



Business Case

2024 Dawson Creek and Taylor Closed Landfill Water Monitoring Well Installations

Executive Summary

Business Need

To install additional groundwater monitoring wells including four at the Taylor Closed Landfill and five at the Dawson Creek Closed Landfill following qualified professional recommendations made by Matrix Solutions as part of the 2023 Water Monitoring program.

Expected Outcome

Taylor Closed Landfill

- Install new monitoring wells in 4 locations.
- Collect and test three sediment samples along the Mason Coulee upgradient, cross gradient, and down gradient of the landfill footprint.

Dawson Creek Closed Landfill

- Decommission monitoring wells DC-BH101 and DC-98 in accordance with BC ENV regulatory procedures.
- Install new monitoring wells at 5 locations.
- Complete a professional survey of all monitoring wells on the site.

Recommendation

That \$80,000 be allocated in the 2024 Regional Solid Waste Capital Budget for the installation of four new monitoring wells at the Taylor Closed Landfill and five new monitoring wells at the Dawson Creek Closed Landfill following qualified professional recommendations made by Matrix Solutions as part of the PRRD's 2023 Water Monitoring Program.

Justification

As part of the 2023 Water Monitoring Program, Matrix Solutions has identified that additional monitoring wells are required at both the Taylor and Dawson Creek Closed Landfills to provide additional information of the background water quality coming into and leaving the area of each landfill.



The Team

Team Member	Role
General Manager of Environmental Services	To provide overall program oversight and provide direction and support for implementation, policy and procedure, procurement policies, and budgetary considerations.
Solid Waste Manager	To provide a program outline, work with regulatory bodies to ensure compliance, and oversee the implementation of the project through contract management and operational oversight.
Solid Waste Foreman	To oversee the progress of the project and coordinate with the Matrix Solutions.
Solid Waste Coordinator(s)	To update/create site operation plans to reflect the addition of the equipment.
Procurement Officer	Assist with contracts and purchases.
Matrix Solutions	To perform the necessary work required for completing the project and provide a construction summary report.

Business Need Definition

Problem Statement

Taylor Closed Landfill

The existing well network does not adequately allow for tested water sample parameters to be tracked horizontally or vertically on the site. Additional wells are required to ensure that ground water is not being affected by the landfill.

Dawson Creek Closed Landfill

Due to damage, the current background monitoring wells are not able to be sampled. Without background monitoring wells, data is unable to be collected and checked against water quality down gradient of the landfill.

Impacts

Installation of the additional wells will assist the PRRD's Qualified Professional (QP) determine if elevated chloride parameters experienced in the 2023 program are existing prior to the landfill footprint or as a result of an interaction with leachate within the landfill. Failure to install the wells will lead to gaps in the data being evaluated by the QP which in turn will prevent the QP from being able to determine if the landfill is affecting ground water quality.



Project Overview

Project

2024 Dawson Creek and Taylor Closed Landfill Water Monitoring Well Installations

Project Description

Taylor Closed Landfill

Based on the water quality results from the 2023 groundwater and surface water monitoring program, Matrix identified several high, medium, and low priority data gaps. The objectives of the supplemental program are to laterally and vertically delineate chloride concentration exceedances in monitoring well TAY-MW13-102 and determine if the Mason Coulee is affected by elevated chloride concentrations in the groundwater unit.

To achieve these objectives, Matrix will complete the following:

1. Complete a pre-ground disturbance package including BC One Call and third-party line locates.
2. Repair the access road into site and install a temporary crossing for the drilling rig.
3. Advance three boreholes to laterally delineate chloride concentration exceedances in groundwater at monitoring well TAY-MW13-102 to a maximum depth of 9 m below ground surface (bgs).
4. Advance one borehole to vertically delineate chloride concentration exceedances in groundwater at monitoring well TAY-MW13-102 to a maximum depth of 21 m bgs.
5. Collect three sediment samples along the Mason Coulee upgradient, cross-gradient, and downgradient of the landfill footprint.
6. Submit select soil samples to ALS laboratory in Fort St. John, British Columbia, and analyze for CoCs.
7. Coordinate McElhanney to conduct a professional survey following installation of the groundwater wells.
8. Complete a summary report documenting the results of the program.

Dawson Creek Closed Landfill

Based on the results of the 2023 groundwater and surface water monitoring program, the objectives of the supplemental monitoring well installation program at the closed Dawson Creek landfill are to determine background groundwater quality and determine the risk to nearby receptors based on the potential leaching of impacted groundwater towards Dawson Creek.

To achieve these objectives, Matrix will complete the following:

1. Complete a pre-ground disturbance package including BC 1 Call and third-party line locates.
2. Decommission monitoring wells DC-BH101 and DC-98-5 in accordance with BC ENV regulatory procedures.
3. Advance a borehole to a maximum depth of 12 m bgs in an area north of the landfill footprint to act as a background location. The borehole will be completed as a nested pair to assess shallow (~4.5 m bgs) and deeper (~12 m bgs) groundwater quality.
4. Advance a borehole to a maximum depth of 6 m bgs west of the landfill footprint to aid in determining groundwater flow direction and water quality west of the landfill footprint. The borehole will be completed as a shallow groundwater monitoring well.
5. Advance two boreholes to a maximum depth of 6 m bgs to laterally delineate groundwater quality impacts identified in DC-19-1 and DC-98-1 which may be associated with leachate migration. The boreholes will be completed as shallow groundwater monitoring wells.



6. Advance a borehole adjacent to DC-19-1 and DC-98-1, respectively, to a maximum depth of 12 m bgs to vertically delineate groundwater quality impacts and aid in future risk assessments.
7. Complete a professional survey of all monitoring wells under the supervision of Matrix.
8. Complete hydraulic conductivity measurements using a slug or bailer recovery method on select monitoring wells.
9. Complete a supplemental site investigation summary report documenting the results of the program.

Project Budget

Department: Environmental Services

Division: Environmental Services

Function: 500 – Regional Solid Waste

Capital Expenses	2024	2025	2026	2027	2028	Summary
Dawson Creek Closed Landfill	\$40,000					\$40,000
Taylor Closed Landfill	\$40,000					\$40,000
TOTAL	\$80,000	-	-	-	-	\$80,000

Capital Funding Sources	2024	2025	2026	2027	2028	Summary
Requisition	\$80,000					
TOTAL	\$80,000	-	-	-	-	\$80,000

Operational Expenses	2024	2025	2026	2027	2028	Summary
Dawson Creek Closed Landfill Monitoring Costs	\$19,425	\$24,280	\$24,280	\$25,000	\$25,000	\$117,985
Taylor Closed Landfill Monitoring Costs	\$9,800	\$12,250	\$12,250	\$12,620	\$12,620	\$59,540
TOTAL	\$29,225	\$36,530	\$36,530	\$37,620	\$37,630	\$177,525

Operational Funding Sources	2024	2025	2026	2027	2028	Summary
Requisition	\$29,225	\$36,530	\$36,530	\$37,620	\$37,630	\$177,525
TOTAL	\$29,225	\$36,530	\$36,530	\$37,620	\$37,630	\$177,525

Project Goals and Objectives

To remain in compliance with landfill permits.



Project Performance Indicators

1. Costs do not exceed project estimates.
2. Sampling new wells included in the 2024 Water Monitoring Program.

Assumptions

1. Matrix Solutions can be utilized to perform the work.
2. Access to the site is not limited.
3. Ground disturbances will not take place within 5m of any underground facilities.
4. Costs of installation and professional oversight will be within the budgeted amount.

Constraints

1. Approval(s) and timeline for turnaround.
2. Contractor availability.
3. Inadequate funding.
4. Delays in installation occur due to weather.

Project Milestones

March 2024	- 2024 Budget Approval
April 2024	- Increase Matrix Contract and Obtain Contract Amendment Approvals
August 2024	- Work Complete

Strategic Fit

Asset & Infrastructure Management

Cost Benefits Analysis

The project aligns with the PRRD's permitted requirements and provide will a greater understanding of elevated parameters seen in the 2023 program and potential liabilities.

Alternatives Reviewed

Continue to monitor existing network for the Taylor Closed Landfill as meets the Permitted requirements. Existing data gaps would remain which would make determining the origin of potential leachate parameters difficult. Ground water well testing allows for a proactive approach to identifying changes in the composition of ground water and the potential impact of leachate to surface or groundwater sources.

Approvals

Regional Board Approval Resolution