THE CITY OF DAWSON

COMMITTEE OF THE WHOLE MEETING #CW23-09

DATE: WEDNESDAY June 28, 2023
TIME: 7:15 PM
LOCATION: City of Dawson Council Chambers

Join Zoom Meeting
https://us02web.zoom.us/j/84809828779?pwd=ZlBTMGJmczY5T0M4SWZaRk9ybXFwdz09
Meeting ID: 848 0982 8779
Passcode: 693373

1. **CALL TO ORDER**

2. **ACCEPTANCE OF ADDENDUM & ADOPTION OF AGENDA**
   1. Committee of the Whole Meeting CW23-09

3. **MINUTES**
   1. Committee of the Whole Meeting Minutes CW23-08 of May 31, 2023

4. **BUSINESS ARISING FROM MINUTES**

5. **SPECIAL MEETING, COMMITTEE, AND DEPARTMENTAL REPORTS**
   1. Letter to Extend Audit
   2. Official Community Plan and Zoning Bylaw Amendments-Schmidt Mining
   3. Historic Resource Demolition Applications
   4. Mayor's AYC Travel Report
   5. Waste Diversion Centre
   6. Waste Management Plan

6. **PUBLIC QUESTIONS**

7. **IN CAMERA-LAND RELATED MATTER**

8. **ADJOURNMENT**

MINUTES OF COMMITTEE OF THE WHOLE MEETING CW23-08 of the Council of the City of Dawson held on Wednesday, May 31, 2023 at 7:00 p.m. via City of Dawson Council Chambers

PRESENT:
Deputy Mayor Lister
Mayor Kendrick
Councillor Somerville
Councillor Pikálek

REGRETS:
Councillor Spriggs

ALSO PRESENT:
CAO: David Henderson
EA: Elizabeth Grenon
A/PDM: Farzad Zarringhalam

1 Call To Order

The Chair, Deputy Mayor Lister called Committee of the Whole meeting CW23-08 to order at 7:01 p.m.

2 Acceptance of Addendum & Adoption of Agenda

CW23-08-01
Moved By: Councillor Somerville
Seconded By: Councillor Pikálek

That the agenda for Committee of the Whole meeting CW23-08 of May 31, 2023 be adopted as presented.

CARRIED 4-0

3 Public Hearings

3.1 Zoning Bylaw Annual Review-(Housekeeping)

The Chair called for submissions.

Jim Taggart provided comments regarding the Zoning Bylaw Amendment.

The Chair called for submissions a second time.

The Chair called for submissions a third and final time, and hearing none declared the Public Hearing closed.

3.2 Official Community Plan & Zoning Bylaw Amendment-(South of Callison Industrial Subdivision)

The Chair called for submissions.

Rod McIsaac, Jim Taggart, Stuart and Harold Schmidt and Shirely and Tina from Chief Isaac, provided comment on the Official Community Plan Amendment.

The Chair called for submissions a second time.

The Chair called for submissions a third and final time, and hearing none declared the Public Hearing closed.

3.3 Official Community Plan Amendment-(Lot 1059, Quad 116B/03)

The Chair called for submissions.

The Chair called for submissions a second time.

The Chair called for submissions a third and final time, and hearing none declared the Public Hearing closed.

3.4 Zoning Bylaw Amendment-(Lots 6 & 7, Block M, Ladue Estate)

The Chair called for submissions.

The Chair called for submissions a second time.

The Chair called for submissions a third and final time, and hearing none declared the Public Hearing closed.

4 Minutes

4.1 Committee of the Whole Meeting Minutes CW23-07 of May 3, 2023

CW23-08-02
Moved By: Councillor Somerville
Seconded By: Councillor Lister

That the minutes of Committee of the Whole Meeting CW23-07 of May 3, 2023 be approved as presented.

CARRIED 4-0

5 Business Arising From Minutes

6 Special Meeting, Committee, and Departmental Reports

6.1 Travel Report-AYC AGM

CAO Henderson gave an overview of the travel report regarding the Association of Yukon Communities AGM.

6.2 Taxation Update

CAO Henderson gave an overview of the Taxation Update information report.

6.3 Zoning Bylaw Amendment No. 21 (2022-21)-Housekeeping

CW23-08-03
Moved By: Councillor Somerville
Seconded By: Councillor Pikálek

That Committee of the Whole direct administration to remove the whole section from Zoning Bylaw Amendment No. 21 and replace it with a clause that refers the demolition of historic resources to the Heritage Bylaw.

CARRIED 3-1

Recorded Vote:

Votes For: Councillor Somerville, Councillor Lister, Councillor Pikálek

Votes Against: Mayor Kendrick

7 Public Questions

Jim Taggart and Dan Davidson had various questions for Council.

8 Adjournment

CW23-08-04

That Committee of the Whole Meeting CW23-08 be adjourned at 8:40 p.m. with the next regular meeting of Committee of the Whole being June 28, 2023.
CARRIED 4-0

THE MINUTES OF COMMITTEE OF THE WHOLE MEETING CW23-08 WERE APPROVED BY COMMITTEE OF THE WHOLE RESOLUTION #C23-09-XX AT COMMITTEE OF THE WHOLE MEETING C23-09 OF JUNE 28, 2023.

Brennan Lister, Chair

David Henderson, CAO

Report to Council

☐ For Council Decision ☐ For Council Direction ☒ For Council Information ☐ *In Camera*

AGENDA ITEM:	Request for Extension of Time for Audited Statements	
PREPARED BY:	CAO	**ATTACHMENTS:**
DATE:	June 23, 2023	
RELEVANT BYLAWS / POLICY / LEGISLATION: **Yukon municipal Act**		

Recommendation

That Council direct staff to request by letter of Council to the Yukon Government an extension of the deadline for approved, audited financial statements.

Issue / Purpose

Yukon Municipal Legislation requires that municipalities approve the audited financial statements of the previous year by June 30th and provide such approved statements to the Yukon Government.

Due to limited resources and cumulative project requirements upon staff this year the audit process was delayed and the audited statements will not be back from the auditor with sufficient time to be reviewed and approved by council to meet the June 30th deadline.

To extend the deadline a letter is required requesting that the timeline be extended.

Background Summary

na

Analysis / Discussion

Dawsons municipal advisor has confirmed that a resolution of Council at the Committee of the Wole directing staff to forward a letter on behalf of council requesting an extension to the deadline requiring approval of the audited financial statements by June 30th would be sufficient to meet the requirements of such a request.

APPROVAL		
NAME:	David Henderson CAO	**SIGNATURE:** David Henderson
DATE:	23-Jun-2023	

REPORT TO COUNCIL

June 23, 2023

☐ For Council Decision ☐ For Council Direction ☒ For Council Information ☐ *In Camera*

SUBJECT

OCP Amendment and Zoning Bylaw Amendment #22-128

- OCP Amendment No. 11 (2023-10)
- ZBL Amendment No. 22 (2023-11)

PREPARED BY

Planning and Development Department

References

° n/a

Attachments

° Bylaw #23-10
° Bylaw #23-11

ISSUE / PURPOSE

The applicant has submitted an application for an OCP/ZBL amendment to amend the designations for their claims from various zonings to Industrial, to facilitate an existing Class 4 placer mining operation.

BACKGROUND

These bylaws received their First Reading on May 17, 2023. The application was forwarded to the Committee meeting for further discussion. On June 19, the Planning Department met with the TH Natural Resources Department to discuss this proposal. The City will be notified of their response.

ANALYSIS/DISCUSSION

At the previous Council meeting on June 14, a few issues were discussed:

- Staff explained that the purpose of this amendment is to redesignate the proposed area in order to facilitate placer mining operations. Appropriate Zoning and Official community Plan designation is considered a first step in making the operation possible. The City has yet to receive an application for a Mining Permit. Staff will ensures that the essential approvals and papers are provided to guarantee compliance with relevant ordinances and regulations.
- Staff explained that none of the currently titled properties will have their zoning changed; they will stay industrial or residential. ***Future Planning and Parks, and Natural Spaces*** will only be partially rezoned.
- Staff explained that enabling mineral development to continue for a predetermined amount of time could guarantee that subsurface rights are relinquished in a timely manner, allowing for the compact and effective development of unencumbered property.
- The City will conduct additional research and work with the proponent to define the stages of the reclamation plan. Before issuing the Mining Permit, the reclamation approval will be obtained. During the discussion with TH Natural Resources, staff indicated that the City is willing to work with TH to develop the detailed plan.

APPROVAL

NAME: David Henderson (CAO)	**Date: June 23, 2023**	**Signature:** David Henderson

THE CITY OF DAWSON

Official Community Plan Amendment No. 11 Bylaw

Bylaw No. 2023-10

WHEREAS section 265 of the *Municipal Act*, RSY 2002, c. 154, and amendments thereto, provides that a council may pass bylaws for municipal purposes.

WHEREAS section 278 of the *Municipal Act*, RSY 2002, c. 154, and amendments thereto, provides that a council must, within three years of formation or alteration of municipal boundaries, adopt or amend by bylaw an official community plan.

WHEREAS section 285 of the *Municipal Act*, RSY 2002, c. 154, and amendments thereto, provides that an official community plan may be amended, so long as the amendment is made in accordance with the same procedure established for adoption of an official community plan.

THEREFORE, pursuant to the provisions of the *Municipal Act* of the Yukon, the council of the City of Dawson, in open meeting assembled, **ENACT AS FOLLOWS**:

PART I - INTERPRETATION

1.00 Short Title

This bylaw may be cited as the ***OCP Amendment No. 11 Bylaw***

2.00 Purpose

2.01 The purpose of this bylaw is to provide for

(a) A re-designation of lands from Parks & Natural Spaces, Future Planning, and Country Residential to Mixed Use to accommodate a time limited re-zoning of lands from Parks and Natural Space, Future Planning, and Country Residential to Industrial until January 1, 2035, after which they will automatically be re-designated Parks & Natural Spaces, Future Planning, and Country Residential.

CAO _____ Presiding Officer _____

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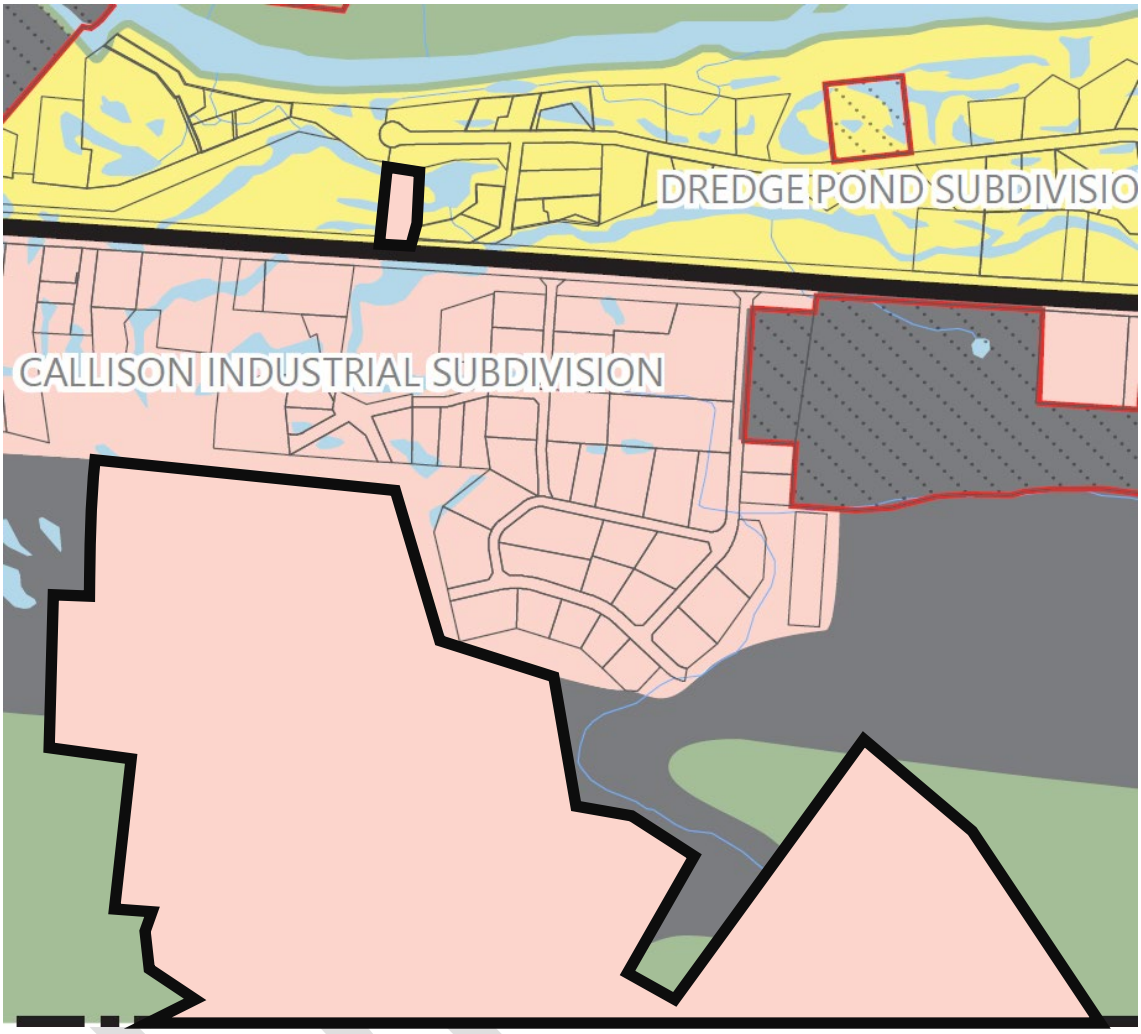

..... 6

Figure 1. Map amendment..... 6

3.00 Definitions

3.01 In this Bylaw:

(a) Unless expressly provided for elsewhere within this bylaw the provisions of the *Interpretations Act,* RSY 2002, c. 125, shall apply;

(b) "Amended Area" means the area shown in Appendix 1;

(c) "City" means the City of Dawson;

(d) "Council" means the Council of the City of Dawson;

PART II – APPLICATION

4.00 Amendment

4.01 This bylaw re-designates a portion of the Amended Area from Future Planning to Mixed Use, as shown in Appendix 1.

4.02 This bylaw re-designates a portion of the Amended Area from Parks & Natural Spaces to Mixed Use, as shown in Appendix 1.

4.03 This bylaw re-designates a portion of the Amended Area from Country Residential to Mixed Use, as shown in Appendix 1.

PART III – FORCE AND EFFECT

5.00 Severability

5.01 If any section, subsection, sentence, clause or phrase of this bylaw is for any reason held to be invalid by the decision of a court of competent jurisdiction, the invalid portion shall be severed and the part that is invalid shall not affect the validity of the remainder unless the court makes an order to the contrary.

6.00 Enactment

6.01 This bylaw shall come into force on the day of the passing by Council of the third and final reading.

7.00 Bylaw Readings

Readings	Date of Reading
FIRST	**May 17, 2023**
NOTICE TO MINISTER	**May 24, 2023**
PUBLIC HEARING	**May 31, 2023**
SECOND	
MINISTERIAL APPROVAL	
THIRD and FINAL	

William Kendrick, Mayor
Presiding Officer

David Henderson, CAO
Chief Administrative Officer

8.00 Appendices

Appendix 1. Amended Area

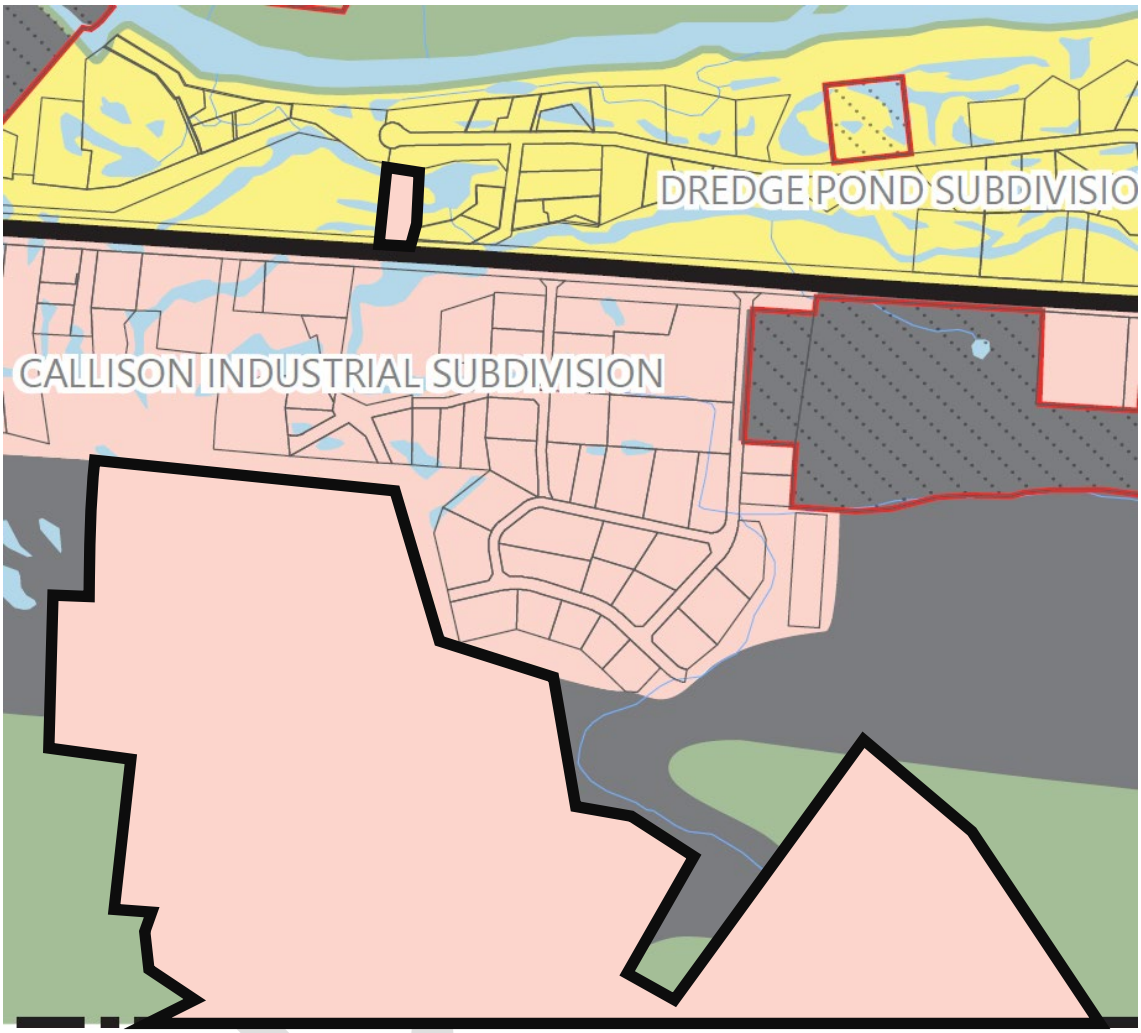

Figure 1. Map amendment

P 30923	P 08240	P 08239	P 08934	P 08222
P 08920	P 08923	38625	P 09318	38626
P 08246	P 08242	P 08243	P 08919	P 08918
P 08921	38870_	38871	38872	P 08244
P 08261	38726	38725	02842	03822
03823	P 09324	42820	P 09285	38889
42588	P 08248	P 08260	P 09319	38897
P 09504	P 09512	P 09582	P 09581	P 09585
P 08470	P 08469	42410	P 0980	P 09886
P 28408	P 28409	P 09580	P 08922	

Table 1. Grant Numbers within the Amended Area.

THE CITY OF DAWSON

Zoning Bylaw Amendment No. 22 Bylaw

Bylaw No. 2023-11

WHEREAS section 265 of the *Municipal Act*, RSY 2002, c. 154, and amendments thereto, provides that a council may pass bylaws for municipal purposes.

WHEREAS section 288 of the *Municipal Act*, RSY 2002, c. 154, and amendments thereto, provides that a council, within two years after the adoption of an official community plan, or as soon as is practicable after the adoption of an amendment to an official community plan, a council must adopt a zoning bylaw.

WHEREAS section 288 of the *Municipal Act*, RSY 2002, c. 154, and amendments thereto, provides that no person shall carry out any development that is contrary to or at variance with a zoning bylaw.

THEREFORE, pursuant to the provisions of the *Municipal Act* of the Yukon, the council of the City of Dawson, in open meeting assembled, **ENACT AS FOLLOWS**:

PART I - INTERPRETATION

1.00 Short Title

This bylaw may be cited as the ***Zoning Amendment No. 22 Bylaw***

2.00 Purpose

2.01 The purpose of this bylaw is to provide for

(a) A time limited re-zoning of lands from Parks and Natural Space, Future Planning, and Country Residential to Industrial until January 1, 2035, after which they will automatically be rezoned Parks and Natural Space, Future Planning, and Country Residential.

CAO _____ Presiding Officer _____

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8.00 Appendices 5

3.00 Definitions

3.01 In this Bylaw:

(a) Unless expressly provided for elsewhere within this bylaw the provisions of the *Interpretation Act,* RSY 2002, c. 125, shall apply;

(b) "Amended Area" means the area shown in Appendix 1;

(c) "City" means the City of Dawson;

(d) "Council" means the Council of the City of Dawson;

PART II – APPLICATION

4.00 Amendment

4.01 Section 13.1.4 is hereby amended by adding a new paragraph as follows:
b) Grant numbers: P 30923, P 08240, P 08239, P 08934, P 08222, P 08920, P 08923, 38625, P 09318, 38626, P 08246, P 08242, P 08243, P 08919, P 08918, P 08921, 38870_, 38871, 38872, P 08244, P 08261, 38726, 38725, 02842, 03822, 03823, P 09324, 42820, P 09285, 38889, 42588, P 08248, P 08260, P 09319, 38897, P 09504, P 09512, P 09582, P 09581, P 09585, P 08470, P 08469, 42410, P 0980, P 09886, P 28408, P 28409, P 09580, P 08922 are temporarily zoned Industrial until January 1, 2035, as per Bylaw No. 2023-11.

4.02 The zoning maps attached to and forming part of *Zoning Bylaw* 2018-19 are hereby amended by changing the zoning of a portion of the Amended Area from Future Planning to Industrial, as shown in Appendix 1, until January 1, 2035.

4.03 The zoning maps attached to and forming part of *Zoning Bylaw* 2018-19 are hereby amended by changing the zoning of a portion of the Amended Area from Parks and Natural Space to Industrial, as shown in Appendix 1, until January 1, 2035.

4.04 The zoning maps attached to and forming part of *Zoning Bylaw* 2018-19 are hereby amended by changing the zoning of a portion of the Amended Area from Country Residential to Industrial, as shown in Appendix 1, until January 1, 2035.

PART III – FORCE AND EFFECT

5.00 Severability

5.01 If any section, subsection, sentence, clause or phrase of this bylaw is for any reason held to be invalid by the decision of a court of competent jurisdiction, the invalid portion shall be severed and the part that is invalid shall not affect the validity of the remainder unless the court makes an order to the contrary.

6.00 Enactment

6.01 This bylaw shall come into force on the day of the passing by Council of the third and final reading.

7.00 Bylaw Readings

Readings	Date of Reading
FIRST	**May 17, 2023**
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William Kendrick, Mayor
Presiding Officer

David Henderson, CAO
Chief Administrative Officer

8.00 Appendices

Appendix 1. Amended Area

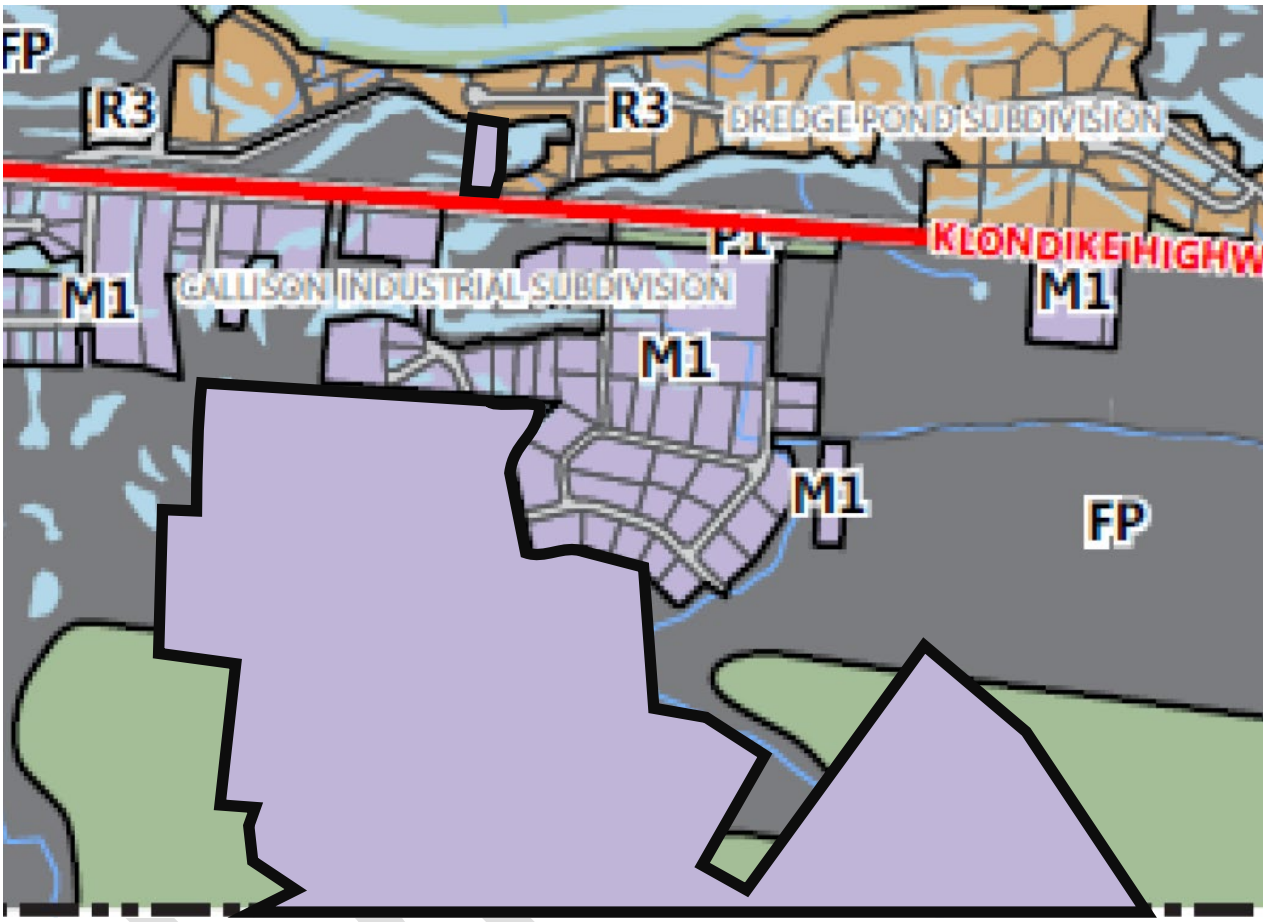

Figure 1. Map amendment.

CAO

Presiding Officer

P 30923	P 08240	P 08239	P 08934	P 08222
P 08920	P 08923	38625	P 09318	38626
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P 08470	P 08469	42410	P 0980	P 09886
P 28408	P 28409	P 09580	P 08922	

Table 1. Grant Numbers within the Amended Area.

REPORT TO COUNCIL

June 23, 2023

☐ For Council Decision ☐ For Council Direction ☒ For Council Information ☐ *In Camera*

SUBJECT

Historic Resource Demolition

(Permits #22-110 and #23-054)

PREPARED BY

Planning and Development

References

- Heritage Bylaw
- Historic Resources Act

Attachments

- Letter from the applicant
- Protective Services evaluation
- Historic Sites Inventory reports

RECOMMENDATIONS

It is respectfully suggested that council consider the options and forward the applications to the next council meeting for decision.

ISSUE / PURPOSE

The City has received a request for permits to demolish historic buildings located at Lot 8, Block C, Smith Addition (202 Judge St) (permit #22-110) and at Lot 3, Block LE, Harper Estate (822 Sixth Ave) (permit 23-054) that are both listed on the *Yukon Historic Sites Inventory*.

BACKGROUND

Lot 8, Block C, Smith Addition

According to the applicant, this building has been built around 1930s. The applicant has indicated that the building is unsafe and beyond repair. The proponent stated that if council decides to approve the permit, they will construct a dwelling unit on their property so that the lot does not go vacant.

Lot 3, Block LE, Harper Estate

This building has been built in 1902 and is one the three historic buildings on this property. Lots 3 and 4 are owned by the proponent. From Lot 4 to Lot 3, other historic structures are encroaching (the owner lives in these buildings). As a result, granting the permit will not result in Lot 3 remaining vacant. A consolidation application may be required.

ANALYSIS/DISCUSSION

HAC recommendations

These applications were presented to the Heritage Advisory Committee for consideration and recommendation. Members of the HAC clarified that demolishing these buildings is their least preferred choice. They added that it would be ideal if the City could collaborate with the applicants to find a way to maintain these buildings. They did, however, indicate that they are aware that this may not be a feasible choice. If the destruction is permitted, the materials should be preserved and reused in other (historic) projects, according to HAC.

Furthermore, HAC suggested that in the future, the City, in collaboration with other stakeholders, develop a comprehensive approach to addressing unsafe historic structures in the city. This not only gives a uniform manner of dealing with requests to demolish historic sites, but it will also assist in seeing these structures in a bigger context, comprehending their relationship, and dealing with them as part of the larger project.

Protective Services recommendations

Their report for Lot 8, Block C, Smith Addition is attached.

During a site visit to Lot 3, Block LE, Harper Estate, Protective Services Manager emphasized that the structure is hazardous and recommended that it be demolished. A more detailed report will be provided at the next council meeting.

Yukon Government Historic Sites

In response to a request for information regarding the structure on Lot 3, Block LE, Harper Estate, YG Historic Sites division stated that this building is “one of a limited number of residences still standing in Dawson City dating to the early settlement of the townsite.” They proposed that if the proponent is unable to maintain the structure, they may consider moving it. However, moving the building has its own challenges such as finding a new location, maintenance costs, etc.

Planning Department analysis

Based on the aforementioned recommendations, the Planning Department investigated various options for preserving the structures.

1. Funding sources for structural upkeep. According to Heritage Bylaw Section 13.05, the City can only give a Heritage Incentive of $5,000 for non-designated historic resources. Due to the existing state of these buildings, this amount is insufficient to rehabilitate them. Applicants have been unsuccessful in obtaining other sources of support.
2. Moving the structures necessitates someone being interested in having them on their property and spending money on their upkeep. This is quite unlikely given the current state of these structures. Furthermore, the City does not have funds to allocate for the relocation of the structures to a City lot.

The structures were also evaluated using four criteria: architectural history, cultural history, context, and integrity. These structures have the ability to showcase the city's history. They are, however, not an eminent example of a builder's or architect's work. According to the Historic Sites Inventory report, these structures do not have a connection to a person, organization, institution, event, or activity of historical significance to the city (the main residence on Lot 3 does, and will be retained). The structure on Lot 8 has a connection to its surroundings, particularly the Whitehouse Cabins. The structural stability of these buildings, both interior and exterior, is poor. However, these buildings are on their original site.

OPTIONS

There are three options that council may consider:

a) Approve the demolition permit.
b) Begin the designation procedure.
c) Take additional precautions to protect the building, such as moving it or having the city buy it.

It should be highlighted that if the council decides that these structures must be protected, the designation procedure should begin. The highest level of protection is provided to designated structures.

APPROVAL		
NAME: David Henderson (CAO)	**Date: June 23,2023**	**Signature** David Henderson

23-054

Demo

May 29, 2023

The house I am asking permission to demo was built in 1901. Lucille Hunter was the original owner and lived there until the 1960's when she became blind and was moved to the Whitehorse General Hospital for her final days.

John Braga bought the property in the 1970's on a tax sale.

This house has never had electricity or plumbing and used only a barrel heater for heat. John used the house for lumber storage and made no changes or improvements to the original house.

After John Braga passed away in 1982, the add on at the back of the house had to be removed as the flooring had rotted and was causing the add on to collapse.

At that time I applied for a City of Dawson grant to maintain the Hunter house but was told the funds had already been dispersed. I applied twice more with the same results.

I then applied to the Historic Properties Assistance.

Mr. Bruce Bennett made a trip to Dawson with Barb Hogan to go through the Hunter house and also the Clark house, as the Clark house is also a heritage building on the same property.

These houses were built on pilings, which are heaving through the floors.

Mr. Bennett stated it would be a three year project and that it would require myself financing fifty percent of the cost.

All three of the buildings on my property are deemed heritage homes. The building I reside in was also built in 1901 and as such has used any and most of my finances to maintain and improve the home.

Currently the Hunter house roof has rotted allowing rain and snow to destroy the second floor and allow water to rot the main flooring as well. It is now a safety hazard as the structure is beginning to lean. The constant flow of water from the alley way has made the ground extremely soft and is contributing to the quickening of the building rotting.

I have concerns for the safety of anyone passing through my driveway and more importantly my neighbours who are quite close to the Hunter house.

At 80 plus years of age on a pension I no longer have the energy nor the financial resources to try and salvage the Hunter house. The costs would be unattainable.

I request the City of Dawson approve my application for demo.

Sincerely,

Mrs. Mary Braga

826 6th Ave.

Tourism and Culture
Historic Sites Inventory Program

Yukon Historic Sites
2-LE-3

Summary

YHSI ID
116B/03/130

Designations

CRHP Category
Building

Site Categories
Architecture

Records

Show In Register?

Primary Name
2-LE-3

Secondary Names

Name 1
East Slope Character Area

Contributing Resources
Building

Historical Pattern

Historical Pattern 1
Historical Pattern
Social

Historical Pattern

Location

Community
Dawson City

Other Community

Other Locality

Physical Address
Address
826 Sixth Avenue

Province
Yukon

Country
Canada

Postal Code
Y0B 1G0

Previous Address

Context
There are three historic buildings on this property and one immediately south on an adjoining lot. All buildings are residential ranging from one story log to two story frame representing a cross section in architectural styles.

Latitude
64.058288426 64° 03' 29.8383" N

Longitude
-139.431233724 139° 25' 52.4414" W

UTM
07 N 576,566.0E 7,104,452.2N

Coordinate Determination
Unknown

NTS Map Sheet
116B/03

Area (m2)

Borden Number

Misc. Info

Dates & Condition

Dates

Date 1
Date Type
Construction

From Date

Details
1902

To Date

Construction Periods

Construction Period 1
From 1896 to 1905

Site Status
Standing

Floor Condition
Fair

Wall Condition
Fair

Door Condition
Good

Roof Condition
Poor

Building Size
7.4m X 5.1m

Condition Notes
Siding missing from east wall.

All Other Resource Types

Themes & Function

YHS Themes
Buildings/Functional/Housing

Themes

Functional Uses

Dates
31/05/1984

Numbers
84Y577

Previous Ownership 12

Numbers
89Y623

Photos

Slide Negative Index
99.05.107.18) south west corner 19) west elevation 20) north west corner 21) north elevation 22) north east corner 23) east elevation 99.05.109.09s) north west corner 10s) north east corner

Photo 1

Feature Name
469.jpg

Caption

Comments

CreditLine

Location

Edit Photo (/Ibbit/Photos/Edit/3463afed-51cf-4bf4-bf6b-b8bb882d911c)

Photo 2

Feature Name
16.116B.03.130 (2).JPG

Caption
Dawson, September 2016. West aspect of house.

Comments

CreditLine
Yukon Government, Historic Sites Unit.

Location
Downtown

Edit Photo (/Ibbit/Photos/Edit/b34887f6-7a10-44eb-beb4-30265e98c995)

Management

Revision Logs

Revision Log 1

Revision Type
Record Update

Date
1999/01/20

Revised By
D Dickson

Details

Revision Log 2

Revision Type
Monitoring Visit

Date
1999/05/14

Revised By
B Hogan

Details

Revision Log 3

Revision Type
Record Update

Date
2010/03/09

Revised By
A Claxton

Details

Revision Log 4

Revision Type
Monitoring Visit

Date
2016/09/28

Revised By
R. Jansen

Details

Contacts

Contact 1

Type
Owner

First Name
Darcy

Last Name
Braga

Phone

Email

Description

Web Links

Jurisdiction
None Selected

Recognition Date

Owner Consent
None Selected

☐ **Publicly Accessible?**

CIHB Number

2-LE-3

YG Building Number

FHBRO Number

YG Reserve Number

Descriptions

Description 1
Description Type
Place Description

Two story frame simple

Description 2
Description Type
Cultural History

This building was probably constructed on 1902 as a residence for Dawson's postmaster, I J Hartman. In 1905-6, Hartman's son Fred H and David Longstaff were both living here with the postmaster and his wife, Sarah. S W Smith, was an electrician, fireman and lineman. Smith sold it to Chas. I Tennant in 1929, and Tennant had sold it to Mrs. C F Hunter by 1933. She was still here in 1938. Personal Recollection - John Gould - Loucial Hunter lived here 1930 to ?. Mr. John Braga bought building from Mrs. Turner.

Description 3
Description Type
Renovation Information

Permit issued in May 1985 to demolish a building. No progress on demolition: permit cancelled Permit issued in August 1987 to construct an addition to an existing building. Permit finalized in November 1989.

Description 4
Description Type
Construction Style

Ship lap siding with sawn shingle gable roof and returned eaves. Molded trim under eaves and along soffits. Single hung windows, no skirting visible. Picket fence on west property line is 75% below grade. Addition off east wall has been removed, but ghost image of roofline can be seen on wall, porch on west wall has been removed.

Description 5
Description Type
Historical Sources Location

1903, 1905-6 and 1915-16

Dominion Land Titles Territorial Land Titles Dawson Municipal Records. Assessment and Tax Rolls Dawson City Directories for


CAUTION
CAUTION
CAUTION
CAUTION


CAUTION
CAUTION
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CAUTION
CAUTION

22-110

Demo

Tourism and Culture
Historic Sites Inventory Program

Yukon Historic Sites
P.A. WILSON

Summary

YHSI ID
116B/03/382

Designations

CRHP Category
None Selected

Site Categories
Architecture

Records

Show In Register?

Primary Name
P.A. WILSON

Secondary Names

Name 1
4-C-8

Name 2
North End Character Area

Contributing Resources

Historical Pattern

Historical Pattern 1

Historical Pattern
Social

Historical Pattern

Location

Community
Dawson City

Other Community

Other Locality

Physical Address

Address
1661 Second Avenue

Province
Yukon

Country
Canada

Postal Code
Y0B 1G0

Previous Address

Context

Building is on a corner lot and well situated on property. Wire fence has collapsed and yard is overgrown with trees and willows. This log residence is typical in size and design for a family type residence. The covered porch on the east wall and fenced yard add to the charm of the property. Adjoining property on the west side has several historic buildings, Whitehouse Cabins. Once stabilized, this house could be rehabilitated as a residence and would definitely add to the historic character of this area.

Latitude
64.069068696 64° 04' 08.6473" N

Longitude
-139.424201005 139° 25' 27.1236" W

UTM
07 N 576,879.5E 7,105,661.6N

Coordinate Determination
Unknown

NTS Map Sheet
116B/03

Area (m2)

Borden Number

Misc. Info

Dates & Condition

Dates

Date 1

Date Type
Construction

From Date

Details
1900

To Date

Construction Periods

Construction Period 1
From 1896 to 1905

Site Status
Standing

Floor Condition
Poor

Wall Condition
Fair

Door Condition
Fair

Roof Condition
Fair

Building Size
18.8m X 6.8m

Condition Notes

420 FF

Numbers
381 FF

Numbers
161 PP

Numbers
73Y434

Photos

Slide Negative Index
99.05.121.35) north east corner 36) east elevation 37) south east corner 99.05.122.01) south elevation 02) south west corner 03) west elevation 04) north west corner 05) north elevation 99.05.112.04s) north east corner 05s) south west corner

Photo 1

Feature Name
341.jpg

Caption

Comments

CreditLine

Location

Photo 2

Feature Name
P.A. Wilson

Caption
September 1973

Comments

CreditLine

Edit Photo (/Ibbit/Photos/Edit/aa5b8309-b8d5-4837-8990-864706cfed8b)

Parks Canada

Location
Dawson City

Edit Photo (/Ibbit/Photos/Edit/19d22129-ed50-45ce-b7b5-044bf5827997)

Management

Revision Logs

Revision Log 1

Revision Type
Record Update

Date
1999/03/30

Revised By
D Dickson

Details

Revision Log 2

Revision Type
Monitoring Visit

Date
1999/05/13

Revised By
B Hogan

Details

Revision Log 3

Revision Type
Initial Recording

Date
2016/07/21

Revised By
R. Jansen

Details

Contacts

Web Links

Jurisdiction
None Selected

Recognition Date

Owner Consent
None Selected

☐ **Publicly Accessible?**

CIHB Number
4-C-8

YG Building Number

FHBRO Number

YG Reserve Number

Descriptions

Description 1

Description Type Place Description	Single story log complex

Description 2

Description Type Cultural History	This building was constructed by Philip Wilson, miner, in 1900 or earlier. He sold it to O S Lanning, accountant at the Northern Commercial Company, in 1902. Lanning occupied this building until 1920 when he sold it to S C McKim, who sold it to Earl Fraser in 1922. The following year, Fred Clarke, labourer at the Yukon Gold Co. purchased it. He owned it until 1935 when E O Finlaison bought it.

Description 3

Description Type Construction Style	Square notched logs painted, with metal compound gable roof. Open porch with flat roof off east wall. East gable has shiplap siding,addition on west wall has shiplap siding with metal gable roof. Addition on north wall has flat metal roof, addition off addition on north wall has shiplap siding and metal shed roof. West wall has oversize door and vertical board and batten. Doors and windows boarded over, wire fence and wooden posts collapsed.

Description 4

Description Type Additional Information	Dawson City Museum has William Bushell photograph collection of Dawson and the Bushell residence

Description 5

Description Type Historical Sources Location 1903, 1905-6 and 1915-16	Dominion Land Titles Territorial Land Titles Dawson Municipal Records. Assessment and Tax Rolls Dawson City Directories for

202 Judge Street Fire and Life Safety Hazard

This is an exterior view of the existing building located at 202 Judge Street, note the roof line dipping in the middle. The dip in the middle of the roof line was caused by a structural collapse due to rotten floor joist (support) as is indicated in picture #1. The hole in the floor on the left side was where the wood burning stove was, it can now be seen below floor level on the dirt below the building. Mr. Hawker is standing on a spongy floor hunched below the sagging ceiling that is

Picture # 1

Picture #2

Picture # 3

supported with a 6 X 8 through the hole in the middle of living room floor, without this support the roof would likely have already collapsed. In picture # 2 you can see the outside walls have sunken into the ground causing the floor to collapse at the outside walls and heave in the center of the room. This is also evident in the bedrooms picture # 3 the floor has dropped along the wall by the boarded window, and picture # 4 the bed has fallen through the floor by the wall

Picture # 4

Picture # 5

Picture # 6

and is resting on the dirt below the floor. The chest of drawers in picture # 4 is also falling through the rot holes by the door and the bed, and the leaking roof has caused the ceiling and wallpaper to fall apart. Picture # 6 is the bathroom that has dropped at the outside wall beside the toilet at the back of the room.

Picture # 7

Picture # 8

Picture # 5, of the backside of the structure that show how rotten the exterior wood has become, the board where the window opening is too rotten to hold nails. The board is leaning against the building. The gable end picture # 7 shows a rotted porch below a collapsing roof and logs are bulging as can be seen by looking at the door. Picture # 8 show how much the exterior walls have rooted and sunk into the ground. This building is rooted beyond the point of being able to secure it to prevent anyone from entering the structure and potentially falling through the floor. This structure should be fenced off until it can be demolished to prevent anyone from entering and injuring themselves. It is extremely unstable and is a safety and fire hazard to our community.

Report to Council

	For Council Decision		For Council Direction
x	For Council Information		
	In Camera		

AGENDA ITEM:	Travel Report - 2023 AYC AGM	
PREPARED BY:	Mayor	**ATTACHMENTS:**
DATE:	June 23, 2023	
RELEVANT BYLAWS / POLICY / LEGISLATION: City of Dawson Travel Policy		

RECOMMENDATION

That council receive this travel report for information purposes.

Travel Report

The 2023 Association of Yukon Communities (AYC) Annual General Meeting was hosted by Watson Lake. For the May 11-14th event, the CAO has already provided a travel report, presented at the May 31, 2023, City of Dawson Committee of the Whole meeting. This brief report covers items not included in that report, from the Mayor's attendance.

Events leading up to the Sunday morning AYC Board Meeting included various speakers and sessions for elected officials. Friday included the following speakers, discussing Yukon municipal issues:

- President Ted Laking, Assoc. of Yukon Communities
- Patti McLeod, MLA Watson Lake
- Christopher Irvin, Mayor of Watson Lake
- Currie Dixon, Leader of the Official Opposition
- Kate White, Leader of the Third Party
- Richard Mostyn, Minister of Community Services
- Ranj Pillai, Premier
- Dr. Brendan Hanley, Member of Parliament

Sessions included a panel from Village of Teslin and Teslin Tlingit Council discussing First Nation and municipal challenges and successes from collaboration. Christina Benty gave two workshops, one entitled "Thinking Together: Managing Polarities for Better Decisions" and "Everything is Relational: Connection Before Content". One of the highlights of these was a simple handout that included a sort-of "Council-Business Personality Test". Extra copies were brought back to Dawson in hopes that Dawson City Council may be able to do this together sometime soon, as it may assist with understanding each Council member's style of decision making and process.

The Mayor provided auctioneering services to AYC on Friday night, and helped raise a record-amount of money for AYC. Special thanks go out to all the Dawson-area businesses and organizations that provided items. These included RAW TV, Treadstone Equipment, Bombay Peggy's, the Dawson City Museum, Klondike Visitor's Association, Inspired Living (Mo Caley-Verdonk), Dawson Golf Association, and our very own Recreation Department, as well as CFO Kim McMynn, who donated a framed Jim Robb print.

On Saturday, to follow-up on a suggestion to visit Watson Lake's Recycling Depot, the Mayor brought recyclables into their facility. It was learned there that:

- Municipal staff receive customer's refundable recyclables on a large sorting table and sort and count them. (They indicated that customers with large orders are suggested to count themselves, but not all do.)
- Staff then make their way to a computer terminal in the same space, input the numbers, and provide the refund after completion of the paperwork.
- There are 2 staff members that operated the depot.

Subsequent to this visit, Mayor contacted Watson Lake Mayor Irvin and further information about their operation was obtained:

- Watson Lake municipal employees are unionized.
- There is no curbside recycling. All customers drive their recycling to the depot.
- Cardboard is also brought into the same facility, where it gets bailed. A large cardboard generator - the grocery store - bails their own cardboard and brings it to the depot already bailed.
- A total of 5 employees including a manager deal with both recycling and the landfill in Watson Lake.
- Customers can donate their refundable recycling toward the town; they go to the firefighters association who divvy it up to various non-profit associations as needed.

Some photo stills (from video) of the visit to the diversion centre follow:

APPROVAL			
NAME:	David Henderson CAO	**SIGNATURE:**	David Henderson
DATE:	Jun 23, 2023		

Report to Council

[ ] For Council Decision [x] For Council Direction [x] For Council Information

AGENDA ITEM:	Update to Council on Diversion centre Operations	
PREPARED BY:	Public Works Manager / CAO	**ATTACHMENTS:**
DATE:	June 23, 2023	
RELEVANT BYLAWS / POLICY / LEGISLATION:		

Recommendation

That council receive this report for consideration in ongoing discussions with regards to the recycling services provided through the City of Dawson Diversion Centre

Issue / Purpose

In April of this year a number of residents identified concerns about the recycling services provided by the City at the recently opened Diversion Centre. Concerns were expressed via letters and delegations at a City Council meeting. Concerns included : location of the new facility and a lack of a downtown location, lack of 24/7 access, signage, a 5 bag limit on refundable, public sorting of refundable items, customer service, compostable waste , curbside pickup services.

Staff recommended and Council accepted in April that:

1. Staff would bring an update back to council at a committee meeting reviewing developments at the diversion center addressing these concerns and the rollout of services at the new facility.
2. Staff would develop a comprehensive review and recommendations regarding recycling services including potential curbside pickup services for consideration by Council in September of this year.

Background Summary

Dawson City Council received a report in 2018 from Morrison Herhfield entitled Solid Waste Management Program Design Assessment which outlined recommendations on Recycling collection and processing.

The report identified design and cost estimates for a Solid Waste Diversion Centre based on design concepts developed in collaboration with the non-profit recycling organization CKS who at the time was expected to be the operator of the facility upon completion.

The report advised a stepped approach to recycling including focusing on the new Diversion Centre, potentially Curbside Collection of Recyclables on a cost recovery basis and not dealing with compostable collection until a future point in time.

CKS stopped providing recycling services in 2021. The City contracted for the design and construction of the Diversion Centre in 2021 and the City provided temporary recycling services through temporary depot facilities between the discontinuation of services by CKS and the opening of the Diversion Centre.

Design and Construction of the Diversion Centre were contracted locally with direction from Staff and CKS representatives with the new facility opening for business in March of 2023. Finishing touches on the facility are ongoing as of June with some equipment still in the certification stages. The official Opening was celebrated in May of 2023.

Public works Is currently recruiting for a waste Manager position that covers the Diversion Centre, the Landfill site, and waste collection as well as long term planning and management of recycling and waste management activities.

The Facility is located outside of the Downtown core, in the industrial areas of the community which allows for more space and the negative aspects of a diversion facility which include odour and debris. The downside of the location is the lack of easy access without a vehicle.

The Yukon Government is also moving communities to regional waste agreements that compensate for usage by non tax paying residents - in turn waste sites are expected to incorporate tipping fees. Dawson is adding tipping fees in 2023 and moving to full tipping fees in 2024 if the municipality signs onto a regional plan. Tipping fees in turn support greater recycling efforts

Analysis / Discussion

Depot update.

The Diversion facility is currently staffed with 3 FTE positions. The City provides curbside pickup of residential and commercial carboard which is then dropped off at the Diversion Centre for baling and transportation south. Residents sort recyclable products into bags located along the exterior of the building – the bags are relocated to the North side when full as they await shipment south.

Residents are asked to sort and record quantities of Refundable drink containers to receive money back or they can opt to simply drop the refundables off if they do not wish to receive money back.

SIGNAGE:

- Currently developing sandwich boards to indicate location at highway and another internally with description of recycling protocols.
- Signs indicating what goes where have been improved. Still working on "shadow boxes" to provide visual examples.

OUTDOOR SORTING:

- Bags have been adjusted to allow for more ergonomic placement of materials. This is still in flux. Although we have seen an improvement of client experience we are seeing an increase in contamination of sorted materials and increased labour requirements to properly sort.

5 BAG LIMIT:

- This has been eliminated and we are seeing no serious implications regarding labour or counts.

PUBLIC SORTING VS. STAFF SORTING:

- The intention is to continue with public self-sorting. Staff have indicated a large reduction in unrecyclable materials entering the stream. To be clear, staff is able and willing to assist but with client participation it is felt there is a more direct relationship and understanding with what is acceptable and what is not.

CURBSIDE PICKUP:

- Staff has begun cost and practical analysis of potential future programming. We will be providing "can and bottle bins" on the street shortly. They have been painted and are getting final touches before deployment.

HOURS OF OPERATION:

- Due to wildlife concerns, vandalism, poor drop-off practice etc. gates will remain closed after hours. The current hours are similar if not identical to the landfill and are posted on the City's website.

CARDBOARD/SCALING UP:

- We are currently over capacity. Staff have been searching for and considering solutions to this issue. Cardboard alone can create over half our weekly delivery to Whitehorse. This is a huge windfall for diversion to the landfill but obviously, stretches capacity at the SWDC. Increased staffing or larger equipment may be required.

Recommendation

That the new waste manager, once recruited, be directed to develop a process for community input and feedback and continuous improvement at the diversion Centre. That functional reviews of the facilities, equipment and staffing be carried out on ongoing basis and incorporated into recycling recommendations anticipated for Council consideration in September.

APPROVAL		
NAME:	David Henderson CAO	**SIGNATURE:** 
DATE:	23-Jun-2023	

Report to Council

☐ For Council Decision ☐ For Council Direction ☒ For Council Information ☐ *In Camera*

AGENDA ITEM:	For receipt by Council	
PREPARED BY:	CAO	**ATTACHMENTS:** Solid Waste Management Plan 2023-2033
DATE:	June 23, 2023	
RELEVANT BYLAWS / POLICY / LEGISLATION:		

Recommendation

That Council receive the updated Solid Waste Management Plan 2023-2033

Issue / Purpose

The Municipality is required to update the SWMP every 10 years.

Background Summary

The SWMP is a technical review of solid waste management facilities and operations and will estimate the operating life of the current landfill site based on current practices, estimated landfill closure costs

Analysis / Discussion

Please see report

APPROVAL		
NAME:	David Henderson CAO	**SIGNATURE:** David Henderson
DATE:	23-Jun-2023	

City of Dawson
Solid Waste Management Plan 2023-2033

PRESENTED TO
The City of Dawson

MAY 15, 2023
ISSUED FOR USE
FILE: 704-SWM.PLAN03265-01

Tetra Tech Canada Inc.
Box 2244, 201, 4916 - 49 Street
Yellowknife, NT X1A 2P7 CANADA
Tel 867.920.2287 Fax 867.873.3324

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Appendix B Waste Management Permit
Appendix C Spill Contingency Plan

LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of the City of Dawson and their agents. Tetra Tech Canada Inc. (Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than the City of Dawson, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this document is subject to the Limitations on the Use of this Document attached in Appendix A or Contractual Terms and Conditions executed by both parties.

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) has been retained by City of Dawson (City of Dawson) to prepare a Solid Waste Management Plan (SWMP) for the Quigley Solid Waste Management Facility (SWMF) and the newly constructed Recycling Depot located in the City of Dawson, Yukon. The previous SWMP, prepared in 2013, has reached its 10-year operating period and now requires updating to align with current operations, updated guidelines, and targets for the next 10 years of operation (2023-2033)

1.1 Solid Waste Management Plan Objectives and Scope

The objectives of this SWMP are to satisfy regulatory requirements for an updated plan and to provide a useful and practical guide for solid waste management over the next 10 years of facility operation. The scope includes site characterization, and a summary of facility design, construction, operation, upgrades, strategies and initiatives, and closure and post-closure plans.

1.2 Facility and Wasteshed Description

The SWMF is located approximately 5 km east of the City of Dawson at 139°18'W, 64°1' N on a Federal Reserve to the Government of Yukon (Land Disposition number 690012). The reserve boundary includes two parcels – A and B. Current operations are located on Parcel A, an 8.96 ha. area site. Parcel B is 14 ha. and is intended as a buffer area and potentially as a landfill expansion area. The Recycling Depot is located at Lot 11 Rabbit Creek Road. The landfill site location and boundaries are shown on Figure 1 and Figure 2, respectively.

The SWMF was originally used by the Government of Yukon as a gravel pit and a road salt storage facility in the 1970s. Landfilling operations began in 1987. The current Recycling Depot location was constructed in 2022 and operations began in 2023.

The wasteshed, defined as the geographical area contributing waste and recyclables to the facility, includes: the City of Dawson and the Tr'ondëk Hwëch'in First Nations residential areas. The permanent population of the City of Dawson in 2021 was 1,577 and is estimated to double in the summer months due to construction, mining, and tourism activities. It is unknown what the permanent population of Tr'ondëk Hwëch'in First Nations is. Assuming the seasonal in-flux in population lasts for four months of the year, the annual average population in 2021 was 2,103 and is projected to increase to 2,398 in 2033, based on a compound annual growth rate (CAGR) of 1.1% (Yukon Bureau of Statistics 2022).

The waste management permit (Permit No: 80-003) for the facility was issued on November 17, 2015, and expires on December 31, 2023 (refer to a copy of the permit in Appendix B). The SWMF and accompanying Recycling Depot accept the following segregated materials as indicated in Table 1-1:

Table 1-1: List of Segregated Materials Accepted

Check Items are Accepted		
☒ 1. Municipal Solid Waste (MSW)	☒ 2. Construction & Demolition Waste (C&D)	☒ 3. Scrap Metal
☒ 4. White Goods	☒ 5. Clean Wood and Tree Trimmings	☒ 6. Tires
☒ 7. Reusable Goods	☒ 8. E-Waste	☒ 9. Animal Carcasses
☒ 10. Compostables		
☒ 11. Recyclables, including:	☒ a) Plastics #1-7	☒ b) Tin Cans
	☒ c) Returnable Beverage Containers	☒ d) Cardboard
	☒ e) Mixed Paper	☒ f) Alkaline Batteries
	☒ g) Wax Cartons	
☒ 12. Hazardous ("Special") Waste, including:	☒ a) Asbestos	☒ b) Lead-acid Batteries
	☐ c) Glycols (Antifreeze, Heating Fluid)	☐ d) Mercury-containing Equipment
	☐ e) Hydrocarbon Contaminated soil/Snow/Water	☐ f) Aerosol Spray Cans
	☒ g) Ozone-depleting Substances (ODS)	☒ h) Water-based Paint
	☒ i) Propane Cylinders	☒ j) Residue Fuel Tanks/Drums
	☐ k) Used Oil	☒ l) Autobodies Received with no liquids
	☐ m) Other, describe:	
☐ 13. Other, describe:		

1.3 Background Reports and References

The following background reports and references have been used in preparation of this SWMP:

- AECOM. (2010). 2009 Quigley Landfill Hydrogeological Assessment.
- BluMetric Environmental. (2021). 2021 Annual Monitoring Report Quigley Landfill Dawson, Yukon.
- Commissioner of the Yukon. (2002). Environment Act O.I.C. 2002/171.
- Environment Yukon. (2011, November). Closure Requirements for Solid Waste Disposal Facilities.
- Government of Yukon. (2021). Extended Producer Responsibility in the Yukon: Exploration and Implementation Considerations.
- Lucey, V. F. (1971). Developments Leading to the Present Understanding of the Mechanisms of Pitting Corrosion of Copper. *British Non-Ferrous Metals Research Association.*

- McBean, E.A., Rovers, F. A., & Farquhar, G. J. (1995). *Solid Waste Landfill Engineering and Design.* Upper Saddle River, NJ: Prentice-Hall, Inc.
- Morrison Hershfield. (2020). Adaptive Management Plan – Quigley Landfill.
- Sperling Hansen Associates. (2020). Yukon Municipal Landfill Closure and Post Closure Costs.
- Tetra Tech EBA. (2015). Quigley Solid Waste Management Facility Solid Waste Management Plan 2013-2023 Revision: 02.
- Wang, Y.-S. (1997). Methane Potential of Food Waste and Anaerobic Toxicity of Leachate Produced During Food Waste Decomposition. *Waste Management & Research,* 149-167.
- Yukon Bureau of Statistics. (2022, March). Population and Dwellings. *Census 2021.*

1.4 Regulatory Framework

The following Yukon acts, regulations, and guidelines provide the regulatory framework governing development, operations, closure, and post-closure of Yukon SWMFs:

- ***Environment Act* RSY 2002, c.76:** Defines the requirement for SWMPs and provides legislation for the following SMWF related regulations:
  - Recycling Fund Regulation O.I.C. 1992/135;
  - Beverage Container Regulation O.I.C. 1992/136;
  - Special Waste Regulation O.I.C. 1995/47;
  - Spills Regulation O.I.C. 1996/193;
  - Air Emission Regulations O.I.C. 1998/207;
  - Solid Waste Regulations O.I.C. 2000/011
  - Ozone Depleting Substances and Other Halocarbon Regulations O.I.C. 2000/127;
  - Contaminated Sites Regulation O.I.C. 2002/171; and
  - Designated Materials O.I.C. 2003/184
- **Waste Management Permit:** Issued for the operation of a SWMF pursuant to the *Environment Act,* the Solid Waste Regulations, the Air Emissions Regulations, and the Special Waste Regulations. Provide specific requirements for SWMPs.
- ***Forest Protection Act* O.I.C. 2002/57 and the Annexed Forest Protection Regulation (2003):** Require that burning operations do not threaten forest land.
- ***Yukon Wildlife Act RSY 2002, c.*229:** Prohibits SWMF operations from providing waste available to wildlife.
- ***Occupational Health and Safety Act* O.I.C. 2006/178:** Provides safety regulations for site operations including mobile equipment, materials and storage, and construction and building safety (trenching and excavating as it relates to cell construction).

- ***Public Health and Safety Act* RSY 2002, c.176:** Provides regulation regarding the control of waste disposal grounds for the disposal of excreta and garbage.
- ***Highways Act* RSY 2002, c.108:** Stipulates a 50 m setback distance from SWMFs to highways.
- ***Territorial Lands (Yukon) Act* SY 2003, c.17:** Provides regulation limiting depositing waste to surface water and groundwater (refer to the Act for a detailed definition of "waste" as it pertains to this regulation).
- ***Yukon Waters Act* SY 2003 ch. 19:** Provides regulation limiting depositing waste to surface water and groundwater (refer to the Act for a detailed definition of "waste" as it pertains to this regulation).

2.0 SITE CHARACTERIZATION AND ENVIRONMENTAL DESCRIPTION

2.1 Climate

The nearest climate station is located approximately 8.75 km northeast from the SWMF (Climate ID 2100402); Table 2-1 displays the most recent temperature data available from 1981 to 2010 for this station and Table 2-2 displays precipitation data from the same time period.

Table 2-1 Temperature Data from 1981 to 2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Daily Average (ºC)	-26.0	-21.5	-12.1	-0.1	8.2	14.0	15.7	12.3	5.8	-4.7	-18.1	-22.9	-4.1
Standard Deviation	6.6	4.4	3.7	2.8	1.6	1.3	0.8	1.3	2.1	2.8	5.4	4.8	4.3
Daily Maximum (ºC)	-21.8	-15.8	-3.8	7.5	15.5	21.8	23.1	19.4	12.1	-0.4	-14.3	-18.7	2.1
Daily Minimum (ºC)	-30.1	-27.1	-20.3	-7.7	0.9	6.2	8.2	5.2	-0.5	-9.0	-21.9	-27.1	-10.3
Extreme Maximum (ºC)	9.7	9.5	11.1	22.5	**34.7**	34.5	33.5	33.5	25.3	17.7	10.6	6.5	N/A
Date (yyyy/dd)	1981/ 15	1992/ 28	1994/ 31	2003/ 26	**1983/ 31**	2004/ 20	1998/ 04	1999/ 06	1978/ 02	1988/ 04	1976/ 13	1999/ 22	N/A
Extreme Minimum (ºC)	-53.8	**-55.8**	-45.2	-32.0	-13.5	-3.0	-2.0	-11.0	-23.2	-36.5	-47.9	-51.8	N/A
Date (yyyy/dd)	1980/ 12	**1979/ 11**	1987/ 05	1986/ 01	2002/ 03	1996/ 05	2005/ 21	1987/ 31	1983/ 27	1996/ 27	1989/ 13	1980/ 28	N/A

Table 2-2: Precipitation Date from 1981 to 2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Rainfall (mm)	0.1	0.0	0.3	2.6	28.4	38.2	49.0	43.1	29.7	9.4	0.1	0.4	201.3
Snowfall (cm)	27.6	18.2	12.1	7.2	2.5	0.0	0.0	0.4	4.6	26.7	36.3	31.0	166.5
Precipitation (mm)	19.4	12.8	9.9	8.2	30.8	38.2	49.0	43.4	34.0	31.4	25.5	22.0	324.4
Extreme Daily Rainfall (mm)	1.2	1.0	4.4	4.8	17.6	24.2	24.8	**28.8**	18.4	21.2	1.6	7.7	N/A
Date (yyyy/dd)	2003/04	1992/28	199/23	2002/19	1995/14	1993/25	2000/23	**1980/14**	1979/13	1981/13	2005/22	1985/20	N/A
Extreme Daily Snowfall (cm)	**27.2**	12.8	12.0	17.8	10.4	0.0	0.0	5.0	14.2	19.0	23.8	19.0	N/A
Date (yyyy/dd)	**2004/13**	1995/20	1979/19	1976/20	1985/11	1976/01	1976/01	1984/28	1983/24	1997/25	1986/25	1989/22	N/A
Extreme Daily Precipitation (mm)	10.2	9.5	13.6	10.2	17.6	24.2	24.8	**28.8**	18.4	22.4	19.8	14.2	N/A
Date (yyyy/dd)	1991/10	1985/27	1988/16	2006/28	1995/14	1993/25	2000/23	**1980/14**	1979/13	1981/13	1987/19	1989/22	N/A

As indicated in Table 2-1, below 0 ºC average temperatures are observed from October to April; whereas, above 0 ºC average temperatures occur from May to September. Most groundwater recharge is expected to occur during spring freshet (melting of the snowpack) when there is accumulated precipitation (March to April to May when the average monthly temperature transitions from below to above ºC). Some increased precipitation in the late summer to fall months also contributes to groundwater recharge. For the remainder of the year, evapotranspiration typically exceeds precipitation and hence, there is little to no groundwater recharge from precipitation.

2.2 Physical and Biological Environment

The following sections describe the physical and biological environment and have been referenced from the most recent Yukon Environmental and Socio-Economic Assessment Board's (YESABs) *Designated Office Evaluation Report* for the facility.

2.2.1 Setting

The site is situated on a north facing slope of the Klondike Valley. Areas immediately adjacent to the SWMF can be described as hummocky terrain with stunted black spruce.

2.2.2 Permafrost

Permafrost is present in non-cleared areas; unlike the main disposal site and access road where permafrost is no longer present.

2.2.3 Waterbodies

Nearby surface waterbodies include the Central Dredge pond located 120 m north of the facility, which discharges to an eddy on Bear Creek approximately 190 m northwest of the facility. Bear Creek meanders through a series of interconnected dredge trenches and is fed primarily from recharge within the Klondike River Valley which ultimately reports to the Klondike River.

2.2.4 Wildlife

The SWMF is frequented on a regular basis by ravens, seagulls, and eagles. There are a wide range of migratory birds that the Yukon seasonally hosts. In reviewing the list of birds currently protected under the Migratory Birds Convention Act (1994) the Quigley SWMF may provide a migratory path, nesting, or other habitat features for a large number of these birds. While no wildlife key areas (WKA) have been identified in the project area, bears, moose, and other mammals are likely to be found. Both grizzly and black bears (and other scavenging wildlife such as foxes) are highly likely to pass through the area.

2.3 Conceptual Hydrogeology

Table 2-3 provides a summary of the hydrogeological regime at the SWMF, based on the hydrogeological investigation conducted by AECOM in 2009.

Table 2-3: Summary of Hydrogeological Regime

Parameter	Unit	Value
Average depth to static water level	Meters below ground surface (mbgs)	5-11
Horizontal hydraulic gradient	m/m	0.0025
Inferred groundwater flow direction	Bearing	North
Geometric mean hydraulic conductivity	m/s	Unknown
Average linear groundwater velocity	m/d	Unknown
General subsurface materials	The site is located on an alluvial fan likely generated by gravels washed down Quigley Gulch. Materials encountered during drilling consisted of gravel from surface to 3 m to 4 m depth underlain by sandy silt 2 m to 8 m thick, which are in turn underlain by the Klondike River Valley “pay gravels” which are approximately 10 m thick. Overburden is underlain at this site by schist bedrock at depths of 15 m to 20 mbgs.	

3.0 SWM FACILITY DESIGN

3.1 Infrastructure and Layout

Figure 3 provides a site map of the existing SWMF infrastructure and layout.

A site attendant office and free-store is located at the SWMF entrance. A fully enclosed compost area on a concrete slab is situated between site entrance and the scrap vehicle pile. Finished product compost is stockpiled behind the enclosure with no end-use designated at this time.

MSW is actively being landfilled on the southern edge of the site, against the cut bank, in above-ground (area fill) lifts. The active C&D cell is located to the east of the MSW cell and is also being landfilled in above-ground lifts. Remaining accepted items are stockpiled throughout the site.

3.1.1 Groundwater Monitoring Wells and Ground Temperature Boreholes

3.1.1.1 Groundwater Monitoring Wells

Locations of groundwater monitoring wells are shown in Figure 3. Nine groundwater monitoring wells have been installed on and surrounding the SWMF (BH04, BH05, MW02-09, MW03-09, MW04-20, MW05-17, MW06-20, MW07-20, MW01-09). Monitoring wells MW01-09 and MW07-20 include nested deep and a shallow installations (two pipes). All monitoring wells are down- or cross-gradient to the landfill. Based on the results of recent groundwater monitoring events, several deficiencies have been noted with the groundwater monitoring network as shown on Table 3-1.

Table 3-1: Condition of Groundwater Monitoring Wells

Monitoring Well ID	Monitoring Well Condition	Comments
BH04	Good condition	-
BH05	Good condition	-
MW02-09	Poor condition; frost-jacked and requires repairs	-
MW03-09	Good condition; no dedicated tubing	Repaired in 2016
MW04-20	Good condition	Replaces MW04-09
MW05-17	Good condition	Background monitoring well located cross-gradient of the SWMF, in lieu of up-gradient well that is not possible to be installed based on topography and permafrost conditions in the area to the south of the SWMF.
MW06-20	Good condition; no dedicated tubing	Replaces BH01
MW07-20S, MW07-20D	Good condition	Replaces ML0109
MW01-09S, MW01-09D	Poor condition, damaged tubing in place	Frozen/dry

For wells that have been noted as damaged or require repairs we recommend that they be repaired; if repair is not possible, we recommend that these wells be decommissioned. For the wells identified as having no dedicated tubing, it is recommended to supply dedicated tubing prior to the next monitoring event if the wells are not found to be dry.

3.1.1.2 Ground Temperature Boreholes

Locations of ground temperature boreholes are shown in Figure 3. Three ground temperature boreholes with thermistors have been installed surrounding the SWMF (BH02, BH03, and BH06). Thermistor beads have been installed at multiple depths in each borehole as follows:

- BH06: 1 to 9 mbgs, at 1 m intervals;
- BH03: 1 to 20 mbgs, at 1 m intervals; and
- BH02: 1 to 20 mbgs, at 1 m intervals.

Ground temperature results help monitor surrounding permafrost conditions.

3.1.2 Signage

Signage indicating the name of facility and hours of operation based on season are posted at the site entrance. Signage at the entrance gate also warns residents of the electric fence, and notifies that the site will be closed at -40°C.

A list of emergency telephone numbers for the landfill are listed near the entrance of the site, as is a map showing dumping locations and driving paths.

Signage throughout the facility identifies stockpiles and receptacles and requests users to dump in the proper locations. There is a list of unacceptable wastes, procedures for properly depositing each special waste, and a warning of fines for improper dumping.

Signage is generally weathered, but adequate for current operations. Tetra Tech recommends that signage be repainted, as needed, to ensure legibility.

3.2 Conceptual Filling and Phasing Strategy

3.2.1 Municipal Solid Waste

Figure 4 presents typical details for the filling strategy. Figure 5 presents the proposed final contours.

MSW is currently being landfilled along the north edge of the cell in Parcel A. The western section of land Parcel B has been identified as a potential area for landfill expansion once landfilling on land Parcel A reaches full capacity. The western side is higher in elevation than the eastern side which is typically wet and is not suitable for landfilling or stockpiling materials. If landfilling proceeds on land Parcel B, additional clearing will be required to provide space for both material stockpiles and landfilling.

Prior to landfill expansion on land Parcel B, the following will be required: a YESAB project proposal, intrusive site investigation and assessment to determine suitability for landfilling, and installation of additional groundwater monitoring wells. Should an agreement with the placer miner not be reached and/or the expansion area is not

determined to be suitable for landfilling purposes, we recommend that a study be completed to assess alternative waste management options for the wasteshed.

3.2.2 Construction and Demolition Waste

Figure 4 presents typical details for the filling strategy. Figure 5 presents the proposed final contours for the C&D cell. C&D is currently being landfilled along the eastern edge of the facility. C&D landfill expansion is proposed for the southeastern corner, which is currently treed. We recommend that the southeastern quadrant be cleared of trees to allow the permafrost to thaw prior to cell development.

3.3 Surface Water Management

Surface water runoff generally flows south to north. Run-on is intercepted by a network of drainage ditches above the southern cut bank, which direct flow away from the landfilling areas to the east and west. On-site surface water is managed through a series of ditches, culverts, and settling ponds. Improvements were constructed in 2015 and infrastructure is adequate for handling the flows experienced on site.

3.4 Landfill Gas Management

Landfill gas (LFG), to Tetra Tech's knowledge, has not been monitored on site. It has generally been assumed that based on the climate (temperature and precipitation) and the quantity of waste being landfilled, that LFG generation is low and slow. Monitoring of wells and buildings for LFG may be conducted to confirm no LFG management is required onsite.

Passive venting may be required in the design of the final cover system, which will have a lower hydraulic conductivity than the intermediate cover currently being used.

3.5 Leachate Management

The Quigley SWMF is a natural attenuation facility with no formal leachate collection or treatment. Table 3-2 provides a list of factors affecting the composition of leachate and a summary of recommended leachate management practices to limit the generation and mobilization.

Table 3-2: Leachate Composition Factors and Management Practices

Factors Affecting the Composition of Leachate (McBean *et. al.,* 1995)	Recommended Leachate Management Practices	
	MSW	C&D
Waste composition	▪ Provide adequate hazardous waste collection to limit inclusion with MSW (e.g., limit mercury vapour lamps, lead-based painted products, and solvent containers).	▪ Provide adequate hazardous waste collection to limit inclusion with C&D waste (e.g., limit mercury vapour lamps, lead-based painted products, and solvent containers). ▪ Record landfilling of gypsum drywall and treated wood (sulphate and arsenic can leach from these C&D wastes [Weber *et. al.,* 2002]).
Age of the refuse	▪ No leachate management practices recommended for this factor; however, it is important to record locations and dates of historical landfilling cells to assist in evaluating groundwater monitoring results.	

Factors Affecting the Composition of Leachate (McBean *et. al.,* 1995)	Recommended Leachate Management Practices	
	MSW	C&D
Operation of the landfill	▪ Implement surface water management practices recommended in Section 3.3. ▪ All previous closed cells from historical operations should be capped with a cover system meeting Environment Yukon's final cover requirements.	
Climate	▪ As evapotranspiration typically exceeds precipitation for most of the year, leachate management practices related to surface water management (Section 3.3) can be focused to freshet and late summer/fall precipitation events. ▪ Progressive closure should be implemented to minimize the infiltration of precipitation into the waste.	
Hydrogeological conditions	▪ Location and orientation of future cells should be designed according to hydrogeological conditions to allow for optimal natural attenuation.	
Conditions within the landfill cell such as chemical and biological activity, moisture content, temperature, pH, and degree of stabilization (i.e., anaerobic vs. methanogenic phases)	▪ No additional recommended management practices other than those previously noted.	

It should be noted that the recommended leachate management practices listed in the table above do not include all potential means for reducing toxicity and volume of leachate; however, they are feasible to implement within the operational period of this plan, will reduce liability and will potentially increase facility lifespan.

4.0 GENERATION AND CAPACITY ANALYSIS

4.1 Waste Generation

Currently, there is no weigh scale on site. Waste disposal rates were estimated by Sperling Hansen Associates Ltd. (SHA) for both MSW and C&D. According to SHA, from 2024 to 2033 inclusive, the Quigly SWMF is estimated to receive 11,961 tonnes of MSW (including industrial, commercial and institutional [ICI] waste and organics) and 5,233 tonnes of C&D (SHA 2020).

4.2 Waste Diversion

Currently there is insufficient data to estimate the amount of diversion that is currently being achieved through SWMF operations (tire recycling, salvaging of white metals, scrap metals, etc.). Based on the tonnage estimates prepared by SHA, it was assumed the SWMF currently has a baseline of 18% total diversion from the MSW and C&D waste streams.

Additional diversion can be achieved by means of public education regarding segregation of recyclable, compostable, and salvageable materials from the MSW and C&D streams, incentive programs, and enforcement. Primary divertible material categories for the MSW stream include paper, metals, plastics, and organics.

Based on the Government of Yukon, Extended Producer Responsibility in the Yukon: exploration and implementation considerations report prepared in 2021 (Yukon Government 2021), Tetra Tech recommends a target of 40% diversion by 2033.

Additional diversion can be achieved by means of public education regarding segregation of recyclable, compostable and salvageable materials from the MSW and C&D streams, incentive programs, and enforcement. Potential divertible materials from the MSW stream are discussed in a report by Maura Walker & Associates, entitled Composition of Waste From Communities Outside The City of Whitehorse (January 2011). As stated in this report, it is estimated that a diversion target rate of 34% is achievable for outlying communities from the City of Whitehorse. Primary divertible material categories from the MSW stream include paper, metals, plastic, and organics.

Based on 34% divertible materials from the MSW stream, it is estimated that an additional 6% can be diverted from the C&D stream. A linear phased approach is recommended to achieve 40% diversion by 2033 as outlined in Table 4-1.

Table 4-1: Diversion Schedule

Year	Target Diversion Rate
2024	18.0%
2025	20.4%
2026	22.9%
2027	25.3%
2028	27.8%
2029	30.2%
2030	32.7%
2031	35.1%
2032	37.6%
2033	40.0%

To track diversion rates improved record keeping is recommended as follows:

- Recyclables: Obtain tonnage data from a local recycling processor in Whitehorse.
- E-waste: complete the monthly count of the number of pallets and average pallet height or obtain data from the e-waste processor.
- Freestore: Complete a rough-running estimate of goods dropped off at the freestore. This task presents a challenge for estimation, as goods are removed and dropped off on a more random interval than other materials diverted on site. Therefore, a record keeping protocol needs to be defined.
- Scrap Metals/White Metals/Autobodies: Obtain tonnage or approximate volume of metals salvager. Scrap metal is typically compacted into standard cubic dimensions that can be tallied after removal from the site.
- Tires: Complete a monthly count of the number and size of each tire or obtain tonnages or volumes from the hauler or recycler. The tonnage or volume must stipulate if the tires are intact or shredded.
- Compost: Obtain approximate monthly dimensions of the compost pile(s). This task presents a challenge for estimation, since compost piles diminish in size during the composting process. Therefore, a record keeping protocol needs to be defined.

Compiled monthly records for each of these items are recommended to be maintained by the site operator for annual reporting in comparison to the target diversion rate. Volumes of recorded items can be converted to tonnage

by assuming typical densities. All facilities throughout Yukon are recommended to use the same densities and general methodology to ensure consistency in comparison.

Strategies and initiatives to increase and promote diversion are further discussed in Section 10.

4.3 Compaction and Cover Material

Based on the type of collection and landfilling equipment used, limited to no MSW and C&D compaction is currently being achieved. As a result, the in-place MSW density is assumed to be 150 kg/m^3. For C&D, the density is assumed to be 250 kg/m^3. For the purposes of assessing landfill capacity, approximately 5:1 waste to cover material is landfilled.

4.4 Capacity

According to SHA there was approximately 523,876 m^3 of available airspace remaining in 2020 for the entirety of the site (SHA 2020). Based on projected disposal rates and densities, there is landfill capacity remaining until the year 2052 for both the MSW and C&D waste cells. For planning purposes, we recommend the City of Dawson complete a topographic survey of the MSW cell to compare to the 2009 contour data previously collected.

The following equations were used to solve for the remaining years of landfilling capacity. It should be noted that diversion was not subtracted from the estimated disposal rates.

$$Cumulative\ Population\ (C_{POP}) = \ a_1(1 - r^n)/(1 - r)$$

$$Volume_{MSW} = \ C_{POP} * 2.3kg/cap.day \ * 365/150kgm^3$$

$$523{,}876\ m^3 = Volume_{MSW}(Excel\ goal\ seek, by\ changing\ n)$$

Where: a_1 = population in year 2021

r = CAGR + 1

n = years (variable in Excel goal seek)

It should be noted that groundwater quality results and changes in environmental regulations may limit natural attenuation landfilling in the future.

5.0 GENERAL OPERATING PROCEDURES

5.1 Site Management

The hours of operation for the SWMF differ with seasons. In the summertime, hours are 12:00 pm to 7:00 pm from Tuesday to Saturday, and winter hours are 11:00 am to 6:00 pm from Tuesday to Saturday. Operations are closed when the temperature reaches -40°C, and site access controlled with a lockable front gate. There is a full-time site operator in attendance during all hours of operation. No tipping fees are collected for depositing waste or recyclables at the facility. We recommend that the City of Dawson establish tipping fees.

Within Dawson City limits, curbside MSW collection is provided weekly on Wednesdays or Mondays. Commercial waste is collected six days per week in the summer and three days per week in the winter. For residents of the Dome subdivision, Dredge Pond Subdivision, and Tr'ondëk Hwëch'in First Nation subdivision, 6 cubic yard MSW and compost (in the summer) bins are provided. Compostable materials are collected in the summer from commercial areas as needed.

5.2 Landfilling Operations

Landfilling operations include MSW and C&D waste. Animal carcasses are landfilled with MSW. Asbestos is landfilled infrequently on a case-by-case basis, depending on availability of airspace.

5.2.1 Segregation

Separate landfill cells are maintained for MSW and C&D. The site operator ensures these materials and others are properly segregated on site.

5.2.2 Active Face Activities

The following best management practices have been referenced from Solid Waste Engineering and Design (McBean *et. al*, 1995).

The active, or working face, is the portion of the cell onto which solid wastes are deposited, spread, and compacted. As a best practice the active face should be as narrow as possible, but sufficiently wide to allow equipment to pass. In general, cells should be rectangular in surface area and have sides sloped as steeply as practical and as Occupational Health and Safety Regulations will permit. The best compaction occurs at approximately 10% slope, but slopes up to 30% may be employed. Relatively steep slopes assist in minimizing the use of cover material. Steep slopes also aid in shredding and obtaining good compaction of the waste. Solid wastes should be spread in layers not greater than 0.5 m thick on the incline over the cell height and worked from bottom of slope to top. Typical landfilling details are shown in Figure 5.

A rubber tire backhoe is used for spreading and covering MSW and C&D. A contractor with a CAT D-7 bulldozer is hired a few times each year to compact the waste. The thickness of waste being compacted may vary and we recommend not to exceed 0.5 m. If possible, we recommend that a CAT D-Series bulldozer or equivalent be used to spread, compact and cover waste in lieu of a rubber tire backhoe to obtain reasonable levels of compaction, increase cell capacity, and to minimize potential issues with slope stability and differential settlement.

5.2.3 Cover Placement

For intermediate cover material, the waste management permit requires that waste be covered with soil or other comparable material to a depth of 0.1 m every seven days or after 0.5 m of solid waste is deposited. Intermediate cover material is currently sourced from trench excavations.

A sample of stockpiled silt from the southwest corner of the site was obtained in 2014 by Tetra Tech for grain size analysis, moisture density standard proctor relationship analysis, and falling head permeability tests at 95% standard proctor dry density. The results indicated that at 95% standard proctor dry density the hydraulic conductivity is 1.8 x 10^{-6} cm/s, which is slightly more conductive than Environment Yukon's requirements for final cover material (1x10^{-6} cm/s). The results were submitted to Environment Yukon for review and approval. Environment Yukon indicated that this material would be acceptable for use as final cover material. We recommend that any silt stripped from land Parcel A and Parcel B be stockpiled for future use as final cover material.

5.3 Recycling and Transfer Operations

Recyclable materials accepted at the Quigley SWMF include those listed in Table 1-1. Recyclables are either collected at the recycling depot or stockpiled throughout the facility.

Recyclable materials handled by the recycling depot plastics (#1-7), tin, aluminum and wax cartons, are transferred to a local recycling processor in Whitehorse. Government of Yukon manages the contract for transfer of recyclables from Quigley SWMF to a local recycling processor in Whitehorse.

Recyclable materials stockpiled throughout the SWMF include scrap metals, white metals, autobodies, and propane tanks.

Lead-acid batteries are stockpiled on a wood pallet and periodically removed for recycling or are removed by scavengers. Further discussion regarding proper storage and handling of automotive batteries is provided in Section 5.6 – Hazardous (Special) Waste Management.

Crushed autobodies, scrap metals, and white goods are periodically collected by a metals salvager every two to three years. Government of Yukon does not manage a contract with the prospective salvaging company; however, they provide information regarding quantities and solicit them to complete a metals collection circuit in the Yukon. As salvaged metals have a market value, salvaging companies typically remove the metals at their own cost. Prior to removal of autobodies and white goods, they must be drained of all hydrocarbon-based fluids and ODS (see Section 5.6 for further discussion). All fluid-containing metals are stockpiled separately from the primary metals stockpile, until drained.

Empty propane tanks with brass valves are stockpiled separately until the valve is removed. Brass valves from refillable propane tanks (typically 20 lbs. and greater) are commonly removed by scavengers due to their high salvage value or by the site operator before being transferred to the scrap metals stockpile. Further discussion regarding proper storage and handling of propane tanks is provided in Section 5.6 – Hazardous (Special) Waste Management.

5.4 Re-Use Operations

Reusable goods are stored in the freestore shelter (east of the site entrance), and bicycles and plastic buckets are stockpiled outside for reuse by the local community.

5.5 Organics Management

Compostable materials are collected in a chain-link shelter on a concrete slab; compost product is periodically stockpiled behind the shelter with no end-use envisioned at this time. We recommend a low permeability berm surrounding the compost shelter be installed. If not contained, an organics composting operation can produce a leachate with elevated nitrogen that could enter the groundwater regime and be detected in the down-gradient monitoring wells. A leachate collection system should be considered to minimize potential groundwater impacts. Compost can be used for site reclamation; however, it is not envisioned to be of sufficient quality for domestic use without quality assurance/quality control (QA/QC) of the compost feedstock.

5.6 Hazardous (Special) Waste Management

For the purposes of this report, “Hazardous Waste” is synonymous with “Special Waste”, as defined by the *Special Waste Regulations*, pursuant to Yukon’s *Environment Act*. Accepted hazardous waste materials typically include lead-acid batteries, glycols, ODS, paint, propane cylinders, residue fuel tanks/drums, used oil, and autobodies containing batteries, fluids, and mercury switches. These hazardous wastes are commonly referred to as household hazardous waste (HHW).

The Quigley SWMF currently does not accept liquid or aerosol hazardous wastes except those hazardous wastes listed in Table 1-1 including: lead-acid batteries, ODS, and paint.

5.6.1 Lead-Acid Batteries

Lead-acid batteries are currently being stockpiled within a seacan east of the free store. Recommended storage procedures identified in the *Yukon Special Waste Regulations* are as follows:

- Place batteries in secondary containment (e.g., on a liner, berm, or closed-bottom container) that will not allow sulfuric acid to escape.
- Place the batteries on wooden pallets. Do not stack the batteries more than three layers thick. Separate each layer with a sheet of plywood or other suitable material.
- Layers of pallets should not be stacked more than two high.
- Before putting waste batteries on the pallet, place enough plastic sheeting on it to completely enclose all of the batteries in a continuous sheet of plastic. All sides must be wrapped to protect the batteries from the weather and to prevent any acid from being discharged into the environment.
- After wrapping the batteries in plastic, strap the stack of batteries to the pallet to prevent the batteries from shifting.

We recommend that proper lead-acid battery storage be implemented to meet the requirements of the *Yukon Special Waste Regulations.*

5.6.2 Ozone-Depleting Substances

ODS from white metals (fridges and freezers) are drained by a qualified technician before being included with the scrap metals stockpile.

5.6.3 Paint

Paint cans are accepted on pallets adjacent to the freestore. We recommend that both oil and water-based paints be dried out (in a well-ventilated shelter) and then be disposed with C&D waste, if landfilled. Based on Tetra Tech’s understanding of site operations; paint is currently stockpiled until being removed by a hazardous waste carrier/handler.

5.7 Environmental Controls

5.7.1 Electric Fencing

An electric exclusion fence encompasses the entire site. The fence is activated continuously from May 1 to October 31 each year (and from November 1 to April 30 each year when tracks or signs of dangerous wildlife are noted around the facility).

5.7.2 Wind/Litter Fencing

An old mesh fabric wind fence strung from metals posts is located along the north side of the MSW cell. The fence has begun to sag and does not adequately appear to be containing windblown litter. We recommend that the mesh fabric wind fence be decommissioned and that a modular metal wind fence (3 m tall) be installed around the perimeter of the active MSW face.

5.7.3 Fire Management

No burning of materials occurs on site. However, in case of a fire, the City of Dawson fire department is available for fire control.

In addition to providing a barrier to vectors, placement of intermediate cover, as outlined in Section 5.2.3 – Cover Placement, also provides protection against landfill fires.

5.7.4 Spill Management

In the event of a release, spill, unauthorized emission, discharge or escape of any substance listed in the *Spills Regulation* or any of the listed Special Wastes referenced in the *Special Waste Regulations*, an environmental protection officer or the 24-hour Yukon Spill Report Centre (867.667.7244) must be contacted as soon as possible.

We recommend that the City of Dawson ensures all personnel who are responsible for responding to spills receive the appropriate specialized professional training in advance of a spill. In addition, it is the responsibility of the City of Dawson to review the attached Spill Contingency Plan (Appendix C) and update, if necessary.

A Spill Contingency Plan is included in Appendix C.

5.8 Inspection and Maintenance

Table 5-1 provides a schedule of recommended weekly inspection tasks. Maintenance will typically be required based on deficiencies noted during weekly inspection.

Table 5-1: Weekly Inspection and Maintenance Schedule

Task Description
Site office/recycling depot access clear.
Litter pick-up of access road and cleared area.
Consolidate batteries and stack on pallets.
Sign repair.
Spill kit container available/stockpiled.
Wind fence maintenance.
Electric fence maintenance and voltage reading (daily).
Operation of freestore and recycling.
Ensure designated waste disposal as per the facility permit.
Hazardous waste area consolidated and labeled and list quantities.
Additional comments (description of quantities/types of waste dropped off and any wildlife observed). Describe any spills observed and whether reported to the Spill Line action taken to date.

In addition to the items listed in Table 5-1, we recommend that the site operator conduct weekly inspections of the access road (e.g., ponding, potholes, rutting, erosion, vegetation growth) and condition of groundwater monitoring wells (e.g., condition of protective casing, protection from snow clearing activities, ground subsidence surrounding protective casing, presence/absence of padlock on protective casing, ponding).

5.9 Site Safety and Training

The site operator and any personnel conducting work on-site are required to have their basic first aid training as well as Workplace Hazardous Materials Information System (WHMIS) training before working on the site. In addition, we recommend that all operators and managers have specialized professional training in courses such as the Solid Waste Association of North America's (SWANAs) Manager of Landfill Operations course, Qualified Landfill Operator course or similar. In addition, local training can be provided by the local recycling processors in Whitehorse to better inform site operators of the recycling stream and how to handle recyclables.

6.0 ENVIRONMENTAL MONITORING

6.1 Groundwater and Surface Water Monitoring

Environmental monitoring at the Quigley SWMF is conducted twice a year (once in the spring and once in late summer) and includes the following:

- Water level measurement in all groundwater wells on site (MW02-09, MW03-09, MW04-20, BH04, BH05, MW05-17, MW06-20, MW07-20S, MW07-20D, MW01-09S, and MW01-09D), and groundwater sampling in active wells.
- Surface water sampling at sites: SEEP, Upper Bear Creek Mid-Channel 2 (UBCMC-2), Middle Bear Creek Mid-Channel (MBCMC), Lower Bear Creek Mid-Channel (LBCMC), and Lower Bear Creek Eddy (LBCE).
- Thermistor readings at three sites: BH02, BH03, and BH06.

The monitoring locations can be seen on Figure 2 and Figure 3.

Table 6-1 provides a summary of groundwater and surface water sampling parameters.

Table 6-1: Groundwater and Surface Water Monitoring Parameters

Groundwater	Surface Water
▪ Field parameters (water temperature, specific conductance, oxidation-reduction potential, dissolved oxygen, pH); ▪ Major ions; ▪ Dissolved metals; ▪ Mercury; ▪ Hardness; ▪ Alkalinity; ▪ Carbonate; ▪ Bicarbonate; ▪ pH; ▪ Specific Conductance; ▪ Total dissolved solids; ▪ Ammonia; ▪ Dissolved organic carbon; ▪ Volatile organic compounds; ▪ Chemical oxygen demand; ▪ Light extractable petroleum hydrocarbons (LEPH); ▪ Extractable Petroleum Hydrocarbons C10-C19; ▪ Volatile Petroleum Hydrocarbons C6-C10; ▪ Volatile Petroleum Hydrocarbons; ▪ BTEX (Benzene, Toluene, Ethylbenzene, and Total Xylenes); and ▪ PAHs (Polycyclic Aromatic Hydrocarbons).	Same parameters as groundwater with the following exceptions: ▪ Total metals instead of dissolved metals; ▪ Total organic carbon instead of dissolved organic carbon; and ▪ Addition of Biochemical oxygen demand;

All water samples should be collected in accordance with Yukon Protocol No. 7: Groundwater Monitoring Well Installation, Sampling, and Decommissioning.

7.0 ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS

Based on the findings of the most recent YESAB *Designated Office Evaluation Report,* the following are key mitigation measures that have been recommended for the SWMF:

- Implement and perform groundwater and surface water monitoring programs regularly to monitor environmental impacts and determine site hydrogeology;
- Continue to segregate and divert waste, clean-up any misplaced waste, and provide secondary containment for hazardous wastes such as paint and batteries;
- Provide adequate clearance from groundwater levels, install liner for a leachate barrier, final cover, and landfilled waste;
- Employ a site attendant to supervise operations, provide site maintenance, monitor site safety, and limit the hours of operation; and

- Monitor electric fence integrity. Record wildlife observations and prevent expansion into wildlife habitats.

Section 7.1 – Groundwater and Surface Water Quality provides detail on the most recent environmental sampling event and Section 7.2 – Receptors, provides a summary of applicable receptors according to the Yukon Contaminated Sites Regulation (CSR) Protocol No. 6: Application of Water Quality Standards.

7.1 Groundwater and Surface Water Quality

Based on the results of BluMetric Environmental's (BluMetric) sampling conducted in 2021, the following conclusions were made:

- An exceedance of Yukon CSR Aquatic Life (AW) standards was noted for Dissolved Cobalt in groundwater wells MW05-17 and MW07S-20. This is consistent with historic results and has been attributed to natural conditions, according to Morrison Hershfield.
- Exceedance of Yukon CSR-AW standard for ammonia was noted in groundwater wells MW07S-20, MW07D-20, and BH05. This is also consistent with historical results.

7.2 Receptors

For the purposes of this report, receptor categories are limited to the following water uses: Drinking Water, Aquatic Life, Irrigation and Livestock – as defined by the Yukon CSR. Table 7-1 summarizes receptors applicable to the SWMF according to Yukon CSR Protocol No. 6: *Application of Water Quality Standards*. Note that Table 7-1 is limited to a desktop review of the hydrogeological investigation and Yukon Lands Viewer and may not include all potential receptors.

Table 7-1: Summary of Applicable Receptors

Receptor	Criteria for Applicability	Applicable to SWMF	Name and Location of Receptor
Aquatic Life	1 km radius (groundwater travel time of less than or equal to 50 years) of the nearest surface water potentially containing aquatic life.	Applicable	▪ Bear Creek (190 m northwest) ▪ Central Dredge Pond (north)
Drinking Water	1.5 km radius (groundwater travel time of less than or equal to 100 years) of the closest existing or probable future drinking water source.	Not Applicable	-
Irrigation	1.5 km radius (groundwater travel time of less than or equal to 100 years) of the closest surface waterbody used for an irrigation water source.	Not Applicable	-
Livestock	1.5 km radius (groundwater travel time of less than or equal to 100 years) of the closest surface waterbody used as a source for drinking water for livestock.	Not Applicable	-

8.0 LANDFILL CLOSURE

8.1 Closure Plan

Prior to any closure works being conducted on site, a closure plan must be submitted to the Yukon Environmental Programs Branch, including with the facility's updated SWMP.

Based on current practices, general requirements for site closure are envisioned to include the following:

- Notify the community and Government of Yukon Environment Programs Branch of the intent to close the facility and planned closure activities in advance of commencement of closure activities. Obtain approval from the Government of Yukon Environment Programs Branch for the closure.
- Ensure that land title is obtained (if not already in place) and retained. This will ensure that future land uses are not permitted unless they are compatible with the reclaimed site.
- Review potential post-closure uses (if any) with the Community.
- Eliminate access to the site; depending on post-closure land use plans. If vehicle traffic to the post-closure site is not required, decommission the access road entirely with large boulders, fencing, or ditching across the road.
- Post notices at the highway and on the access road indicating the site has been closed and where the nearest alternative waste facilities are available. Signs could also reference the appropriate sections of the *Solid Waste Regulations* and/or the Wildlife Act regarding littering, fines, and consequences.
- Perform an extensive litter pick-up of the cleared area and bush perimeter.
- Compact and bury remaining wastes in the landfill cells.
- Recycle scrap metals, vehicle bodies, ODS appliances, and tires.
- Salvage wind fencing and electric fence components for reuse.
- Apply final cover material, if not already completed during progressive closure, according to the cell design. Final lifts of waste and intermediate cover are placed such that final contours are achieved, less the final cover thickness (minimum of 0.6m thick). Final contours should allow for a minimum grade of 4% allowing for positive drainage and not exceeding 33%, minimizing erosion. Final cover material shall be placed to achieve a maximum hydraulic conductivity of 1 x 10^{-6} cm/s, as identified in Requirements for Public Waste Disposal Facilities, November 2019, unless otherwise approved by the Government of Yukon. Topsoil with a minimum thickness of 150 mm is recommended to be placed overlying final cover, although it is not a regulatory requirement.
- Ensure no sharp objects are protruding the final cover and no sinkholes have developed where material has settled in voids between bulking landfilled waste.
- Grade and ditch to ensure that surface water is diverted from the closed cells and include plans for the maintenance of draining systems, if applicable.
- Once the final cover is established, the area can be re-vegetated with plants and grasses native to the area, or this can be allowed to occur naturally.

- Documentation of closure of each cell must be maintained by the operator and provided to the Environmental Programs Branch on request. The documentation shall include:
  - Photos of the Cell before and after closure;
  - Details about the cover material used, its final thickness, and its permeability;
  - Whether the waste was compacted before burial;
  - Methods to be used to ensure that surface water is diverted from the closed cell, including plans for the maintenance of drainage systems if applicable; and
  - A site plan showing the locations of segregation/composting areas and closed and open cells at the waste disposal facility.

8.2 Post-Closure Monitoring and Maintenance

Post-closure inspection and monitoring of the facility shall be conducted for a minimum post-closure period of 25 years and will generally include, but not be limited to, the following items:

- Physical integrity of the final cover;
- Ponding water on the site;
- Surface water impacts of the closed facility; and
- Monitoring of appropriate end-uses at the site.

Post-closure care activities will generally include, but not be limited to, the following:

- Perform annual inspections of the final cover area for settling or erosion that may cause ponding of surface water or exposure of buried waste;
- Perform minor repairs and maintenance to the final cover or re-vegetation efforts, as required;
- Collect and submit annual groundwater monitoring and evaluation of results; and
- Submit annual reporting of post-closure care inspections and surface water monitoring to the Government of Yukon Environmental Programs Branch.

8.3 Closure and Post-Closure Monitoring Costs

In 2020, the closure and post-closure costs were estimated for the SWMF by SHA. The closure cost estimate includes elements such as site regrading, leachate infrastructure, final cover, and record drawings.

For the Quigly SWMF, the closure area was estimated to be 53,096 m^2, with an estimated closure cost of $2,824,752. The SHA estimate assumed a remaining site life greater than 50 years.

For post-closure monitoring costs, it is anticipated that more intensive monitoring will occur during the first five years. If results remain positive, a progressive reduction of ground water monitoring would be recommended. SHA did not provide a recommended monitoring schedule; however, it is assumed to be as follows:

- Years 1 – 5: Two times per year.
- Years 5 – 10: Once per year.

- Years 11 – 20: Once every two years.
- Years 21 – 25: Once at 25 years.

We recommend that future closure and post-closure monitoring costs will be covered by means of the City of Dawson annual contribution to a closure fund.

9.0 RECORD KEEPING AND REPORTING

- All regulated records shall be maintained for a minimum of three years.
- The following records shall be kept at the site:
  - Name of operator or municipal works staff working on site.
  - Copies of any plans required as part of the Waste Management Permit, including amendments and approvals.
  - Summary of all inspections, including name of inspection personnel, date of inspection, recorded observations, actions taken as a result of observations, and date the action was taken.
  - Analytical results of ground and surface water sampling, including interpretations of monitoring results to determine trends in contaminant levels over time. Results of ground and surface water monitoring shall also be submitted in electronic format to an environmental protection officer by January 31 of the year following that in which samples were taken.
  - Hydrogeological investigation/assessment report(s).
  - Notes regarding spills or leaks, including substance involved, estimated quantity, date of spill or leak was observed, spill reports, and clean-up procedures implemented.
  - Records of any deficiencies remedied as a result of inspections of the facility or equipment in non-compliance with the Waste Management Permit or approved plans and a summary of how they were remedied.
  - Copies of waste manifests documenting each shipment of hazardous (special) waste from the site.
  - Before and after photographs and a detailed description of any activities undertaken to close any cell(s).
- If the facility is to accept contaminated materials, the permittee shall submit to an environmental protection officer, for approval, copies of all laboratory analytical results before accepting the material and shall not allow materials containing contaminants in excess of the industrial land use standards in the Yukon CSR to be deposited into a cell.
- The permittee shall submit a letter of notification to an environmental protection officer when a new cell is developed or when a cell is closed. The letter shall provide details of the cell construction or closure and written confirmation that the cell was properly constructed or closed in accordance with written guidelines.
- Obtain written or verbal approval from an environmental protection officer that weather conditions preclude obtaining cover material between November 15 and April 15 each year.

10.0 STRATEGIES AND INITIATIVES

Key strategies and initiatives related to the SWMF include the following:

- Regionalization of solid waste activities, including tipping fees (both residential and commercial rates) to avoid "dump shopping":
  - Provide community education regarding tipping fees to allow for better understanding why they are required;
  - Complete a financial analysis to determine the most appropriate tipping fees for regional areas; and
  - Introduce tipping fees in a phased approach to reduce initial public impacts and outcry.
- Regionalization of transferred/recycled materials to reduce Operations and Maintenance costs associated with trucking.
- Achieving waste diversion targets (discussed in this report) by increased community education:
  - Develop improved record keeping ensuring any diversion being achieved is adequately tracked.
- Establish an extended producer responsibility system in the Yukon that can assist with funding mechanisms for HHW and e-waste. The goal would be to put the handling costs up-front to the consumer to ultimately help dispose or recycle these products properly. This would require amendment to the *Designated Material Regulation* or creation of a similar framework that could be more easily updated.
- Potentially install a weigh scale system to better track material quantities entering the facility.
- Require local waste collection contractors to have SWMPs to ensure their wastes are being sorted properly as part of their contract (i.e., separation of any segregated materials accepted on site to increase diversion).

We recommend that the City of Dawson continue working with other municipalities and Government of Yukon to realize as many initiatives as possible during the planning period of this report (2023-2033). We further recommend that this report be updated every two years with new or revised strategies and initiatives.

11.0 CONCLUSIONS AND RECOMMENDATIONS

Tetra Tech has completed this 10-year SWMP (2023-2033) for the Quigley SWMF. Based on the results of this Plan, Tetra Tech emphasizes the following conclusions and recommendations:

- Nine groundwater monitoring wells have been installed and are actively being monitored on and surrounding the SWMF (BH04, BH05, MW01-09 [S and D], MW02-09, MW03-09, MW04-20, MW05-17, MW06-20, MW07-20 [S and D]). Based on the results of recent groundwater monitoring events, deficiencies have been noted with the groundwater monitoring network. For wells that have been noted as damaged, or with loose standpipes and casings, we recommend that they be repaired; if repair is not possible, we recommend that these wells be decommissioned. For wells without dedicated tubing, we recommend tubing be supplied prior to the next monitoring event if the well is not found to be dry.
- Signage throughout the site generally weathered, but adequate for current options. Signage should be repainted, as needed, to ensure legibility.
- The western section of land Parcel B has been identified as a potential area for landfill expansion once landfilling on land Parcel A reaches full capacity. The western side is higher in elevation than the eastern side which is typically wet and is not suitable for landfilling or stockpiling materials. If landfilling proceeds on land Parcel B,

additional clearing will likely be required to provide space for both material stockpiles and landfilling. Prior to landfill expansion on land Parcel B, requirements included in Section 3.2.1.

- C&D waste is currently being landfilled along the eastern edge of the facility. C&D landfill expansion is proposed for the southeastern corner, which is currently treed. We recommend that the southeastern quadrant be cleared.
- To limit potential impacts from leachate derived contaminants of concern, we recommend that the following leachate management practices be implemented: improved record keeping, implementation of recommended surface water management practices, and cap all previous closed cells from historical operations and progressively closed cells with a cover system meeting Environment Yukon's final cover requirements.
- We recommend that a diversion target of 40% be established in a phased approach by 2033. Community education, incentive programs, enforcement, improved site operations, and record keeping will assist in achieving this goal.
- Based on data from SHA, there is approximately 523,876 m³ of available airspace. Based on projected disposal rates and densities, the landfill is estimated to reach capacity in the year 2053. For planning purposes, we recommend the City of Dawson complete a topographic survey of the waste cells for comparison with the 2009 contours to verify the estimated disposal rate.
- No tipping fees are collected for depositing waste or recyclables at the facility. We recommend that the City of Dawson establish tipping fees.
- A rubber tire backhoe is used for spreading and covering MSW and C&D. A contractor with a CAT D-7 bulldozer is hired a few times each year to compact the waste. The thickness of waste being compacted may vary and we recommend not to exceed 0.5 m. If possible, we recommend that a CAT D-Series bulldozer or equivalent be used to spread, compact and cover waste in lieu of a rubber tire backhoe to obtain reasonable levels of compaction, increase cell capacity, and to minimize potential issues with slope stability and differential settlement.
- A sample of stockpiled silt from the southwest corner of the site was obtained in 2014 by Tetra Tech for grain size analysis, moisture density standard proctor relationship analysis, and falling head permeability tests at 95% standard dry density. The results indicate that at 95% standard dry densities the hydraulic conductivity is 1.8×10^{-6} cm/s, which is slightly more conductive than Environment Yukon's requirements for final cover material (1×10^{-6} cm/s). The results were submitted to Environment Yukon for review and approval. Environment Yukon indicated that this material would be acceptable for use as final cover material. Tetra Tech recommends that any silt stripped from land Parcel A and Parcel B be stockpiled for future use as final cover material and that a minimum of three additional soil samples be collected and sampled for grain size analysis, moisture density standard proctor relationship analysis, and falling head permeability tests at 95% standard dry density prior to final cover placement.
- Compostable materials are collected in a chain-link shelter on a concrete slab; compost product is periodically stockpiled behind the shelter with no end-use envisioned at this time. We recommend that a low permeability berm surrounding the compost shelter be constructed. If not contained, an organics composting operation can produce a leachate with elevated nitrogen that could enter the groundwater regime and be detected in the down-gradient monitoring wells. A leachate collection system should be considered to minimize potential groundwater impacts. Compost can be used for site reclamation; however, it is not envisioned to be of sufficient quality for domestic use without QA/QC of the compost feedstock.
- An old mesh fabric wind fence strung from metals posts is located along the north side of the MSW cell. The fence has begun to sag and does not adequately appear to be containing windblown litter. We recommend that the mesh fabric wind fence be decommissioned and that a modular metal wind fence (3 m tall) be installed around the perimeter of the active MSW face.

- We recommend that the site operator inspect the clean wood and brush stockpile regularly to minimize inclusion of materials other than clean wood and brush.
- We recommend that the City of Dawson ensures all personnel who are responsible for responding to spills receive the appropriate specialized professional training in advance of a spill. In addition, it is the responsibility of the City of Dawson to review the attached Spill Contingency Plan and update, if necessary.
- The site operator and any personnel conducting work on site are required to have their basic first aid training as well as WHMIS training before working on the site. In addition, we recommend that all operators and managers have specialized professional training in courses such as the SWANA's Manager of Landfill Operations course, Qualified Landfill Operator course, or similar. In addition, local training can be provided by a local recycling processor in Whitehorse to better inform site operators of the recycling stream and how to handle recyclables.
- Based on the results of BluMetric's environmental monitoring conducted in July and August 2021 the following conclusions are made:
  - An exceedance of Yukon CSR AW standards was noted for Dissolved Cobalt in groundwater wells MW05-17 and MW07S-20. This is consistent with historic results and has been attributed to natural conditions, according to Morrison Hershfield.
  - Exceedances of Yukon CSR-AW standard for ammonia were noted in groundwater wells MW07S-20, MW07D-20, and BH05. This is consistent with historical results.
- Based on the SHA report on closure and post-closure monitoring costs, the Quigley SWMF is estimated to have a closure cost of $2,824,752.
- We recommend that the City of Dawson continue working with other municipalities and Government of Yukon to realize as many initiatives as possible during the planning period of this report (2023-2033). We further recommend that this report be updated every two years with new or revised strategies and initiatives.

12.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

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PERMIT TO PRACTICE
TETRA TECH CANADA INC.
SIGNATURE _____
Date _____
PERMIT NUMBER PP003
Association of Professional Engineers of Yukon

FIGURES

Figure 1 Site Location Plan
Figure 2 Reserve Boundary
Figure 3 Existing Conditions
Figure 4 Typical Landfilling Details
Figure 5 Final Cell Contours

CLIENT

CITY OF DAWSON

SOLID WASTE MANAGEMENT PLAN
QUIGLEY SWMF, YUKON

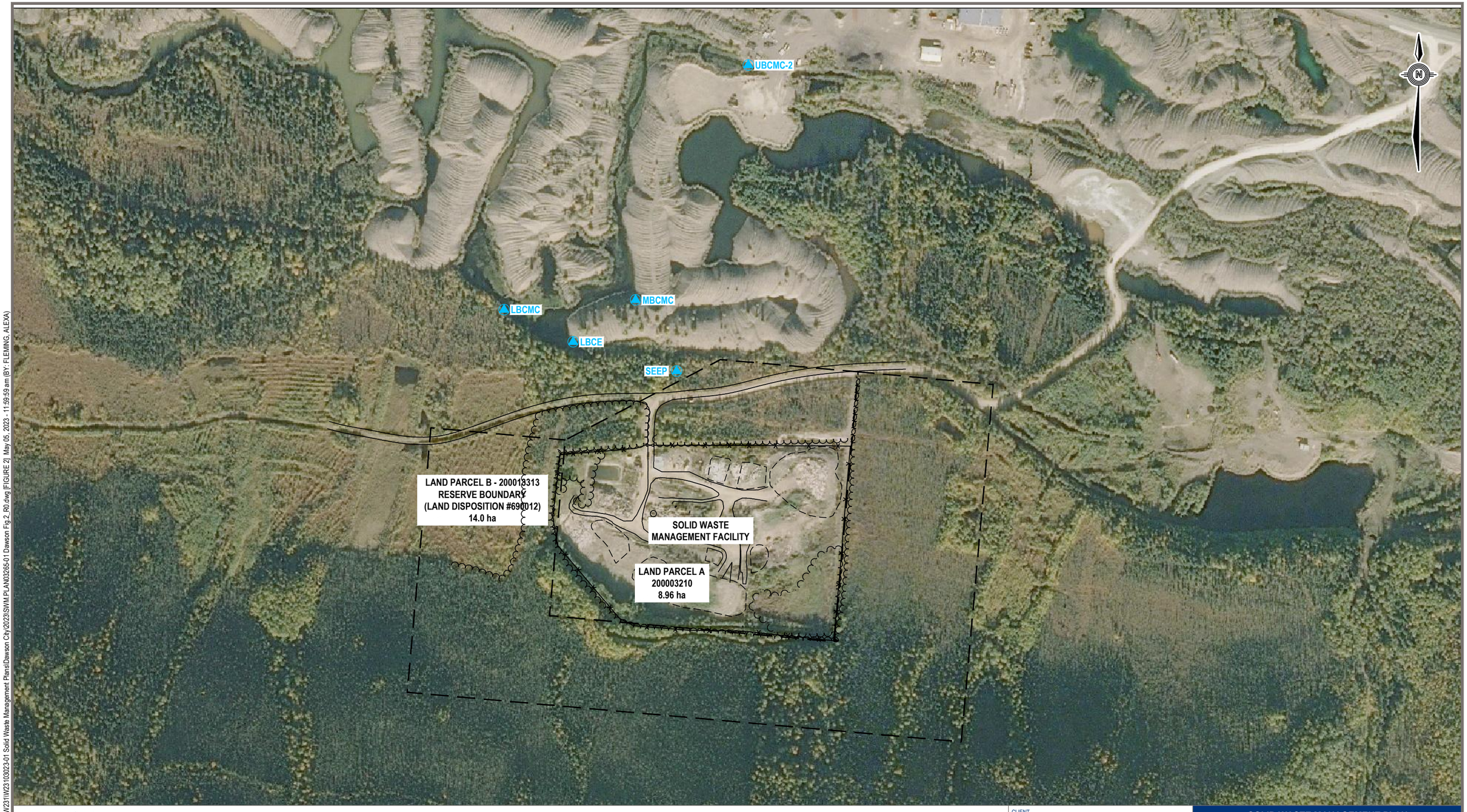
SITE LOCATION PLAN

TETRA TECH

PROJECT NO.	DWN	CKD	REV
SWM.PLAN03265-01	AF	TS	0

OFFICE	DATE
CGY	March 31, 2023

FIGURE 1



LEGEND

- EDGE OF ROAD
- ELECTRIC FENCE
- TREELINE
- RESERVE BOUNDARY
- MONITORING LOCATION

0 100 m

Scale: 1: 3 000

NOTES

IMAGE SHOWN PROVIDED BY BING MAPS (DATED 2023)

TOPOGRAPHIC SURVEY INFORMATION WAS PROVIDED BY YUKON ENGINEERING SERVICES (DATED 2009)

STATUS
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CITY OF DAWSON

SOLID WASTE MANAGEMENT PLAN
QUIGLEY SWMF, YUKON

RESERVE BOUNDARY AND ENVIRONMENTAL MONITORING LOCATIONS

TETRA TECH

PROJECT NO.	DWN	CKD	REV
SWM.SWOP03265-01	AF	TS	0

OFFICE: CGY
DATE: March 31, 2023

Figure 2

LEGEND

- BOREHOLE WITH GROUND TEMPERATURE CABLE
- MONITORING WELL LOCATION
- TREELINE
- DRAINAGE DITCH / SWALE
- ELECTRIC FENCE
- WIND FENCE / CHAIN-LINK FENCE
- 685 - CONTOUR (mamsl)
- PONDED AREA (AS OBSERVED MAY 1, 2014)
- EDGE OF ROAD
- APPROXIMATE INFRASTRUCTURE / STOCKPILE LOCATION
- GATE

0 50 m

Scale: 1: 1 500

NOTES

IMAGE SHOWN PROVIDED BY GOOGLE EARTH (DATED 2023)

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CITY OF DAWSON

SOLID WASTE MANAGEMENT PLAN
QUIGLEY SWMF, YUKON

EXISTING CONDITIONS

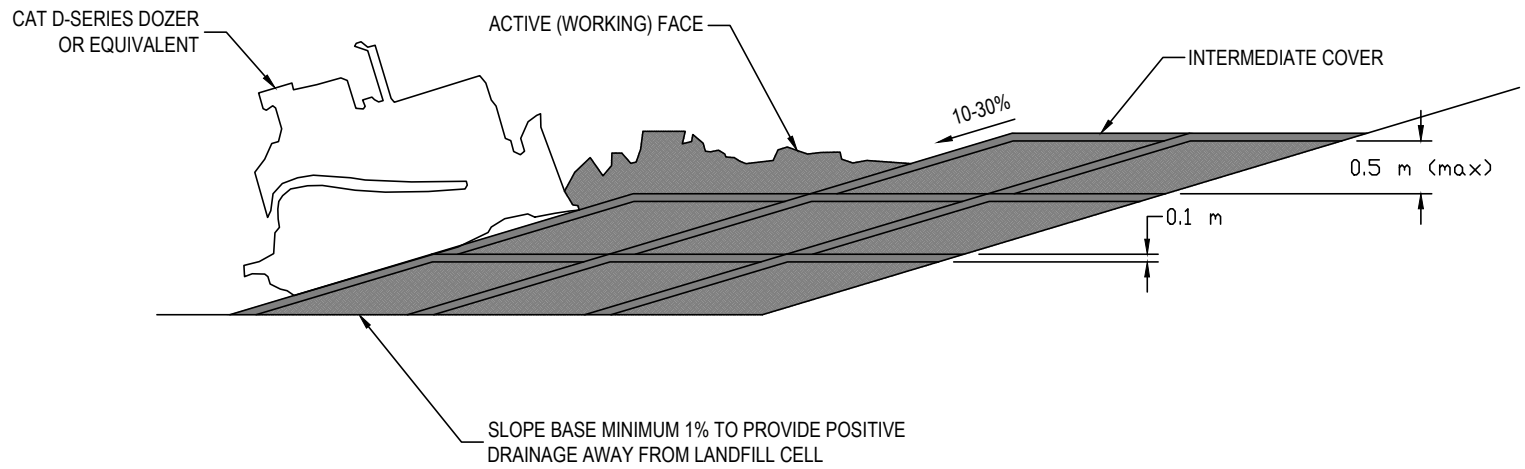
TETRA TECH

PROJECT NO.	DWN	CKD	REV
SWM.SWOP03265-01	AF	TS	0

OFFICE: CGY

DATE: May 15, 2023

Figure 3



NOTES:

1. INTERMEDIATE COVER PLACED BETWEEN APRIL 16 - NOVEMBER 14 EVERY 7 DAYS OR AFTER EVERY 0.5 M OF WASTE IS DEPOSITED, WHICHEVER OCCURS FIRST

CLIENT

CITY OF DAWSON

SOLID WASTE MANAGEMENT PLAN
QUIGLEY SWMF, YUKON

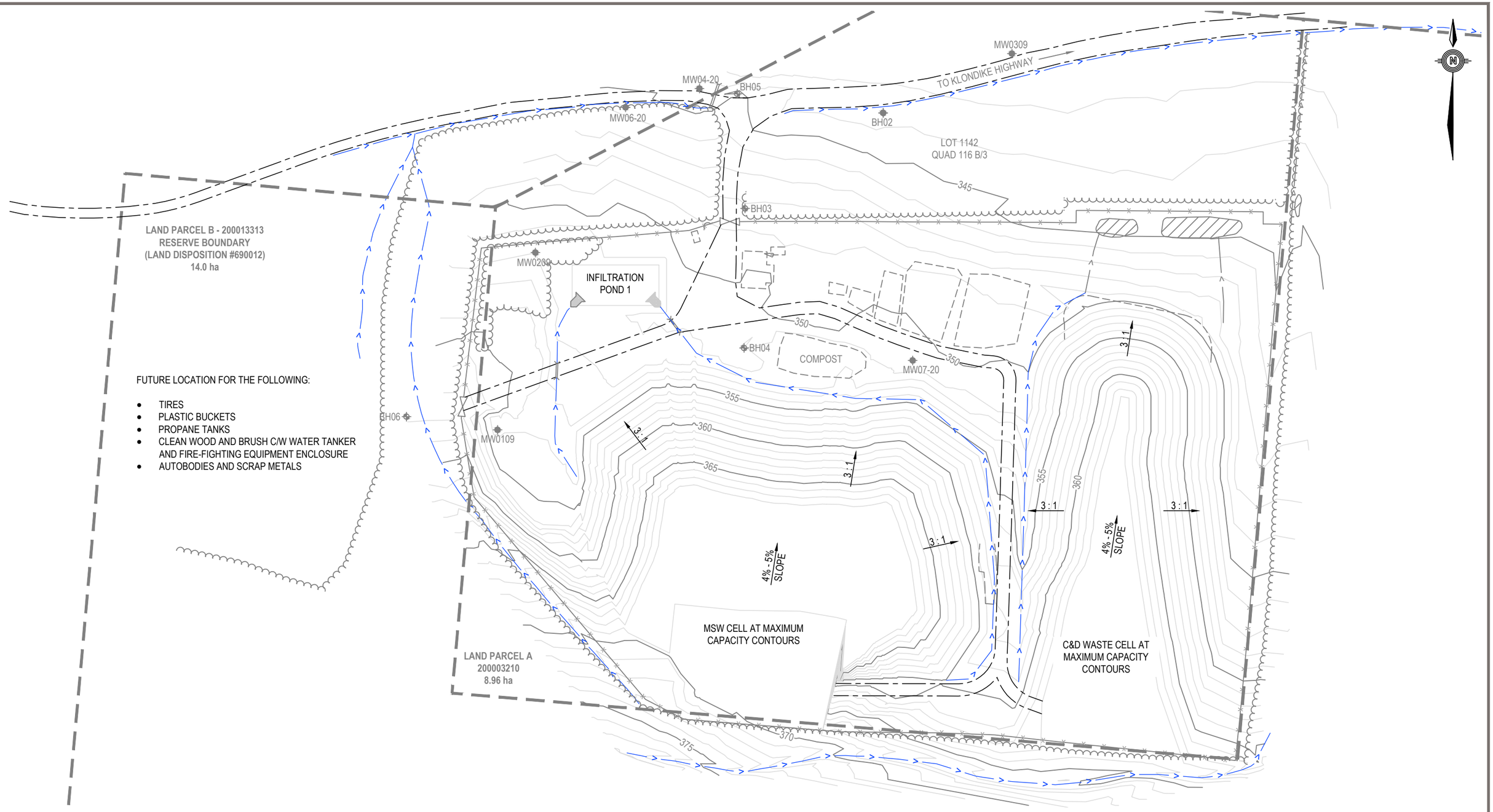
TYPICAL LANDFILLING DETAILS

TETRA TECH

PROJECT NO.	DWN	CKD	REV
SWM.PLAN03265-01	AF	TS	0

OFFICE	DATE
CGY	March 31, 2023

FIGURE 4



LEGEND

- BOREHOLE WITH GROUND TEMPERATURE CABLE
- MONITORING WELL LOCATION
- TREELINE
- DRAINAGE DITCH / SWALE
- ELECTRIC FENCE
- WIND FENCE / CHAIN-LINK FENCE
- 685 — CONTOUR (mamsl)
- EDGE OF ROAD
- APPROXIMATE INFRASTRUCTURE / STOCKPILE LOCATION
- GATE

0 50 m

Scale: 1: 1 500

NOTES

TOPOGRAPHIC SURVEY INFORMATION WAS PROVIDED BY YUKON ENGINEERING SERVICES (DATED 2009)

STATUS

FOR INTERNAL USE ONLY

CLIENT

CITY OF DAWSON

SOLID WASTE MANAGEMENT PLAN
QUIGLEY SWMF, YUKON

FINAL CELL CONTOURS

TETRA TECH

PROJECT NO.	DWN	CKD	REV
SWM.SWOP03265-01	AF	TS	0

OFFICE: CGY

DATE: March 31, 2023

Figure 5

APPENDIX A

LIMITATIONS ON THE USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

GEOENVIRONMENTAL

1.1 USE OF DOCUMENT AND OWNERSHIP

This document pertains to a specific site, a specific development, and a specific scope of work. The document may include plans, drawings, profiles and other supporting documents that collectively constitute the document (the "Professional Document").

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Where TETRA TECH submits electronic file and/or hard copy versions of the Professional Document or any drawings or other project-related documents and deliverables (collectively termed TETRA TECH's "Instruments of Professional Service"), only the signed and/or sealed versions shall be considered final. The original signed and/or sealed electronic file and/or hard copy version archived by TETRA TECH shall be deemed to be the original. TETRA TECH will archive a protected digital copy of the original signed and/or sealed version for a period of 10 years.

Both electronic file and/or hard copy versions of TETRA TECH's Instruments of Professional Service shall not, under any circumstances, be altered by any party except TETRA TECH. TETRA TECH's Instruments of Professional Service will be used only and exactly as submitted by TETRA TECH.

Electronic files submitted by TETRA TECH have been prepared and submitted using specific software and hardware systems. TETRA TECH makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

1.3 STANDARD OF CARE

Services performed by TETRA TECH for the Professional Document have been conducted in accordance with the Contract, in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions in the jurisdiction in which the services are provided. Professional judgment has been applied in developing the conclusions and/or recommendations provided in this Professional Document. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of the Professional Document.

If any error or omission is detected by the Client or an Authorized Party, the error or omission must be immediately brought to the attention of TETRA TECH.

1.4 DISCLOSURE OF INFORMATION BY CLIENT

The Client acknowledges that it has fully cooperated with TETRA TECH with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The Client further acknowledges that in order for TETRA TECH to properly provide the services contracted for in the Contract, TETRA TECH has relied upon the Client with respect to both the full disclosure and accuracy of any such information.

1.5 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

During the performance of the work and the preparation of this Professional Document, TETRA TECH may have relied on information provided by third parties other than the Client.

While TETRA TECH endeavours to verify the accuracy of such information, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information even where inaccurate or unreliable information impacts any recommendations, design or other deliverables and causes the Client or an Authorized Party loss or damage.

1.6 GENERAL LIMITATIONS OF DOCUMENT

This Professional Document is based solely on the conditions presented and the data available to TETRA TECH at the time the data were collected in the field or gathered from available databases.

The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present, or variation in assumed conditions which might form the basis of design or recommendations as outlined in this report, at or on the development proposed as of the date of the Professional Document requires a supplementary exploration, investigation, and assessment.

TETRA TECH is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

1.7 NOTIFICATION OF AUTHORITIES

In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by TETRA TECH in its reasonably exercised discretion.

APPENDIX B

WASTE MANAGEMENT PERMIT

Yukon
Environment

Permit No: 80-003

WASTE MANAGEMENT PERMIT

Issued for the Operation of a Waste Disposal Facility and a Special Waste Management Facility
Pursuant to the *Environment Act*, the *Solid Waste Regulations*
and the *Special Waste Regulations*

Permittee: City of Dawson

Mailing Address: Box 308, Dawson City, YT Y0B 1G0

Site Location: Quigley Solid Waste Disposal Facility
Lot 1142 Quad 116B/03 CLSR YT 84878
Dawson City, YT

Authorized Representative: Norm Carlson
Phone/Fax: (867) 993-7410 / (867) 993-7434
Email: Norm.Carlson@cityofdawson.ca

Effective Date: Date of Director's Signature
Expiry Date: December 31, 2023

This permit replaces permit #80-003 issued on December 17, 2012.

Scope of Authorization: In accordance with your application, you are authorized to:

a. operate a landfill waste disposal facility;
b. open burn cardboard in an amount greater than 5 kilograms per day until May 31, 2016; and
c. operate a special waste management facility for the collection and storage of all special wastes, excluding those in Class 1 and Class 7 as defined in the *Transportation of Dangerous Goods Act* (Canada), at the above site location (the "site"), as set out in the terms and conditions of this permit.

Dated this 17th day of November, 2015

Director, Environmental Programs Branch
Environment Yukon

DEPARTMENT OF ENVIRONMENT
ENVIRONMENTAL PROGRAMS
Whitehorse, Yukon
Certified true copy of original
Date: 17.NOV.15 Initials:

1. DEFINITIONS

1. In this permit,

"Act" means the *Environment Act*, R.S.Y. 2002, c. 76;

"alternative cover material" means cover material approved by an environmental protection analyst that is not earthen material and is placed over exposed waste in a cell on a permanent or temporary basis;

"approved plan" means a plan that is submitted by the permittee and approved by an environmental protection analyst under this permit and includes any terms and conditions specified by the environmental protection analyst in the approval;

"associated personnel" means all employees, contractors and volunteers involved in the permitted activities;

"Branch" means the Environmental Programs Branch, Environment Yukon;

"cell" means a discrete area of a facility in which solid waste is deposited for permanent disposal, and includes such areas that are no longer used for that purpose;

"closure" means activities undertaken to reduce the environmental impact of a facility when a cell reaches capacity or the facility is no longer accepting waste, such as placing final cover material over cells or restricting public access to the site, and may refer to closure of an individual cell or closure of an entire facility;

"construction and demolition waste" means the debris generated during the construction, renovation, and demolition of buildings, structures, roads, and bridges (e.g., concrete, wood, drywall, metals, glass, and salvaged building components);

"contaminated material" means any soil, snow, sediment or water that has one or more parameters in excess of applicable standards in the *Contaminated Sites Regulation*, O.I.C. 2002/171;

"dangerous wildlife" means wildlife so defined in the *Wildlife Act,* R.S.Y. 2002, c. 229;

"designated materials" means all materials identified in Schedule A of the *Designated Materials Regulation*, O.I.C. 2003/184;

"disposal areas" means the location(s) of the cell(s);

"environmental protection analyst" means an employee of the Branch so designated by the Minister of Environment under the Act;

"environmental protection officer" means an employee of the Government of Yukon so designated by the Minister of Environment under the Act;

"facility" means the waste disposal facility and the special waste management facility located at the site;

"landfill" means a facility authorized to accept waste for final disposal, and does not include transfer stations or modified transfer stations;

"modified transfer station" means a waste disposal facility where construction and demolition waste is permanently disposed on site and all other types of waste are

removed from the site for recycling or disposal at another location permitted to accept those wastes;

"ODS" means an ozone-depleting substance or other halocarbon identified in the *Ozone-Depleting Substances and Other Halocarbons Regulation, O.I.C. 2000/127;*

"putrescible waste" means food- or plant-based waste which can decompose or rot;

"Regulations" means any or all of the *Air Emissions Regulations*, O.I.C. 1998/207, the *Solid Waste Regulations*, O.I.C. 2000/11, the *Contaminated Sites Regulation*, O.I.C. 2002/171, the *Designated Materials Regulation*, O.I.C. 2003/184, the *Ozone Depleting Substances and Other Halocarbons Regulation,* O.I.C. 2000/127, the *Storage Tank Regulations,* O.I.C. 1996/194, the *Spills Regulations*, O.I.C. 1996/193, and the *Special Waste Regulations*, O.I.C. 1995/047, as applicable;

"solid waste" includes waste which originates from residential, commercial, industrial or institutional sources or from the demolition or construction of buildings or other structures, or which is specified in a solid waste management plan to be solid waste and for greater certainty includes litter, as defined in the *Act*, but does not include untreated brush or wood products that are not mixed with other materials;

"special waste management facility" means an operation which handles or disposes special wastes generated by other persons or operations, and includes without limitation a community collection system which is intended to collect or transport special waste to a special waste management facility in the Yukon;

"service area" means the population that is anticipated to be served by a facility, whether or not that population resides entirely within municipal or other boundaries;

"spill" means a release of a substance in excess of the amounts specified in Schedule A of the *Spills Regulations*, O.I.C. 1996/193, or that is abnormal in quantity or quality in light of all the circumstances of the release;

"storage tank" means a closed container with a capacity of more than 230 litres that is designed to be installed in a fixed location, and includes either an aboveground storage tank or an underground storage tank;

"substance" means a hazardous substance, pesticide, contaminant, or special waste;

"texas gate" means an electrified metal grid on the ground that can be passed over by vehicles but will prevent entry by animals;

"transfer station" means a waste disposal facility where no waste is permanently disposed on site, and all types of waste are removed from the site for recycling or disposal at another location permitted to accept those wastes;

"vehicle" has the same meaning as in the *Motor Vehicles Act*, R.S.Y. 2002, c. 153; and

"waste manifest" means the shipping document required to be completed by the permittee as set out in this permit in the form approved by an environmental protection officer.

2. Any term not defined in this permit that is defined in the Act or the Regulations has the same meaning as in the Act or the Regulations.

2. GENERAL

1. No condition of this permit limits the applicability of any other law or bylaw.

2. The permittee shall ensure that all activities authorized by this permit occur on property that the permittee has the right to enter upon and use for that purpose.

3. The permittee shall install and maintain visible markers along the boundary of the site and ensure that permitted activities do not take place outside the demarcated area.

4. The permittee shall ensure that all associated personnel:
   a) have access to a copy of this permit;
   b) are knowledgeable of the terms and conditions of this permit; and
   c) receive the appropriate training for the purposes of carrying out the requirements of this permit.

5. The permittee shall provide notice in writing to an environmental protection analyst prior to any significant change of circumstances at the site, including without limitation:
   a) closure of the facility;
   b) change of ownership of the facility;
   c) discontinuation of any regulated activity;
   d) collecting or transporting special wastes other than those authorized by this permit; or
   e) a change to the mailing address or phone number of the permittee.

6. Where conflicts exist between this permit, the permit application or elements of any plan pertaining to any activity regulated under the Act, this permit shall prevail.

7. If an inspection reveals that the facility or equipment is in any way not in compliance with this permit or approved plans developed in accordance with this permit, the permittee shall repair the damage or take other actions as required to bring the facility or equipment into compliance.

8. For clarity, all obligations of the permittee under this permit survive the expiry.

3. PLANS

1. The permittee shall submit for approval a ground temperature monitoring plan for the site that will adequately monitor impacts to permafrost no later than March 31, 2016.

2. The permittee shall submit for approval a plan that describes the installation of a functional groundwater monitoring well to determine background groundwater quality at the site that is suitable for the detection of impacts to groundwater from the facility no later than March 31, 2016. The plan shall include a discussion of the proposed groundwater monitoring well location, the timing of monitoring well installation, and any other considerations necessary for installation of the monitoring well.

3. The document entitled "Quigley Solid Waste Management Facility Solid Waste Management Plan 2013-2023," prepared by Tetra Tech EBA and dated February 2015, as well as the supplementary information provided for YESAB project # 2014-0192, is a waste management plan approved by the Branch that will expire on June 30, 2023.

4. The permittee shall submit an updated waste management plan to the Branch one year in advance of the expiry of an approved waste management plan for the facility, or as otherwise directed in writing by an environmental protection analyst.

5. When the permittee is required to submit a plan, report or other document under this permit, the permittee shall:
   a) ensure the plan, report or other document meets the requirements for that type of plan, report or other document as established by the Branch in writing;
   b) submit the plan, report or other document in writing to an environmental protection analyst;
   c) not undertake any of the activities described in the plan, report or other document until it is approved in writing by an environmental protection analyst;
   d) implement the plan, report or other document as of the date it is approved in writing by an environmental protection analyst; and
   e) ensure that all associated personnel are familiar with the plan, report or other document.

6. If the permittee wants to amend an approved plan, report or other document, the permittee shall submit the proposed amendment to an environmental protection analyst as if the amendment were a plan, report or other document under section 3.5 of this permit.

7. If an environmental protection analyst directs in writing and with reasons that an approved plan, report or other document be amended, the permittee must prepare the required amendment and submit it as if it were a plan, report or other document referred to in section 3.5 of this permit.

4. FENCING AND SECURITY

1. The permittee shall install and maintain, in accordance with written guidelines developed by the Branch, an electric exclusion fence(s) and gates that encompass all putrescible waste storage and disposal areas at the facility. The permittee shall ensure that all substances that are an attractant to animals are stored within the perimeter of the electric fence or shall expand the electric fence to encompass the storage areas for those substances. The fence and gates shall be adequate to prevent dangerous wildlife from entering the encompassed areas of the facility.

2. The fences and gates referenced in paragraph 4.1 above must be:
   a) activated continuously from May 1 to October 31 of each year;
   b) activated between November 1 to April 30 of each year if there are tracks or other signs of dangerous wildlife attempting to access the facility; and
   c) activated upon the written direction of an environmental protection officer.

3. If the permittee wishes to deactivate the electric fence for any length of time during the period of operation referenced in paragraph 4.2, except as required for routine fence maintenance, the permittee shall obtain prior written or verbal approval from an environmental protection officer.

4. The permittee shall conduct weekly inspections of all electric fences and shall maintain them as necessary during periods of activation as specified in paragraph 4.2 to ensure that:
   a) the fence is sufficiently charged to deter dangerous wildlife; and
   b) there is no vegetation, windblown litter or other items along the perimeter of the fence, or contacting the fence, that may act as a ground.

5. During the weekly inspections referred to in paragraph 4.4, the permittee shall inspect the fence perimeter for tracks or other signs of dangerous wildlife attempting to access the facility.

6. The permittee shall ensure that there is no bear habitat within the perimeter of the electric fence by June 1, 2016.

7. If the facility is open to the public when staff are not on site, the permittee shall install and maintain a texas gate at each entrance and exit of the facility.

8. If the facility is closed to the public when staff are not on site, the permittee shall install and maintain either a texas gate or an electrified rigid swinging gate at each entrance and exit of the facility. Any rigid swinging gates are to be closed and secured every time staff leave the facility.

9. The permittee shall install and maintain signs marking the areas, if any, of the facility that are not to be accessed by the public and erect or construct fencing, gates or other similar structures to prevent public access to these areas.

10. The permittee shall report any incidents involving dangerous wildlife to the Government of Yukon, Conservation Officer Services Branch or the TIPP line (**1-800-661-0525**).

5. SIGNAGE AND SEGREGATION

1. The permittee shall install and maintain signs at the facility visible to the public containing the telephone contact numbers for the facility manager, the local fire protection services, the district conservation officer, and the 24-hour Yukon Spill Report Centre (**867-667-7244**).

2. The permittee shall:
   a) establish and maintain separate areas for the collection of each type of solid waste, special waste, and designated materials accepted at the facility, including, but not limited to, electronic and electrical waste;
   b) install and maintain appropriate signs identifying each of these areas; and

c) ensure that the facility is maintained to enable vehicles to access each of these areas.

3. The permittee shall conduct weekly visual site inspections to verify correct segregation of wastes and shall transfer all improperly segregated wastes to their appropriate areas, with the exception of removing wastes from the area where waste originating from domestic sources is disposed of.

4. The permittee shall install and maintain signs, no later than June 30, 2016, identifying appropriate disposal information, or phone number(s) or website(s) to consult for appropriate disposal information, for common special wastes including, but not limited to:
   - Waste oil
   - Waste antifreeze
   - Waste batteries
   - Waste solvents
   - Waste fuels
   - Waste pesticides
   - Waste fluorescent tubes
   - Waste aerosol cans
   - Waste cleaners

6. SOLID WASTE OPERATIONS

1. The permittee shall ensure that all solid waste to be disposed of at the facility is deposited into a cell or open burned in accordance with this permit.

2. The permittee may only open burn cardboard waste and must cease open burning no later than May 31, 2016.

3. The permittee shall receive written authorization from the operator of any municipal or Yukon government solid waste disposal facility prior to transferring any waste to that facility.

4. The permittee shall cover any exposed solid waste in a cell that could be moved by animals or wind with soil or other comparable material to a depth of 0.1 metres, or any other depth that an environmental protection officer considers necessary to prevent windblown solid waste and attraction of birds:
   a) every day the facility is used if the facility has a service area of more than 5,000 people;
   b) every seven days if the facility has a service area of 500 to 5,000 people;
   c) every 21 days if the facility has a service area of less than 500 people; or
   d) after every 0.5 metres of solid waste is deposited,
   whichever occurs first.

5. Paragraph 6.4 does not apply between November 15 and April 15 of each year if soil or other comparable cover material cannot be obtained within the service area. Should weather conditions preclude obtaining cover material outside the aforementioned dates, the permittee shall obtain written or verbal approval from an environmental protection officer.

6. The permittee may comply with paragraph 6.4 by covering exposed solid waste in a cell with an alternative cover material.

7. The permittee shall ensure that animal carcasses and animal parts (excluding carcasses, bones, etc. that are included with domestic food wastes) are buried at a landfill or modified transfer station at least 2 metres below the surface of the land, or by other means made inaccessible to animals, or transported to a permitted landfill or modified transfer station.

8. The permittee shall ensure that snow is stockpiled in a manner that will minimize the generation of leachate from active and closed cells.

9. The permittee shall submit to an environmental protection analyst for approval copies of all laboratory analytical results of any contaminated material before accepting it at the facility for deposition into a cell, and shall not allow materials containing contaminants in excess of the industrial land use standards in the *Contaminated Sites Regulation*, O.I.C. 2002/171, to be deposited into a cell.

7. FACILITY SPECIFICATIONS

1. The permittee shall submit a cell siting and construction plan for approval in accordance with written guidelines developed by the Branch prior to developing any new cells.

2. The permittee shall ensure that all cells or portions of cells no longer used for the disposal of solid waste are covered with a geomembrane or a clay or composite liner that meets the thickness and permeability requirements for final cover material as established by the Branch in writing.

3. The permittee shall submit a letter of notification to an environmental protection analyst when a cell is closed, providing details of the closure and written confirmation that the cell was properly closed in accordance with written guidelines developed by the Branch.

4. The permittee shall divert surface water from flowing into or pooling in or on active and closed cells through the use of controls such as trenches, berms, and grading techniques. For clarity, the permittee is not required to remove precipitation that falls on active or closed cells.

5. The permittee shall submit a facility closure plan for approval in accordance with written guidelines developed by the Branch and apply for a permit amendment prior to closing any facility.

8. MONITORING

1. The permittee shall install and maintain, at minimum, one monitoring well upgradient and two monitoring wells downgradient of the facility suitable for the detection of impacts to groundwater from the facility. All groundwater monitoring wells shall be maintained in good operating condition.

2. The permittee shall replace damaged groundwater monitoring well MW0309 in accordance with all applicable protocols pursuant to the *Contaminated Sites Regulation,* O.I.C. 2002/171, and replace MW0309 with a groundwater monitoring well located downgradient of the construction & demolition waste cell no later than December 31, 2016. The permittee shall ensure that MW0309 is properly decommissioned in accordance with paragraph 8.3.

3. The permittee shall provide written notice to an environmental protection analyst if any groundwater monitoring wells are known or suspected to be damaged, are to be covered with landfilled waste, or otherwise compromised. Such groundwater monitoring wells shall be decommissioned in accordance with the *Contaminated Sites Regulation*, O.I.C. 2002/171, Protocol 7: Groundwater Monitoring Well Installation, Sampling and Decommissioning, and replaced if necessary in accordance with paragraph 8.1.

4. The permittee shall ensure that samples are collected and analyzed from all active groundwater monitoring wells at the facility in accordance with protocols for groundwater sampling approved by the Branch. The water level in all monitoring wells shall be recorded at each sampling event. Samples shall be taken twice each year the permit is in effect, once in the spring after the wells have thawed and once in the fall prior to the wells freezing, or as otherwise directed in writing by an environmental protection analyst. See Appendix A for a list of active groundwater monitoring wells.

5. The permittee shall ensure that samples are collected and analyzed, using generally-accepted sampling practice, from all downgradient surface water bodies within 1 km of the facility that are identified in the hydrogeological assessment as being potentially impacted by the facility, or as otherwise directed in writing by an environmental protection analyst. Samples shall be taken twice each year the permit is in effect, once in the spring and once in the fall, concurrently with each groundwater sampling event if possible, or as otherwise directed in writing by an environmental protection analyst. See Appendix A for a list of surface water monitoring locations.

6. All water quality sampling must be conducted in accordance with all applicable protocols pursuant to the *Contaminated Sites Regulation*, O.I.C. 2002/171, that pertain to sampling and analysis. Sample collection must be carried out by trained personnel using appropriate equipment and procedures. All water samples required by this permit shall be analyzed at a laboratory that is accredited as conforming to ISO/IEC 17025 by an accrediting body that conforms to ISO/IEC 17011.

7. All groundwater samples shall be analyzed for the following parameters in the field:
   - Temperature
   - Specific conductance
   - Oxidation-reduction potential
   - Dissolved oxygen
   - pH

   and the following parameters in the lab:
   - Major ions (Calcium, Magnesium, Sodium, Potassium, Chloride, Sulphate, Nitrate Nitrogen, Nitrite Nitrogen, Phosphate)
   - Dissolved metals
   - Hardness
   - Alkalinity
   - Carbonate
   - Bicarbonate
   - pH
   - Specific conductance
   - Total dissolved solids
   - Ammonia
   - Dissolved organic carbon
   - Volatile organic compounds
   - Chemical oxygen demand
   - $LEPH_W$ (Light Extractable Petroleum Hydrocarbons in Water)
   - EPH_{W10-19} (Extractable Petroleum Hydrocarbons in Water, C10-C19)
   - VH_{W6-10} (Volatile Petroleum Hydrocarbons in Water, C6-C10)
   - VPH_W (Volatile Petroleum Hydrocarbons in Water)
   - BTEX (Benzene, Toluene, Ethylbenzene, and Total Xylenes)
   - PAHs (Polycyclic Aromatic Hydrocarbons)

8. All surface water samples shall be analyzed for the following parameters in the field:
   - Temperature
   - Specific conductance
   - Oxidation-reduction potential
   - Dissolved oxygen
   - pH

   and the following parameters in the lab:
   - Major ions (Calcium, Magnesium, Sodium, Potassium, Chloride, Sulphate, Nitrate Nitrogen, Nitrite Nitrogen, Phosphate)
   - Total metals
   - Hardness
   - Alkalinity
   - Carbonate
   - Bicarbonate
   - pH
   - Specific conductance
   - Total dissolved solids

- Ammonia
- Total organic carbon
- Chemical oxygen demand
- Biochemical oxygen demand
- $LEPH_W$ (Light Extractable Petroleum Hydrocarbons in Water)
- EPH_{W10-19} (Extractable Petroleum Hydrocarbons in Water, C10-C19)
- VH_{W6-10} (Volatile Petroleum Hydrocarbons in Water, C6-C10)
- VPH_W (Volatile Petroleum Hydrocarbons in Water)
- BTEX (Benzene, Toluene, Ethylbenzene, and Total Xylenes)
- PAHs (Polycyclic Aromatic Hydrocarbons)

9. The results of the analyses required under paragraphs 8.7 and 8.8 shall be submitted in electronic format to an environmental protection analyst by July 31st following the spring sampling event and November 30th following the late summer sampling event.

10. If the results of the analyses required under paragraphs 8.7 or 8.8 show deteriorating water quality with respect to any of the substances set out in Schedule 3 of the *Contaminated Sites Regulation*, O.I.C. 2002/171, as described in CSR Protocol 13: Adaptive Management, the permittee shall submit an adaptive management plan to address the contamination in accordance with that Protocol.

11. The permittee shall conduct ground temperature monitoring in accordance with the approved ground temperature monitoring plan. The results of the ground temperature monitoring shall be submitted in electronic format to an environmental protection analyst by November 30th of each year. See Appendix A for a list of thermistor identification numbers.

9. STORAGE AND HANDLING OF SPECIAL WASTE

1. The permittee shall not handle special wastes other than those authorized by this permit.

2. The permittee shall not discard, destroy, treat, process, incinerate, or recycle special wastes unless specifically authorized by this permit, except for mixing or dilution authorized by an environmental protection officer as an acceptable treatment or disposal option for the special waste.

3. The permittee shall not combine different types of special waste in the same container.

4. The permittee shall ensure that special wastes are stored and handled in such a manner as to prevent their release into the environment.

5. The permittee shall ensure that:
    a. all drums and other portable containers containing special wastes are covered or stored out of inclement weather;
    b. all drums and other portable containers containing special wastes are stored off the ground;

c. all containers used to store special waste are closed at all times during storage;
d. special wastes are stored in a manner that will prevent incompatible substances from reacting adversely with each other;
e. containers used for the storage of special waste are made of materials that will not adversely react with the special waste;
f. special wastes stored in leaking containers are immediately transferred to intact containers; and
g. all containers used for the storage of special waste are clearly marked to identify what special waste is stored in the container.

6. The permittee shall inspect special waste storage containers:
   a) weekly in terms of visual inspections for leaks;
   b) monthly in terms of an inventory of special wastes stored on site;
   c) annually in terms of tank/container quality, piping, and auxiliary equipment; and
   d) upon request from an environmental protection officer.

7. The permittee shall not release any residue at the bottom of a container used for the storage of special waste to the environment. Such residue shall be collected by the permittee and considered to be special waste until proven by testing to not be special waste.

8. The permittee shall not store special wastes in a storage tank unless specifically authorized by a permit issued pursuant to the *Storage Tank Regulations*, O.I.C. 1996/194.

9. The permittee shall ensure that public access to all special waste storage and handling areas is prevented, except as required during regular operating hours.

10. If an inspection reveals that the amount of special waste stored at the site may pose a risk to human health or the environment, the permittee shall develop and implement a final disposal plan for the special waste, as directed in writing by an environmental protection officer.

10. TRANSPORT AND TRANSFER OF SPECIAL WASTE

1. The permittee shall not transport or transfer special wastes other than within the site.

2. The permittee shall ensure that all special wastes are transported and transferred in such a manner as to prevent their release into the environment.

3. The permittee shall complete a waste manifest documenting each shipment of special wastes from the site. The permittee shall distribute copies of the waste manifest in the manner described thereon.

4. The permit number **YG80-003** shall be used as the Provincial Identification Number on waste manifests used for the transport of special wastes.

5. The permittee shall ensure that all vehicles operated by the permittee and carrying any special wastes are secured to prevent access by unauthorized persons.

6. The permittee shall ensure that special wastes are transported to a special waste management facility in the Yukon or another jurisdiction that is permitted to receive those special wastes.

7. The permittee shall ensure that special wastes are transported by a carrier permitted in the Yukon to transport the special wastes.

11. SPILLS

1. The permittee shall contact either an environmental protection officer, or the 24-hour Yukon Spill Report Centre (**867-667–7244**) as soon as possible under the circumstances in the event of a release, spill, unauthorized emission, discharge, or escape of any substance listed in the *Spills Regulations*, O.I.C. 1996/193, or any special wastes.

2. The permittee shall ensure that clean-up equipment appropriate for the amount and type of special waste stored on site (such as sorbent, shovel, broom, bucket, gloves, boots, etc.) is readily accessible at all locations where special wastes are handled or stored.

3. The permittee shall ensure that spill procedures are developed, maintained, and posted at all locations where special wastes are handled or stored, and that all associated personnel are familiar with those procedures. The spill procedures must meet the requirements for that type of plan as established by the Branch in writing.

4. In the event that an inspection or other information leads the permittee to believe that ODS are being released into the environment from an appliance or other container deposited at the site, the permittee shall ensure that the ODS are removed from the appliance or other container in accordance with the *Ozone-Depleting Substances and Other Halocarbons Regulation,* O.I.C. 2000/127.

5. The permittee shall ensure that contaminated material resulting from a release, spill, unauthorized emission, discharge, or escape of any substance listed in the *Spills Regulations*, O.I.C. 1996/193, or any special wastes is properly handled in accordance with the *Contaminated Sites Regulation*, O.I.C. 2002/171.

12. RECORDS

1. The permittee shall keep the following records at their office:
   a) an updated site plan showing the location of all active and closed cells and solid and special waste segregation areas at the facility;
   b) a copy of each plan submitted under this permit, and any amendments to and approvals of each plan;
   c) summaries of all inspections carried out by the permittee under this permit (including the name of the person conducting the inspection, the date of each

inspection, any observations recorded during the inspection, actions taken as a result of those observations, and the date each action was taken);

d) results of surface water and groundwater testing conducted at the site, including any interpretations of monitoring results to determine trends in contaminant levels over time;
e) reports on hydrogeological assessments undertaken at the site;
f) notes concerning any release, spill, unauthorized emission, discharge or escape that occurred at the facility, including the substance involved and estimated quantity, the date of observation, any spill reports made, and clean-up procedures implemented;
g) any deficiencies remedied in accordance with paragraph 2.7, and how and when they were remedied;
h) a copy of any waste manifests used to transport special wastes to or from the facility;
i) before and after photographs and a detailed description of any activities undertaken to construct a new cell;
j) before and after photographs and a detailed description of any activities undertaken to close a cell.

2. The permittee shall keep all records required under this permit in a format acceptable to an environmental protection officer for a minimum of three years and make them available for inspection by an environmental protection officer upon request.

DEPARTMENT OF ENVIRONMENT
ENVIRONMENTAL PROGRAMS
Whitehorse, Yukon
Certified true copy of original
Date: 17.NOV.15 Initials: JAM

APPENDIX A: ENVIRONMENTAL MONITORING INFORMATION

Groundwater Flow Direction: North

Groundwater Monitoring Wells

Well ID	Classification
BH01	Destroyed
BH04	Active
BH05	Active
MW0109 (shallow and deep)	Active
MW0209	Active
MW0309	Damaged
MW0409	Active
ML0109 – Pipes 1-7* *Pipes 3 and 4 are damaged	Active

Surface Water Monitoring Locations

Location ID	UTM Zone	UTM Easting	UTM Northing	Description
LBCMC	7W	582660	7101695	Lower Bear Creek Mid-Channel
LBCE	7W	582736	7101668	Lower Bear Creek Eddy
MBCMC	7W	582804	7101719	Middle Bear Creek Mid-Channel
UBCMC-2	7W	582934	7101984	Upper Bear Creek Mid-Channel 2
SEEP	7W	582836	7101629	The seep

Ground Temperature Monitoring

Thermistor ID		
BH2	BH3	BH6

APPENDIX C

SPILL CONTINGENCY PLAN

Quigley Solid Waste Management Facility
Spill Contingency Plan 2023-2033
Revision Number: 0

PRESENTED TO

City of Dawson

MAY 15, 2023
ISSUED FOR USE
FILE: 704-SWM.PLAN03265-01

Tetra Tech Canada Inc.
Box 2244, 201, 4916 - 49 Street
Yellowknife, NT X1A 2P7 CANADA
Tel 867.920.2287 Fax 867.873.3324

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Appendix A Limitations on the Use of this Document

LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of the City of Dawson and their agents. Tetra Tech Canada Inc. (Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than the Town of the City of Dawson, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this document is subject to the Limitations on the Use of this Document attached in the Appendix or Contractual Terms and Conditions executed by both parties.

1.0 DISCLAIMER

The following Spill Contingency Plan (SCP) has been prepared for general Solid Waste Management Facility (SWMF) operations. It is the responsibility of the Town of the City of Dawson (City of Dawson) to review and revise this report, as needed, for site-specific conditions and to correct for any errors or omissions. In addition, it is the responsibility of the City of Dawson to provide adequate training to Public Works staff, its contractors and their employees, fuel suppliers and transporters, and affected agencies as to the planned course of action in the event of a spill or leakage at the SWMF.

2.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) has prepared this SCP for the City of Dawson for the Quigley SWMF.

The City of Dawson Public Works Department conducts ongoing fuel use/handling activities, as well as occasional construction activities at the Quigley SWMF. These activities include the use of machinery that consume petroleum products, refueling of machinery, and potentially storage of other hydrocarbons on site.

This SCP is a guide for the City of Dawson's Public Works Staff, its contractors and their employees, fuel suppliers and transporters, and affected agencies as to the planned course of action in the event of a spill or leakage of petroleum products during the course of construction activities and general operations. Safety procedures for personnel and for proper equipment usage during such operations are discussed within this plan. Yukon Environment Act *Spill Response Plans Regulations* provide guidance for the preparation of spill response plans. (*Yukon Environment Act,* O.I.C. 1996/193). This SCP includes the following components:

- Emergency contact information;
- Definitions (spill vs. leak) and severity rating for spills;
- Emergency response spill procedure; and
- Reporting procedures.

3.0 EMERGENCY CONTACT INFORMATION

A list of contact agencies and phone numbers is provided below in Table 3-1. Town administration and the Town Maintenance Department should always be the first point of contact after a spill. Town staff will then contact the Yukon Spill Line, as described in this plan. The Fire Department has trained staff and equipment to deal with large spills and can be contacted to assist the Town in addressing these situations.

Table 3-1: Contact Information in the Event of a Spill

Resource	Contact Number
Yukon Spill Line	(867) 667-7244
Municipal Building (Administration)	(867) 993-7400 Ext. 402
Maintenance Department (Public Works Superintendent)	(867) 993-7400 Ext. 301
Fire Department	(867) 993-7400 Ext. 407
Government of Yukon Environmental Protection Officer	(867) 667-5683

4.0 DEFINITIONS AND SEVERITY RATING

A spill of more than 200 L must be reported to the Yukon Spills report centre. All spills must be cleaned regardless of volume, but if a spill is less than 200 L and does not enter a watercourse, the Owner (City of Dawson) and/or the operator do not need to report the spill.

5.0 EMERGENCY SPILL RESPONSE PROCEDURE

The first person on the scene of a spill shall complete the following procedure:

- PROTECT human health and safety, including the elimination of possible ignition sources, and the warning/removal of any workers or bystanders;
- STOP the continuing flow of product providing it is safe to do so;
- CONTAIN the spilled material with any available means;
- CALL the Supervisor and Owner who will then contact the spill line (867) 667-7244 and report the location, time, and nature of the spill;
- RECOVER product and contaminated soil/other materials when safe to do so;
- REPORT in writing on the spill response form in Table 1 following the text and give to Supervisor; and
- REMAIN at the site and assist with response as needed when help arrives.

A listing of typical spill response tools/equipment is included in Table 1 (following the report text). Material Safety Data Sheets are included in Table 2 (following the report text).

5.1 Response for Gasoline Spills

If in **water** and if safe to do so:

- Stop or reduce discharge if safe to do so by plugging, up-righting, adjusting valves, or other suitable method;
- Ensure that the spill has been reported as noted in Section 5.0;
- If possible, contain discharge by booming using commercial boom material, logs, or other material at hand;
- If in rapidly flowing water, direct to quieter backwater using booms to deflect material; and
- Remove from water by skimming, using absorbents, and collect in suitable container (tanks, drums, plastic lined depression in ground or snow).

Dispose absorbents by recycling or incineration if conditions are suitable and after consultation with environment authorities and/or forestry officials contacted through the Emergency Spill Response Line.

NOTE: IN THE EVENT MATERIAL IS SPILLED DURING VERY WARM WEATHER AND THERE IS DANGER OF FIRE DUE TO FUMES, DO NOT ATTEMPT TO CONTAIN PRODUCT ON WATER. ALLOW PRODUCT TO DISPERSE AND EVAPORATE.

If on **land** and safe to do so:

- Stop, or reduce discharge if safe to do so by plugging, up-righting, adjusting valves, or other suitable method;
- Ensure that the spill has been reported as noted in Section 5.0;
- Contain spill by diking with earth, snow and ice or other physical barrier, possibly trenching or creating a lined sump down-gradient from the spill source;
- Remove fuel from containment area with pumps and/or vacuum equipment and place in appropriate containers. Ensure equipment is intrinsically safe (does not have a source of ignition/spark);
- Absorb residual liquid on natural or synthetic absorbents (e.g., 3M products); and
- Remove contaminated soils in the spill site to an appropriate disposal site if spill located near water supply or stream/river course for aesthetic reasons.

Dispose of contaminated fuel by recycling or incineration. In situ incineration may be possible if permission is granted by environmental and forestry officials contacted through the Emergency Spill Response Line.

5.2 Response for Diesel Spills

If in **water** and if safe to do so:

- Stop or reduce discharge if safe to do so by plugging, up-righting, adjusting valves, or other suitable method;
- Ensure that the spill has been reported as noted in Section 5.0;
- If possible, contain discharge by booming using commercial boom material, logs, or other material at hand;
- If in rapidly flowing water, direct to quieter backwater using booms to deflect material; and
- Remove from water by skimming, using absorbents, and collect in suitable container (tanks, drums, plastic lined depression in ground or snow).

Dispose by recycling or incineration if conditions are suitable and regulatory authorities grant permission.

If on **land** and safe to do so:

- Stop, or reduce discharge if safe to do so by plugging, up-righting, adjusting valves, or other suitable method;
- Ensure that the spill has been reported as noted in Section 5.0;
- Contain spill by diking with earth, snow and ice or other physical barrier, possibly trenching or creating a lined sump down-gradient from the spill source;
- Remove fuel from containment area with pumps and/or vacuum equipment and place in appropriate containers. Ensure equipment is intrinsically safe (does not have a source of ignition/spark);
- Absorb residual liquid on natural or synthetic absorbents (e.g., 3M products); and
- Remove contaminated soils in the spill site to an appropriate disposal site if spill located near water supply or stream/river course for aesthetic reasons.

Dispose of contaminated fuel by recycling or incineration. In situ incineration may be possible if permission is granted by environmental and forestry officials.

5.3 Response for Sulfuric Acid Spills

- Stop or reduce discharge if safe to do so by plugging, up-righting, adjusting valves, or other suitable method;
- Ensure that the spill has been reported as noted in Section 5.0;
- Dilute small spills with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container;
- If necessary, neutralize the residue with a dilute solution of sodium carbonate;
- In large spills, use water spray curtain to divert vapor drift and reduce vapors; and
- Call for assistance on disposal.

6.0 REPORTING PROCEDURES

The following two levels of reporting are required by any individual who locates a spill or leak:

1. Report to a Supervisor (refers to the direct Supervisor in charge of the individual who located the spill or leak).
2. Report to the Owner (City of Dawson): The Owner shall immediately be given details of any leak or spill. It is the Owner's responsibility to ensure protection of human health and safety, provide directions to stop or contain spills, and report the spill (if necessary, see severity rating and notes above) to affected agencies prior to investigating the spill themselves.

Affected Agencies: Affected Agencies shall all be contacted through the 24-hour Emergency Spill Response Line at **(867) 667-7244**.

The following information shall by conveyed to the affected agencies through the 24-hour Emergency Spill Response Line. This information should be documented on the "Spill Reporting Form" provided in Table 3, following the report text.

- General location of the spill or leak (e.g., nearest highway, town, major waterbody).
- Time of spill.
- Specific location of the spill or leak (e.g., nearest community location, kilometer location on highway if known).
- Severity of spill or leak, refer to Table 4-1.
- Type of spill (e.g., total loss/leakage, overturned vehicle or tanker [plus name of transport company], ruptured tank, lost drum).
- Product spilled (e.g., diesel fuel [identify grade], gasoline, lubricant [identify grade], or other).
- Nearest water course or body of water (Identify by name and description of the nearest watercourse, pond or lake, with an approximate distance to the spill. As well describe the soils condition and direction of probable flow for spilled product).
- Potential to enter surface water.

- Fire hazard.
- Hazard to life and limb, injuries.
- Environmental effect expected, if applicable.
- Equipment and clean-up consumables on hand.

Response by Affected Agencies depends upon the location of the possible spill and will vary; however, they will be coordinated by phoning the Emergency Response Line **(867) 667-7244**. For the purpose of this SCP, it is recommended that only one call be made to government or other agencies using the 24-hour spill line.

Other affected parties may include organizations associated with fuel supply and transport companies. Most major supplies in the Yukon are members of the Transportation Emergency Assistance Plan (TEAP). One of the responsibilities of this organization is the sharing of resources, consumables, equipment and personnel in the event of spill. The transporter is responsible for contacting TEAP in the event of a spill.

The Canadian Transport Emergency Centre (CANUTEC), a branch of Transport Canada, can also be contacted for a 24-hour technical advice on Dangerous Goods, as needed. The CANUTEC – help line for dangerous goods is **1 (613) 996-6666 (collect).**

7.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
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PERMIT TO PRACTICE
TETRA TECH CANADA INC.
SIGNATURE _____
Date _____
PERMIT NUMBER PP003
Association of Professional Engineers of Yukon

TABLES

Table 1 Typical Spill Response Equipment
Table 2 Material Safety Data Sheet Information
Table 3 Spill Reporting Form

Table 1: Typical Spill Response Equipment

Item No.	Description
1.0	**Absorbents (for petroleum hydrocarbons including fuels, lubricants, and solvents)**
1.1	Booms
1.2	Sheets
1.3	Towels
1.4	Absorbent granules
2.0	**Contaminated soils recover tools**
2.1	Shovels
2.2	Picks
2.3	Excavators
2.4	Loaders
2.5	Trucks
3.0	**Liquid recovery tools**
3.1	Pumps
3.2	Containers
3.3	Vacuum/eductor truck
4.0	**Fire suppression equipment**
5.0	**Personal safety equipment**
5.1	Protective clothing
5.2	Eye protection
5.3	Breathing apparatus

Notes:

(1) This is by no means an exhaustive list of materials and tools that can be assembled and used for spill response.

(2) More information on spill response equipment and equipment suppliers can be found on the Internet. Suppliers of this sort of equipment and material can also be found in Whitehorse.

Table 2: Material Safety Data Sheet Information

Gasoline	
Characteristics	Flammable
	Solubility in water 1 ppm to 100 ppm
	Floats
	Flash Point -38°C to -43°C
Human Health	Moderately toxic by inhalation
	Avoid prolonged exposure to fumes
Environment	Harmful to aquatic life
	Fish toxicity: 5 ppm to 40 ppm rainbow trout
Protective Clothing	No specific recommendations
	Protective clothing is required
Diesel	
Characteristics	Combustible/Flammable liquid
	Insoluble in water (30 ppm)
	Floats
	Flash point 52°C to 96°C
Human Health	Low toxicity by all routes
Environment	Fish toxicity: 10 ppm rainbow trout
	Two ppm for grass shrimp
Protective Clothing	Gloves and boots made from neoprene or butyl rubber

Table 3: Spill Reporting Form

Item No.	Description:	Response:
1.0	**Name:**	
2.0	**Spill Type:**	
2.1	Oil/Gasoline/Diesel/Sewage/Other:	
2.2	Specified substances:	
2.3	Quantity:	
2.4	Source (company):	
3.0	**When/Where/How:**	
3.1	Date of incident:	
3.2	Time of incident:	
3.3	Roadway kilometre location:	
3.4	Specifics of location:	
3.5	Cause of Incident (i.e., truck overturn)	
3.6	Reason (i.e., poor road conditions):	
4.0	**Weather:**	
4.1	Temperature:	
4.2	Wind:	
4.3	Precipitation:	
5.0	**Receptors:**	
5.1	Fish Killed (Yes/No):	
5.2	Bird Killed (Yes/No):	
5.3	Fire Hazard:	
5.4	Threat to drinking water:	
6.0	**Contact Information:**	
6.1	Who to contact at the scene:	
6.2	*Company:*	
6.3	*Phone Number*	
	Reported to	
	Name:	
	Department:	
	Phone Number:	
	General Comments:	
7.0	**Actions taken to date:**	
7.1	Containment:	
7.2	Cleanup:	
8.0	**How to prevent recurrence:**	

APPENDIX A

LIMITATIONS ON THE USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

GEOENVIRONMENTAL

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The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present, or variation in assumed conditions which might form the basis of design or recommendations as outlined in this report, at or on the development proposed as of the date of the Professional Document requires a supplementary exploration, investigation, and assessment.

TETRA TECH is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

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In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by TETRA TECH in its reasonably exercised discretion.