	KO

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