

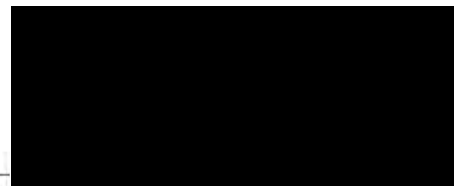


**REGIONAL DISTRICT
of Fraser-Fort George**

**MACKENZIE REGIONAL LANDFILL
2022 ANNUAL REPORT
PRINCE GEORGE, BRITISH COLUMBIA**

Prepared by:

THE REGIONAL DISTRICT OF FRASER-FORT GEORGE
155 George Street
Prince George, British Columbia
V2L 1P8



Laura Zapotichny
General Manager of Environmental Services



December 4, 2023

Attention: British Columbia Ministry of Environment and Climate Change Strategy

Subject: Qualified Professional Annual Report Review
Mackenzie Regional Landfill 2022 Annual Report

The Regional District of Fraser-Fort George has retained Tetra Tech Canada Inc. (Tetra Tech) as a Qualified Professional (QP) to review the Mackenzie Regional Landfill (the Site) 2022 Annual Report (Annual Report).

Relevant 3rd party information, which has been relied upon, has been used in and/or appended to this report. Tetra Tech has reviewed the Annual Report and based on the information provided and knowledge of the Site, Tetra Tech is in general agreement with the information provided. Tetra Tech has reviewed the information presented in the Annual Report and is not responsible for any information that has been omitted.

Respectfully submitted,
Tetra Tech Canada Inc.



Rana Mandour, P.Eng.
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Solid Waste Management Practice
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EXECUTIVE SUMMARY

This 2022 Annual Operations Report has been prepared for the Mackenzie Regional Landfill located approximately 3 kilometres south of Mackenzie, British Columbia.

The objective of the 2022 Annual Operations Report is to summarize the development of the Site for the period of January 1, 2022 to December 31, 2022. The results of the Environmental Monitoring Program were submitted to the British Columbia Ministry of Environment and Climate Change Strategy (BC MOECCS) in the report entitled, “2022 Annual Groundwater Monitoring Report Mackenzie Regional Landfill” generated by SNC-Lavalin Inc.

The Site began to accept waste in 1974. It currently operates under Operational Certificate (OC) 100206 issued March 4, 2009 by the British Columbia Ministry of Environment under the provisions of the *Environmental Management Act* and in accordance with the Regional District of Fraser-Fort George (RDFFG) Solid Waste Management Plan. The site is operating as a natural attenuation landfill.

The Site has a total permitted area of approximately 8.2 hectares.

In 2019 the municipal solid waste landfill was converted into a Transfer Station operation and Select Landfill for demolition, land clearing and construction (DLC) waste. With the completion of the transfer station facility to the west of the landfill property, municipal solid waste (MSW) is now hauled to the Foothills Boulevard Regional Landfill. As of January 1, 2020, only DLC materials are landfilled at the Site.

According to RDFFG records, the total amount of DLC landfilled at the active face is estimated at approximately 539 tonnes during the reporting period.

Approximately 1,753 tonnes of commercial and residential MSW were transported to Foothills Boulevard Regional Landfill during the reporting period.

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1. INTRODUCTION

The objective of the 2022 Annual Operations Report is to summarize the development of the Site for the period of January 1, 2022 to December 31, 2022 (Reporting Period).

This report fulfils the annual operational reporting requirements outlined in Condition 8.2 of Operational Certificate 100206 (OC), issued by the British Columbia Ministry of Environment and Climate Change Strategy (BC MOECCS).

2. SITE AND REGULATORY SETTING

2.1 Site Description

The Site is located approximately 3 kilometres south of the District of Mackenzie, British Columbia on leased Crown land previously used as a gravel pit. The Site comprises an area of approximately 8.2 hectares. A site location map is provided as Figure 1.

The Site opened in 1974 and accepts waste from the District of Mackenzie and surrounding area.

Currently, the Site provides services for receiving Demolition, Land Clearing and Construction (DLC) waste for burial. Municipal Solid Waste (MSW), used oil, oil filters and containers, antifreeze, lead acid batteries, and rechargeable household batteries are received at the Transfer Station. A swap shed, marshalling site for appliances, scrap metal, and multi-material recycling (MMR) are present at the Transfer Station.

Large quantities of source separated yard and garden waste can be dropped off at the Site at no charge. Yard waste is chipped periodically and composted by static pile composting method on-site.

The existing site conditions are shown on Figure 3.

2.2 Site History

The Site began to accept waste in 1974 from the District of Mackenzie and surrounding area. The Site is operated as a “natural attenuation landfill.”

On December 1, 2019, the Transfer Station was fully operational, accepting all MSW and recyclables. The landfill site transitioned to only accept DLC waste.

The old weigh scale was replaced with a new weigh scale in 2019. The weigh scale and scale house are located at the Transfer Station entrance of the Site.

2.3 Regulatory Setting

The OC for the Site (Appendix A) was issued on March 4, 2009 by the BC MOECCS under the provisions of the *Environmental Management Act* and in accordance with the Regional District of Fraser-Fort George Solid Waste Management Plan. The annual operations reporting requirements for the Site, are outlined in Condition 8.2 of the OC, including the following:

- An executive summary;
- The type and tonnage of waste received, recycled, and landfilled for the year;
- A current topographic map detailing airspace consumption, on-site borrow pit changes, and future developments (Figure 2);
- Updated estimates for the remaining capacity, closure date for the current phase, and closure date for the current landfill footprint;

- Any new information or proposed changes relating to the facilities and Design and Operating Plan;
- Composting operation activity included amount of material received for composting, material composted, material sold and number of composting cycles;
- Occurrences or observations of wildlife (medium and large carnivores) at the facility;
- A statement regarding the facility's progress in reducing the regional solid waste stream, in accordance with the hierarchy of reduce, reuse, and recycle principles; and
- The results of monitoring programs as specified in the OC will be submitted by the RDIFFG under separate cover and are not included in this report.

3. LANDFILL OPERATION AND MANAGEMENT

3.1 Site Operations

Since December 1, 2019, and the completion of the Transfer Station, the Site accepts only DLC waste from the District of Mackenzie and surrounding areas.

Other waste items accepted at the Transfer Station include the following:

- MSW;
- Scrap metal;
- Yard and Garden Waste; and
- Clean Cover.

According to Condition 6.1 of the OC, hazardous waste, as defined by the Hazardous Waste Regulation pursuant to the Environmental Management Act is prohibited from disposal unless expressly authorized by the Hazardous Waste Regulation, approved by the Director or as specified in the OC.

Condition 6.2 of the OC authorizes the disposal of waste asbestos at the Site, subject to compliance with the requirements of Section 40 of the Hazardous Waste Regulation. The Site did not accept asbestos for disposal in 2022. Moving forward the Site now prohibits the disposal of asbestos.

Materials that are prohibited for disposal at the Site include: cattle carcasses; fencing wire; hazardous waste; industrial chemical waste; lubricants; radioactive waste; refuse (on fire or smouldering); special waste (except as permitted controlled waste); steel/plastic drums (if not cut, crushed, or perforated); tires on rims; explosives; fuels; ignitable waste; liquids; paints/solvents; reactive waste; and slurry/sewage sludge.

Equipment used at the Site for landfilling related activities, includes the following:

- CAT model D6M Crawler Tractor;
- CAT model EL300R hydraulic excavator;
- Kenworth model all-wheel drive dump truck; and
- CAT model 730 rock truck.

The landfill hours of operation are as follows:

- Sunday to Thursday 9 am to 5 pm.
- Closed Friday and Saturday.
- Closed all statutory holidays.

A pilot project for extended hours of operation began April 1, 2022 and ended August 31, 2022. During this time, the site was open Monday to Friday, 9am to 5pm and Saturday and Sunday from 9am to 1pm and closed on all holidays.

Currently, the active face area of the landfill is covered three to four times during Spring and Summer. The active face area of the landfill is covered with soil.

3.2 Site Facilities

The limit of waste of the landfill and Transfer Station is secured with an electric fence. Access to the Site is controlled by a gate located at the main entrance. The gate is locked outside of normal operating hours to unauthorized access and uncontrolled disposal. The weigh scale facility includes a 12-metre long weigh scale and an adjacent scale house. When residents and commercial haulers arrive at the Site, they are instructed to report to the scale house where load inspections and discharge direction is provided.

All weigh scale records are maintained on a computer attached to the weigh scale. The software program used to collect weigh scale data at the Site is the same software used at the Foothills Boulevard Regional Landfill. This harmonizes the data input between the Site and Foothills Boulevard Regional Landfill.

In addition to the scale house, the following facilities are maintained at the Site:

- Swap Shed;
- Used Oil Storage sea can, which consists of a double walled storage tank with a capacity of 2,200 litres and a built in catch basin within the sea can;

3.3 Open Burn Activity

No open burning activities occurred on the Site during the reporting period.

3.4 Wildlife Observations

Wildlife tracks of medium carnivores were observed on Site during the Reporting Period, a total of three separate times, while actual sightings were noted 7 separate times from May to September. Large carnivore tracks were observed outside the Burrow Pit gate once, while actual sightings were limited to two times in the reporting period, both outside the main gate and not inside the landfill site.

3.5 Waste Diversion Activities

The RDFFG encourages the reduction of solid waste generated and subsequently landfilled by the following means (Appendix B):

- Swap shed – waste exchange areas where reusable items can be either dropped off or picked up free of charge;
- Composting of yard and garden waste;
- Multi-material recycling including:
 - Corrugated cardboard and mixed paper; and
 - Plastic cartons and containers, metal food cans.
- Automotive lead acid battery collection;
- Single use battery collection;

- Sea can for collection of used oil and antifreeze, oil filters and used oil containers;
- Marshalling area for scrap metal; and
- Marshalling area for white goods, including Ozone Depleting Substances (ODS) containing appliances.

3.6 Waste Disposal

Residential and Commercial MSW are no longer received at the Landfill Site for burial since the Full-Service Transfer Station started operations on December 1, 2019. All MSW is transported to the Foothills Boulevard Regional Landfill.

Only DLC waste is accepted at the Select Landfill area. According to RDFFG records, the total amount of DLC landfilled at the active face is estimated at approximately 593 tonnes during the reporting period, with 539 tonnes scaled in.

According to RDFFG records, the total MSW transported to Foothills Boulevard Regional Landfill is 1,753 tonnes during the reporting period. This total was made up by 1,505 tonnes of MSW collected through the District of Mackenzie's curbside garbage collection and 248 tonnes brought by commercial haulers and residential self haul.

Prior to 2020, the amount of waste received at the site was approximated using the scale software data and average provincial per capita disposal rates. Since that time, most of the waste is accounted for in two ways.

The municipal solid waste collected at the Mackenzie Regional Transfer station is transported to the Foothills Boulevard Regional Landfill and weighed in.

Most demolition, land clearing, and construction waste was scaled in at the Mackenzie site, however the RDFFG applied a factor of 10% to account for the small loads of DLC waste that were not scaled in at the site for a total of 593 tonnes of DLC waste buried at the site in 2022.

3.7 Landfill Volume Consumed

As indicated in Section 3.6, the total amount of DLC waste received was estimated to be approximately 593 tonnes during the Reporting Period.

The apparent waste density is estimated from the calculated landfill airspace consumption and the annual tonnage landfilled. The apparent waste density is not a true density, but is a relationship that represents the mass of waste that can be disposed in each cubic metre of landfill air space. The apparent waste density is a more accurate measure of the efficiency of landfilling since soil (used for daily and interim cover) is excluded from the ratio. The apparent waste density is based on the comparison of the tonnage landfilled versus the air space consumed. Soil used as daily cover is excluded from consideration since an increase in soil usage can increase the true density and provide a skewed representation of landfilling efficiency.

Efficient landfill compaction techniques employed at well-operated landfill sites can typically attain an apparent waste density of 0.5 to 1.0 tonnes of waste per cubic metre of air space consumed depending on the size of the landfill. A landfill similar to the Site would be anticipated to achieve an apparent waste density of 0.5 tonnes per cubic metre.

The apparent waste density was calculated by comparing the waste tonnage and air space consumed between the survey period on May 21, 2022, and May 11, 2023. Using the topographic contour plan generated during the reporting period, shown as Figure 3, an airspace consumption of approximately 834 cubic metres was estimated (Dillon Consulting Inc., 2023) and 460 tonnes were received on Site during this period giving an apparent waste density of 0.55 tonnes per cubic meter, (Dillon Consulting Inc., 2023).

3.8 Approved Design Volume

An approved design volume has not been defined for the Site.

3.9 Remaining Capacity and Site Life

The remaining Site life has not been quantified.

3.10 2022 Operations Plan

The current landfill was converted into a Select Landfill, where demolition, land clearing and construction (DLC) is the only waste accepted for burial. The transfer station portion opened on December 1, 2019.

The Site will continue to accept residential, commercial, and light industrial waste from the District of Mackenzie and surrounding areas directed to the Mackenzie Regional Transfer Station. Other waste items listed in Section 3.1 will continue to be accepted at the Site.

To enhance cardboard diversion, a cardboard compactor unit was installed in October 2021 to maximize the collection of corrugated cardboard. Multi-material recycling is scheduled to be consolidated at the Site and will coincide with the removal of the recycling bins at the Fire Hall location.

Future consideration will be given to implementing the DLC waste diversion program at the Mackenzie Regional Landfill.

Weigh Scale records indicate that approximately 460 tonnes of DLC waste was received at the Site, during the survey period, May 21, 2022, and May 11, 2023. Using this information and an airspace consumption of approximately 834 cubic metres during the survey period an apparent waste density of 0.55 tonnes per cubic metre, (Dillon Consulting Inc., 2023) was calculated.

3.11 Summary of Environmental Monitoring Data

The results of the Environmental Monitoring Program were submitted to the British Columbia Ministry of Environment and Climate Change Strategy (MOECCS) in the report entitled, “2022 Annual Groundwater Monitoring Report Mackenzie Regional Landfill” generated by SNC-Lavalin Inc, (April 2023).

4. SUMMARY AND CLOSURE

The 2022 Annual Report was prepared to summarize the development and operations of the Mackenzie Regional Landfill, for the January 1, 2022, to December 31, 2022 Reporting Period.

According to RDFFG records, approximately 593 metric tonnes of waste was received at the Site during the 2022 Reporting Period. In 2023 an updated Design, Operation and Closure Plan is being produced that will update the information currently available and will determine the lifespan of the current footprint.

5. REFERENCES

1. Aero Geometrics Ltd., 2022. “Air Survey.”
2. Dillon Consulting Inc., 2022. “2022 Volume Assessment-Mackenzie Regional Landfill.”
3. British Columbia Ministry of Environment, Second Edition, June 2016. “Landfill Criteria for Municipal Solid Waste.”
4. Environmental Management Act, 2009. “Hazardous Waste Regulation.”

FIGURES

FIGURE 1
SITE LOCATION MAP



NOT TO SCALE



SITE LOCATION MAP






2013 ANNUAL OPERATIONS REPORT
MACKENZIE REGIONAL LANDFILL
REGIONAL DISTRICT OF FRASER-FORT GEORGE



DATE	JOB NO.	FIGURE NO.
AUGUST 2014	4-2428-03-03	1

FIGURE 2
SITE PLAN

MACKENZIE REGIONAL LANDFILL & TRANSFER STATION SITE TOPOGRAPHY

LEGEND	
	CONTOUR LINES
	GRAVEL ROAD
	DITCH
	FENCE
	MONITORING WELL









NOTE: EXISTING CONDITIONS AS OF MAY 21, 2022

SCALE 1:1,000 METRES

FIGURE 3
AERIAL SURVEY

MACKENZIE REGIONAL LANDFILL & TRANSFER STATION SITE PLAN WITH INFRASTRUCTURE

LEGEND	
	CONTOUR LINES
	GRAVEL ROAD
	DITCH
	FENCE
	MONITORING WELL
	WASTE FILL AREA





TABLES

TABLE 1 WASTE DIVERSION

Material	Units
Waste Oil	2,420 litres
Oil Filters (drums)	2 drums
Antifreeze	205 litres
Batteries	183 units
Scrap Metal	159 tonnes

TABLE 2 SOLID WASTE DISPOSAL SUMMARY

Materials Received Mackenzie Regional Landfill		
Materials Received and Buried at Active Face		
	Construction and Demolition (tonnes)	Asbestos (tonnes)
Scale Data	539	0
Estimate	54	0
Total	593	0
MSW Materials Diverted Off-Site		
	Residential Curbside (tonnes)	Residential & Commercial Self-Haul (tonnes)*includes calculated estimate.
Scale Data	1505	248
Total	1753	

APPENDIX A
OPERATIONAL CERTIFICATE 100206

MINISTRY OF ENVIRONMENT
OPERATIONAL CERTIFICATE
100206

*Under the Provisions of the Environmental Management Act
and in accordance with the
Regional District of Fraser-Fort George
Solid Waste Management Plan*

Regional District of Fraser-Fort George
155 George Street
Prince George, British Columbia
V2L 1P8

is authorised to manage recyclable material and municipal solid waste at a sanitary landfill located 4.2 km south of Mackenzie, British Columbia, subject to the conditions listed below. Contravention of any of these conditions is a violation of the *Environmental Management Act* and may result in prosecution.

1. **LOCATION OF AUTHORISED FACILITY**

The location of the facility for the management of recyclable material and municipal solid wastes to which this Operational Certificate is applicable is the Mackenzie Regional Landfill, covering all unsurveyed Crown Land in the vicinity of District Lot 3458, Cariboo District, containing 16.73 hectares, more or less. The Crown Licence of Occupation for the site is #705356.

2. **ENTRANCE FACILITIES**

The authorised facility includes recyclable material and municipal solid waste drop-off facilities, weigh scales and related appurtenances approximately as shown on attached Site Plan A.

3. **MANAGEMENT OF MUNICIPAL SOLID WASTE**

3.1. **Sanitary Landfill**

3.1.1. The authorised facilities are a sanitary landfill area, recyclable material storage areas and related appurtenances approximately as shown on the attached Site Plan. The site reference number for the discharge is E211576.

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for Director, Environmental Management Act

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- 3.1.2. The characteristics of the discharge must be municipal solid waste as defined under the *Environmental Management Act* and other wastes as approved in writing by the Director.
- 3.1.3. Waste may be discharged to the areas specified in the Regional District's Design and Operation Plan, approximately located as shown on attached Site Plan A.

4. GENERAL REQUIREMENTS

4.1. Qualified Professionals

All facilities and information, including works, plans, assessments, investigations, surveys, programs and reports, must be certified by qualified professionals.

4.2. Plans

4.2.1. The Regional District shall prepare a Design and Operation Plan that will include considerations for site operation, development and closure, leachate and landfill gas management, composting operations, monitoring programs and environmental impact mitigation management.

The Design and Operation Plan must be submitted to the Director by May 15, 2009.

4.2.2. The Design and Operation Plan must address, but not be limited to, each of the subsections in the *Landfill Criteria for Municipal Solid Waste* including performance, siting, design, operational and closure and post-closure criteria.

4.2.3. The facilities must be developed and operated in accordance with the Design and Operation Plan.

4.2.4. Any updates to the plan shall be immediately submitted to the Director.

4.3. Additional Facilities or Works

The Director may require investigations, surveys, and the construction of additional facilities or works. The Director may also amend information requirements of this Operational Certificate including plans, programs, assessments and reports.

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5. OPERATIONAL REQUIREMENTS

5.1. Non-Compliance Reporting

The Regional District shall immediately notify the Regional Manager, Environmental Protection, or designate by facsimile (250-565-6629) of any non-compliance with the requirements of this Operational Certificate and take appropriate remedial action.

Written confirmation of all non-compliance events, including available test results, is required by facsimile within 24 hours of the original notification unless otherwise directed by the Regional Manager, Environmental Protection.

5.2. Operator Training and Development

At a minimum, the Regional District will ensure that operating personnel are trained to industry standards and current in a SWANA recognized landfill operator course or equivalent.

5.3. Electric Fencing

Areas where putrescible materials are stored or discharged shall be surrounded by an electric fence.

5.3.1. Design, Construction and Maintenance

The electric fencing shall be designed, constructed, and maintained such that bears are prevented from penetrating the fence. The Director shall be advised of any modifications to the fence.

5.3.2. Operating Period

The electric fence shall be fully operational during the period of April 15 to November 15 inclusive each year. If snow is present during this period, any electrified strands above snow line shall be isolated from the remainder of the system and energised. The Director may vary the operating period with prior written authorisation.

5.3.3. Record Keeping and Reporting

The Regional District is required to monitor wildlife (medium and large carnivores) activity at the facility and keep records of occurrences and observations of wildlife (medium and large carnivores).

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5.4. Compost

Composting facilities shall be operated and maintained in accordance with the *Organic Matter Recycling Regulation*.

5.5. Landfill Gas

Landfill gas shall be managed in accordance with the *Landfill Gas Management Regulation*.

5.6. Leachate

The characteristics of the surface water and groundwater at the property boundary must not exceed concentrations set in the *British Columbia Approved Water Quality Guidelines (Criteria)* and *A Compendium of Working Water Quality Guidelines for British Columbia*. Where natural background water quality concentrations exceed the aforementioned guidelines, characteristics of the surface water and groundwater at the property boundary must not exceed background concentrations.

6. HAZARDOUS WASTE MANAGEMENT

6.1. Hazardous Waste

"Hazardous Wastes" as defined by the *Hazardous Waste Regulation* pursuant to the *Environmental Management Act* are prohibited from disposal unless expressly authorised by the *Hazardous Waste Regulation*, approved by the Director or as specified in the Operational Certificate.

6.2. Waste Asbestos

Waste asbestos is authorized for disposal subject to compliance with the requirements of section 40 of the *Hazardous Waste Regulation* and the following conditions:

6.2.1. The asbestos waste may not be mixed with any other hazardous waste.

6.2.2. The Regional District must approve the disposal before disposal takes place.

6.2.3. All other applicable requirements of the *Hazardous Waste Regulation*, including but limited to manifesting and waste record keeping, must also be complied with.

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6.3. Handling of Impacted Soil

The *Environmental Management Act*, the *Contaminated Sites Regulation* and the *Hazardous Waste Regulation* are applicable for the disposal of impacted (contaminated) soil at the facility.

6.4. Hazardous Wastes from Accidental Spills or Abandonment

Hazardous wastes resulting from accidental spills or abandonment of dangerous goods may be accepted at the facility only under the authority of Section 52(1) of the *Hazardous Waste Regulation*.

7. MONITORING

7.1. Monitoring Program

7.1.1. A monitoring program shall be developed by a qualified professional to identify potential impacts to the environment and public health from the facility.

7.1.2. The monitoring program shall be submitted as part of the Design and Operation Plan.

7.1.3. The monitoring program must address, but not be limited to, subsections 4.1, 4.2 and 7.15 of the *Landfill Criteria for Municipal Solid Waste* and the *Guidelines for Environmental Monitoring at Municipal Solid Landfills*.

7.1.4. Monitoring must be conducted in accordance with the monitoring program.

8. REPORTING

All reports and drawings shall be submitted in electronic format unless otherwise requested by the Director.

8.1. Drawings

All drawings shall be certified correct and sealed by a qualified professional. Drawings shall be submitted to the Director within 30 days of completion or as otherwise specified by the Director.

8.2. Annual Report

The Regional District shall submit an Annual Report to the Director on or before June 30 each year for the previous calendar year.

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The report shall contain, but not be limited to the following information:

- i.) an executive summary;
- ii.) the type and tonnage of waste received, recycled and landfilled for the year;
- iii.) a current topographic map detailing airspace consumption, on-site borrow pit changes and future developments;
- iv.) updated estimates for the remaining capacity, closure date for the current phase and closure date for the current landfill footprint;
- v.) any new information or proposed changes relating to the facilities and Design and Operation Plan;
- vi.) composting operation activity including amount of material received for composting, material composted, material sold and number of composting cycles;
- vii.) occurrences or observations of wildlife (medium and large carnivores) at the facility;
- viii.) a statement regarding the facility's progress in reducing the regional solid waste stream, in accordance with the hierarchy of reduce, reuse and recycle principles; and,
- ix.) the results of all monitoring programs as specified in this Operational Certificate. Data interpretation and comparison to the performance criteria in the *Landfill Criteria for Municipal Solid Waste* and the *Guidelines for Environmental Monitoring and Municipal Solid Waste Landfills*. Trend analysis, as well as an evaluation of the impacts of the discharges on the receiving environment in the previous year shall be carried out by a qualified professional.

9. CLOSURE PLAN

At least one year in advance of decommissioning the landfill, or as otherwise specified by the Director, a Closure Plan shall be submitted which includes at least the following information:

- i) a topographic plan showing the final elevations contours of the landfill and surface water diversion and drainage controls;
- ii) specifications for the final cap and proposed end use of the site; and,

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- iii) provisions for a minimum 25 year post-closure care period at the facility which, at a minimum, considers the following: groundwater monitoring, surface water monitoring, landfill gas management, erosion and settlement monitoring and management.

10. CLOSURE AND POST-CLOSURE FUND

The Regional District will conform to the Public Sector Accounting and Auditing Board's requirements (PS 3270) to recognize solid waste landfill closure and post-closure liability. The Regional District will develop a plan to ensure that sufficient funds are available for closure and post-closure care work.

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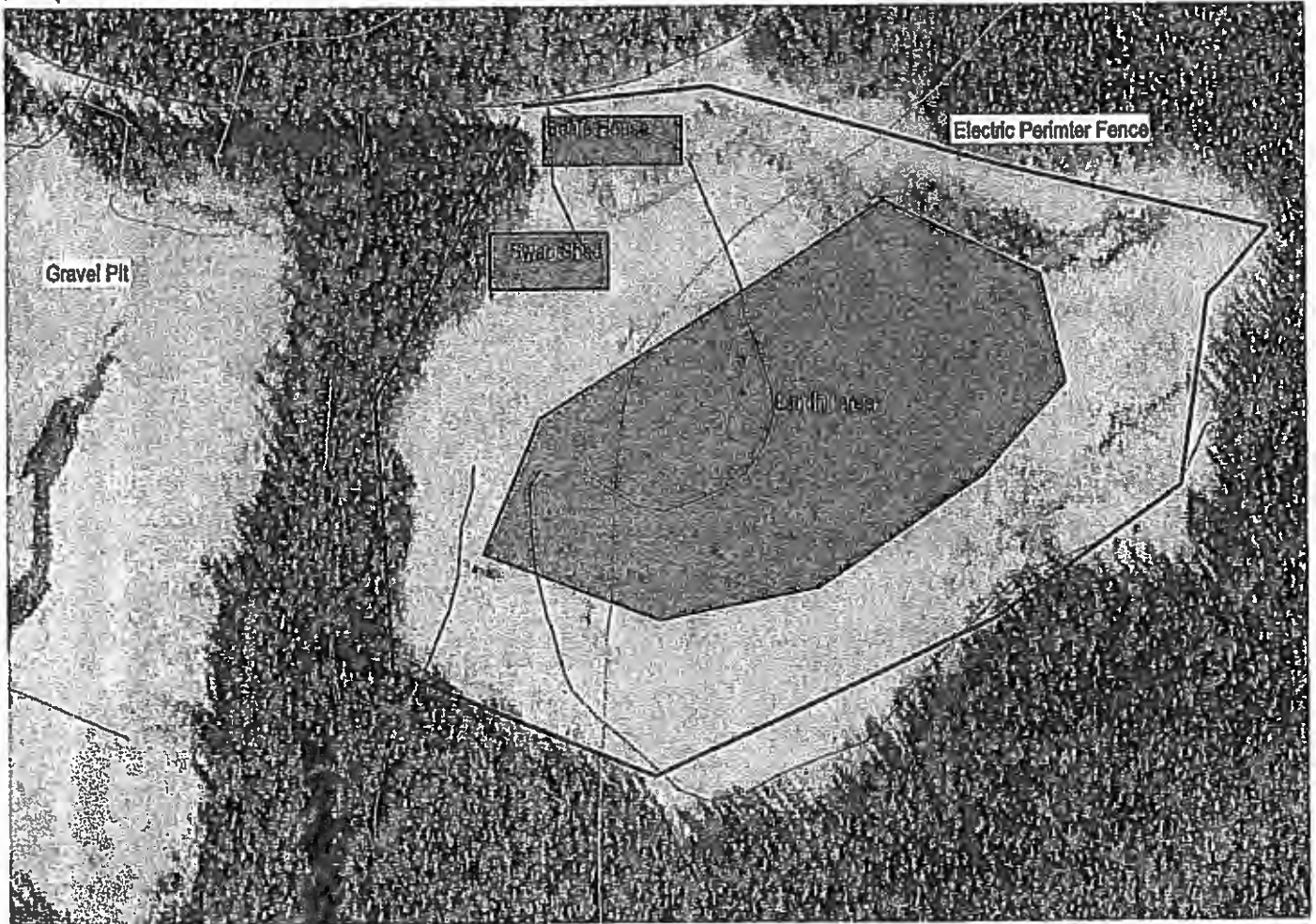
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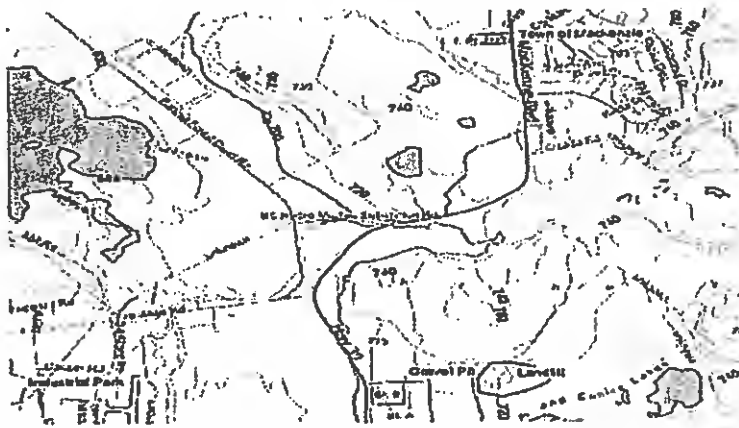
OPERATIONAL CERTIFICATE: 100206



SITE PLAN A




Location Map



Not to Scale

Operational Certificate 100206

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for Director, *Environmental Management Act*
Omineca and Peace Regions

APPENDIX B
SITE BROCHURE

RECYCLING BINS

Three recycling depot sites are located in Mackenzie; at the Fire Hall, the Public Works Building and the Transfer Station. The following recyclable items are accepted:

- **Containers and Cartons**

Plastic containers, steel packaging, aluminum containers and paper packaging containing liquids when sold. Empty and rinse containers -labels are okay, remove caps, pumps & lids, place loose in the bin. Put metal lids inside cans and flatten.

- **Mixed Paper**

*Catalogues, glossy flyers, cereal boxes, office paper, kraft grocery bags, envelopes, magazines, newspaper and cardboard egg cartons. **NO paper that has any plastic, foil, wax or food residue attached to it.***

- **Corrugated Cardboard**

A separate bin for flattened corrugated cardboard is provided. Corrugated boxes have a rippled layer sandwiched between layers of linerboard.

For a detailed list of accepted materials, please refer to the Regional District Recycling Brochure or visit our website.

USED OIL AND ANTIFREEZE

Used oil, oil filters and containers, and used antifreeze and containers are accepted for recycling.

APPLIANCES CONTAINING REFRIGERANT

Fridges, freezers, air conditioners, dehumidifiers and water coolers are accepted **free of charge** for recycling. (<https://www.marbc.ca>)

SCRAP METAL RECYCLING

Metal materials accepted at the Mackenzie Regional Transfer Station for recycling include:

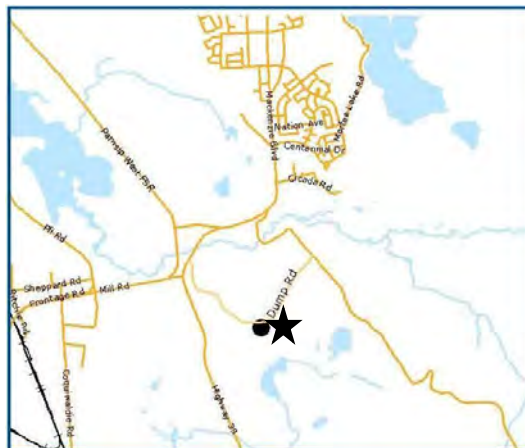
- Appliances and parts such as stoves, dishwashers, hot water tanks, washers, dryers and any other **non-refrigeration** type appliance, many of which are part of MARR;
- Bicycle frames and barbeque hulks;
- Metal roofing and siding;
- Lawnmower bodies, snowmobile and motor bike frames (fuel, lubricants and tires must be removed);
- Steel containers (drums and tanks) must be crushed or perforated to ensure that they contain no liquid or hazardous material. Pressurized containers cannot be recycled.

HOURS OF OPERATION

Mackenzie Demolition and Construction Landfill Hours of Operation	
Operating Hours – Year Round	
Sunday to Thursday	9 am – 5 pm
Closed on Friday & Saturday	
This facility is CLOSED on all Holidays:	
New Years' Day	Labour Day
Family Day	National Day of Truth and Reconciliation
Easter Monday	Thanksgiving Day
Good Friday	Remembrance Day
Victoria Day	Christmas Day
Canada Day	Boxing Day
BC Day	

When delivering waste to Regional District facilities, ensure that loads are covered and secured so that material does not blow out onto the roads.

LOCATION MAP



**REGIONAL DISTRICT
of Fraser-Fort George**

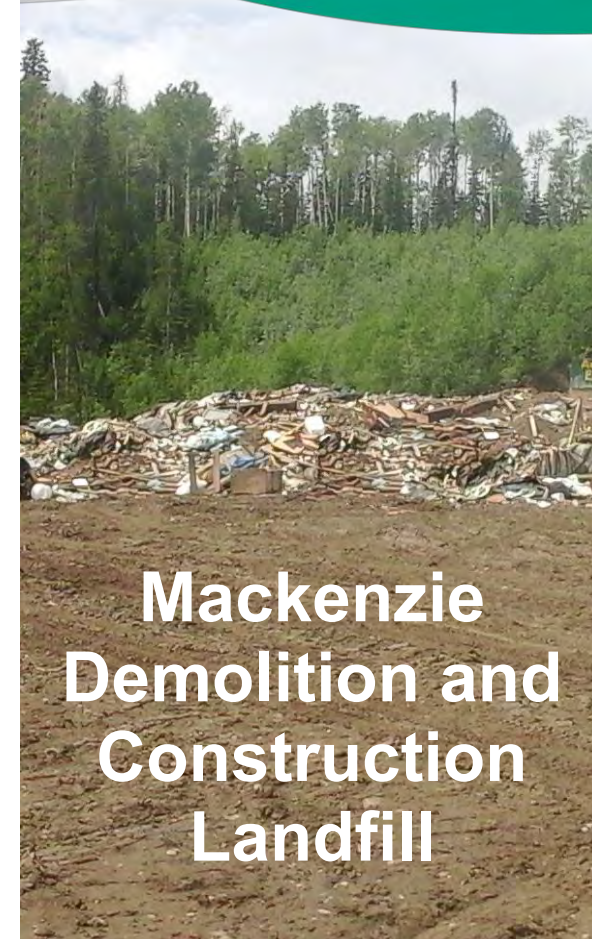
155 George Street, Prince George, BC V2L 1P8
Tel: 250-960-4400 • Toll Free: 1-800-667-1959
Fax: 250-563-7520 • Email: environment@rdffg.bc.ca

www.rdffg.bc.ca



**REGIONAL DISTRICT
of Fraser-Fort George**

**Environmental
Services**



**Mackenzie
Demolition and
Construction
Landfill**

LANDFILL SERVICES

As of December 1, 2019, the site operates as a transfer station and a demolition and construction waste landfill.

SITE OPERATION

The Mackenzie Demolition and Construction Waste Landfill is a select waste landfill operated by the Regional District of Fraser-Fort George. Materials accepted for disposal include demolition and construction waste and land clearing debris.

SOLID WASTE DISPOSAL BYLAW

Regional District of Fraser-Fort George Bylaw No. 3166, 2020, Amendment Bylaw No. 3245, 2021 establishes:

- Tipping Fee rates
- Definition of terms
- Site regulations, and
- Permit and approval requirements for Controlled Waste

QUICK REFERENCE DEFINITIONS

Demolition, Land Clearing & Construction Waste

- may include waste such as PVC pipe, asphalt, lumber, stumps, roofing materials, masonry and wire, and shall not contain Prohibited Waste, Controlled Waste, Recyclable Materials or Hazardous Waste.

Contaminated Soil

- means soil, sediment and/or fill material containing substances in quantities or concentrations as defined by the Contaminated Sites Regulation but is not hazardous waste under the Hazardous Waste Regulation. Requires pre-approval as well as laboratory analysis and an application for the acceptance of controlled waste.

Concrete

- means a hardened mixture of cement with sand, gravel and/or rebar. Rebar protruding from cement shall not exceed 1 ft. in length.

Creosote Treated Wood

- means wood that is treated with creosote, which may include railway ties, telephone poles and dock pilings. Requires pre-approval.

TIPPING FEES AND SITE REGULATIONS

A tipping fee is a charge levied for disposal of waste and is based on weight and type of material. Tipping fees apply to “controlled waste”, and demolition, land clearing and construction waste (DLC).

PAYMENT

Payment may be made by Mastercard, VISA, AMEX, Discovery or debit card. Commercial customers may apply to the Regional District for credit accounts. Application forms are available from the Mackenzie Regional Transfer Station during operating hours or Financial Services at 155 George Street, Prince George, BC, between 8:45 am – 12:00 pm and 1:00 pm – 5:00 pm, Monday to Friday (excluding holidays).

FEES

The fee to dispose of DLC waste is \$94 per tonne or a \$6 minimum charge per load. Load weights are measured on scales provided at the landfill.

PROHIBITED MATERIALS

The following materials are not accepted for disposal at the Mackenzie Regional Landfill. For disposal options, please consult with the attendant or call the Regional District Service Centre at 1-800-667-1959.

Asbestos
Cattle Carcasses
Chemical Waste
Explosives
Fencing Wire
Fuels
Hazardous Waste
Ignitable Waste
Liquids
Lubricants
Paints/Solvents
Pesticides
Radioactive Waste
Reactive Waste
Refuse (on fire or smoldering)
Restaurant grease
Slurry/Sewage Sludge
Steel/Plastic Drums (if not cut, crushed, or perforated)
Tires (as of March 31, 2022)

SWAP SHED

The Mackenzie Demolition and Construction Landfill has a waste exchange area where reusable items can be either dropped off or picked up free of charge. Accepted items include clothing, books, toys, sporting goods, and furniture.

SALVAGING

Salvaging of materials from dumping areas, marshalling areas, or recycling bins is not permitted.

CENTRALIZED COMPOSTING

Large quantities of source separated yard and garden waste can be dropped off at the Mackenzie Regional Transfer Station at no charge for inclusion into the centralized compost operation. Please consult the attendant for further information on acceptable materials.

CONTROLLED WASTE

Controlled wastes are materials that require special handling and disposal techniques to avoid creating health hazards, nuisances or environmental pollution. Controlled wastes **require pre-approval** and a Regional District permit prior to delivery. Check with landfill staff concerning permits and delivery times.

CONTROLLED WASTE	RATE PER TONNE OF WEIGHT	Minimum Charge
Bulky Waste	\$111.50	\$6.00
Concrete	\$223.00	\$6.00
Contaminated Soil	\$111.50	\$6.00
Creosote treated wood	\$171.50	\$6.00
Waste sludge from municipal sewage treatment plants and screening stations	\$0	\$0

**In all cases, Bylaw No. 3166, Amendment Bylaw No. 3245, 2021, should be consulted for conditions and definitions of terms.*

Permits for Disposal of Controlled Waste

A permit issued by the Regional District is required to deposit a controlled waste at the Mackenzie Demolition and Construction Landfill. Permit application forms are available from the Mackenzie Demolition and Construction Landfill during regular operating hours, or on the Regional District website.

APPENDIX C
2023 MACKENZIE VOLUME ASSESSMENT



July 28, 2023

Regional District of Fraser-Fort George
155 George Street
Prince George, British Columbia
V2L 1P8

Attention: Mr. Darwin Paton
Environmental Services Technician

2023 Volume Assessment – Mackenzie Regional Landfill

Dear Mr. Paton:

Dillon Consulting Limited (Dillon) is pleased to provide the 2023 volume assessment for the Mackenzie Regional Landfill (Site) located in the Regional District of Fraser-Fort George (RDFFG).

Aerial photographic mapping was completed over the Site on May 11, 2023 by Aero Geometrics Ltd. Information obtained from the aerial photographic mapping was used to generate the 2022 elevation contours which were then compared against the May 21, 2022 elevation contours to determine the approximate airspace consumed at the Site between the two time periods. Based on a comparison of the May 2022 and May 2023 elevation contours, approximately 834 cubic metres of airspace was consumed. **Figure 1**, attached, presents the May 11, 2023 contours and area which was infilled.

Weigh scale records indicate that 460 tonnes of waste were landfilled at the Site between May 2022 and May 2023, as provided by the RDFFG. Using the total tonnage of waste landfill at the Site and the calculated airspace consumed, the apparent density for the landfill was calculated to be approximately 0.55 tonnes per cubic metre (460 tonnes / 834 cubic metres). The apparent density is not a true density but is a relationship that represents the mass of waste disposed in each cubic metre of landfill airspace, excluding soils used as cover.

3820 Cessna Drive
Suite 510
Richmond
British Columbia
Canada
V7B 0A2
Telephone
604.278.7847
Fax
604.278.7894

Regional District of Fraser-Fort George

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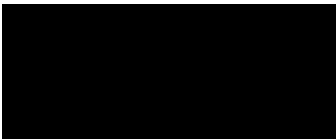
July 28, 2023



Dillon appreciates the opportunity to support the RDIFFG with this volume assessment. Should you have any questions or require additional information, please do not hesitate to contact us.

Sincerely,

DILLON CONSULTING LIMITED



Phillip Auclair, P.Eng.
Senior Waste Engineer

PA:tjs

Commercial Confidentiality Statement

This document contains trade secrets or scientific, technical, commercial, financial and labour or employee relations information which is considered to be confidential to Dillon Consulting Limited ("Dillon"). Dillon does not consent to the disclosure of this information to any third party or person not in your employ. Additionally, you should not disclose such confidential information to anyone in your organization except on a "need-to-know" basis and after such individual has agreed to maintain the confidentiality of the information and with the understanding that you remain responsible for the maintenance of such confidentiality by people within your organization. If the head or any other party within any government institution intends to disclose this information, or any part thereof, then Dillon requires that it first be notified of that intention. Such notice should be addressed to: Dillon Consulting Limited, 235 Yorkland Boulevard, Suite 800, Toronto, Ontario M2J 4Y8, Attention: Legal Department.

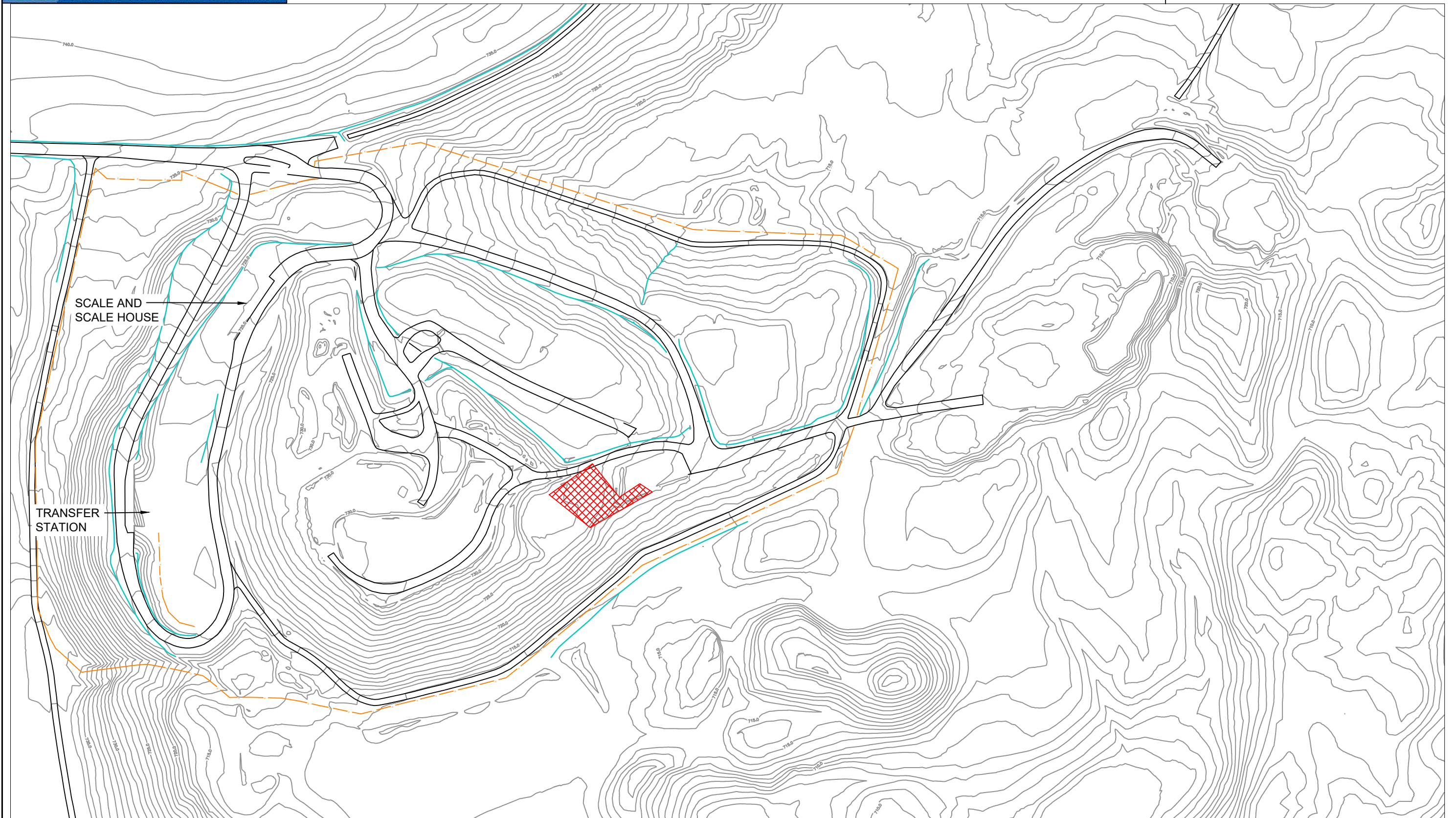


REGIONAL DISTRICT
of Fraser-Fort George

MACKENZIE REGIONAL LANDFILL AND TRANSFER STATION SITE TOPOGRAPHY

LEGEND

- CONTOURS
- GRAVEL ROAD
- DITCH
- FENCE



NOTE: EXISTING CONDITIONS AS OF MAY 2023.

SCALE 1:1,000 METRES