City of North Battleford
2024 Waste Management Facility
Annual Report

North Battleford
Treaty Six Territory | Heartland of the Métis | Saskatchewan | Canada

March 2025

EXECUTIVE SUMMARY

The WMF accepts and disposes of domestic municipal waste as authorized by the Permit to Operate a Municipal Waste Disposal Ground. All the procedures outlined in the Permit to Operate a Municipal Waste Disposal Ground (Permit to Operate) and the WMF Operations Plan are being followed to ensure the City is within regulatory guidelines.

A summary of the WMF operations are as follows:

- In 2024 the total amount of waste disposed of in the main pit increased.
    - The amount of waste disposed of in the main pit increased from 8,878 tonnes in 2023 to 10,835 tonnes in 2024.
    - The amount of household recyclables decreased from 550 tonnes in 2023 to 543 tonnes in 2024.
- The current working cells (cell 1 through 3) are expected to be full in 30 years.
    - With the construction of cell 4 the remaining life of the main pit changes to approximately 92 years.
    - The 2024 compaction rate increased from 0.65 tonne/m^3 in 2023 to 0.78 tonne/m^3 in 2024.
- In 2024 there were 52 weekly inspections completed. The findings of the inspections indicate that:
    - Asbestos was noted as “buried in pit” in all inspections.
    - Perimeter fencing was observed in good condition in 51 of 52 inspections.
    - The SE secondary access gate was observed as being secured in all inspections.
    - The landfill pit was observed as having “portable fencing in place” in all inspections.
    - Standing water was noted on the site in the beginning of April. Samples were not taken as the standing water did not leave the site and was determined to be surface water from spring melt/seasonal rains.
    - The storm water storage pond was noted to be below the freeboard threshold in all inspections.
- In 2024 the WMF experienced five landfill intruder incidents afterhours between July 27th and August 16th.
- In 2024 the WMF experienced three landfill fires.
- The low chloride concentrations in the monitoring wells suggest that leachate has not been detected in the monitoring wells, however chloride concentrations may be related to both historic and active landfill activities.

The City of North Battleford continues to work towards diverting more recyclable and reusable material from the main pit in 2025.

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INTRODUCTION

The City of North Battleford (the City) Annual Waste Management Facility (WMF) Report is designed to provide information to City Council, internal management, and government agencies.

The WMF accepts and disposes of domestic municipal waste as authorized by the Permit to Operate a Municipal Waste Disposal Ground (Permit to Operate) and the WMF Operations Plan. All the procedures outlined in this permit are being followed to ensure the City is within regulatory guidelines. The City is continually taking steps to reduce, reuse, recycle and recover wastes directed to the WMF.

The City's Permit to Operate Waste Disposal Grounds (Permit PO21-012) was renewed on February 1, 2021, and is in effect until January 31, 2026. Of note, Permit PO21-012 introduced a new requirement that volatile organic compounds (VOCs) be added to the annual groundwater program to establish baseline data and trends. Depending on analytical results, VOC sampling may be amended in future years once baseline conditions are established.

BACKGROUND

The WMF is located near Wearing Road, approximately 2.1 km east of Territorial Drive North. The legal land description is SW-15-44-16 W3M. A map showing the location of the WMF and current site diagram can be found in Appendix A.

The WMF design consists of four cells, constructed over the lifetime of the facility. Cell No. 1 was constructed in 1996, Cell No. 2 was constructed in 2002, and Cell No. 3 is currently being used and was constructed in 2012. Cell No. 3 was expected to have a serviceable life of nine years and provide approximately 375,000 m^3 of landfill capacity. Cell No. 4 was originally projected for construction in 2030. The WMF design features a clay till liner, leachate collection system, leachate pumping station and force main to deliver leachate to the wastewater treatment plant for treatment.

The WMF operates Monday through Saturday from 08:00 to 18:00 May 1 to October 30 and 09:00 to 17:00 November 1 to April 30. The WMF is closed on all statutory holidays. At all times that the WMF is operational, and the main gate is open, the scale house is manned by a scale house attendant.

The main gate remains closed until the scale house attendant opens it to the public. Security cameras and facility monitoring are completed at the main gate, the tool shed, and the equipment lean-to. The WMF perimeter is fenced, and weekly inspections monitor the fence integrity. There is one secondary access point to the WMF located in the northeast near the cell stockpile. This access is secured with a chain-link gate and locked to prohibit unauthorized access.

The City is the main contributor to the waste that enters the facility. Historically contributors included the Town of Battleford, the RM of North Battleford No. 437, and the RM of Battle River No. 438. In April 2018, the Town of Battleford diverted their waste to the newly constructed Loraas Transfer Station.

The WMF collection site for used oil, oil containers and filters, and antifreeze is located within the EcoCentre.

The WMF offers free disposal of compostable materials, blue bin recyclable materials, and fluorescent light bulbs and ballasts (limited quantities/week) to City residents. Blue bin recyclable materials can be disposed of into two 30-yard bins. The WMF stores some recyclables which are processed at other locations including white goods (refrigerants), metal objects, tires, empty propane canisters, grain bags, batteries, used cooking oil, antifreeze, and waste oil. Other materials that are diverted from the main pit and stored onsite include clean wood/lumber, trees/shrubs, concrete, asphalt, compostable material, clean soil, and high-quality resalable items. Clean wood/lumber is stockpiled and chipped, trees/shrubs are stockpiled and burnt, concrete and asphalt are crushed onsite for resale, and compostable material and clean soil are used for cover in the main pit. Resalable items are stored in a neat row next to the trees/shrubs pile and include items such as peddle bikes, lawn mowers, desks, bricks, and lumber.

Curbside garbage and recycling pick-up is completed by third-party contractors who monitor the contents and volumes of the bins they collect. Any non/rejected recyclable material found after sorting is baled and disposed of in the WMF main pit.

The WMF accepts asbestos which is buried on-site in designated areas.

WMF ACCEPTED MATERIALS VOLUMES

A record of the types and volumes of waste and other materials collected are listed in Appendix B. These records also show which materials were disposed and which were diverted from the main pit at the WMF. Where available the 2024 waste volumes have been compared to the 2023 volumes to demonstrate year over year variances in waste and recycling streams.

WMF MAIN PIT VOLUMES

The volumes shown in Appendix B under Main Pit Volumes include all waste entering the main pit. The amount of waste disposed of in the main pit increased from 8,878 to 10,835.3 tonnes. The City retained Tetra Tech Canada. Inc (Tetra Tech) to update the annual airspace assessment. As of 2024 the estimated remaining airspace is estimated to be 595,770 m^3 in Cells 1 through 3 and 1,831,468 m^3 when cell 4 is included. the current working cells (cell 1 through 3) are expected to be full in 30 years. With the

construction of cell 4 the remaining life of the main pit changes to approximately 92 years.

GENERAL WASTE

General waste entering the main pit consists of sorted domestic waste and rejected recyclables, construction and demolition waste, and carcasses. Sorted domestic waste includes waste from the curbside residential waste collection program and sorted waste brought into the WMF from residential and non-residential customers. In 2024 there were 71 animal carcasses collected. No weight was recorded in the scale house software for animal carcasses.

The amount of general waste entering the main pit increased from 8,808 to 10,835 tonnes.

ASBESTOS

The amount of asbestos disposed of and buried in the main pit increased from 70 to 614 tonnes. In March of 2024 a fire at Quickfalls Collision Centre North Battleford resulted in a total loss to the building. The amount of asbestos disposed of from the cleanup resulted in the large increase of asbestos.

LEACHATE

The total volume of leachate pumped from the leachate collection well to the Wastewater Treatment Plant (WWTP) decreased from 5,238 m^3 to 3,658 m^3.

DIVERTED MATERIALS

The volumes/units shown in Appendix B under Diverted Materials include all materials diverted from the main pit.

SORTED CONSTRUCTION RECYCLABLES

Sorted construction recyclables consists of concrete, wood, metal, and asphalt. The amount of sorted construction recyclables decreased from 10,416 to 5722.6 tonnes.

ECO-CENTRE OIL/ANTIFREEZE

The amount of oil removed from the eco-centre increased from 10,800 to 12,700 litres.

The amount of antifreeze removed increased from to 400 to 1,400 litres.

11 drums of oil filters, 793 empty oil containers (20L pails), and 332 large garbage bags filled with empty oil jugs were removed.

HOUSEHOLD RECYCLABLES

The amount of household recyclables decreased from 550 to 543 tonnes.

COVER MATERIAL

Cover material consists of clean soil, compost, and vac truck clean-out.

The amount of cover material received increased from 14,141 to 14,751 tonnes. All compost received and processed in 2024 was used as cover material. No compost was sold or used off-site.

Vac truck clean-out increased from 246 to 988 tonnes.

COMPOST ANALYTICAL

On October 7, 2024 a composite sample of the WMF compost pile was collected and submitted to A & L Canada Laboratories of London, Ontario. The sample results were compared to the CCME guidelines for Compost Quality. Sample results are found in Appendix C.

Compost sampling results indicate that the 2024 WMF compost material was within the CCME guidelines for Category A – Unrestricted use.

OTHER RECYCLABLE MATERIAL

The WMF maintains stockpiles of recyclable materials that are used or held for processing elsewhere. The following materials were diverted from the Main Pit in 2024:

- 292 tires. Tires are collected by TW Trucking for recycling.
- 56 automotive batteries. Automotive batteries are sold for recycling.
- 12 tonnes of resalable items were sold for reuse.

COMPACTION

Daily compaction and cover activities are recorded in the Operator logbook at the WMF.

The latest compaction survey taken at the WMF was performed as part of the Airspace Assessment and Airspace Optimization completed by Tetra Tech. An Unmanned Aerial Vehicle (UAV) survey was completed on October 23, 2024 and was compared to the October 6, 2023 UAV survey. The landfill tonnage and the volumetric airspace

consumption between these two surveys was 11,323 tonnes and 14,476 m^3, resulting in a waste compaction rate of 0.78 tonne/m^3. The 2024 compaction rate increased from the 2023 rate of 0.65 tonne/m^3, however TetraTech noted that the 2024 number may be inflated from stockpiled cover placed in previous surveys.

MINISTRY OF ENVIRONMENT (MOE) COMPLIANCE

The WMF is required to comply with the conditions of the Permit to Operate and the approved Operations Plan. To maintain compliance the City is required to report annually on the following information that is not otherwise captured within sections of this report:

- Results of Inspections identifying:
  - Asbestos burial
  - Perimeter fencing
  - Landfill pit observations
  - Adequate signage
  - Standing water
  - Storm water storage pond depth and any storage pond activities (i.e., sampling and pumping to WWTP)
- A summary of unauthorized discharges
- Verifying the presence of records:
  - Dates of clean wood burns
  - Date and sign-off of annual review of Operations and Emergency response plans
- Summary of urgent/upset conditions.
- Discharge and Discovery Reporting

SUMMARY OF INSPECTIONS

The WMF is required to have weekly and quarterly inspections. The inspections capture information on the general condition of the WMF, an estimate of stockpiled diverted materials, storm water retention pond water levels, and the main pit conditions and practices.

In 2024 there were 52 weekly inspections completed. The findings of the inspections indicated that:

- Asbestos was noted as “buried in pit” in all inspections.
- Perimeter fencing was observed in good condition in 51 of 52 inspections, one inspection noted the fencing connected to the SE secondary access was

"sagging" from animals crossing over, WMF staff fixed the fencing before the next weekly inspection.
    - The SE secondary access gate was observed as being secured in all inspections.
- The landfill pit was observed as having "portable fencing in place" in all inspections.
- Signage was observed in good condition in all inspections.
- Standing water was noted on the site in the beginning of April. Samples were not taken as the standing water did not leave the site and was determined to be surface water from spring melt/seasonal rains.
- The storm water storage pond was noted to be below the freeboard threshold in all inspections.

UNAUTHORIZED DISCHARGES

There were no unauthorized discharges in 2024.

RECORD VERIFICATION

The City tracks information for the WMF in the scale house waste tracking program TRUX, in the Daily Cover Log, through regular inspections, in the electronic file system, and in the WMF Supervisors logbook.

Table 1B is generated using the records available in TRUX and provides the City with a record of all materials entering and diverted materials exiting the WMF. Leachate volumes are provided by the WWTP.

CLEAN WOOD BURNS

On November 27, 2024, the City conducted a clean wood burn.

OPERATIONS PLAN SIGN OFF

The Operations Plan was signed off on March 28, 2024. The Emergency Response Plan is included in the Operations Plan.

SUMMARY OF URGENT/UPSET CONDITIONS

In 2024 the WMF experienced five landfill intruder incidents afterhours between July 27th and August 16th. In all incidents, one to three individuals entered the facility by climbing over or crawling under the front gate. No property damage or facility equipment occurred. Items taken by the intruders included items from the resalable row and items

from the household garbage drop off bins. RCMP were called and an incident report was created with each break in.

In 2024 the WMF experienced three landfill fires. The first fire was on May 30th, a small battery fire in pit, WMF staff quickly extinguished the fire. The second fire was on October 18th, a laptop battery ruptured and caught fire from equipment driving over it, the laptop was moved to a clear location and the fire was extinguished. The third fire was on December 11th, during the drilling of a new groundwater monitoring well, landfill gas was released and inadvertently lit on fire from a nearby propane torch.

DISCHARGE AND DISCOVERY REPORTING

On November 30, 2023, CNB notified the two properties to the north of the WMF that a historical chloride plume identified in the 2021 historical discharge report is present on their properties. CNB will provide the landowners with copies of the annual groundwater monitoring report and will specifically notify the landowners of any significantly increasing chemical concentrations that exceed the Saskatchewan Environmental Quality Guidelines.

GREENHOUSE GAS EMISSIONS

The City does not have an estimate for the 2024 Green House Gas (GHG) emissions at the WMF at the time this report was created but does have an estimate to report for 2023. The City contracted Tetra Tech to estimate and summarize GHG emissions at the WMF. In Tetra Tech's "North Battleford 2023 GHG Report", the WMF emitted 12.753 kt of GHG in 2023 vs 12.673 kt in 2022. This estimate is above the Federal reporting threshold of 10 kt and was reported to Environment and Climate Change Canada.

GROUNDWATER MONITORING PROGRAM

Pinter & Associates LTD (Pinter) was contracted by the City to conduct the annual groundwater monitoring program at the WMF. On March 27, 2025, a copy of the Final 2024 Groundwater Monitoring report was forwarded to the Ministry of Environment. As part of the monitoring program, water samples are collected from eight (8) monitoring wells, the leachate collection well, and the storm water retention pond. Monitoring wells are inspected at the time of sampling for potential damage and securement. The monitoring wells are grouped according to their location relative to the main pit. Two wells are up-gradient (upstream of the groundwater flow), three wells are immediately down-gradient (downstream of the groundwater flow), and three wells are in a buried channel further down-gradient of the main pit.

The findings of the 2024 groundwater monitoring are presented below.

2024 GROUNDWATER MONITORING REPORT SUMMARY

CONDITION OF MONITORING WELLS

At the time of sampling all monitoring wells identified in the Permit to Operate were in good condition. Pinter noted all monitoring wells were protected by metal casing protectors and secure, BH521 was noted that it was secured with a locking-plug in absence of a locked casing protector.

GROUNDWATER ANALYSIS

Saskatchewan environmental quality guidelines (SEQG) were exceeded in monitoring wells BH501D, BH504C-r, BH505C, BH506B, BH508C, BH519, BH520r, and BH521.

BH501D exceeded the SEQGs for conductivity (4,180 uS/cm), total dissolved solids (4,620 ppm), sulphate (2,780 ppm), and sodium (272 ppm).

BH504C-r exceeded the SEQGS for total dissolved solids (1,980 ppm) and sulphate (952 ppm).

BH505C exceeded the SEQGS for conductivity (4,140 uS/cm), total dissolved solids (4,580 ppm), chloride (277 ppm), and sulphate (2,600 ppm).

BH506B exceeded the SEQGS for conductivity (2,180 uS/cm), total dissolved solids (1,980 ppm), chloride (215 ppm), and sulphate (647 ppm).

BH508C exceeded the SEQGS for conductivity (3,680 uS/cm), total dissolved solids (3,710 ppm), nitrate (3.26 ppm), and sulphate (2,270 ppm).

BH519 exceeded the SEQGS for conductivity (1,480 uS/cm), total dissolved solids (1,100 ppm), chloride (108 ppm), trichloroethylene (0.44 ppb), and vinyl chloride (2.94 ppb).

BH520r exceeded the SEQGS for conductivity (2, 710 uS/cm), total dissolved solids (1,900 ppm), chloride (313 ppm), sodium (222 ppm), chlorobenzene (1.36 ppb), trichloroethylene (1.74 ppb), vinyl chloride (1.52 ppb), and phenols (0.0024 ppm).

BH521 exceeded the SEQGS for total dissolved solids (1,900 ppm) and sulphate (722 ppm), and ethylbenzene (0.00311 ppm)

SURFACE WATER ANALYSIS

A sample was collected from the WMF storm water pond. The storm water pond exceeded the SEQG for TDS (512 ppm).

EXCEEDANCE ANALYSIS

Chloride can be used an indicator for landfill leachate contamination as chloride moves un-attenuated through the subsurface. Additionally, Pinter plotted general water quality parameters on trilinear diagrams to illustrate the different water types at the WMF and compare the water quality at each monitoring well and private wells to the Leachate Collection Well chemistry.

The data indicates that water type differs between wells up-gradient of the active pit, wells immediately down-gradient of the active pit, and wells further down-gradient of the active pit (in the buried valley channel). The low chloride and VOC concentrations in the downstream monitoring wells, suggest that chloride, sodium, and VOC's are likely attributed to the historic unlined landfill located on the site.

Monitoring well BH521 continues to demonstrate localized hydrocarbon impacts, however the only parameter to exceed the SEQG in 2024 was ethylbenze (0.00311 ppm). Previous sample results did not exceed the SEQG, however the SEQG for ethylbenzene decreased in 2024. The hydrocarbons are believed to be associated with improper used oil disposal that occurred in the past. Visible hydrocarbons have been decreasing annually through groundwater purging and the installation and removal of a hydrocarbon absorbent sock that is placed in the monitoring well.

In 2024 chloride concentrations in BH504C-r decreased from 140 to 94.3 ppm. Chloride concentrations in BH505C increased from 267 to 277 ppm. Chloride concentration in BH506B decreased from 257 to 215 ppm. Increasing trends in chloride concentrations at BH504C-r, BH505C and BH506B may indicate influence from the current engineered lined active cells or fluctuations in naturally elevated chloride concentrations. Additional monitoring of monitoring wells BH504C-r, BH505C and BH506B is required.

Surface water quality from the storm water retention pond was different then the leachate water quality and chloride concentrations were significantly lower than leachate (44.1 compared to 1,230 ppm respectively).

NEIGHBOURING DOMESTIC WELLS

Water chemistry at up-gradient domestic well KB1 and surface water from KB Dugout indicate that they are not influenced by groundwater from the WMF. Domestic well BB1, which is downgradient of the Site, does not have elevated chloride concentrations and is installed at a deeper elevation than the buried valley channel which indicates that BB1 has not been influenced by groundwater from the WMF.

CONCLUSION

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The City of North Battleford continues to work towards diverting more recyclable and reusable material from the main pit in 2025.

APPENDIX A: SITE MAP

SaskEnergy Gas Line (approx location)

GAS

SECONDARY SITE ACCESS

PROPANE TANKS

WHITE GOODS (REFRIGERANTS)

SAND PILE

COMPOST

GRAIN BAGS

CONCRETE STOCKPILE

CRUSHED CONCRETE PILES

METAL PILE

STORM WATER RETENTION POND

LEACHATE WELL/ LIFT STATION

MAIN PIT

OFFICE/ CHANGE ROOM

HOUSEHOLD GARBAGE DROP-OFF/ BLUE BIN

CLEAN WOOD

ASPHALT STOCKPILE

EQUIPMENT LEAN-TO/ DIESEL TANK

CONTRACTOR GARBAGE DROP OFF/BLUE BIN

TIRES

ASH DUMPSTER

RESALABLE ITEMS

TREES/ SHRUBS

CRUSHED ASPHALT PILES

VAC TRUCK CLEANOUT

ECOCENTRE

SOIL FILL

SCALE HOUSE

USED COOKING OIL DUMPSTER

MAIN GATE ENTRANCE

100mm HDPE FORCE MAIN

WEARING ROAD

2101 - 130th Street

SW-15-44-16-3

Emergency Response Equipment

- Fire Extinguisher
- First Aid Kit
- Spill Kit
- Automated External Defibrillator (AED)
- Muster Point 1
- Muster Point 2

North Battleford

CITY OPERATIONS

DATE REVISED	BY
12/04/2024 - UPDATED -	AJF

DESIGNED BY: CNB

CHECKED BY: CNB

JOB NO.:

DATE: Jan. 26, 2022

SCALE: NTS

PAGE: 1 / 1

PROJECT: City of North Battleford Waste Managementy Facility
Site Plan/Emergency Response Equipment Location

APPENDIX B: TABLES

Table 1B - WMF ACCEPTED MATIERALS VOLUMES			
Main Pit Volumes		**Total**	**Unit**
GENERAL WASTE		**10220.9**	tonne
	Sorted Domestic and Rejected Recylables	6436.3	
	Construction and Demolition	3784.6	
	71 Small Animal Carcasses collected in 2024 (no weight entered)		
ASBESTOS		**614.4**	tonne
		614.4	
	Total	**10835.3**	
COVER MATERIAL		**14751.2**	tonne
	Clean Soil	13538.8	
	Compost	966.4	
	Vac Truck Clean-Out	246.0	
	Total Main Pit Volume	**25586.5**	tonne
DIVERTED MATERIALS			
SORTED CONSTRUCTION RECYCLABLES		**5722.6**	tonne
	Concrete, wood, metal, asphalt	5722.6	
ECO-CENTRE OIL/ANTIFREEZE		**14100.0**	L
	Oil	12700.0	
	Antifreeze	1400.0	
HOUSEHOLD RECYCLABLES		**542.6**	tonne
	Curbside Program	503.3	
	WMF	39.3	
OTHER RECYCLABLE MATERIAL			
	Resalable Items Outbound ($125/tonne - $6 minimum)	**12.0**	tonne
	Batteries Outbound	**71.0**	count
	Tires	**292.0**	count
LEACHATE[1]		**3657.6**	m^3
		3657.6	

[1] Leachate is collected from the Main Pit through the Leachate Collection System and pumped to the Wastewater Treatment Plant for treatment.

APPENDIX C: COMPOST ANALYTICAL

Appendix C: Compost Analytical				
Parameter	City of North Battleford WMF Compost Sample Results (ug/g)	CCME Guidelines		
		Category A	Category B	
		Max Concentration within Product (mg/kg dry weight)	Max Concentration within Product (mg/kg dry weight)	Max Cumulative Additions to Soil (kg/ha)
Arsenic	3.89	13	75	15
Cobalt	4.07	34	150	30
Chromium	17.02	210	**	**
Copper	12.76	400	**	**
Molybdenum	1.5	5	20	4
Nickel	8.43	62	180	36
Selenium	<1	2	14	2.8
Zinc	53.41	700	1850	370
Cadmium	<1	3	20	4
Mercury	<0.10	0.8	5	1
Lead	7.34	150	500	100
**	= Limits for copper and chromium are not established in the Trade Memorandum.			