

AtkinsRéalis



Feasibility Report

City of Grande Prairie

March 5, 2026

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CITY OF GRANDE PRAIRIE RESERVOIR FEASIBILITY STUDY

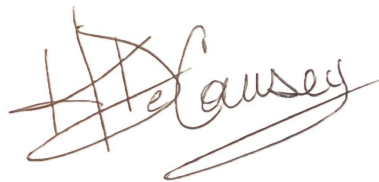
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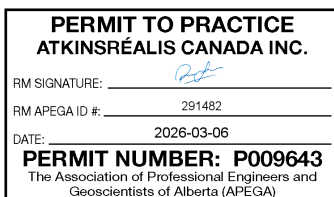
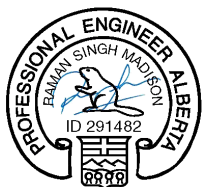
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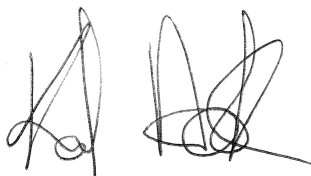


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Executive Summary

AtkinsRéalis Canada Inc. (AtkinsRéalis) was retained by the City of Grande Prairie (the City) to conduct a feasibility review of five potential options for future upgrades and development of the Bear Creek Reservoir Area, including the Bear River Control Structure (BRCS). This report represents the conclusion of the 90% feasibility phase of the project.

Summarized within are the developed concepts for each of the five proposed options including sediment management, flood protection, and amenities. Additionally, AtkinsRéalis has performed a Gap Analysis and determined what studies, and assessments are required for each of the options to be advanced from a feasibility phase to a design, tender and construction phase. Finally, AtkinsRéalis has prepared preliminary cost estimations for each of the options-based information collected, and previous experience with similar projects. As a part of this feasibility study, AtkinsRéalis coordinated and participated in indigenous, stakeholders, and public engagement to gather feedback for the City on the proposed options, and to assess interest.

The Bear Creek Reservoir, Dam, and Control Structure are owned and operated by the City. The structures of interest are located within the City's corporate boundaries and are located in the North West quadrant of the City. The reservoir is encompassed by Muskoseepi Park and is a prominent feature of downtown Grande Prairie. Key infrastructure and institutions such as the Grande Prairie Museum, Northwest Polytechnic, the Rotary Park Campground, and several residential areas surround the reservoir.

The options presented in this report are proposed as solutions to the issue of excess sedimentation and accumulation of sediment in the reservoir. The goal of this report is to provide the City of Grande Prairie information to determine a long-term management strategy for the BRCS and Reservoir. Currently the reservoirs storage capacity in the event of a flood is virtually zero. This creates a potential hazard for the City and downstream stakeholders. Additionally, the infilled reservoir has had reports of a nuisance odors making the area less desirable for use by the community.

The options presented in this report are summarized as follows:

- **Option 1: Maintain the Bear River Control Structure** – This option presents the work required to maintain the Bear Creek Reservoir Dam and BRCS until the end of their design life (Approximately 30 years). The option includes the addition of a sediment management pond in the North portion of the reservoir to settle sediments by reducing the inflow velocity and provide a singular location for sediments to be collected. This sediment management pond will require ongoing dredging. Additionally, a small collection pond is included upstream of the BRCS to provide the City with some additional flood storage for increased flood control. Excavated sediment could be reused and graded within the reservoir footprint. Amenities such as parks, a revamped lookout point and parking were added as a part of the concept to provide additional benefit to the community.
- **Option 2: Maintain the Bear River Control Structure & Remove Some of the Accumulated Sediment** – This option presents the work required to maintain the Bear Creek Reservoir Dam and BRCS until the end of their design life (Approximately 30 years), and remove the sediment accumulated in the reservoir to an off-site location. The intent with this option is to permanently store water behind the dam and remove the sediments to a level below the dam sill. The estimated volume of sediments that would be required to be removed is 487,000 m³ of material. Based on the results of the preliminary investigation conducted as a part of this feasibility report, the sediments are not contaminated and are fit for storage and reuse. Sediment management would be achieved through the excavation of a sediment collection pond upstream of the new reservoir. The sediment collection pond works by reducing inflow velocities, thus settling suspended sediments and providing a singular location for sediments to be collected. The sediment management pond will require ongoing



dredging. Amenities such as parks, a revamped lookout point and parking were added as a part of the concept to provide additional benefit to the community.

- **Option 3: Partial Removal of the BRCS** – This option outlines the requirements for the partial removal of the Bear Creek Reservoir Dam. The options include the removal of the BRCS and the North Earth Embankment of the dam. Removal of the dam and BRCS would require the re-naturalization of bear creek within the reservoir footprint and would allow the City to reclaim a portion of the reservoir area to construct value added features such as parks, new walking trails, and other amenities. The BRCS would be replaced with a gabion drop structure to allow downstream flow and fish passage, and a pedestrian bridge will be required to reconnect the existing walking trails. Sediment management would be achieved via the naturalized channel being designed to maintain sufficient velocity to reduce deposition of sediments. Should the flow rate in the channel be insufficient to reduce sedimentation, there is the option of constructing a small sediment control in the northern portion of the reservoir area.
- **Option 4: Complete Removal of the BRCS** – This option is similar to Option 3 presented above, but with the additional removal of the South Bear Creek Reservoir Dam Earthen Embankment and will result in the full removal of the reservoir. The removal of the south embankment presents an opportunity to the City to expand the existing festival grounds into the new available park space provided by the re-naturalization of the Bear Creek. All other features are the same as Option 3.
- **Option 5: Complete Restoration of the BRCS and Full Dredging of the Reservoir** – This option considered the requirements to fully restore the Bear Creek Reservoir to its historical size. The intent with this option is to permanently store water behind the dam and remove sediments to a level below the dam sill. The estimated volume of sediments that would be required to be removed is 700,000 m³ of material. Based on the results of the preliminary investigation conducted as a part of this feasibility report the sediments are not contaminated and are fit for storage and reuse. Sediment management would be achieved through the use of a submerged sediment basin and berm. The berm would be designed to settle sediments upstream of the reservoir and provide storage until the sediments could be removed regularly through dredging. Similar to Option 2 above, amenities such as parks, a boat launch, and an upgraded observation point could be added to provide additional value to the community.

The objectives of this feasibility report are as follows:

- To summarize the feedback received from both the 30% and 90% engagement sessions.
- To summarize the findings of the geotechnical and environmental investigations completed on May 20, 2025.
- To present the revised concept plans and provide context on the proposed sediment management, flood control, core requirements, and amenities of each of the five options considered.
- To provide preliminary cross sections of the reservoir concepts to the City.
- To present the required assessments and studies to bridge information gaps identified in the 30% feasibility phase.
- To provide scopes of work for the proposed assessments.
- To present cost estimates for each of the proposed options and identify potential sources of funding for the City.



Engagement Results

Engagement opportunities were held leading up to the final 30% and 90% feasibility studies to present fulsome options while remaining open to refinement based on feedback. 30% engagement resulted in the identification of an additional option and several public and environmental amenities being incorporated into the options.

While few changes were made to the 90% options, important feedback for decision-makers was received. Participants preferred options featured larger open water expanses as found in Options #2 and #5. Preferences for decision-making mildly emphasized community and environmental benefits over flood and erosion control, and cost. Water based recreation and habitat enhancements were highly valued as well as limiting change and costs. Going forward, ideas for future engagement were communicated to the City by participants to meet community needs.

Costs and Funding

AtkinsRéalis analyzed several potential funding opportunities for alignment with the five options. Five of the funding opportunities do not require partnering with another agency or community group, while another five do have this requirement. The applicability and potential for success of these funding opportunities can be strengthened by fine-tuning the preferred reservoir option to emphasize the objectives and criteria outlined by each funding agency. For example, adding a partner agency, recreational benefits, ecological restoration, flood mitigation, etc. can increase the potential for successful granting.

Currently, Option #3 has the strongest overall fit to the most grant programs, followed closely by Options #2 and #4. However, Options #1, #2, and #5 may qualify for greater amounts of grant money.

The estimated costs for each of the options is developed in detail in **Section 7** of this report. For each option considerations were made for assessments and engineering, design, environmental concerns, and construction. The presented costs assume a remaining service life of 30 years for the BRCS and are intended to take the structure to the end of its design life. A summary of the estimated costs is as follows:

Option	Pre-Design Costs	Design Costs	Maintenance (over 30 years)	Construction	Possible Available Funding
Option 1: Maintain the Bear Creek Reservoir & Control Structure	\$795,000	\$420,000 - \$570,000	\$13,000,000- \$15,000,000	\$7,900,000	\$3.0M – \$11.0M
Option 2: Maintain the Bear Creek Reservoir & Control Structure, and Remove the Accumulated Sediment		\$460,000 - \$610,000	\$13,000,000 – 18,000,000	\$20,600,000	\$3.3M – \$13.0M
Option 3: Partial Removal of the Bear Creek Reservoir Dam		\$530,000	\$13,020,000	\$16,389,000	\$1.5M – \$3.0M
Option 4: Full Removal of the Bear Creek Reservoir Dam		\$530,000	\$13,020,000	\$17,539,000	\$1.3 M – \$ 2.4 M
Option 5: Restoration of the Bear Creek Reservoir		\$460,000 - \$610,000	\$13,000,000 – 18,000,000	\$27,100,000	\$3.3M – \$13.0M



1 Introduction

AtkinsRéalis Canada Inc. (AtkinsRéalis) has been retained by the City of Grande Prairie (the City) to undertake a feasibility study for the long-term plan for the Bear River Control Structure (BRCS) and the associated Reservoir (collectively referred to as the “Bear Creek Reservoir”). This report should be read in conjunction with the 30% Feasibility Study Report written by AtkinsRéalis (AtkinsRéalis, 2025). All of the assumptions made for the options presented can be found in the 30% Feasibility Study Report.

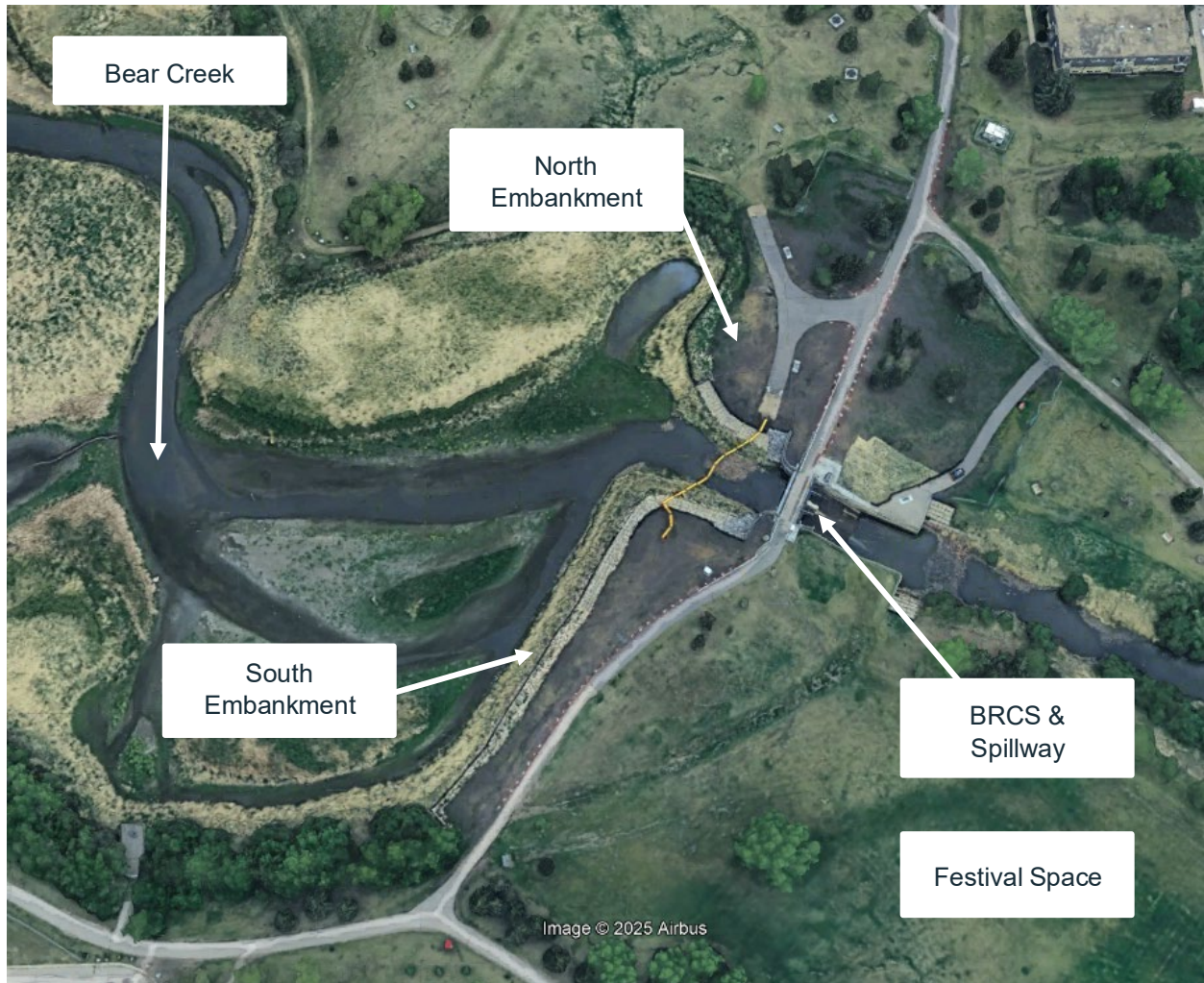


Figure 1-1: Site Overview

The detailed scope of work can be found in [Appendix A](#) of RFP-2024-95 (City of Grande Prairie, 2024). The RFP required feasibility review for the four design options developed by the City plus an additional Option #5 conceptualized during the review stage, outlining different long-term plans (30-year) for the BRCS and associated reservoir.



The options discussed in this report are as follows:

- Option 1 – Maintain the Bear River Control Structure (BRCS)
- Option 2 – Maintain the BRCS and Remove Sediment
- Option 3 – Partial Removal of the BRCS
- Option 4 – Complete Removal of the BRCS
- Option 5 – Maintain the BRCS and Restore the Bear River Reservoir

During the 30% review stage, a review of all available background information was completed by the project team, as well as considerations for stakeholder input from the indigenous and stakeholder sessions held in Grande Prairie, Alberta on March 19, 2025. The scope of work for this report is as follows:

- Further develop and refine the options initially conceptualized in the report titled *City of Grande Prairie Reservoir Feasibility Study – 30% Engineering Report* (AtkinsRéalis, 2025);
- Address and incorporate comments and concerns from indigenous, stakeholder, and public engagement sessions held in Grande Prairie during 30% review stage (March 19, 2025) as well as the current 90% stage (July 24th, 2025);
- Present the findings of the reservoir site investigation conducted on May 20, 2025;
- Refine option concepts and make changes based on feedback received;
- Refine scopes of work for all recommended pre-design, and design assessments;
- Refine the predicted costs for each option; and
- Further explore funding and remediation partnerships available to each option;

This report presents the findings, outcomes and conclusions for the scope of work at the 90% project feasibility stage.



2 Indigenous, Stakeholder, & Public Feedback

2.1 30% Engagement

Prior to the completion of the 30% report, engagement was conducted to gauge support of the four options (identified in the original RFP) under consideration and gain insight as to what would make the options more supportable. It should be noted that Option #5 was developed after the engagement sessions and was therefore not included in the ranking or feedback exercises.

There were three invitation-only events held on March 19, 2025, at the Grande Prairie Museum: an Indigenous event, and two stakeholder events. 46 participants representing 21 affiliations attended the events or submitted feedback afterwards. AtkinsRéalis led the events with support from the City.

As part of the feedback, participants were asked to rank the options as part of a dotmocracy exercise and on feedback forms. Two options were clearly favoured (Options 3 and 2) whereas two received significantly less support (Options 1 and 4).

Going forward, participants noted support for open water areas, riparian restoration, an outdoor classroom, increasing recreational potential, minimizing overall costs, addressing sedimentation, addressing flooding, improving water quality, and enhancing habitat. During the group discussions, participants noted the difficulty in fully evaluating the options in the absence of studies to answer their questions.

The engagement process and feedback were presented in detail in the 30% feasibility study.

2.2 How Feedback at 30% was Used

The feedback gained at the 30% stage was used to develop the options for the 90% feasibility study stage. New design features and information included:

- A new option (5) to represent fully restoring the reservoir to its original state;
- Added recreational features in some of the options such as an improved observation area, access from the campground to the park, extended festival grounds, new trails, and new canoe launch;
- New picnic areas and parking for greater accessibility to the waterfront;
- Maintaining areas where existing vegetation can mature in some options;
- Updated cost estimates and applicability of grants; and
- Updated analysis of the benefits of each option.



2.3 90% Engagement

Engagement prior to the 90% feasibility report was conducted by the City using draft 90% content provided by AtkinsRéalis. The City utilized an online engagement platform to inform the public of the five options under consideration. The platform collected feedback using a survey (68 participants) and question forum (17 participants). One in-person public engagement session was held and attracted 20 participants. The City produced a “what we heard” report to present the process and results. The City engagement report can be found in [Appendix B](#).

Key information from the online engagement platform for decision-making includes:

- Factors in choosing an option that were most important to participants (51) were ranked as follows:
 1. Community Benefits
 2. Environmental Benefits
 3. Flood & Erosion Control, and lastly
 4. Cost
- The more preferred options by participants (54) were:
 1. Option 5: Restoration of the Bear Creek Reservoir
 2. Option 2: Maintain the Bear Creek Reservoir & Control Structure, and Remove the Accumulated Sediment
 3. Option 1: Maintain the Bear River Control Structure
 4. Option 3: Partial Removal of Bear Creek Reservoir Dam
 5. Option 4: Full Removal of Bear Creek Reservoir Dam

The preferences for the options changed from the engagement at 30% to 90% (see **Table 2-1**) with Options 5 and 2 having the highest overall level of support in comparison to the other options.

Table 2-1: Option Preferences

Preference	30% Feasibility (Approximately 42 In-person Dotmocracy Participants)	90% Feasibility (54 Online Survey Participants)
Most preferred option	3	5
	2	2
	4	1
Least preferred option	1	3
		4

2.4 Using Feedback from the 90% Stage

As identified in the preceding section, participants in the 90% feasibility engagement ranked their key criteria and preferences for decision-making. The City also summarized key themes and feedback from the online engagement. Most of the summarized outcomes are consistent with the preference rankings of the benefits and Options 1 to 5.



Preferences were communicated for:

- Water based recreation and the community/tourism point of focus associated with a large open water reservoir (which is consistent with Options 2 and 5);
- Habitat and ecosystem improvements including fish passage and migratory bird habitat;
- A low cost/cost effective approach (which is inconsistent with the benefit rankings);
- Limited change (which is most consistent with Options 1 & 2);
- Effective off-site reuse of sediments;
- Maintenance of Borstad Hill and festival space (which is consistent with options 3 & 4);
- A wide variety of community amenities;
- Dissuading encampments; and
- Reducing fire, flood, mosquito breeding, and erosion risks.

One additional option was identified: keep the dam for 30 years, then allow the river to return to a more natural state while leaving the existing sediment undisturbed (low intervention).

At the 90% feasibility stage, none of the feedback received is directly related to changes to the design of the options presented.

Going forward, the preferences communicated should be applied to the option that is ultimately selected, such as maximizing cost effective community and environmental benefits.

As with the 30% feasibility engagement process, feedback was received about engagement itself.

Preferences were communicated for:

- Transparency related to costs (including cost comparisons), timelines, and how they relate to a long-term vision;
- Meaningful Indigenous engagement;
- Timely communication;
- On site signage to promote engagement;
- Site tours;
- Continued online options for giving feedback; and
- More communication about the studies that will be needed and how they will be used in decision-making.



3 Investigation

On May 20, 2025, AtkinsRéalis conducted a site investigation at the Bear Creek Reservoir. The investigation consisted of eight test pits with the aim of observing and identifying stratigraphy and composition of the deposited sediments in the reservoir. **Figure 3-1** below shows the locations of the test pits. Summary tables of the soils encountered in each of the test pits along with photos can be found in [Appendix C](#) of this report. In total 16 grab bags of samples were collected for the following geotechnical and environmental testing:

- Grainsize distribution
- Moisture content
- Atterberg limits
- Metals and Salinity in Soil
- Available NO₃
- BTEX (Soil Quality)
- Moisture Availability
- Sulfur Availability

A summary of the test results can also be found in [Appendix C](#).



Figure 3-1: Investigation Layout



3.1 Observed Conditions

During the site visit the following observations were made on the conditions within the reservoir:

1. During the visit, no odour from the sediments was detected.
2. The sediment piles are well vegetated with long grass, bushes and small trees.
3. The inflow into the reservoir consisted of a small stream which collected behind the BRCS and flowed over the spillway.
4. Sediments were found to be very wet and test pits filled with water quickly.
5. The thickness of the sediment layer over top of native soil was found to be between 0.5 m – 1 m thick on the North Side of the reservoir, and between 0.8 m – 1.2 m thick on the South Side of the reservoir. The test pits only went 2m below the surface. A full drilling program is required to determine the full extent of the of the sediments.
6. Sediments were stable enough for a mini excavator to walk on without danger of sinking.
7. Birds such as eagles, ravens, swallows and other small birds were observed in and around the reservoir.
8. The reservoir banks appeared to be instable condition and showed no signs of slope stability issues such as tension cracks or sloughing.

Photos of the site visit including images of the test pits can be found in [Appendix C](#) of this report.

3.2 Geotechnical Lab Testing Results

The samples collected during the investigation were sent to a geotechnical lab in Grande Prairie for analysis. **Table 3-1** below summarizes the results of the testing.

Table 3-1: Results of the Geotechnical Lab Testing

Sample No.	Soil Type	Depth (m)	Moisture (%)	% Sand	% Silt	% Clay	PL	LL	PI	USCS Classification
TP-01	Silt Deposits	0.4	56.2	13.4	49.0	37.5	26	65	39	CH
TP-02	Silt Deposits	0.6	42.9	29	36.8	34.2	-	-	-	-
TP-03	Clayey Silt	0.9	51.5	15.8	49.3	34.8	23	49	26	CL
TP-04	Silty Deposits	0.6	60.9	7.3	49.3	43.4	-	-	-	-
TP-05	Silty Deposits	0.3	48.9	15.8	42.0	42.2	-	-	-	-
TP-06	Silty Deposits	0.5	47.3	2.3	57.6	40.0	19	55	36	CH
TP-07	Silty Deposits	0.5	41.2	33.6	36.7	29.6	17	39	22	CL
TP-08	Silty Deposits	0.6	49.4	33.6	26.7	29.6	-	-	-	-



The detailed testing results can be found in [Appendix C](#) of this report. Generally, the reservoir stratigraphy can be described as clayey silt and sand deposits overlaying a layer of black silty clay. The observed stratigraphy was consistent between all eight test pits. **Figure 3-2** below shows TP-08 and provides a good overview of the observed conditions. It is our opinion, that the overlaying brown coloured soil may be the sediments that have been deposited in the reservoir, and the black coloured silty clay may be the native soil of the reservoir bottom. However, these conclusions will need to be confirmed by a more detailed geotechnical drilling program. The test pitting would suggest that the build up at the initially assumed 5 m build up of sediment could be an over estimation. The test pitting suggests that the deposited material at the bottom of the reservoir could be between 0.5 m – 1 m thick. This will need to be confirmed by further lab testing and deeper investigations.

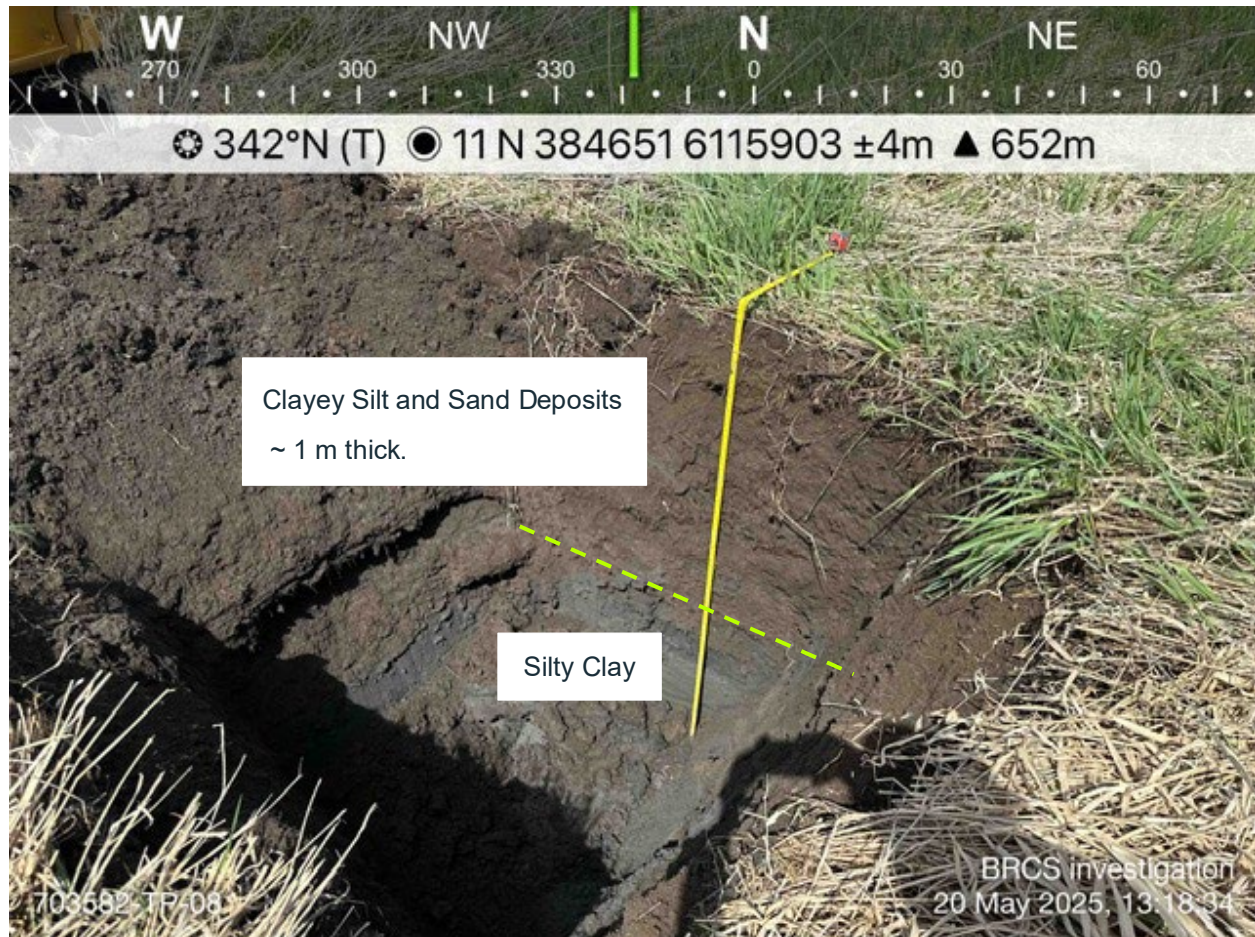


Figure 3-2: Typical Test Pit Stratigraphy

3.2.1 Slope Stability Modeling

As part of the investigation and assessment of the soils present in the Bear Creek Reservoir, and to assist in better understand the possibility of reusing the reservoir sediment, we have performed slope stability modeling based on assumptions made from the developed concepts (AtkinsRéalis, 2025), previous Dam Safety Review (DSR) reports (SNC-Lavalin, 2020), and the previous Golder report (Golder Associates, 2014).



From the results of the lab testing, and using empirical relations (Ameratunga, Sivakungan, & Das, 2016). The models were developed in GeoStudio 2023 Version 23.1.2.11. We utilized the available LiDAR data from the City of Grande Prairie to construct accurate cross sections. Additionally, strength values for the clayey silt were taken from the 2021 DSR (SNC-Lavalin, 2021).

The cross section of the reservoir selected for the analysis is shown in **Figure 3-3** below.



Figure 3-3: Slope Stability Cross Section

Material properties used in the modeling are summarized in **Table 3-2** below. Due to the lack of available information on the shear strength of the silty deposits found in the reservoir, the assumption has been made that the sediments will likely be near their residual shear strength. This would particularly be the case were any of the sediments to be reworked and used in flood berms and slope grading.

Table 3-2: Slope Stability Material Properties

Material	Unit Weight (kg/m ³)	Effective Friction Angle, Φ' (°)	Cohesion, C' (kPa)
Silty Deposits	19	16 - 18	10
Clayey Silt	20	30	0

Based on the assumptions adopted for the analysis, the existing slopes are considered stable, with Factors of Safety (FoS) exceeding two for both the north and south banks. These results align with field



observations made during the investigation, where no indications of slope instability were noted. After confirming the stability of the existing banks, the model was refined to assess the steepest feasible regrading of the reservoir slopes with the placement of silty deposits. Given the uncertainty in the material properties of these deposits, a sensitivity analysis was performed on their friction angle. The analysis indicates that the steepest slope that maintains a satisfactory FoS of 1.5 is 5H:1V, which is consistent with the findings reported by Golder Associates (2014). A summary of these results is provided in Table 3-3.

Table 3-3: Slope Stability Results

Bank	Natural Slope FoS	$\Phi' = 16^\circ$			$\Phi' = 18^\circ$		
		5H:1V	4H:1V	3H:1V	5H:1V	4H:1V	3H:1V
North Bank	2.50	1.61	1.41	1.131	1.63	1.44	1.01
South Bank	2.20	1.69	1.39	1.24	1.73	1.38	1.20

It should be noted that these results do not by any means constitute a design analysis, and should be taken as preliminary analysis. We recommend a detailed investigation of the reservoir bottom, side slopes, and dam embankment prior to the selection and design of any of the concepts contained within this report. **Section 6** of this report defines the required scope of work for any future geotechnical instigation.

3.3 Initial Soil Sampling Results: Considering Contamination

During the initial geotechnical materials testing eight soil samples were taken to analyze for local contamination and to detail the chemical properties of the soil. This was done in conjunction with the geo-technical test pitting (see **Figure 3-1** for Locations and see **Table 3-1** for Soil Types).

The analytical results from these samples can be found in [Appendix C](#).

Based on these initial analytical samples that were taken as conglomerate samples in each test pit that was excavated as part of the geo-technical materials testing it appears that there was no significant contamination in any of these areas. Although there are some high Sulphate, Electrical Conductivity and Soil Absorption Ratio results in the sampling an accredited “Contaminated Sites Approved Professional” (CSAP) should be able to advise the City on what needs to be done in each design scenario to allow some or all of the materials to be left on site as part of the final design.

It is advised that more sampling be conducted before an end use for the soil within any of the excavation zones is decided. An accredited CSAP will be able to suggest the best use for the soils when considering the guidelines and the Projects design thesis.



4 Option Summary

Utilizing the gathered information from the investigation conducted and the engagement sessions, the five options were developed into concepts that meet the requirements set out by the City in the RFP (City of Grande Prairie, 2024). The concepts are explained in detail in **Sections 4.1, 4.2, 4.3, 4.4, and 4.5** below. For convenience, a summary of the core features and amenities associated with each of the options are presented in **Table 4-1**.

Table 4-1: Options Summary

Feature Type	Feature	Option 1	Option 2	Option 3	Option 4	Option 5
Core Feature	Sediment Management Pond/Area	✓	✓	✓	✓	✓
	Flood Protection Dikes	✓	✓	✓	✓	✓
	Permanent Storage of Water Behind Bear Creek Dam		✓			✓
	Naturalization of the River Channel and Reservoir			✓	✓	
	Stabilization of the Reservoir Banks	✓	✓	✓	✓	✓
	Excavation and Hauling of material		✓	✓	✓	✓
	Excavation of Outfall Channels			✓	✓	
	Pedestrian Bridge to Replace the BRCS			✓	✓	
	Rehabilitation/ Replacement of the BRCS	✓	✓			✓
	Removal of the BRCS			✓	✓	
	Removal of North Dam Embankment			✓	✓	
	Removal of South Dam Embankment				✓	
	Grading of Sediments	✓	✓	✓	✓	✓
Amenity	Picnic/ Park Spaces	✓	✓	✓	✓	✓
	Observation Point Expansion		✓			✓
	Canoe Launch		✓			✓
	New Walking Trails		✓	✓	✓	
	Expansion of the Existing Festival Space			✓	✓	
	Access from the Rotary Campground			✓	✓	



4.1 Option 1 – Maintain the Bear River Control Structure

Option 1 was developed to determine the required work to maintain the BRCS until the end of its life, which for the purpose of this study was identified to be in approximately 30 years as per the RFP assumptions. Full rehabilitation of the Control Structure and earthen dam will be required to ensure the continued operation of the asset beyond the next 30 years. Cross sections of the proposed reservoir area can be found attached in [Appendix D](#) of this report.

Figure 4-1 below is a visual rendering of the proposed concept.



Figure 4-1: Option 1 Concept



4.1.1 Core Features

Sediment Control

As required by the RFP document (City of Grande Prairie, 2024), a practical approach to sediment management was developed to enable the City of Grande Prairie to operate and manage the reservoir into the future. The concept developed by AtkinsRéalis utilizes a sediment management pond. The function of the pond is to reduce the velocity of the flow, allowing sediments to settle upstream of the pond outlet. This pond is located so that sediments can be more easily accessed and removed. The pond will require ongoing dredging and for the purposes of this feasibility study, dredging was assumed to be required every 5 years.

Flood Control

Improving flood control would be achieved with the addition of an excavated storage pond upstream of the dam. The pond would be designed to temporarily store inflows that exceed the Control Structure spill capacity during flood events. The size of the pond would need to be designed based on the consequence classification of the dam and associated design flood. Furthermore, flood control berms and dikes would be required near the flood storage pond. The existing embankments would need to be assessed to determine if they are suitable to raise for this purpose or new flood control berms and dikes could be constructed using some of the excavated material from the reservoir.

Improved Operations

Necessary repairs and rehabilitation of the BRCS within the next 30 years to extend the service life of the dam and Control Structure are required for the feasibility of this option. Continued dam safety inspections and reviews will also be required on an ongoing basis. The scope of any rehabilitation or replacement will need to be assessed prior to the design of this option. The City will also need to ongoingly dredge the sediment management pond. The frequency of the dredging would be established during the design of the pond, but initial estimation for dredging frequency would be every 5 years.

Environmental Considerations

Option 1 is considered to be the lowest impact option in terms of disturbing the existing conditions inside the reservoir footprint. Most of the reservoir would remain as is, and existing habitat and vegetation will remain.

4.1.2 Additional Amenities

Amenities for this option were derived based on feedback received from both the 30% and 90% engagement sessions and were developed to be value added items to the project. It should be noted that the amenities suggested are not core to the function of the proposed concept and can be modified as needed by the City as the design is developed.

Park Space

The concept includes additional park space to be built on the north bank of the reservoir by the new flood storage pond upstream of the dam. This park space would act as a means of access to the water and contain picnic and recreation facilities. To accommodate ease of access to the expanded park areas, new vehicle parking lots would be added. Additionally, the existing observation point located on the south bank would be expanded to provide better views of the new flood storage pond area.



4.2 Option 2 - Maintain the River Control Structure, and Remove Some of the Accumulated Sediment

As outlined in the RFP, Option 2 focuses on maintaining the BRCS and removing accumulated sediment from the reservoir. This option aims to partially restore the Bear River and permanently store water upstream the BRCS. **Figure 4-2** below is a visual rendering of the proposed concept. Cross sections of the proposed reservoir area can be found attached in [Appendix D](#) of this report.

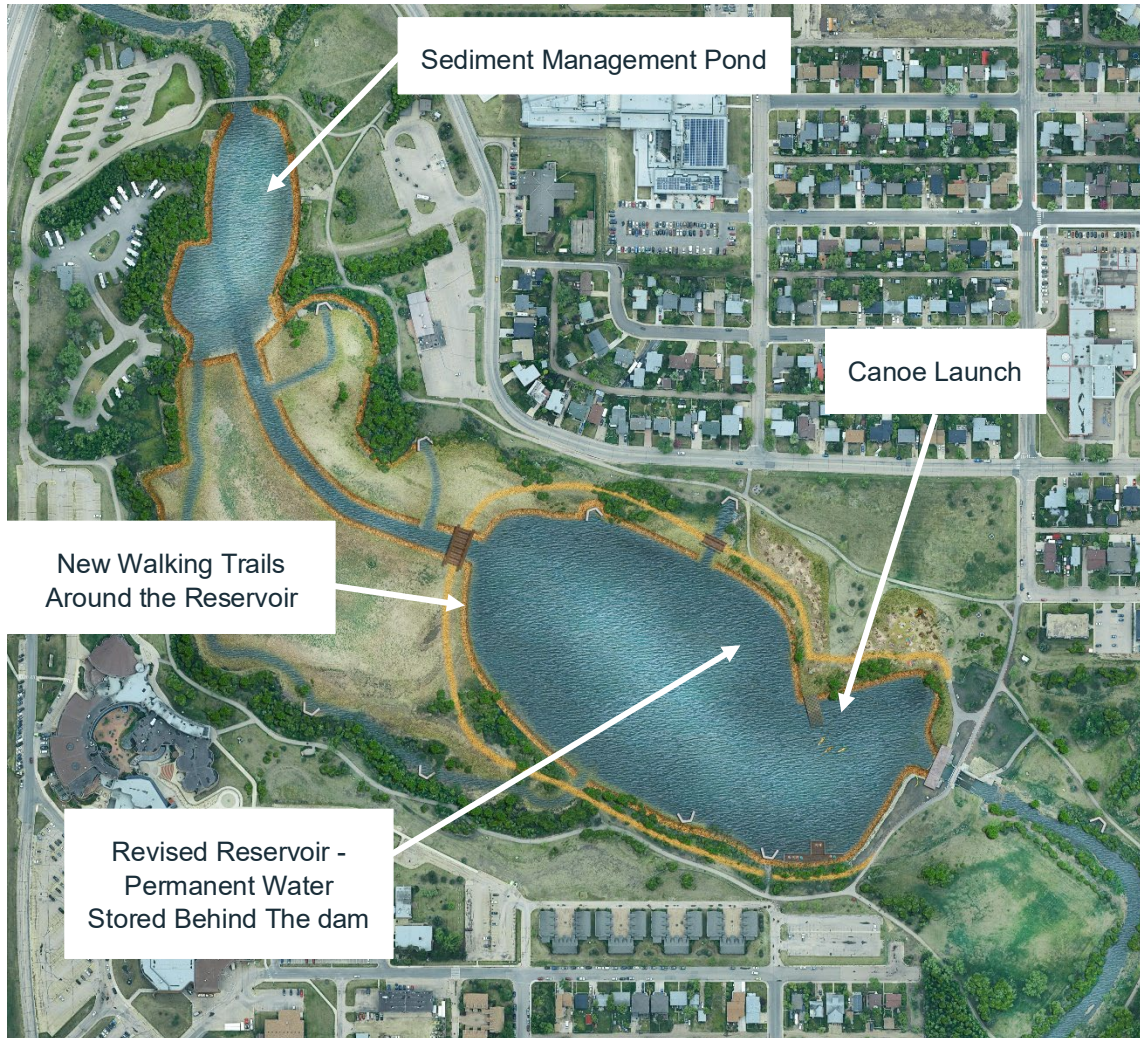


Figure 4-2: Option 2 Concept



4.2.1 Core Features

Sediment Control

As required by the RFP document (City of Grande Prairie, 2024), a practical approach to sediment management was developed to enable the City of Grande Prairie to operate and manage the reservoir into the future. The concept developed by AtkinsRéalis utilizes a sediment management pond. The function of the pond is to reduce the velocity of the flow, allowing sediments to settle upstream of the pond outlet. This pond is located so that sediments can be more easily accessed and removed. The pond will require ongoing dredging and for the purposes of this feasibility study, dredging was assumed to be required every 5 years.

Flood Control

Improving flood control would be achieved with the addition of an excavated storage pond upstream of the dam. The pond would have more storage capability than Option 1 and would be designed as a permanent storage reservoir. As is typical for a storage reservoir, the Control Structure would be operated to maintain the design Full-Service Level. The size of the pond would need to be designed based on the consequence classification of the dam and associated design flood event; however could be used to store more of the design flood event than Option 1. Furthermore, flood control berms and dikes would be required near the revised reservoir. The existing embankments would need to be assessed to determine if they are suitable to raise for this purpose or new flood control berms and dikes could be constructed using the excavated material from the reservoir.

Improved Operations

Necessary repairs and rehabilitation of the BRCS within the next 30 years to extend the service life of the dam and Control Structure are required for the feasibility of this option. Continued dam safety inspections and reviews will also be required on an ongoing basis. The scope of any rehabilitation or replacement will need to be assessed prior to the design of this option. The City will also need to ongoingly dredge the sediment management pond. The frequency of the dredging would be established during the design of the pond, but initial estimation for dredging would be every 5 years.

The installation of a revised reservoir, that would be larger than the Option 1 flood storage pond, would result in fewer gate operations annually at the BRCS.

Environmental Considerations

Option 2 is considered to have a high impact on the current habitat within the reservoir. The permanent storage of water behind the dam will likely destroy any existing bird or animal habitat and kill vegetation. A portion of the reservoir would remain as is, and existing habitat and vegetation will remain. As noted in the investigation, the reservoir is vegetated with a variety of grasses, shrubs, and small trees. Considerations for fish passage also need to be considered and maintenance of downstream flow rates as required by regulations.

4.2.2 Additional Amenities

Amenities for this option were derived based on feedback received from both the 30% and 90% engagement sessions and were developed to be value added items to the project. It should be noted that the amenities suggested are not core to the function of the proposed concept and can be modified as needed by the City as the design is developed.



Park Space

The concept calls for additional park space to be built on the north bank of the reservoir by the new waterfront created the reservoir water behind the dam. This park space would act as a means of access to the water and contain picnic and recreation facilities.

Parking Lots

To accommodate ease of access to the new park areas, new vehicle parking lots would be added.

Observation Point

Additionally, the existing observation point located on the south bank would be expanded to provide better views of the new revised reservoir area. A boat launch could be added to enable access to the reservoir for recreational activities.

New Paths and Bridges

Gravel path and bridge crossings could be added to expand the existing walking trail in the reservoir and provide add value and use to the space.

4.3 Option 3 - Partial Removal of the Bear River Control Structure

AtkinsRéalis has assessed the requirements for Option 3 based on the RFP. The concept for this option would be to remove the spillway structure, and northern dam embankment such that the City would no longer have a licenced dam structure. Key features of this option include decommissioning and de-licencing the dam. The BRCS spillway would be deconstructed and replaced with a gabion wall drop structure as described in the following section. Along with the spillway, the north berm of the dam embankment would also be deconstructed. Cross sections of the proposed reservoir area can be found attached in [Appendix D](#) of this report.

Figure 4-3 below is a visual representation of the proposed concept for Option 3.





Figure 4-3: Option 3 Concept

4.3.1 Core Features

Sediment Control

River channel will be designed and constructed such that the shape is re-naturalized to match the meandering observed both upstream and downstream of the original reservoir. Furthermore, the channel will be designed such that the velocity will be high enough to result in minimal sedimentation occurring within the channel at this location and as a result, sediments would flow through downstream. Should the sediment deposition rate proves to be higher than the desirable in this section of the channel, there is the option to construct a small sediment management pond in the upstream portion of the reservoir footprint, which is shown in the above figure.



Flood Control

Flood control is achieved by designing the naturalized channel to handle a design flood determined based on risk discussions with the City. The design flood would be based on the likelihood of occurrence in any given year. Flood control dikes and berms could also be constructed along the channel and around the festival grounds to provide additional flood protection to the new infrastructure and park space.

Improved Operations

The removal of the BRCS spillway and north dam berm reduces the maintenance and eliminates the need for ongoing inspections and DSRs.

Environmental Considerations

The significant changes to the reservoir area, and the transformation of the reservoir into park space will remove the existing vegetation and likely destroy any existing habitat. The gabion structure must also have considerations for fish passage.

4.3.2 Additional Amenities

New Park Space

New park space will be created within the reservoir footprint. These parks will provide more recreation space for the community to use.

New Paths

New paths would be constructed to expand the existing path network. Additionally, the existing festival grounds could be expanded to take advantage of the new park space beyond the south dam embankment.

Pedestrian Bridge

A new bridge would be constructed over the gabion drop structure to maintain access between the north and south sides of the river.

4.4 Option 4 – Complete Removal of the Bear River Control Structure

AtkinsRéalis has assessed the requirements for Option 4 based on the RFP. The concept for this option would be to remove the spillway structure, northern dam embankment, and southern dam embankment, such that the City would no longer have a licenced dam structure. Cross sections of the proposed reservoir area can be found attached in [Appendix D](#) of this report.

Figure 4-4 below is a visual representation of the proposed concept for Option 4.





Figure 4-4: Option 4 Concept

4.4.1 Core Features

Sediment Control

River channel will be designed and constructed such that the shape is re-naturalized to match the meandering observed both upstream and downstream of the original reservoir. Furthermore, the channel velocity will be designed such that the velocity will be high enough to result in minimal sedimentation occurring within the channel at this location and as a result, sediments would flow through downstream. Should the sediment deposition rate proves to be higher than the desirable in this section of the channel, there is the option to construct a small sediment management pond in the upstream portion of the reservoir footprint, which is shown in the above figure.



Flood Control

Flood control is achieved by designing the naturalized channel to handle a design flood determined based on risk discussions with the City. The design flood would be based on the likelihood of occurrence in any given year. Flood control dikes and berms could also be constructed along the channel and around the festival grounds to provide additional flood protection to the new infrastructure and park space.

Improved Operations

The removal of the BRCS spillway and north dam berm reduces the maintenance and eliminates the need for ongoing inspections and DSRs.

Environmental Considerations

The significant changes to the reservoir area, and the transformation of the reservoir into park space will remove the existing vegetation and likely destroy any existing habitat. The gabion structure must also have considerations for fish passage.

4.4.2 Additional Amenities

New Park Space

New park space will be created within the reservoir footprint. These parks will provide more recreation space for the community to use.

New Paths

New paths would be constructed to expand the existing path network. Additionally, the existing festival grounds could be expanded to take advantage of the new park space beyond the south dam embankment.

Pedestrian Bridge

A new bridge would be constructed over the gabion drop structure to maintain access between the north and south sides of the river.

4.5 Option 5 – Complete Restoration of the Bear River Control Structure and Full Dredging of the Reservoir

Option 5 considers the requirements to restore the reservoir to its original size and capacity. To achieve this, the accumulated sediment in the reservoir will need to be removed and transported to an off-site disposal/storage facility. The concept will also require sediment control measures and flood management plan as noted in the RFP. **Figure 4-5** below shows a concept of what this option could look like.





Figure 4-5: Option 5 Concept

4.5.1 Core Features

Sediment Control

As required by the RFP document (City of Grande Prairie, 2024), a practical approach to sediment management was developed to enable the City of Grande Prairie to operate and manage the reservoir into the future. The concept developed by AtkinsRéalis utilizes a submerged sediment management system. The system would consist of an underwater berm which will serve to reduce the velocity of the flow into the upper portion of the reservoir, thus allowing the sediment to settle in the sediment management pond. The sediment would be removed from the upstream side of the berm and transported off site for disposal. This area will then need to be dredged ongoingly to maintain its effectiveness. Cross sections of the proposed reservoir area can be found attached in [Appendix D](#) of this report.

Flood Control

Improving flood control would be achieved by re-establishing the original reservoir upstream of the dam. The storage capacity of the original reservoir would be restored to act as permanent storage reservoir. As



was originally designed, the Control Structure gates would be operated to maintain the design Full-Service Level and for fish passage as required. The size of the pond would need to be designed based on the consequence classification of the dam and associated design flood event; however, could be used to store more of the design flood event than Options 1 and 2 and would allow the most flexibility for flood control. Furthermore, flood control berms and dikes would be required near the BRCS. The existing embankments would need to be assessed to determine if they are suitable to raise for this purpose or new flood control berms and dikes could be constructed using the excavated material from the reservoir

Improved Operations

Necessary repairs and rehabilitation of the BRCS within the next 30 years to extend the service life of the dam and Control Structure are required for the feasibility of this option. Continued dam safety inspections and reviews will also be required on an ongoing basis. The scope of any rehabilitation or replacement will need to be assessed prior to the design of this option. The City will also need to ongoingly dredge the sediment management system/pond. The frequency of the dredging would be established during the design of the pond, but initial estimation for dredging would be every 5 years.

The re-establishment of the original reservoir would result in fewer gate operations annually at the BRCS and increased flexibility around flood handling and control.

Environmental Considerations

Option 5 is considered to have a high impact on the current habitat within the reservoir. The permanent storage of water behind the dam will likely destroy any existing bird or animal habitat and kill vegetation. A portion of the reservoir would remain as is, and existing habitat and vegetation will remain. As noted in the investigation, the reservoir is vegetated with a variety of grasses, shrubs, and small trees. Considerations for fish passage also need to be considered and maintenance of downstream flow rates as required by regulations.

4.5.2 Additional Amenities

Amenities for this option were derived based on feedback received from both the 30% and 90% engagement sessions and were developed to be value added items to the project. It should be noted that the amenities suggested are not core to the function of the proposed concept and can be modified as needed by the City as the design is developed.

Park Space

The concept calls for additional park space to be built on the north bank of the reservoir by the new waterfront created the reservoir water behind the dam. This park space would act as a means of access to the water and contain picnic and recreation facilities.

Parking Lots

To accommodate ease of access to the new park areas, new vehicle parking lots would be added.

Observation Point

Additionally, the existing observation point located on the south bank would be expanded to provide better views of the new revised reservoir area. A boat launch could be added to enable access to the reservoir for recreational activities.

New Paths and Bridges

A gravel path and bridge crossings could be added to expand the existing walking trail in the reservoir and provide add value and use to the space.



5 Required Studies

As part of this feasibility study, AtkinsRéalis has examined each of the proposed options and determined what assessments and studies are required to fill in information gaps identified in this feasibility review and facilitate future design. Although each of the five options considered presents its own unique challenges, there are many assessments that are common to all of the options. These assessments can be completed prior to making the decision on which option to move forward with. Furthermore, having each study assess five separate options would result in the studies costing more individually. Completion of these common assessments early in the process can also present significant cost savings as the information they provide will better inform the best option for the City to move forward with.

Table 5-1 below summarizes the required common Pre-Design Assessments and the option specific Design Assessments relevant to the particular option highlighted with a check-box. Pre-Design Assessments are needed for all of the options evaluation. The extent of some of the Design studies will change based on the option selected. Therefore, even though some of the Design studies are common for all options, the pertinent scope may vary option to option. In addition, some Pre-design studies may need to be extended into Design stage due to need for additional information to inform the specific option design. **Section 6** of this report goes into further detail of the specific requirements of each of the proposed assessments.

Table 5-1: Required Assessments Summary

Phase	Assessment	Option 1	Option 2	Option 3	Option 4	Option 5
Pre-Design	BRCS Condition Assessments (Include Structural Stability/Scouring Assessment Analysis of BRCS, Earth Embankment Condition Assessment, Reservoir and Embankment Investigation, , flood study)	✓	✓	✓	✓	✓
	Probable Failure Modes & Effects Analysis (PFMEA) / Risk Register	✓	✓	✓	✓	✓
	Traffic Study	✓	✓	✓	✓	✓
	Dam Removal Impact Study	✓	✓	✓	✓	✓
	Environmental Study (include Local Vegetation Study, Wildlife and Habitat Study, Fish Species Study)	✓	✓	✓	✓	✓
	Sediment Chemical Assessment	✓	✓	✓	✓	✓
	Survey of Topography and Existing Infrastructure	✓	✓	✓	✓	✓



Table 5-1 (Cont'd): Required Assessments Summary

Phase	Assessment	Option 1	Option 2	Option 3	Option 4	Option 5
Design, Construction & Maintenance	Application to declassify dam structure			✓	✓	
	Geotechnical Design Assessment		✓	✓	✓	✓
	Dam Safety Reviews (including dam breach analysis)	✓	✓			✓
	Dam Safety Inspections	✓	✓			✓
	Permitting (Includes Department of Fisheries and Oceans Authorization/ Offsetting Plan, Water Act Permitting, Department of Fisheries and Oceans Permitting, Transport Canada Permit/Notification)	✓	✓	✓	✓	✓
	Revise Operational Maintenance plan	✓	✓			✓
	Sediment Management Pond Design	✓	✓	✓	✓	✓
	Redesign of Stormwater Outfalls	✓	✓	✓	✓	✓
	Rehabilitation/ Replace BRCS	✓	✓			✓
	Design of Amenities	✓	✓	✓	✓	✓
	Spillway and Embankment Removal Plan			✓	✓	
	Redesign & Armouring of reservoir banks	✓	✓	✓	✓	✓
	Quantification of Sedimentation transport and deposition	✓	✓	✓	✓	✓
	Downstream Modification			✓	✓	✓
	Design of Gabion Drop Structure			✓	✓	
	Design of sediment piles/grading and required reinforcement		✓	✓	✓	
	Design of Pedestrian bridge			✓	✓	
	Vegetation Assessment and Design	✓	✓	✓	✓	✓



6 Scopes of Work

As discussed with the City, determination of scopes of work for each of the proposed assessments/studies was completed. This determination was done to provide direction to the City on what the specifics of each of the reports are and what the purpose of the assessment is. It should be noted that at this early stage, it is difficult to give highly technical requirements, but the description provided will enable the City to have a starting point on what each assessment needs to achieve. These scopes are presented in **Table 6-1** below.

Table 6-1: Scopes of Work for the Proposed Studies and Assessments

Phase	Assessment	Scope
Pre-Design	PFMEA / Risk Register	A workshop with the aim of identifying the failure modes which can impact the stability and operation of the dam, the progression of the failures, and the results of the failures. The workshop should quantify the risk of each of the identified failure modes along with the confidence in the risk. Finally, the workshop should provide recommendations to address all failure modes. This will help align the need of a dam and key areas of concern for an understanding of the long-term purpose.
	BRCS Condition Assessments (Include Structural Stability/Scouring Assessment Analysis of BRCS, Earth Embankment Condition Assessment)	Comprehensive investigation and detailed condition assessments which assess the dams and associated structures. The assessments should cover the following: ▪ Structural condition of the spillway and chute. ▪ Investigation of the earthen embankments on either side of the spillway and around the reservoir to gain an understanding of the geological conditions of the dam and reservoir. ▪ Determination of the depths and stratigraphy of the foundation soils beneath the Bear Creek Control Structure, Earthen Dam and around the reservoir. ▪ Observation of any signs of scouring, cracking, or failure of any components. ▪ Assess the performance of mechanical gates and electrical systems. ▪ Assess the adequacy of the stormwater management and drainage from the site. ▪ Flood study of Bear Creek to determine inundation extents including the development of inundation maps in the area of interest upstream of the dam as well as impacted areas downstream of the dam.
	Traffic Study	A study to assess vehicle and foot traffic access to the reservoir area. The Study should cover the following: ▪ Main access road traffic study. ▪ All weather access to the reservoir for routine and emergency operation and maintenance activities. ▪ Development of foot traffic numbers.



Table 6-1 (Cont'd): Scopes of Work for the Proposed Studies and Assessments

Phase	Assessment	Scope
Pre-Design (Cont'd)	Dam Removal Impact Study	This study should aim to develop a clear understanding of the impact of potentially removing the Bear Creek Dam (In part or in whole). The assessment should cover: ▪ Baseline environmental impact which shows how species at the reservoir and downstream will be impacted. ▪ Future studies and mitigations required. ▪ Understanding what is required to remove the dam structure and foundation. ▪ The impact on surrounding infrastructure such as roads, bridges, and stormwater outfalls. ▪ An understanding of the impact on the downstream erosion of banks. ▪ Hydraulic modelling to determine erosion protection required and design. ▪ Flood study/inundation of dam removal scenarios.
	Environmental Study (include Local Vegetation Study, Wildlife and Habitat Study, Fish Species Study)	Baseline vegetation surveys of rare plants and invasive species will be needed prior to disturbance. Baseline vegetation surveys of rare plants and invasive species will be needed prior to disturbance. Baseline studies will be needed prior to any disturbance to determine the fish species present in the reservoir and the quality of the existing habitat. Future studies and/or mitigation measures may be needed depending on the results of the baseline studies.
	Sediment Chemical Assessment	There are some high Sulphate, Electrical Conductivity and Soil Absorption Ratio results observed in the samples. It is advised that more sampling at other locations and comprehensive chemical testing be conducted before an end use for the soil within any of the excavation zones is decided. An accredited CSAP will be needed to suggest the best use for the soils when considering the guidelines and the Projects design thesis.
Design, Construction & Maintenance	Design Geotechnical Investigation	A through geotechnical investigation aimed at gathering any relevant additional data for the selected design option. Should be determined based on the selected option and the requirement for filling any data gaps that may be applicable.
		Execution of an extensive survey utilizing GPS foot survey techniques, and LiDAR to capture the locations, dimensions and elevations of all relevant infrastructure at the site. The items to be surveyed includes but is not limited to: ▪ The BRCS Spillway ▪ The Earthen Dam ▪ All stormwater outlets (Private and Public) ▪ Pathways and park areas ▪ Bridges ▪ The Reservoir area and flood.



Table 6-1 (Cont'd): Scopes of Work for the Proposed Studies and Assessments

Phase	Assessment	Scope
Design, Construction & Maintenance (Cont'd)	Dam Safety Reviews & Inspections	A systematic review and evaluation of all aspects of design, construction, maintenance, operation, and surveillance (OMS), and other factors, processes, and systems affecting a dam's safety. The review defines and encompasses all components of the "dam system" under evaluation including: ▪ Assessment of the geotechnical stability of the earthen dam, and the foundation. ▪ Stability analysis of concrete spillway and its components under various loading conditions (as per Canadian Dam Association [CDA] guidelines) ▪ Identification of structural defects (cracks, spalling, or other signs of deterioration) in concrete structure. ▪ Assessment of the mechanical and electrical components associated with the spillway. ▪ Confirmation of hazard consequence classification of the structure which would include the following: ▫ Completion of a dam break study including inundation mapping. The downstream extents for inundation would be determined during the study and would continue until the flood inundation impact due to breach is considered negligible. ▫ Review of environmental effects downstream of dam in the event of a dam failure. ▫ Determination of population at risk and loss of life due to dam failure. ▫ Economic losses due to dam failure.
	Application to declassify dam structure – option based	Application with provincial and federal regulatory bodies to declassify the BRCS and Dam, as a water retaining structure.
	Permit Application	Department of Fisheries and Oceans and Transport Canada permits will be needed prior to any work in or near the Bear River and the Bear River Dam.
	Revise Operational Maintenance Plan	Requires the updating of inspection, maintenance, and monitoring protocols to reflect the structure's behavior, vulnerabilities and performance expectations. It includes: frequency and methods for inspecting structural integrity, maintenance activities, emergency response planning (ERP).
	Sediment Management Pond Design	An extensive design program that will begin with the installation of inflow monitoring instrumentation. Data collection will likely require 1-2 years before the design can commence. The design will define the dimensions, flow rates, and functionality of the sediment management pond. It will also define the dredging frequency and other operational requirements. Flood study and hydraulic modelling to determine size required for revised reservoir given final dam classification. Model would also be used to determine operational procedures for gate openings during various flood events. Flood study and hydraulic modelling to determine size required for sediment ponds in conjunction with existing spill capacity given final dam classification Hydraulic modelling through the area of interest including sediment transport analysis to determine deposition characteristics upstream of the existing dam.



Table 6-1 (Cont'd): Scopes of Work for the Proposed Studies and Assessments

Phase	Assessment	Scope
Design, Construction & Maintenance (Cont'd)	Redesign of Stormwater Outfalls	Design of stormwater outfalls including dimensions and elevations to suite new reservoir conditions.
	Rehabilitation/ Replace BRCS	A rehabilitation or replacement design plan based on the findings of dam safety inspections and dam safety reviews. The plan should address the following: ▪ Foundational repairs including soil replacement, grouting, or anchoring. ▪ Hydraulic modeling including sediment transport analysis. ▪ Replacement plan and profile. ▪ Remedial solutions to defects that ensure long-term safety and durability. ▪ Controlled demolition if required of the existing spillway. ▪ Design of any cofferdams to be used during the replacement or rehabilitation.
	Design of Amenities	Design of the additional amenities such as the proposed parks, canoe launches, observation points, parking lots etc.
	Spillway and Embankment Removal Plan	A plan which outlines the means of methods for the controlled demolition planning and techniques and safe removal of existing spillway.
	Redesign & Armouring of Reservoir Banks	Design of bank slope armouring which includes the selection of materials to be used, and a wind set up and wave run up analysis.
	Quantification of Sedimentation Downstream	A hydraulic assessment and monitoring program which will assess the amount of sediment transiting downstream of the reservoir. The aim will be to identify the impact of sediment transport on downstream users and communities.
	Downstream Modification	Design of any downstream protection or required channel modification to facilitate the selected option. The exact scope of this assessment is difficult to precisely define at this time as it is option dependent.
	Design of Gabion Drop Structure (or similar structure to facilitate elevation change)	Design of the proposed Gabion drop structure which would replace the BRCS in Options 3 & 4. The design should include the following: ▪ Gabion Drop structure plan and profile. ▪ Stability checks of gabion drop structure against sliding, overturning, bearing capacity. ▪ Baseline studies will be needed to determine the existing habitats and species, and the potential affects that changes to the dam may cause to existing environment.
	Design of Sediment Piles/Grading and Required Reinforcement	The grading plan and profile of all sediment storage piles (On site or Off site). The plan should include any reinforcing or cover systems required.
	Design of Pedestrian Bridge	Design of the Pedestrian bridge over the gabion drop structure in Options 3 & 4. The design should include the design of the abutment foundations, the structural design of the structure, construction methodology, and drawings.
	Vegetation Assessment and Design	Baseline data will be used to determine the best method and species used in the revegetation of the project area.



7 Options Costs

The costs for each option can be broken down into Pre-Design Assessment, Design Assessments, Construction, and Maintenance costs. Costs consider the following assumptions:

- All costs are assumed in 2025-dollar amounts, and costs do not consider inflation or wage growth in the future.
- Engineering and Environmental Analysis Costs were estimated based on previous experience completing similar projects and assessments.
- Design costs were estimated based on previous experience designing similar structures. The Rehabilitation Design of the BRCS, the exact cost is difficult to estimate as the exact condition of the structure and spillway is not known. The range provided is based on current understanding, engineering judgment and review of previous DSR's. A range of cost was provided to account for the unknown condition of the dam and spillway.
- Ongoing costs over the next 30 years were estimated based on previous experience performing dam safety inspections and Dam Safety Reviews.
- Construction costs were estimated by using volume estimates of material required to be removed. It should be noted that the estimated quantity is by no means a complete estimate and was computed only for the purposes of estimating approximate earthworks costs.
- The cost of amenity construction was estimated based on experience working on similar projects in the past.

7.1 Pre-Design Costs

The estimated costs of the proposed pre-Design Assessments are summarized in **Table 7-1** below. As stated in **Section 5**, these assessments are common to all options and will need to be completed prior to the execution of any of the options.

Table 7-1: Pre-Design Assessments Cost Estimations

Item	Estimated Cost
BRCS Condition Assessments (Includes Structural Stability/Scouring Assessment Analysis of BRCS, Earth Embankment Condition Assessment, Reservoir and Embankment Investigation)	\$200,000
PFMEA Review	\$100,000
Survey, Drawings and Layout	\$50,000
Environmental Impact Assessment (Includes Baseline Water Quality Assessments, Local Vegetation Study, Wildlife and Habitat Study, Fish Species Study, Archaeological Desktop Review, Historical Resources Impact Study)	\$260,000
Traffic Study	\$100,000
Dam Declassification Study	\$75,000
Sediment Chemical Assessment	\$10,000
Total Estimated Cost	\$795,000



7.2 Design, Construction & Maintenance Costs

7.2.1 Option 1 Cost Estimations

The costs for Option 1 can be broken down into Design Assessments, Construction, and Maintenance costs. **Table 7-2**, **Table 7-3**, and **Table 7-4** below summarize the estimated costs for Option 1. Specific assumptions applicable for this option are:

- We estimate that 76,000 m³ of material will need to be moved to create the two ponds, flood dikes, and slope regrading.

The estimated total costs for Option 1 are between **\$13,427,900** and **\$26,470,000**.

Table 7-2: Option 1 Design Assessment Estimated Costs

Item	Estimated Cost
Design Geotechnical Investigation	\$75,000
Sediment Trap Design	\$110,000
Design of Amenities	\$35,000
Permitting	\$100,000
Rehabilitate/Replace the BRCS	Minor: \$100,000 Major: \$250,000
Total Estimated Cost	\$420,000 - \$570,000

Table 7-3: Option 1 Estimated Ongoing Costs Over the Next 30 Years

Item	Estimated Cost
BRCS Annual Dam Safety Inspections	\$60,000/year
Dam safety Reviews (Every 10 years)	\$150,000/review (3 assumed)
Ongoing Site Maintenance	\$160,000/year
Dredging	\$159,000 (Every 5 years)
Dam Rehabilitation	Minor: \$5,000,000 Major: \$10,000,000
Total Estimated Cost (Over the next 30 years)	\$13,000,000 – 18,000,000

Table 7-4: Option 1 Estimated Cost of Earthworks Construction and Rehabilitation

Item	Estimated Cost
Clearing and Grubbing	\$435,000
Earthworks	\$6,800,000
Amenities	\$670,000
Total Estimated Cost	\$7,900,000



7.2.2 Option 2 Cost Estimations

The costs for Option 2 can be broken down into Design Assessments, Construction, and Maintenance costs. **Table 7-5**, **Table 7-6**, and **Table 7-7** below summarize the estimated costs for Option 2. Specific assumptions applicable for this option are:

- We estimate that 487,000 m³ of material will need to be moved to create the two ponds, flood dikes, and slope regrading.
- 15,000 m³ of material would be required to be hauled to an off-site location for disposal or storage.
- It was assumed that the haul distance would be 30 km away for the purposes of estimating the costs.

The estimated total costs for Option 2 are between: **\$35,060,000** and **\$39,210,000**

Table 7-5: Option 2 Design Assessments Cost Estimation

Item	Estimated Cost
Design Geotechnical Investigation	\$150,000
Sediment Trap Design	\$165,000
Design of Amenities	\$45,000
Rehabilitation/Replacement of the BRCS	Minor: \$100,000 Major: \$250,000
Total Estimated Cost	\$460,000 - \$610,000

Table 7-6: Option 2 Estimated Ongoing Costs Over the Next 30 Years

Item	Estimated Cost
Condition Assessments	\$60,000/Year
DSR (Every 10 Years)	\$150,000/DSR (3 assumed)
Dredging	\$159,000 (Every 5 Years)
BRCS Rehabilitation Costs	Minor: \$5,000,000 Major: \$10,000,000
Ongoing Site Maintenance	\$160,000/Year
Total Estimated Cost	\$13,000,000 – 18,000,000

Table 7-7: Option 2 Estimated Earthwork and Rehabilitation Costs

Item	Estimated Cost
Clearing & Grubbing	\$1,500,000
Earthworks	\$17,000,000
Amenities	\$2,100,000
Total Estimated Cost	\$20,600,000



7.2.3 Option 3 Cost Estimations

The costs for Option 3 can be broken down into Design Assessments, Construction, and Maintenance costs. **Table 7-8**, **Table 7-9**, and **Table 7-10** below summarize the estimated costs for Option 3. Specific assumptions applicable for this option are:

- We estimate that 330,000 m³ of material will need to be excavated to re-naturalize the river channel, construct flood dikes, and slope regrading.

The total estimated cost for Option 3 is **\$29,939,000**.

Table 7-8: Option 3 Design Assessment Estimated Costs

Item	Estimated Cost
Design Geotechnical Investigation	\$150,000
Design of Amenities	\$30,000
Design of Gabion Drop Structure	\$160,000
Pedestrian Bridge Design	\$120,000
Spillway Removal Plan	\$50,000
Vegetation Assessment and Design	\$10,000
Estimated Total Cost	\$530,000

Table 7-9: Option 3 Estimated Ongoing Maintenance Costs

Item	Estimated Cost
Ongoing Maintenance	\$275,000/year*
Dredging	\$159,000/year
Estimated Total	\$13,020,000

*Assumes Dam will be decommissioned within 20-years.

Table 7-10: Option 3 Estimated Construction Costs

Item	Estimated Cost
Clearing and Grubbing	\$1,300,000
Earthworks	\$11,200,000
Spillway Removal and Replacement	\$840,000
Pedestrian Bridge	\$770,000
Park Vegetation	\$2,099,000
Walking Pathways	\$180,000
Estimated Total	\$16,389,000



7.2.4 Option 4 Cost Estimations

The costs for Option 4 can be broken down into Design Assessments, Construction, and Maintenance costs.

Table 7-11, Table 7-12 and Table 7-13 below summarize the estimated costs for Option 4. Specific assumptions applicable for this option are:

- We estimate that 360,000 m³ of material will need to be excavated to re-naturalize the river channel, construct flood dikes, and slope regrading.

The total estimated cost for Option 4 is **\$31,089,000**.

Table 7-11: Option 4 Design Assessment Estimated Costs

Item	Estimated Cost
Design Geotechnical Investigation	\$150,000
Design of Amenities	\$30,000
Design of Gabion Drop Structure	\$160,000
Pedestrian Bridge Design	\$120,000
Spillway Removal Plan	\$50,000
Vegetation Assessment and Design	\$10,000
Estimated Total Cost	\$530,000

Table 7-12: Option 4 Estimated Ongoing Maintenance Costs

Item	Estimated Cost
Ongoing Maintenance	\$275,000/year*
Dredging	\$159,000/year
Estimated Total	\$13,020,000

*Assumes Dam will be decommissioned within 20-years.

Table 7-13: Option 4 Estimated Construction Costs

Item	Estimated Cost
Clearing and Grubbing	\$1,450,000
Earthworks	\$12,200,000
Spillway Removal and Replacement	\$840,000
Pedestrian Bridge	\$770,000
Park Vegetation	\$2,099,000
Walking Pathways	\$180,000
Estimated Total	\$17,539,000



7.2.5 Option 5 Cost Estimations

The costs for Option 5 can be broken down into Design Assessments, Construction, and Maintenance costs. **Table 7-14**, **Table 7-15**, and **Table 7-16** below summarize the estimated costs for Option 5.

Specific assumptions applicable for this option are:

- We estimate that 700,000 m³ of material will need to be moved to create the two ponds, flood dikes, and slope regrading.
- 15,000 m³ of material would be required to be hauled to an off-site location for disposal or storage.
- It was assumed that the haul distance would be 30 km away for the purposes of estimating the costs.

The total estimated cost for Option 5 are between **\$40,560,000** and **\$45,710,000**.

Table 7-14: Option 5 Design Assessments Cost Estimation

Item	Estimated Cost
Design Geotechnical Investigation	\$150,000
Sediment Trap Design	\$165,000
Design of Amenities	\$45,000
Rehabilitation/Replacement of the BRCS	Minor: \$100,000 Major: \$250,000
Total Estimated Cost	\$460,000 - \$610,000

Table 7-15: Option 5 Estimated Ongoing Costs Over the Next 30 Years

Item	Estimated Cost
Condition Assessments	\$60,000/Year
Dam Safety Review (DSR) (Every 10 Years)	\$150,000/DSR (3 assumed)
Dredging	\$159,000 (Every 5 Years)
BRCS Rehabilitation Costs	Minor: \$5,000,000 Major: \$10,000,000
Ongoing Site Maintenance	\$160,000/Year
Total Estimated Cost	\$13,000,000 – 18,000,000

Table 7-16: Option 5 Estimated Earthwork and Rehabilitation Costs

Item	Estimated Cost
Clearing & Grubbing	\$1,500,000
Earthworks	\$23,500,000
Amenities	\$2,100,000
Total Estimated Cost	\$27,100,000



8 Available Funding Opportunities

As part of the 30% Engineering Report, AtkinsRéalis analyzed several potential funding opportunities that were recommended by the City or found through agency websites. This information was revisited using the 90% designs as a new baseline. The following is a summary of the top potential funding opportunities based on the applicability of the five options and the likelihood of success. Should more detail be desired, the information can be seen in the 30% Engineering Report as well as [Appendix E](#).

The likelihood of success is reliant on a variety of factors as noted for each option. For example, the extent and quality of riparian and habitat restoration could increase the likelihood of success for some grants. The funding opportunities available for the project include a mix of federal and provincial non-repayable grants, repayable loans, and partner-dependent programs, with eligibility influenced by the specific design features of each option.

Table 8-1 outlines the top five funding programs for which the municipality is eligible without needing an external partner agency.

Table 8-1: Available Funding Options

Grant Program	Maximum Funding	Key Attributes
Green Municipal Fund (GMF)	Up to \$10M loan + up to \$1.5M grant (15% of loan)	- Strongest overall fit. - Supports feasibility and capital projects for water, climate adaptation, and infrastructure.
Alberta Drought and Flood Protection Program (Drought & Flood)	Up to 70% grant (cost-share) of eligible costs	Excellent applicability for berms, flood mitigation, and stormwater infrastructure.
Watershed Resiliency and Restoration Program (WRRP)	Varies (typically \$200K–\$600K grant; recent approvals range ≈ \$160K–\$1.95M)	Strong fit for naturalization, sediment control, and riparian restoration.
Environmental Damages Fund (EDF)	\$100K–\$500K grant	Supports restoration, education, and habitat recovery.
Habitat Stewardship Program (HSP)	Min \$25K grant	- Strong fit for fish passage and riparian habitat restoration. - Closed for 2025–26 but expected to reopen.

Should the City partner with an external agency, eligibility increases to include another five potential grant opportunities as shown in **Table 8-2**. Partnerships could include non-profit organizations, Indigenous groups, or non-governmental organizations.

Table 8-2: Additional Grants (Partnership Required)

Grant Program	Maximum Funding	Key Attributes
Ducks Unlimited / ACA / Land Stewardship Centre	Varies (grant)	- Require partnerships. - Restoration and education-focused grants.
EcoAction Community Funding Program	Up to \$100K grant (50% match)	- Requires NGO partner. - Strong community engagement and water quality focus.
Canada Nature Fund – Target 1 Challenge	Varies (grant)	- Requires Indigenous partnership. - Focuses on protected areas and Indigenous-led conservation.
Community Facility Enhancement Program (Small & Large)	\$125K–\$1M grant	- Requires nonprofit partner. - Supports recreational infrastructure (e.g., canoe launch, trails, festival space).



Table 8-3 presents a breakdown of strong-fit funding programs by type, allowing a clear comparison of non-repayable grants, repayable loans, and partner-required grant opportunities for each option.

Table 8-3: Strong-Fit Grant Applicability and Available Funding by Option¹

Grant Program	Option 1	Option 2	Option 3	Option 4	Option 5
GMF	●	●	●	●	●
Drought & Flood	●	●	●	●	●
WRRP	●	●	●	●	●
EDF	●	●	●	●	●
HSP	●	●	●	●	●
Ducks Unlimited	●	●	●	●	●
EcoAction	●	●	●	●	●
CNF Target 1 Challenge	●	●	●	●	●
Community Facility Enhancement	●	●	●	●	●
Funding Totals (Ranges)	Option 1	Option 2	Option 3	Option 4	Option 5
A. Total Non-Repayable Grants (● Strong Fit)	\$2.20–\$3.60M	\$2.53–\$4.80M	\$1.83–\$2.70M	\$1.83–\$2.70M	\$2.20–\$3.60M
B. Repayable Loans (● Strong Fit)	\$10.00M	\$10.00M	\$10.00M	\$10.00M	\$10.00M
C. Partner-Dependent Grants (Non-Repayable)	N/A	\$125k–\$1.0M	\$150k–\$1.1M	\$25k–\$100k	\$125k–\$1.0M
Total Grant Funding (A + C)	\$2.20–\$3.60M	\$2.66–\$5.80M	\$1.98–\$3.80M	\$1.86–\$2.80M	\$2.33–\$4.60M
Total Available Funding Capacity (A + B + C)	\$12.20–\$13.60M	\$12.66–\$15.80M	\$11.98–\$13.80M	\$11.86–\$12.80M	\$12.33–\$14.60M

● = Strong Fit | ● = Moderate Fit | ● = Limited/No Fit

Overall, considering the strong fit funding programs and the three subtotal categories of non-repayable grants, repayable loans, and partner-required non-repayable grants, Option 2 provides the highest Total Available Funding Capacity, with Option 5 ranking second. Option 3 remains competitive due to its broad eligibility across ecological and community grant programs; however, its Total Available Funding Capacity is lower than Options 2 and 5 under the applied funding ranges.

¹ Funding ranges were calculated using strong-fit (●) programs only. Drought & Flood is shown as 70% of assumed eligible scope (\$1–\$3M → \$0.7–\$2.1M), consistent with program guidance. WRRP is shown as \$0.2–\$0.6M, reflecting recent award patterns, which typically range from approximately \$0.16M to \$1.95M. EDF is shown as \$0.1–\$0.5M, as amounts vary by call under the Environmental Damages Fund. HSP is shown as \$25k–\$100k per year, representing typical award scales for the Habitat Stewardship Program. EcoAction is shown as \$25k–\$100k, requires a nonprofit lead, and a 50% non-federal match contribution. CFEP (Large) is shown as \$125k–\$1.0M, requiring a nonprofit partner or lead applicant. GMF is presented as a non-repayable grant up to \$1.5M (15% of loan) and a repayable loan up to \$10M, in line with program criteria. The Canada Nature Fund – Target 1 Challenge and Ducks Unlimited do not have available estimated funding ranges and were not used in the funding totals in Table 8-3.



9 Option Comparison

This report has presented the findings of public engagement, funding opportunities, and costs for each option. The options were ranked 1 to 5 with the best outcomes (such as most support or lowest cost) receiving a score of 5. When comparing the options for the best outcomes, Option #3 is shown to have the best overall outcome by a slight margin. While Options #1 and #2 also have merit, Options #4 and #5 have the least overall value when evaluated using the criteria as follows:

- Public support (from the What We Heard report) ;
- Upfront costs (estimated pre-Design Assessments and Design Assessments);
- Cost of construction (estimated earthwork and rehabilitation costs);
- Applicability of external grants (the number of grants with high applicability to the subject option as shown in Section 8.0); and
- The total value of the funding capacity (the total monetary value of grants with high applicability to the subject option as shown in Section 8.0).

As the criteria has not been weighted, this comparison is provided to present an overall picture. Decision-making will involve a more detailed review and will prioritize relevant criteria accordingly as needed.

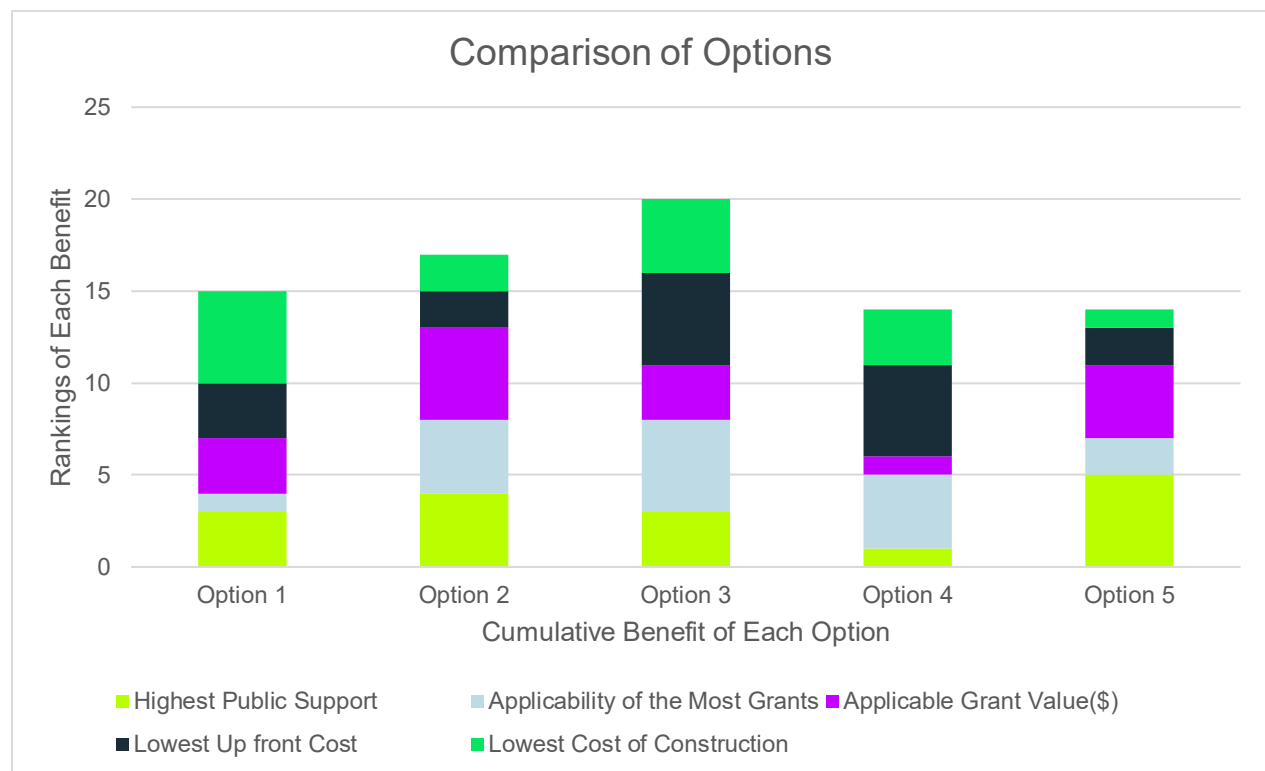


Figure 9-1: Overall Outcomes



10 Conclusion

This feasibility study should serve as a starting point in planning the future of the Bear Creek Reservoir and Control Structure. The next steps for the City will be to select an option that meets all requirements from a technical and community perspective. This City will also need to complete further engagement, all the required assessments and studies, and application for funding.

As a part of the feasibility study and as required by the RFP, AtkinsRéalis has completed a small field investigation to gain a preliminary understanding of the site conditions and to better develop the concepts in the study. The findings of the investigations were as follows:

- The stratigraphy at the sediments at the reservoir was found to consist of a brownish clayey silt and silty sand material approximately 1 m thick overlying a dark Grey silty clay material.
- It is unclear if the test pits dug were at sufficient depth to reach “existing ground”.
- Preliminary stability analysis based on the result of the lab testing agree with Golder (Golder Associates, 2014) initial assessment which states that the maximum safe angle for the sediments is 5H:1V assuming a target factor of safety of 1.5.
- Environmental testing of the sediments suggest that the sediments do not contain any contaminants that would prevent them from being disposed of off site.

Although each of the five options considered presents its own unique challenges, there are several assessments that are required prior to evaluating and selecting a suitable option. These assessments are recommended to be completed prior to making the decision on which option to move forward with. Completion of these common assessments early in the process can also present significant cost savings as the information they provide will better inform the best option for the City to move forward with.

Engagement sessions were held at the 30% and 90% feasibility stages. Support for Options #2 and #5 was significantly higher than for the alternatives. Preferences for decision-making mildly emphasized community and environmental benefits over flood and erosion control, and cost. Water based recreation and habitat enhancements were highly valued as well as limiting change and costs. Going forward, ideas for future engagement were given to meet community needs. As the lack of background information and data was identified as an impediment to evaluating the options presented, further engagement is recommended to guide participants through the results of assessments before revisiting option preferences.

Ten potential funding opportunities that align with the options for the reservoir were identified in this report. Overall, Option #3 is most strongly positioned for qualifying for the most grants while Options #2 and #5 may be eligible for a greater amount of funds. The applicability and potential for success of these funding opportunities can be strengthened by fine-tuning the preferred reservoir option to emphasize the objectives and criteria outlined by each funding agency. Once the City chooses an option to pursue, the funding agencies outlined in this report should be contacted to discuss the applicability of the option, methods to improve the potential for success, timelines, and other details prior to applying for the grant. The City should consider partnering with other agencies to increase the potential access to funds and to explore the benefits of collaboration.

Recommended next steps for the City of Grande Prairie are to begin completing all the common pre-Design Assessments set out in **Section 5**. Additionally, the City should begin the task of selecting the option that best meets the needs of the City and its community.



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APPENDIX A

Request for Proposal



**REQUEST FOR PROPOSALS
FOR
RESERVOIR FEASIBILITY STUDY**

Request for Proposals No.: **RFP-2024-95**

Issued: **September 19, 2024**

Electronic Bid Submission Deadline: **October 10, 2024, 2:00:00 P.M. Mountain Time**

Important Notice for this Opportunity

The City of Grande Prairie utilizes a fully integrated online eProcurement platform bids&tenders™ which provides proponents with the ability to view, register and submit bids online in one convenient location.

The bid document(s) for this opportunity has been posted on <https://cityofgp.bidsandtenders.ca> for viewing and downloading. Submissions will be received **online only** through the bidding system.

There are no fees or charges for accessing or downloading the City of Grande Prairie opportunities on bids&tenders™

Requirements:

1. Bidding System Account and Plan Taker

All proponents must have a bidding system **Vendor Account** and be registered as a **Plan Taker** for this opportunity. Registering as a Plan Taker will enable the proponent to download the opportunity, to receive addenda email notifications, to download addenda and to submit their bid electronically through the system.

Please note that any bids received from a proponent that did not register as a Plan Taker for this particular bid will be disqualified from the competition.

2. Questions

Questions related to this opportunity are to be submitted to the RFP Representative through the Bidding System only, by clicking on the “Submit a Question” button for this specific opportunity.

3. Submission Confirmation

After a bid is submitted, the bidding system will send a confirmation email to the proponent advising that their bid was submitted successfully. If a confirmation email is not received, contact bids&tenders™ support at support@bidsandtenders.ca , late submissions will not be accepted.

4. Addenda

Proponents shall acknowledge receipt of any addenda when submitting their bid through the bidding system by checking a box for each addendum and any applicable attachment.

If a proponent submits their bid prior to the bid closing date, and an addendum is issued, the bidding system will **withdraw** the bid and the bid status will change to an **incomplete status**. An incomplete status means that the City of Grande Prairie has not received the bid. The proponent can view this status change in the **“My Bids”** section of the bidding system.

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PART 1 – INTRODUCTION

1.1 Invitation to Proponents

This Request for Proposals (“RFP”) is requesting detailed and comprehensive proposals for the provision of **Reservoir Feasibility Study** as further described in Appendix D – RFP Particulars (the “Deliverables”).

1.2 RFP Representative

For the purposes of this procurement process, the RFP Representative is the Procurement Buyer to be contacted through the bidding system only, by clicking on the “Submit a Question” button.

Proponents and their representatives are not permitted to contact any employees, officers, agents, elected or appointed officials or other representatives of the City, other than the RFP Representative, concerning matters regarding this RFP. Failure to adhere to this rule may result in the disqualification of the proponent and the rejection of the proponent’s submission.

Proponents must have a bidding system Vendor Account with bids&tenders™ cityofgp.bidsandtenders.ca and be registered as a Plan Taker for this bid opportunity, which will enable the proponent to download the RFP document and to receive addenda email notifications.

1.3 Type of Contract for Deliverables

The selected proponent will be requested to enter into negotiations for an agreement with the City for the provision of the Deliverables in the form attached as Appendix A to this RFP. It is the City’s intention to enter into an agreement with only one (1) legal entity. The term of the agreement is to be until the work as outlined in Appendix D is complete.

It is anticipated that the agreement will be executed around **November 6, 2024**.

The City conducts supplier performance evaluations within bids&tenders™. When applicable, Suppliers will receive a performance evaluation scorecard detailing their interim and final scores. The supplier performance evaluation program has been developed to be inclusive and will require input from the supplier. The intent of this program is based on strengthening relationships.

1.4 RFP Timetable

Issue Date of RFP	September 19, 2024
Deadline for Questions	October 1, 2024 at 2:00 P.M. Mountain Time
Deadline for Issuing Addenda	October 4, 2024
Electronic Bid Submission Deadline	October 10, 2024 at 2:00 P.M. Mountain Time
Rectification Period	Two (2) Business Days
Anticipated Award	Week of October 28, 2024
Commencement of the Work	Upon executed agreement

The RFP timetable is tentative only and may be changed by the City at any time. For greater clarity, business days means all days that the City is open for business.

1.5 Submission of Proposals

1.5.1 Electronic Bidding System and Proponent Contact Information

ELECTRONIC BID SUBMISSIONS ONLY, shall be received by the bidding system. Hardcopy submissions are not permitted.

Proponents are cautioned that the timing of their submission is based on when the submission is RECEIVED by the bidding system, not when submitted, as bid transmission can be delayed due to file transfer size, transmission speed, etc.

For the above reasons, it is recommended that sufficient time to complete your submission and to resolve any issues that may arise. The closing time and date shall be determined by the bidding system's web clock.

Proponents should contact bids&tenders™ support listed below, at least twenty-four (24) hours prior to the closing time and date, if they encounter any problems. The bidding system will send a confirmation email to the proponent advising that their submission was successfully submitted. If you do not receive a confirmation email, contact bids&tenders™ support at support@bidsandtenders.ca.

Late submissions are not permitted by the bidding system.

To ensure receipt of the latest information and updates via email regarding this RFP, or if a proponent has obtained this RFP document from a third party, the onus is on the proponent to create a bidding system Vendor Account and register as a Plan Taker for the RFP opportunity.

1.5.2 Proposals to be submitted in Prescribed Format

Proponents must submit online only, through the bidding system.

1.5.3 Amendment of Proposals

Proponents may edit or withdraw their submission prior to the closing time and date. However, the proponent is solely responsible to ensure the re-submission is received by the bidding system no later than the stated closing time and date.

Any amendment should clearly indicate which part of the proposal the amendment is intended to amend or replace.

1.5.4 Withdrawal of Proposals

Proponents may edit or withdraw their submission prior to the closing time and date. However, the proponent is solely responsible to ensure the re-submission is received by the bidding system no later than the stated closing time and date.

[End of Part 1]

PART 2 – EVALUATION, NEGOTIATION AND AWARD

2.1 Stages of Evaluation and Negotiation

The City will conduct the evaluation of proposals and negotiations in the following stages:

2.2 Stage I – Mandatory Submission Requirements

Stage 1 will consist of a review to determine which proposals comply with all of the mandatory submission requirements. If a proposal fails to satisfy all of the mandatory submission requirements, the City will issue the proponent a rectification notice identifying the deficiencies and providing the proponent an opportunity to rectify the deficiencies. If the proponent fails to satisfy the mandatory submission requirements within the Rectification Period, its proposal may be rejected. The Rectification Period will begin to run from the date and time that the City issues a rectification notice to the proponent. The mandatory submission requirements are set out in Section C of the RFP Particulars (Appendix D).

2.3 Stage II – Evaluation

Stage II will consist of the following two sub-stages:

2.3.1 Mandatory Technical Requirements

The City will review the proposals to determine whether the mandatory technical requirements as set out in Section D of the RFP Particulars (Appendix D) have been met. Questions or queries on the part of the City as to whether a proposal has met the mandatory technical requirements will be subject to the verification and clarification process set out in Part 3.

2.3.2 Rated Criteria

The City will evaluate each qualified proposal on the basis of the non-price rated criteria as set out in Section F of the RFP Particulars (Appendix D). Only proposals that pass will be invited to participate in the Presentation / Interview.

2.4 Stage III – Virtual / On site Demonstrations (Interview)

Not applicable.

2.5 Stage IV – Ranking and Contract Negotiations

2.5.1 Ranking of Proponents

After the completion of Stage III, all scores will be combined and the proponents will be ranked based on their total scores. The top-ranked proponents will receive a written invitation to enter into direct contract negotiations to finalize the agreement with the City. In the event of a tie, the proponent will be selected by way of lowest price.

2.5.2 Contract Negotiation Process

Any negotiations will be subject to the process rules contained in the Terms and Conditions of the RFP Process (Part 3) and will not constitute a legally binding offer to enter into a contract on the part of the City or the proponent and there will be no legally binding relationship created with any proponent prior to the execution of a written agreement. The Terms and Conditions found in the Form of Agreement (Appendix A) are to form the basis for commencing negotiations between the City and the selected proponent. Negotiations may include requests by the City for supplementary information from the proponent to verify, clarify or supplement the information provided in its proposal or to confirm the conclusions reached in the evaluation, and may include requests by the City for improved pricing or performance terms from the proponent.

2.5.3 Time Period for Negotiations

The City intends to conclude negotiations and finalize the agreement with the top-ranked proponent during the Contract Negotiation Period, commencing from the date the City invites the top-ranked proponent to enter negotiations.

2.5.4 Failure to Enter into Agreement

If the pre-conditions of award listed in Section E of the RFP Particulars (Appendix D) are not satisfied or if the parties cannot conclude negotiations and finalize the agreement for the Deliverables within the Contract Negotiation Period, the City may discontinue negotiations with the top-ranked proponent and may invite the next-best-ranked proponent to enter into negotiations. This process will continue until an agreement is finalized, until there are no more proponents remaining that are eligible for negotiations or until the City elects to cancel the RFP process.

2.5.5 Notification of Negotiation Status

Other proponents that may become eligible for contract negotiations may be notified at the commencement of the negotiation process with the top-ranked proponent.

[End of Part 2]

PART 3 – TERMS AND CONDITIONS OF THE RFP PROCESS

3.1 General Information and Instructions

3.1.1 Proponents to Follow Instructions

Proponents should structure their proposals in accordance with the instructions in this RFP. Where information is requested in this RFP, any response made in a proposal should reference the applicable section numbers of this RFP.

To ensure receipt of the latest information and updates via email regarding this bid, or if a proponent has obtained this RFP document from a third party, the onus is on the proponent to create a bidding system Vendor Account and register as a Plan Taker for the RFP.

3.1.2 Proposals in English

All proposals are to be in English only.

3.1.3 No Incorporation by Reference

The entire content of the proponent's proposal should be submitted in a fixed form, the content of websites or other external documents referred to in the proponent's proposal but not attached will not be considered to form part of its proposal.

3.1.4 References and Past Performance

During the evaluation process, the City reserves the right to request references and conduct a reference check of the top ranked proponent and may also consider the proponent's past performance or conduct on previous contracts with the City or other institutions.

3.1.5 Information in RFP Only an Estimate

The City and its advisers make no representation, warranty or guarantee as to the accuracy of the information contained in this RFP or issued by way of addenda. Any quantities shown or data contained in this RFP or provided by way of addenda are estimates only, and are for the sole purpose of indicating to proponents the general scale and scope of the Deliverables. It is the proponent's responsibility to obtain all the information necessary to prepare a proposal in response to this RFP.

3.1.6 Proponents to Bear Their Own Costs

The proponent will bear all costs associated with or incurred in the preparation and presentation of its proposal, including, if applicable, costs incurred for interviews or demonstrations.

3.1.7 Proposal to be Retained by the City

The City will not return the proposal or any accompanying documentation submitted by a proponent.

3.1.8 No Guarantee of Volume of Work or Exclusivity of Contract

The City makes no guarantee of the value or volume of work to be assigned to the successful proponent. The agreement to be negotiated with the selected proponent will not be an exclusive contract for the provision of the described Deliverables. The City may contract with others for goods and services the same as or similar to the Deliverables or may obtain such goods and services internally.

3.1.9 Trade Agreements

Proponents should note that procurements at this estimated value may fall within the scope of and are subject to the most recent version of the New West Partnership Trade Agreement, the Canada Free Trade Agreement, and the Comprehensive Economic and Trade Agreement but that the rights and obligations of the parties will be governed by the specific terms of this RFP.

3.2 Communication after Issuance of RFP

3.2.1 Proponents to Review RFP

Proponents should promptly examine all of the documents comprising this RFP and may direct questions or seek additional information on or before the Deadline for Questions.

Questions related to this RFP are to be submitted to the Procurement representative through the bidding system only by clicking on the “**Submit a Question**” button for this specific RFP.

No such communications are to be directed to anyone other than the RFP Representative via the “**Submit a Question**” button. The City is under no obligation to provide additional information, and the City is not responsible for any information provided by or obtained from any source. It is the responsibility of the proponent to seek clarification on any matter it considers to be unclear. The City is not responsible for any misunderstanding on the part of the proponent concerning this RFP or its process.

3.2.2 All New Information to Proponents by Way of Addenda

This RFP may be amended only by addendum in accordance with this section. If the City, for any reason, determines that it is necessary to provide additional information relating to this RFP, such information will be communicated to all proponents by addendum. Should the City issue an addendum to the RFP, it will be posted only on the bidding system. Each addendum forms an integral part of this RFP and may contain important information, including significant changes to this RFP. Proponents are responsible for obtaining all addenda issued by the City.

Proponents will acknowledge receipt of any addenda through the bidding system by checking a box for each addendum and any applicable attachment.

It is the responsibility of the proponent to have received all addenda that are issued. Proponents should check online at cityofgp.bidsandtenders.ca prior to submitting and up until the submission closing time and date in the event additional addenda are issued.

If a proponent submits prior to the closing time and date and an addendum has been issued, the bidding system will WITHDRAW the submission and the bid status will change to INCOMPLETE STATUS and withdraw the bid. The proponent can view this status change in the “MY BIDS” section of the bidding system.

The proponent is solely responsible to:

- make any required adjustments to their submission; and
- acknowledge the addenda; and
- ensure the re-submitted bid is RECEIVED by the bidding system no later than the stated closing time and date.

Verbal answers provided by any City staff or consultants for the City are only binding when confirmed by written addenda from the RFP Representative.

3.2.3 Post-Deadline Addenda and Extension of Submission Deadline

If the City determines that it is necessary to issue an addendum after the Deadline for Issuing Addenda, the City may extend the Submission Deadline.

3.2.4 Verify, Clarify and Supplement

When evaluating proposals, the City may request further information from the proponent or third parties in order to verify, clarify or supplement the information provided in the proponent's proposal, including but not limited to clarification with respect to whether a proposal meets the mandatory technical requirements set out in Section D of the RFP Particulars (Appendix D). The City may revisit, re-evaluate and rescore the proponent's response or ranking on the basis of any such information.

3.3 Notification and Debriefing

3.3.1 Notification to Other Proponents

Once an agreement is executed by the City and a proponent, the other proponents will be notified by public posting, in the same manner that this RFP was originally posted, of the outcome of the procurement process.

3.3.2 Debrief

Proponents may request a debrief after receipt of a notification of the outcome of an unsuccessful submission. All requests must be in writing to procurement@cityofgp.com and must be made within thirty (30) calendar days of such notification.

The intent of the debrief session is to aid the proponent in subsequent competitive opportunities.

The debrief is not for the purpose of providing an opportunity to challenge the procurement process or its outcome.

3.3.3 Procurement Protest Procedure

Any proponent with concerns about the RFP process is required to attend a debrief prior to proceeding with a protest.

If, after attending a debrief, the proponent wishes to challenge the RFP process, it must provide written notice to procurement@cityofgp.com. The written notice must contain:

- (a) a clear statement as to which RFP the proponent wishes to challenge;
- (b) a clear explanation of the proponent's concerns with the RFP, including specifics as to why it disagrees with the procurement process; and
- (c) the proponent's contact details, including name, telephone number and email address.

The RFP Representative will send an initial response to acknowledge receipt of the proponent's notice and indicate the date by which the City will provide the proponent with further details.

3.4 Conflict of Interest and Prohibited Conduct

3.4.1 Conflict of Interest

For the purposes of this RFP, the term "Conflict of Interest" includes, but is not limited to, any situation or circumstance where:

- (a) in relation to the RFP process, the proponent has an unfair advantage or engages in conduct, directly or indirectly, that may give it an unfair advantage, including but not limited to (i) having, or having access to, confidential information of the City in the preparation of its proposal that is not available to other proponents, (ii) communicating with any person with a view to influencing preferred treatment in the RFP process (including but not limited to the lobbying of decision makers involved in the RFP process), or (iii) engaging in conduct that compromises, or could be seen to

compromise, the integrity of the open and competitive RFP process or render that process non-competitive or unfair; or

- (b) in relation to the performance of its contractual obligations under a contract for the Deliverables, the proponent's other commitments, relationships or financial interests (i) could, or could be seen to, exercise an improper influence over the objective, unbiased and impartial exercise of its independent judgement, or (ii) could, or could be seen to, compromise, impair or be incompatible with the effective performance of its contractual obligations.

3.4.2 Disqualification for Conflict of Interest

The City may disqualify a proponent for any conduct, situation or circumstances, determined by the City, in its sole and absolute discretion, to constitute a Conflict of Interest as defined above.

3.4.3 Disqualification for Prohibited Conduct

The City may disqualify a proponent, rescind an invitation to negotiate or terminate a contract subsequently entered into if the City determines that the proponent has engaged in any conduct prohibited by this RFP.

3.4.4 Prohibited Proponent Communications

Proponents must not engage in any communications that could constitute a Conflict of Interest and should take note of the Conflict of Interest declaration set out in the Submission Form (Appendix B).

3.4.5 Proponent Not to Communicate with Media

Proponents must not at any time directly or indirectly communicate with the media in relation to this RFP or any agreement entered into pursuant to this RFP without first obtaining the written permission of the RFP Representative.

3.4.6 No Lobbying

Proponents must not, in relation to this RFP or the evaluation and selection process, engage directly or indirectly in any form of political or other lobbying whatsoever to influence the selection of the successful proponent(s).

3.4.7 Illegal or Unethical Conduct

Proponents must not engage in any illegal business practices, including activities such as bid-rigging, price-fixing, bribery, fraud, coercion or collusion. Proponents must not engage in any unethical conduct, including lobbying, as described above, or other inappropriate communications; offering gifts to any employees, officers, agents, elected or appointed officials or other representatives of the City; deceitfulness; submitting proposals containing misrepresentations or other misleading or inaccurate information; or any other conduct that compromises or may be seen to compromise the competitive process provided for in this RFP.

3.4.8 Past Performance or Past Conduct

The City may prohibit a proponent from participating in a procurement process based on past performance or based on inappropriate conduct in a prior procurement process, including but not limited to the following:

- (a) illegal or unethical conduct as described above;
- (b) the refusal of the proponent to honour its submitted pricing or other commitments; or
- (c) any conduct, situation or circumstance determined by the City, in its sole and absolute discretion, to have constituted an undisclosed Conflict of Interest.

3.5 Confidential Information

3.5.1 Confidential Information of the City

All information provided by or obtained from the City in any form in connection with this RFP either before or after the issuance of this RFP

- (a) is the sole property of the City and must be treated as confidential;
- (b) is not to be used for any purpose other than replying to this RFP and the performance of any subsequent contract for the Deliverables;
- (c) must not be disclosed without prior written authorization from the City; and
- (d) must be returned by the proponent to the City immediately upon the request of the City.

3.5.2 Confidential Information of Proponent

A proponent should identify any information in its proposal, or any accompanying documentation supplied in confidence for which confidentiality is to be maintained by the City. The confidentiality of such information will be maintained by the City, except as otherwise required by law or by order of a court or tribunal. Proponents are advised that their proposals will, as necessary, be disclosed, on a confidential basis, to advisers retained by the City to advise or assist with the RFP process, including the evaluation of proposals. If a proponent has any questions about the collection and use of personal information pursuant to this RFP, questions are to be submitted to the RFP Representative.

3.6 Procurement Process Non-binding

3.6.1 No Contract A and No Claims

This procurement process is not intended to create and will not create a formal, legally binding bidding process and will instead be governed by the law applicable to direct commercial negotiations. For greater certainty and without limitation:

- (a) this RFP will not give rise to any Contract A-based tendering law duties or any other legal obligations arising out of any process contract or collateral contract; and
- (b) neither the proponent nor the City will have the right to make any claims (in contract, tort, or otherwise) against the other with respect to the award of a contract, failure to award a contract or failure to honour a proposal submitted in response to this RFP.

3.6.2 No Contract until Execution of Written Agreement

This RFP process is intended to identify prospective proponent(s) for the purposes of negotiating potential agreements. No legal relationship or obligation regarding the procurement of any good or service will be created between the proponent and the City by this RFP process until the successful negotiation and execution of a written agreement for the acquisition of such goods and/or services.

3.6.3 Pricing

Proponents are required to submit pricing with their proposal. Please refer to **Appendix C** for further details.

Pricing must not be included in the technical submission. Pricing will only be evaluated for those proposals that pass with a minimum of 70% through the technical and presentation phases. It is at the City's sole discretion to waive the threshold for technical score.

While the pricing information provided in proposals will be non-binding prior to the execution of a written agreement, such information will be assessed during the evaluation of the proposals and the ranking of the proponents. Any inaccurate, misleading or incomplete information, including withdrawn or altered pricing, could adversely impact any such evaluation or ranking or the decision of the City to enter into an agreement for the Deliverables.

3.6.4 Cancellation

The City may cancel or amend the RFP process without liability at any time.

3.7 Governing Law and Interpretation

These Terms and Conditions of the RFP Process (Part 3):

- (a) are intended to be interpreted broadly and independently (with no particular provision intended to limit the scope of any other provision);
- (b) are non-exhaustive and will not be construed as intending to limit the pre-existing rights of the parties to engage in pre-contractual discussions in accordance with the common law governing direct commercial negotiations; and
- (c) are to be governed by and construed in accordance with the laws of the province of Alberta and the federal laws of Canada applicable therein.

[End of Part 3]

APPENDIX A – FORM OF AGREEMENT

ATTACHED IN THE DOCUMENT SECTION OF THE BID OPPORTUNITY LOCATED IN THE bids&tenders™ BIDDING SYSTEM

Proponents must clearly indicate in their submission any conditions in the Form of Agreement that are not acceptable and provide alternate wording as a basis of negotiation.

APPENDIX B – SUBMISSION FORM

TO BE COMPLETED ONLINE THROUGH THE bids&tenders™ BIDDING SYSTEM

APPENDIX C – PRICING

TO BE COMPLETED ONLINE THROUGH THE bids&tenders™ BIDDING SYSTEM

Instructions on How to Provide Pricing

- (a) Proponents should provide the pricing information requested by completing **only** the Pricing Tables in the bids&tenders™ bidding system.
- (b) Rates must be provided in Canadian funds, inclusive of all applicable duties and taxes except for **GST**.
- (c) Rates quoted by the proponent must be all-inclusive and must include all labour and material costs, disbursements and expenses, all freight and carriage costs, all insurance costs, fuel surcharges, all costs of delivery, all costs of installation and set-up, including any pre-delivery inspection charges, and all other overhead, including any fees or other charges required by law.
- (d) Pricing **must** be separated from the technical submission. Any indication of price within the technical submissions may result in disqualification.

Evaluation of Pricing

Pricing will be scored based on a relative pricing formula using the rates set out in the pricing form. Each proponent will receive a percentage of the total possible points allocated to price, which will be calculated in accordance with the following formula, which will be calculated in accordance with the following formula:

$$\text{Lowest price} \div \text{proponent's price} \times \text{weighting} = \text{proponent's pricing points}$$

Fee Schedule

A detailed fee schedule, in spreadsheet format, will be included in the proposal, identifying the resource budget for the charge-out rates, expenses and disbursement, and the allocated staff hours for engineering tasks. Each task will be listed under the relevant engineering phase. Engineering phase subtotals (Upset Fees) will then be added to provide a total cost estimate (Total Upset Fee). Upset fees by phase and the total upset fee will not be exceeded without the prior approval of the Project Sponsor.

- Provide fee for service schedule, hourly costs for services, hours committed to project.
- Provide accurate estimate of budget required for this work.
- Provide schedules and estimates for all related disciplines required to complete this project.
- Work items the proponent considers to be optional can be presented as a delete-able item.
- Provide estimates for ALL disbursements and incidentals such as vehicle rates, computer rates, CAD rates, printing rates, etc. Omission in identifying an incidental item will be deemed as providing the service at a nil charge. Disbursements must be listed, and a separate cost shown.

The proponent will present a fee schedule for each phase of the project and will present the following information:

Engineering Review and Report Preparation (Options 1 – 4) 30% Report	Lump Sum
Engineering Review and Report Preparation (Options 1 – 4) 90% Report	Lump Sum
Engineering Review and Report Preparation (Options 1 – 4) Final Report	Lump Sum
Public Engagement Session 90%	Lump Sum
Stakeholder Engagement Sessions	Lump Sum
Presentation to Council/Committee	Lump Sum
Geotechnical services allowance	\$7,500

NOTES:

1. All lump sum items will be paid based on a percentage completed not on hourly fees.
2. Final Report will be paid once they are submitted and approved.
3. Geotechnical services cash allowance will be used for any geotechnical investigation services approved by the City. Any necessary field reviews (geotechnical) related to construction to be provided by the Geotechnical staff may be charged to the allowance (subgrade assessments, proof rolls etc.) at approved rates. This allowance will be used for any additional geotechnical investigation that the City does not anticipate (revision and/or addition to the provided geotechnical reports, or additional sites not identified in this RFP), and for all material testing costs during the construction phase. Any additional amount required above the allowance will be treated as extra work.
4. Cash allowances belong to the City and their use must be approved. Unused portions will be free of claim by the Consultant.

Invoicing Procedure

Invoicing and budget status summary report will only be accepted on a monthly basis and will utilize the end of each month as a cut-off date. For payment to be facilitated by the end of the following month, the invoice must be received by the City's Engineering Services department 30 days prior.

The fee schedule will serve as the basis for invoicing. Invoices must be supplemented with a detailed expenditure report. At minimum, the expenditure report shall show the per phase cost for:

- Original budget
- Change order(s) (if any)
- Costs in previous period(s)
- Costs in current period
- Costs to date
- Budget status in %
- Projected final costs
- A total in each expenditure column summarizing the total costs
- A brief summary of work completed for the invoiced period

APPENDIX D – RFP PARTICULARS

A. DELIVERABLES

The City of Grande Prairie (the “City”) is requesting detailed and comprehensive proposals for an Engineering consulting firm specializing in dam, control structure, reservoir planning and management along with Provincial rules and regulations in relations to dam structures (including but not limited to: The Water Act, The Water (Ministerial) Regulation, The Alberta Dam and Canal Safety Directive) to provide design and Engineering services for the creation of multiple options for the long term plan for the Bear River Control Structure (BRCS) and the associated reservoir.

Scope of Work

The City would like to explore the following four design options in further detail to determine their feasibility and costs. The studies should include high level Engineering to ensure options are feasible both technically and accounting for the current regulatory requirements. The cost estimates prepared must be Class-D or better (as defined by Public Services and Procurement Canada). All options should prepare costs for the next 30 years including expected operation, maintenance, and capital costs as appropriate. Further, all options must account for sediment management. The successful consultant must also explore potential grant opportunities for each option. Additionally, it is required that all the required technical studies, which are to be carried out at a later date, are identified for each option. Additionally, funding and remediation partnerships should be explored with agencies including but not limited to the Forest Resource Improvement Association of Alberta, Ducks Unlimited, and Trout Canada.

Option 1 – Maintain the Bear River Control Structure

This option will explore what work will be required to maintain the BRCS until the end of its life and include the replacement or full rehabilitation of the control structure and earthen dam to ensure continued operation beyond the next 30 years. The analysis should include any practical sediment management strategies. The costs are to include the ongoing inspection and maintenance costs along with estimated capital costs.

Option 2 – Maintain the Bear River Control Structure and Remove Sediment

This option will explore what work will be required to maintain the BRCS until the end of its life and include the replacement or full rehabilitation of the control structure and earthen dam to ensure continued operation beyond the next 30 years. The analysis should include what it will take to more permanently have water retained behind the spillway gates including sediment management strategies and the removal or movement of sediment to below the dam sill elevation to allow for a more permanent pool of water. As part of this option, the sediment should be analyzed by a geotechnical firm to determine its suitability for reuse or disposal. The costs are to include the ongoing inspection and maintenance costs along with capital costs and sediment management costs.

Option 3 – Complete Removal of the Bear River Control Structure

This option is to explore the complete removal of the BRCS and the work required to completely declassify the structure as a dam. The intent would be that the City would no longer have a licensed control structure or any obligations of a permitted dam structure. This option should include the re-sloping of Bear River and the reconstruction of a naturalized channel for permanent water flow. The investigation should include the maintenance of current utilities within the area. The trail network must be maintained over Bear River in this area to ensure continued connectivity within the trail network. As part of the concept analysis, fish passage is to be restored. Basic riverine principles should be utilized as part of this option to ensure feasibility of concept design. A sediment management or removal plan must also be included as part of this option. The bank stability surrounding the upstream areas adjacent to existing infrastructure must

be considered as part of the plan prepared for this portion of the corridor. The plan should also include an optional expansion of the trail network adjacent to the new river valley including opportunities for recreation and wildlife observation in all seasons.

Option 4 – Partial Removal of the Bear River Control Structure

This option would explore the removal of the gates, the concrete spillway, and the earthen dam to the north of the concrete spillway. The ongoing cost for the maintenance and inspections of the dam should be included as well as the creation of a bridge to replace the pedestrian crossing over the river. The passage of fish should be considered for this option within any reconstructed channel. Basic riverine modelling should be undertaken as part of this option to ensure feasibility of concept design. The south portion of the earthen dam (south of the spillway) is to remain intact to ensure that the sled hill and the festival space remain unimpacted or improved as a result of the work. A sediment management plan must be included as part of this option. The bank stability surrounding the upstream areas adjacent to existing buildings must be considered as part of the plan prepared for this portion of the corridor.

Project Management

The project management approach should be rooted within the Project Management Institute (PMI) processes and tools and tailored to fit the project.

Regular project status meetings will be held between the Consultant and the Owner during the project lifecycle to review project progress, costs, scope, quality, project control, resource allocation, and safety.

Provide an updated project baseline/as-planned schedule prior to any meeting (project initialization, progress, etc.).

Minimum Deliverables: Formal progress meetings, agendas, minutes, documents, and reports

Project Risk Management

An open discussion pertaining to risk will be required at the project kick-off meeting and at every meeting thereafter. At minimum, the Consultant shall capture project risks (threats and opportunities), develop, maintain, and submit a project risk log/register during the lifecycle of the project.

The risk register will be reviewed as a standing agenda item for every project team meeting.

There may be varying levels of risk; discuss with the Project Sponsor to ensure that the City has a handle on the risks that they agree to or determine if they need mitigation to another level.

Minimum Deliverables: Initial risk register, regular reviews, and updates

Communication and Engagement

The Consultant shall work with the City's Communication team by:

- Providing relevant information about the project that will assist the City in keeping the public informed; this will include providing information to develop news releases quarterly and at all major project milestones along with content for the engagement page on the City's engagement website.
- Converting all key technical information into plain language for the public and summarize into key messages that can be understood by those without a technical background to allow for a plain language message to be delivered by the City's communication team.
- Develop information and content for all in-person engagement events, such as creating content for information boards, content for presentations, feedback survey content, as well as developing and producing all material (including the printing of media such as poster boards, directional signage for wayfinding in event spaces, printing of paper surveys, and other physical media as required).

- Attend and lead two in-person public engagement events at the 90% stage for the project.
- Attend and lead two targeted sets of stakeholder workshops at two significant project stages for identified key stakeholders (including but not limited to Rotary Campground, Northwest Polytechnic, Elks Hall, etc.) with one set of stakeholder consultations to be held in person and one set to be held virtually.
- Consultant to present the finalized options to council/committee including the preparation of a presentation and report specifically tailored for the meeting. The City's Communication team will provide a separate "What We Heard Report" that highlights the engagement results.

All formal meetings (progress, design review, pre-construction, construction, etc.) shall have an agenda prepared before the meeting and minutes distributed after.

Minimum Deliverables: Communication plan, correspondence, agendas and minutes, stakeholder engagement plan, stakeholder survey, presentation to council/committee, a finalized engagement report, survey data analysis and report, stakeholder and public engagement session summaries

Engineering Review & Report Preparation

- Review of the existing information, reports, master plans, functional studies, and files.
- Familiarize with the project site.
- Assess all existing infrastructure and provide recommendations on design options to the City.
- Perform a limited survey for design concepts as required.
- Review all options for potential grant funding and provide recommendations of available grants including but not limited to those from Trout Unlimited and the Forest Resource Improvement Association of Alberta.
- Collect any other information required.
- Undertake any high level modelling or assessments for sediment, water, or land to determine feasibility of the options with recommendations on further detailed studies required as part of each option.
- Coordinate with utility companies (identifying conflicting infrastructure, power connections and relocations, etc.) and include the City in all correspondence.
- Coordinate with potential industry, provincial, and other potential partners such as Forest Resource Improvement Association etc.
- Determine what permits would be necessary (crossing, proximity, environmental, etc.) from others if necessary (Alberta Environment and Protected Area, ATCO, CN Rail, etc.) for each design option.
- Obtain all required permits for the investigative work.
- Report options for review and/or engagement to be submitted at 30% and 90%. At a minimum must include:
 - Design concept sketches or drawings
 - Full color 3D renderings with walkthroughs (3 paths minimum) of the entire study area including the area on both sides of the dam and the surrounding river valley for all four design options
 - Cost Estimates
 - List of required future studies
 - Constructability review memo
- Final Report for City acceptance must include:
 - Design concept sketches or drawings
 - Full color 3D site renderings of finalized options
 - Cost Estimates for each option, life cycle
 - List of required future studies
 - Legislation and permitting requirement review
 - Grant potential review
 - Constructability review memo

- Silt and sediment management plan(s)
- Formal meeting to review the options with administration
- Finalize reports related to all aspects of the work.
- Geotechnical investigation to evaluate the sediment within the reservoir for the possibility of reuse, disposal, land spreading, or other potential management strategies. Geotechnical Investigation Reports are to be submitted to the City for all sites identified.

The geotechnical investigation shall include, but not be limited to:

- Geotechnical drilling
 - Silt and sediment analysis to determine general suitability for proposed uses
 - Physical sampling (drilling, grab sampling, etc.)
 - Report to provide recommendation for treatment options
 - Report to include copy of logs and results of all laboratory tests
 - Existing geotechnical reports if any will be provided to the successful proponent for review and/or re-evaluation.
- Geotechnical Investigation Reports will become property of the City.
 - The Consultant shall include a geotechnical cost allowance total of \$7,500, which must be identified as a separate line cost item in the proposal. This allowance shall be used for any geotechnical investigation. The successful consultant will provide unit rates for all material testing. Any additional amount required above the allowance shall be treated as extra work. All allowance belongs to the City and any use shall be approved and any unused portion will be free of claim by the Consultant.

Minimum Deliverables: 30% options report, 90% options report, geotechnical report, stormwater report, final options report

Additional Project information

Information Available

The following information may be available for review to assist in the preparation of the proposal:

- City of Grande Prairie's Open Data: <https://data.cityofgp.com/>
- Latest City of Grande Prairie Design and Construction Manuals:
<https://www.cityofgp.com/development-plans/specifications-standards-and-guidelines>
- Bear River Dam Safety Review: https://cityofgp.com/sites/default/files/2022-08/20210716_676065_Bear%20River%20IS-DSR_Final_rev1.pdf
- Reservoir Feasibility Study: https://cityofgp.com/sites/default/files/2022-01/2012_reservoir_feasability_study_with_out_3_figures_1.pdf
- Attachments 1 & 2, found in the 'Uploaded Documents' section of bids&tenders.

The following information will be provided to the successful Proponent upon award:

- Record drawings (if any)
- Geotechnical reports (if any)
- Environmental reports (if any)

All information is provided as reference material only and it is the responsibility of the Proponent to confirm the completeness and accuracy of all required information through investigation, survey, testing, calculation, etc.

Project Schedule

The entire project must be completed by November 2025.

A tentative schedule for the proposal process is as defined below. The Consultant will outline in their proposal the schedule for the completion of each task. The Consultant should allow for a minimum of one week for the City's review of design. In addition, for the project to be implemented in a timely manner, we request that the following milestone dates be met unless otherwise agreed upon with the Project Sponsor.

Milestone Event	Date
Project Initialization Meeting	November 2024
Design Review Meetings (30%)	February 2025
Stakeholder Engagement	February 2025
Design Review Meetings (90%)	May 2025
Stakeholder Engagement & Public Consultation at 90% Stage	June 2025
Final Report	September 2025

B. MATERIAL DISCLOSURES

- 1) The City reserves the right to award the Contract based upon budget approval.
- 2) All drawings, designs, specifications, reports, data sheets, scope development, photos, and all other documents and models prepared by the Consultant or others for the Project are the property of the City.
- 3) The successful proponent must obtain and maintain a City of Grande Prairie Business License and all permits required to carry out the obligations set forth in this RFP. Proponents are encouraged to visit [Business Licensing | City of Grande Prairie \(cityofgp.com\)](https://cityofgp.com/business-licensing) to determine if a City of Grande Prairie Business License is required.

C. MANDATORY SUBMISSION REQUIREMENTS

- **Submission Form** (Appendix B-to be completed online through bids&tenders™ bidding system)
- **Pricing** (Appendix C- to be completed online through bids&tenders™ bidding system)
- **Technical Proposal** (to be uploaded through bids&tenders™ bidding system)
- **Detailed Fee Schedule** (to be uploaded through bids&tenders™ bidding system)
- **Confirmation of Professional Registration with APEGA or its equivalent** (to be uploaded through bids&tenders™ bidding system)
- **WCB Clearance Letter or equivalent** (to be uploaded through bids&tenders™ bidding system)
- **Certificate of Recognition (COR) or equivalent:** A current copy of an issued COR, SECOR or Temporary Letter of Certification endorsed by the Government of Alberta, or an equivalent certificate or designation under an equivalent program in a jurisdiction other than Alberta. A detailed safety program may be submitted as an alternative to the above, however this a discretionary alternative as the City reserves the right to accept or deny this submission.

D. MANDATORY TECHNICAL REQUIREMENTS

Not applicable

E. PRE-CONDITIONS OF AWARD

- **Certificate of Insurance:** Upon award, the successful proponent shall obtain insurance from an insurance provider authorized to sell insurance in the Province of Alberta and acceptable to the City in its sole discretion. Insurance shall remain in force until date of the completion and provide 30 days written notice to the City in advance of any cancellation, termination, material change, or reduction in policy limits for such insurance.

Commercial General Liability Insurance

Comprehensive General Liability Insurance protecting the Owner, the Proponent, and their respective servants, agents or employees against damages arising from personal injury (including death) and claims for property damage which may arise out of the operations of the Proponent, its sub-proponents, and their respective servants, agents or employees under the Agreement.

Such insurance must:

- be in an amount of not less than \$2,000,000.00 inclusive per occurrence, and shall include a standard form of cross-liability clause;
- have the City, and the City's Personnel and elected officials, included as additional insured with respect to liability arising in the course of performance of the proponents' obligations under, or otherwise in connection with the Agreement.

Automobile Mobile Equipment Insurance

If vehicles are used in the performance of the Agreement by or on behalf of the proponent, then Automobile Liability Insurance shall be maintained on all licensed vehicles owned by or leased to the Proponent, protecting against damages arising from bodily injury (including death) and from claims for property damage arising from the operations of the Proponent, its servants, agents or employees. This insurance shall be for an amount of \$2,000,000.00 inclusive per occurrence.

F. RATED CRITERIA

The following is an overview of the categories and weighting for the rated criteria relevant to the evaluation of proposals under this RFP. Proponent must achieve a minimum score of 70% overall (52.5 points) on Point-Rated Criteria in order to be evaluated on the basis of their Financial Proposal.

A breakdown of the points available is listed below the Evaluation Criteria Table.

Considerations	Points
Project understanding, methodology, approach, and risk register	20
Project work plan and schedule	15
Previous relevant experience	15
Project team experience and qualifications	15
Environmental sustainability	5
Innovation	5
Technical Score	75
Price	25
Overall Score	100

Non-Price Criteria Requirements

Proponents will be required to complete a series of schedules within the bidding system which forms the qualitative response to the RFP non-price rated criteria. The uploading of unrequested documentation will not be permitted and may result in the disqualification of the proponent's proposal.

Technical Proposal

Proposals should address the Deliverables and must not include any pricing information. Should any pricing information be included in the Technical Proposal submission, the proposal will be deemed non-compliant and will no longer be considered. All pricing information is to be included in the Detailed Fee Schedule submission and online pricing forms submission only.

a) Technical Proposal Outline

Proponents shall organize the information required in response to this RFP in accordance with the format and requirements outlined in this section. Proponents shall provide technical proposal sections in the order listed, and in a clear and concise manner. Failure to address any section will be reflected in the proponent's evaluation scores.

1. Project Understanding, Methodology, Approach and Risk Register
2. Detailed Project Work Plan and Schedule
3. Previous Relevant Projects
4. Project Team Experience and Qualifications
5. Environmental Sustainability
6. Innovation

b) Technical Proposal Content

The following provides a brief description of the information that the Proponent is expected to include in each section of the technical proposal.

Project Understanding, Methodology, Approach and Risk Register 20 points

- Project Understanding: Proponent to demonstrate an understanding of the scope and purpose of the project, project requirements, and deliverables. **(10)**
- Project Methodology, Approach and Risk Register: Proponent will effectively identify all phases of the project, including critical phases, with clear explanations of steps required to achieve project deliverables. Proponent to demonstrate knowledge and keen comprehension of the challenges and risks associated with the project and can ensure the City receives the best overall value during the project delivery process. **(10)**

Detailed Project Work Plan and Schedule 15 points

- Project Work Plan: Proponent to demonstrate how it will ensure the proposed methodology meets the requirements, including but not limited to project management, change management, and any expectations of City staff. Include the number of hours for completion of each phase, milestones, critical phases of the project and the ability to complete the project within the identified time period. **(10)**
- Project Schedule: Proponent to provide a project schedule in Gantt chart format with timelines detailing number of days and proposed hours, including completion of each phase/deliverable, identifying milestones and critical phases of the project ensuring dates are met as outlined in the RFP. **(5)**

Previous Relevant Projects 15 points

- Proponent to provide a detailed outline of three (3) specific projects its firm has delivered which are considered relevant and comparable to this project in size and complexity. Include the following information:
 - Type of entity (e.g., public, private, large corporation)

- Start and completion dates
- Involvement of firm and key staff
- What the customer was asking
- What methodology was followed
- What made the project successful

Project Team Experience and Qualifications

15 points

Proponent must identify staff members and subconsultants to be assigned to this project, including their role, hours of engagement and summary of the team member's knowledge and experience with similar projects:

- Team members' qualifications, experience and skills, appropriate balance of professional and technical consultants should be included in the project team. Provide technical background, respective position descriptions, and identification of any subconsultants and their role. Include project team member's resumes. **(10)**
- Extent of staff and subconsultants involvement in the project and individual staff project experience specifically related to this scope of work. Suitability, commitment, and availability of team members will be critical. **(5)**

Environmental Sustainability

5 points

- Proponent to provide its organization's efforts to mitigate environmental impacts and identify considerations specific to this project

Innovation

5 points

- Proponent to demonstrate evidence highlighting project options that provide innovation and alternate values or lower long-term maintenance costs. Innovation must be feasible and achievable.

Pricing

25 points

Pricing will be scored based on a relative pricing formula using the rates set out in the Pricing Form.

Lowest price ÷ proponent's price x weighting = proponent's pricing points

Ratings:

Proposals will be evaluated and scored according to the outline below. The evaluation will be based on a 0 to 5 score scale.

Rating	Description
5	Exceeds expectations; Proponent clearly understands the requirement; comprehensive response with precision and relevance and includes improvement through innovation and added value; excellent probability of success.
4	Meets expectations; Proponent has a good understanding of the requirement, comprehensive response in terms of detail and relevance to the requirements; good probability of success.
3	Partially meets expectations; Proponent has good understanding of requirement; however, fails in some areas, acceptable level of detail and accuracy; fair probability of success.
2	Limited information provided / inadequate response / only partially demonstrates understanding of the requirements; low probability of success.
1	Inadequate detail provided / questions not answered or addressed / meets mandatory requirements only; no probability of success.
0	Lack of response or complete misunderstanding of the requirements, no probability of success.

RFP-2024-95 - Reservoir Feasibility Study

Opening Date: September 19, 2024 8:00 AM

Closing Date: October 10, 2024 2:00 PM

Schedule of Prices

The Bidder hereby Bids and offers to enter into the Contract referred to and to supply and do all or any part of the Work which is set out or called for in this Bid, at the unit prices, and/or lump sums, hereinafter stated.

* Denotes a "MANDATORY" field

Do not enter \$0.00 dollars unless you are providing the line item at zero dollars to the Owner (unless otherwise specified).

If the line item and/or table is "NON-MANDATORY" and you are not bidding on it, leave the table and/or line item blank.Do not enter a \$0.00 dollar value.

Pricing Table

- a. Proponents should provide the pricing information requested by completing the Pricing Table.
- b. Rates must be provided in Canadian funds, inclusive of all applicable duties and taxes except for **GST**.
- c. Rates provided by the proponent must be all-inclusive, including but not limited to, all labour and material costs, disbursements and expenses, all insurance costs, as well as all other operational, administrative, and overhead costs and profit, including any fees or charges required by law.

Pricing **must** be separated from the technical submission. Any indication of price within the technical submissions will result in disqualification.

Description	Unit	Price *	Extended Total
Engineering Review and Report Preparation (Options 1 – 4) 30% Report	Lump Sum		
Engineering Review and Report Preparation (Options 1 – 4) 90% Report	Lump Sum		
Engineering Review and Report Preparation (Options 1 – 4) Final Report	Lump Sum		
Public Engagement Session 90%	Lump Sum		
Stakeholder Engagement Sessions	Lump Sum		
Presentation to Council/Committee	Lump Sum		
Subtotal:			

Cash Allowances

Cash allowance is to be provided by the City for the following additional services that may be required:

- 1. Geotechnical services

All cash allowances belong to the City and any use will be approved and any unused portion will be free of claim by the Consultant.

The Contract Price, and not the cash allowance, includes the Consultant's overhead and profit relating to such cash allowance. There will be no mark up on cash allowances.

Description	Total
Cash Allowance - Geotechnical services allowance	\$ 7,500.00
Subtotal:	\$ 7,500.00

Summary Table

Bid Form	Amount
Pricing Table	
Cash Allowances	\$ 7,500.00
Bid Amount:	

Proponent Information

Proponent to fill out the following form, naming one person to be the contact for this RFP process and for any clarifications or communication that might be necessary.

Proponent shall also provide name and email address of its authorized signatory for contract and other contractual documents.

Proponent Information	Response *
Company's Full Legal Name	
Address for the RFP	
Contact Name	
Contact Title	
Contact Phone	
Contact Email	
Name and Email of Company's Authorized Signatory	

Appendix A - Form of Agreement

A sample Form of Agreement, which will form the basis of any negotiation for the Work, is provided in the Documents section of this bid opportunity. Proponents will clearly indicate in the response box below, any condition in the Form of Agreement that is not acceptable and provide alternate wording for the City's legal review and consideration.

If the Form of Agreement is acceptable, proponents will select the check box to opt out of completing this form.

☐ We will not be submitting for Appendix A - Form of Agreement

Line Item	Response
1	

Business License

Bidders are **NOT** required to submit proof of valid business license with their submission, this will be addressed during the award phase.

PLEASE DO NOT CONTACT THE BUSINESS LICENSE OFFICE UNLESS YOU HAVE BEEN ADVISED OF AN AWARD.

Description	Response *
The City of Grande Prairie issues licences for businesses, business activities, and persons engaged in business. Business license bylaws are enacted to protect public health and safety. A business license serves as confirmation that a business complies with local laws and regulations. This applies to: Every separate business entity, trade, profession, industry, occupation employment, calling or person providing goods or services, with the intent of making a profit, operating in the City of Grande Prairie is required to hold a valid City of Grande Prairie business licence. Proof of a professional license will be accepted for those eligible such as APEGA. For more information on business license requirements and exemptions visit https://www.cityofgp.com/city-services/permits-licenses-forms/planning-and-development/business-licensing	Select A Value ▾

WCB

Description	Response *
We the bidder confirm the following WCB status:	Select A Value ▾

Sub-Contractors

The Bidder shall state all Subcontractor(s) and type of Work proposed to be used for this project. Bidders shall not indicate "TBD" (To Be Determined) or "TBA" (To Be Announced) or similar wording and shall not indicate multiple choices of Subcontractor names for any Subcontractor category in their list of Subcontractors.

The Bidder shall state only one (1) subcontractor for each type of work.

Subconsultant

The following work will be performed (or provided) by Subconsultants and coordinated by us. No other Subconsultants will be employed without the written approval of the City, to a request made in writing by the Consultant.

☐ By clicking here I confirm that there are no Subcontractor(s) and the Bidder shall perform the project with their "OWN FORCES".

Subconsultant Name	Portion of the Work	
		*

Documents

It is your responsibility to make sure the uploaded file(s) is/are not defective or corrupted and are able to be opened and viewed by the Owner. If the attached file(s) cannot be opened or viewed, your Bid Call Document may be rejected.

- Technical Proposal * (mandatory)
- Detailed Fee Schedule * (mandatory)
- Certificate of Recognition (COR) or equivalent * (mandatory)
- APEGA / Permit to Practice * (mandatory)
- WCB Clearance Letter or equivalent * (mandatory)

Addenda, Terms and Conditions

1. Acknowledgment of Non-binding Procurement Process

The proponent acknowledges that the RFP process will be governed by the terms and conditions of the RFP, and that, among other things, such terms and conditions confirm that this procurement process does not constitute a formal, legally binding bidding process (and for greater certainty, does not give rise to a Contract A bidding process contract), and that no legal relationship or obligation regarding the procurement of any good or service will be created between the City and the proponent unless and until the City and the proponent execute a written agreement for the Deliverables.

2. Ability to Provide Deliverables

The proponent has carefully examined the RFP documents and has a clear and comprehensive knowledge of the Deliverables required. The proponent represents and warrants its ability to provide the Deliverables in accordance with the requirements of the RFP.

3. Non-binding Price Estimates

The proponent has submitted its rates in accordance with the instructions in this RFP. The proponent confirms that the pricing information provided is accurate. The proponent acknowledges that any inaccurate, misleading or incomplete information, including withdrawn or altered pricing, could adversely impact the acceptance of its quotation or its eligibility for future work.

4. Addenda

The proponent is deemed to have read and taken into account all addenda issued by the City prior to the Deadline for Issuing Addenda.

5. No Prohibited Conduct

The proponent declares that it has not engaged in any conduct prohibited by this RFP.

6. Disclosure of Information

The proponent hereby agrees that any information provided in this proposal, even if it is identified as being supplied in confidence, may be disclosed where required by law or by order of a court or tribunal. The proponent hereby consents to the disclosure, on a confidential basis, of this proposal by the City to the advisers retained by the City to advise or assist with the RFP process, including with respect to the evaluation this proposal.

☐ I have the authority to bind the organization.

You must declare all potential Conflicts of Interest, as defined in the Conflict of Interest terms in the solicitation document. This includes disclosing the names and all pertinent details of all individuals (employees, advisors, or individuals acting in any other capacity) who (a) participated in the preparation of the proposal; **AND** (b) were employees of the City of Grande Prairie within twelve (12) months prior to the Submission Deadline.

By selecting "no" in the box below, you will be deemed to declare that (a) there was no Conflict of Interest in preparing your submission and (b) there is no foreseeable Conflict of Interest in performing the contractual obligations contemplated in the solicitation document.

Otherwise, if the statement below applies, check the "yes" button.

- You declare that there is an actual or potential Conflict of Interest relating to the preparation of your submission, and/or you foresee an actual or potential Conflict of Interest in performing the contractual obligations contemplated in the solicitation document.

☒ Yes ☐ No

The Bidder acknowledges and agrees that the addendum/addenda below form part of the Bid Document

Please check the box in the column "**I have reviewed this addendum**" below to acknowledge each of the addenda.

File Name	I have reviewed the below addendum and attachments (if applicable)	Pages
There have not been any addenda issued for this bid.		

APPENDIX B

City of Grande Prairie 90% Engagement Report



WHAT WE HEARD – BEAR CREEK DAM

Public Engagement Results – August 2025

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BEAR CREEK DAM OVERVIEW

The City of Grande Prairie, in collaboration with AtkinsRéalis, is reviewing **five potential options** for the future of the Bear Creek Dam.

Originally constructed in 1948 as a drinking water source, the reservoir has since filled with sediment, limiting its function. While the dam is expected to remain operational for approximately 30 more years, several challenges—such as sediment buildup, water quality issues, odour, erosion, flood control and fluctuating water levels—have prompted the need for long-term planning.

The study will help determine the best path forward and identify potential funding and partnership opportunities to support future improvements.

Residents were given five options to choose from such as:

Option 1: Maintain the Bear Creek Dam

This option retains the dam with possible upgrades to extend its life beyond 30 years, with minimal changes to the site.

- New sediment trap pond (requires maintenance)
- Small water pond for flood storage and recreation
- Sediment placed and stabilized on reservoir banks

Option 2: Maintain Bear Creek Dam & Partially Remove Sediment

This option keeps the dam, with possible upgrades, and creates a large open water area for long-term use.

- Creates a large permanent reservoir
- Supports summer and winter recreation
- Sediment partly reused for park space, rest moved off-site
- Includes boat launch, parking, and new trails

Option 3: Partial Removal of Bear Creek Dam

This option removes the dam gates, concrete spillway and north embankment, declassifying the dam and restoring the river to a more natural state.

- The spillway would be replaced with a gabion (rock basket) slope
- Reuses sediment for added park space and trails
- Adds pedestrian bridge and retains south berm (Borstad Hill) for recreation and festivals

Option 4: Complete Removal of Bear Creek Dam

This option fully removes the gates, spillway, and both earthen dams, declassifying the dam and restoring the river to a natural state.

- Fully naturalized river channel
- Park space expanded with trails
- New pedestrian bridge added
- South berm removal impacts existing recreational uses

Option 5: Restore Reservoir

This option proposes keeping the Bear Creek Dam and fully excavating the reservoir to potentially restore its historical size and support past aquatic recreational activities.

- Most sediment moved off-site
- Sufficient water depth to allow for full recreational activities
- A sediment management pond in the upstream portion of the reservoir
- Bear Creek Dam upgraded to handle restored water levels

ONLINE ENGAGEMENT

The online engagement page received 1400 unique visitors including:

- 1008 “aware” visitors meaning they visited one single page on the engagement site.
- 485 “informed” visitors, meaning they downloaded a document, enlarged an infographic, visited multiple project pages, or contributed to an engagement tool.
- 68 “engaged” visitors who participated in the ideas space or questions space.

ONLINE SURVEY

Question 1: Please share your feedback on option one.

Based on 40 responses, 14 skipped

The following summarises the main themes:

- Water Recreation – Strong preference for keeping or restoring water for activities (fishing, kayaking and full reservoir use.
- Wildlife & Environment – Desire to maintain or improve habitats, water quality and ecosystem stability.
- Cost Focus – Preference for low-cost or cost-effective options; calls for clear cost estimates.
- Minimal Changes – Support for limited intervention to preserve existing features (festival grounds, sled hill)
- Opposition – Some see small ponds or certain options as unnecessary, unappealing or not worth pursuing.

Question 2: Please share your feedback on option two.

Based on 46 responses, 8 skipped

The following summarises the main themes:

- Support for Larger Reservoir – Strong preference for restoring or expanding the reservoir for full recreation use. (Kayaking, boating, fishing, winter skating and trails.
- Community & Economic Benefits – Seen as enhancing vibrancy, property values, tourism and year-round activities.
- Wildlife & Environmental – Improving water quality, fish migration, erosion control, and habitat.
- Additional Amenities – Interest in boat launch, more parking, benches and trail improvements.
- Sediment Management – Support for removing and reusing nutrient-rich sediment.
- Opposition – A few do not support this option, seeing it as unnecessary or not addressing existing issues. (Ex. Homelessness in area)

Question 3: Please share your feedback on option three.

Based on 3 responses, 51 skipped

The following summarises the main themes:

- Mixed Opinions on Value – Some like the ideas of new trails, bridges and park space. However, many feel it's missing the key feature of water and would be less attractive without the reservoir.
- Strong Preference for Water- Based Recreation – Frequent calls for keeping or restoring a reservoir for kayaking, canoeing, paddle boarding and general recreation.
- Opposition & Skepticism – Many oppose this option, citing it as a waste of money, a safety hazard or unnecessary duplication of existing park space.
- Other Considerations – Some want to keep Borstad Hill for festivals/sledding, other raise concerns about mosquito breeding and homeless camps.

Question 4: Please share your feedback on option four.

Based on 43 responses, 11 skipped

The following summarises the main themes:

- Opposition to Full Naturalization – Concerns that removing the reservoir would harm Borstad Hill festival/toboggan use, reduce recreational variety and duplicate existing parkland.
- Safety, Fire and Flood Concerns – Fears about increased fire risk, flooding and erosion if the area is fully naturalized, as well as potential for increased encampments in the dry basin.
- Cost and Planning Criticism – Frustration that money was already spent on dam repairs only for removal to be considered; calls for better long-term planning.
- Environmental & Habitat Views – Some note potential benefits for wildlife and limiting trail impact, while others stress water storage's role in supporting diverse park space.

Common Themes for Option Five: Restore Reservoir

Question 5: Please share your feedback on option five.

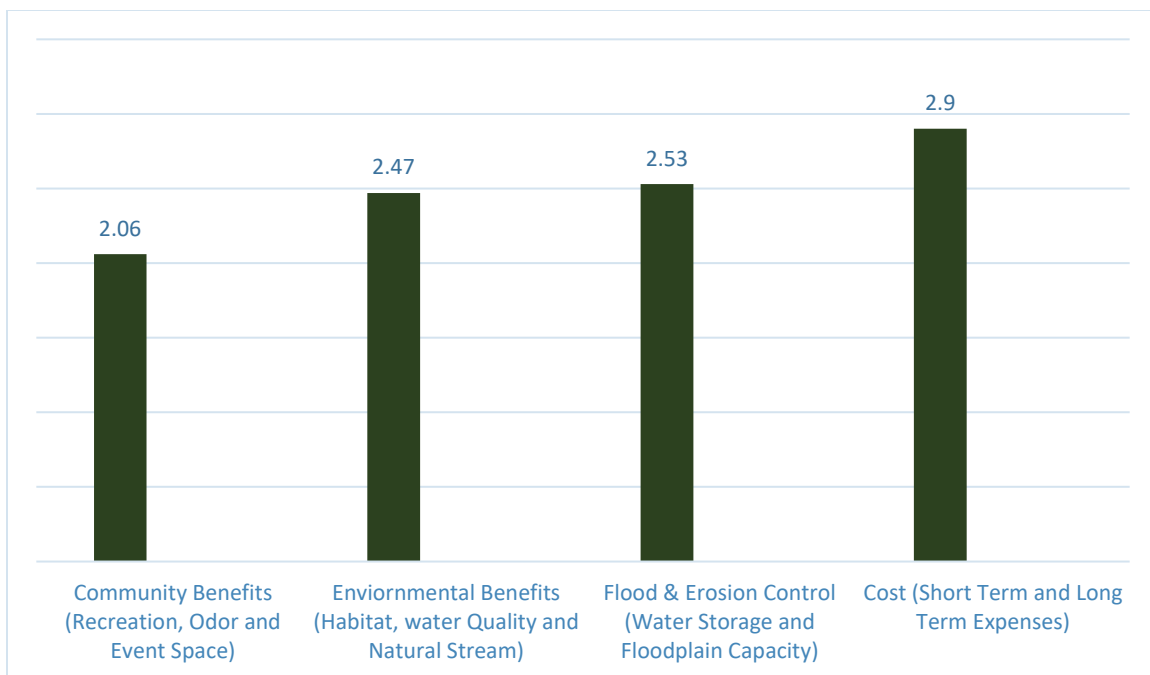
Based on 49 responses, 5 skipped

The following summarises the main themes:

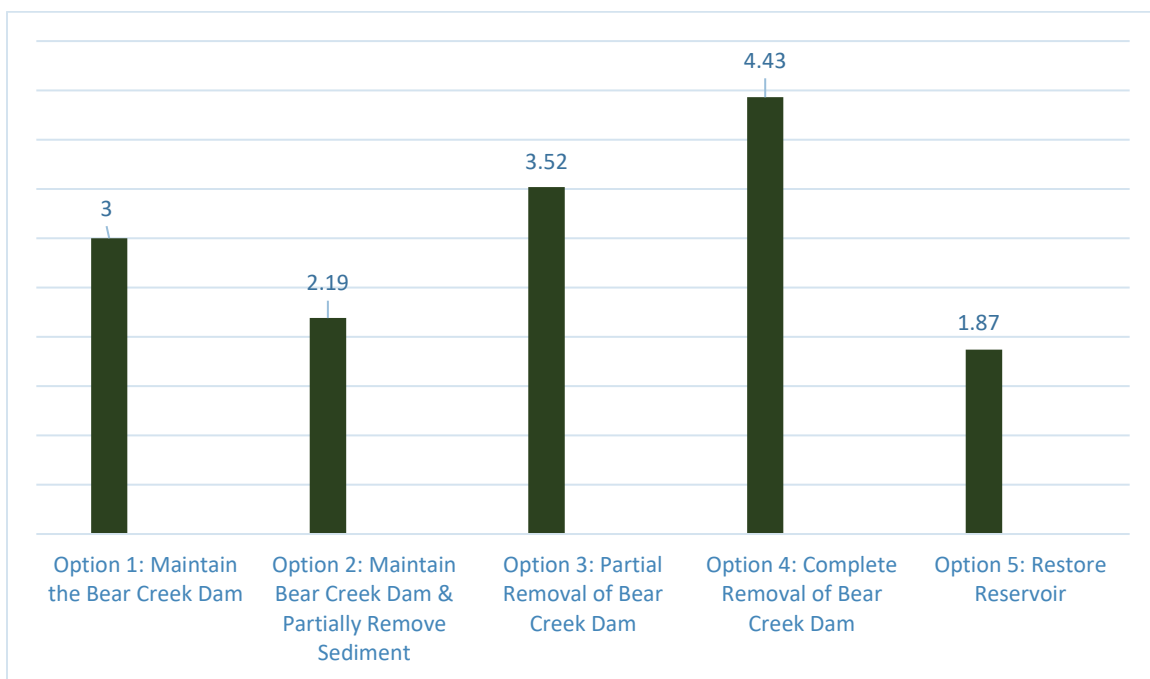
- Strong Support for Reservoir Restoration – Many want the large water body reinstated for year round recreation such as kayaking, canoeing, paddle boarding, skating and fishing with accessible boat launches and docks.
- Environmental & Wildlife Benefits – Desire to restore bird and wildlife habitats, improve ecosystem health and add features like fish ladders or stocked fish.
- Historical & Community Value – The reservoir is seen as a historic focal point that adds beauty, identity and pride to Grande Prairie.
- Safety & Infrastructure Advantages – Belief that water storage aids flood control, reduces fire risk and discourages homeless encampments in the area.
- Planning & Investment Concerns – Frustration over past spending on dam repairs and calls for better long-term planning and prioritization of this project over other capital builds.

Question 6: How important are the following factors to you when evaluating the 4 options? Please rank 1 to 4 with 1 being most important and 4 being least important.

Based on 51 responses, 3 skipped



Question 7: Please rank the options from 1 to 5, with 1 being your most preferred and 5 being your least preferred.
Based on 54 responses, 0 skipped



Question 8: Do you have any additional comments or suggestions regarding the proposed options?
Based on 33 responses, 21 skipped

The following summarises the main themes:

- Strong Desire for Reservoir Restoration – many want the water feature brought back for recreation such as kayaking, fishing, swimming, paddle boats, and canoeing; seen as key to livability, tourism and quality of life.

- Environmental & Wildlife Value – Importance of restoring migratory bird habitat, stocking fish, adding a fish ladder, and maintaining a ecosystem balance.
- Cost Transparency & Planning – Criticism of short-term planning and lack of communication on past repairs; preference for cost-effective solutions without tax increases.
- Flood Control & Backup Water Supply – Recognition that the reservoir could provide flood mitigation, emergency water storage, and reduce fire hazards.
- Opposition to Event Space Only Option – View that a purely event-focused redevelopment would be underused and could become a homeless encampment.

Question 9: Is there another option or other features you think should be explored? Please describe.

Based on 1 response, 53 skipped

- Preference for Minimal Intervention – Keep the dam in place for the next 30 years to maintain flood control, avoid creating ponds, allow the river to return to a more natural state, and leave existing sediment undisturbed.

QUESTIONS FORUM

Residents were encouraged to submit questions about the Bear Creek Dam through the engagement page, where they would receive response directly from the project engineers. 17 residents submitted questions and comments.

Question 1: How are indigenous people being engaged on this project?

Indigenous engagement on this project began with a dedicated stakeholder meeting held in March, which provided an opportunity to share information, gather input, and begin building relationships around the future of the Bear Creek Dam.

Indigenous communities and organizations are also warmly invited to attend the upcoming public engagement session this summer to view the site, ask questions, and learn more about the five proposed options under consideration. We value continued input and welcome ongoing participation as the project moves forward.

Question 2: I cannot attend the engagement session but would like to provide my feedback. How can I provide my feedback on the five options?

Thank you for your interest in the Bear Creek Dam project. If you're unable to attend the engagement session, you can still share your feedback by completing the online survey available at engage.cityofgp.com/bearcreekdam.

The survey includes information on all five options and is a great way to have your voice heard. We appreciate your input as it helps shape the future of this important community asset.

Question 3: What was the point of the long rehab of the spillway/dam if now you want to remove it? #5 is the best get back to when you could rent watercraft under Center 2000.

Thank you for your feedback. I have prepared a response below but would like to encourage you to follow the City's engagement page for this project (<https://engage.cityofgp.com/bearcreekdam>) as a way to stay updated on the Reservoir Feasibility Study and to continue to provide feedback as work progresses on the study.

The City carried out repairs to the Bear River Control Structure to fix serious safety issues that were found during a 2018 inspection and later reviews. These problems included damage to the concrete, erosion, and aging mechanical and electrical parts—all of which could have posed risks to public safety and nearby infrastructure if left unaddressed.

The goal of this repair work was to make the dam safe and stable for the foreseeable future, while also keeping future options open. At the same time, the City is looking more closely at the long-term future of the structure through a Reservoir Feasibility Study. This study is exploring several possibilities, such as ongoing maintenance, more upgrades, or even full reconstruction. These long-term decisions are still being reviewed and may not move forward for another 10 years or more.

Question 4: What date will the tours be rescheduled? why was the June 19 one cancelled??? the weather was good enough for all of the school groups using the park and pool..... very disappointed that it was cancelled.

We're currently assessing the best timing to reschedule and will share an update as soon as details are confirmed. Thanks for your patience and continued interest.

Question 5: What detailed environmental assessment has been done with respect to these options prior to them being developed (in terms of wetland and wildlife fisheries) For that matter where are the assessments done prior to the Dam rehabilitation.

All of the presented options have a recommendation that during the pre-design phase, additional detailed studies are undertaken. This would include wetland, wildlife, aquatic and additional studies. Smaller geotechnical and environmental investigations were completed in 2012 and 2025; however, these are only preliminary in nature and will require additional more comprehensive studies once an option is selected.

Question 6: How much money is budgeted for this project?

The Reservoir Feasibility Study has a budget of \$270,000. Once a long term design option is selected, additional funding will need to be secured to complete further studies and construction.

Question 7: I like the ideas of option 2 or 5. What is the environmental impact going to be on the wild life that nest there every year? If walking trails and more park land is developed, what silviculture has been done one site? Right now we have black knot tearing through our community unchecked, what's to stop a disease going through the park especially if new or similar trees are brought in for beautification?

The potential impact on wildlife, vegetation and the overall ecosystem will be fully examined through a detailed environmental and wildlife assessment. This assessment will be a required step before any option moves forward.

Question 8: The sediment that is taken off site, would that be partnered with Aquaterra and the land fill? Or could it be the start of a composting program that people could buy and use in their home gardens?

It depends on the results of the in-depth environmental testing of the sediment. If the sediment is found to be environmentally suitable, then the option to store and re-use can be explored by the City.

Partnerships with other organizations and facilities would be explored during the detailed design phase of the project.

Question 9: What migratory fish do we have in Bear Creek? Is it possible for #2 and #5 to be modified in such a way that the passage of fish is allowed? It happens many other places to allow for fish migration.

According to the Fisheries and Wildlife Information System (FWMIS), over the past five years, fish species surveyed in Bear Creek have included brook stickleback, lake chub, longnose sucker and white sucker. These species use creeks like Bear Creek as important migration routes, moving upstream each spring to spawn before returning to their downstream habitats.

In the downstream Wapiti River, surveys have identified migratory species such as walleye, the threatened bull trout, and arctic grayling—a species of special concern—all of which could utilize Bear Creek for upstream spawning.

Historically, Bear Lake, which feeds into Bear Creek, has also supported populations of spottail shiner and yellow perch. All options presented for the Bear Creek dam can be modified to include infrastructure to assist fish passage.

Question 10: If the option where the south embankment where people sled and do festivals are taken away, what space will be opened up for the festivals? Our city is already complaining that there isn't as many things to do in the summer. However, this is mainly due to no one wanting to plan these events. Why doesn't the city have an event coordinator for the street festival, heritage days, or other fun events that could draw people to our city?

Thank you for your question and for sharing your thoughts on community events and spaces. At this stage, no decisions have been made about removing the embankment. However, if any option involving changes to that area is pursued, the City will carefully consider how to accommodate seasonal activities and events that currently rely on the space.

The City of Grande Prairie has an **Events & Programming** department responsible for managing events at Bonnetts Energy Centre and Montrose Cultural Centre, as well as supporting a variety of community event organizers in delivering their events. For more information, please see links below:

[Event Calendar | City of Grande Prairie](#)

[Bonnetts Energy Centre | Bonnetts Energy Centre](#)

Question 11: When will construction begin? I like option 2 it will provide a park instead of an ugly MUD HOLE ! Initial requests for quote will help make decisions regarding how much dirt to move where. On the banks is not a good long term solution. Islands can be built for park. We will need a decent sediment trap upstream.

There is currently no set date for construction. The project is still in the feasibility and public engagement phase. Once City Council selects a preferred option, the next steps will include completing all necessary engineering and environmental assessments, as well as evaluating whether the sediment can be reused. A sediment trap pond is a key feature in all five proposed options and will be required regardless of which concept is chosen.

Question 12: Why can't the city post signs along the reservoir route walking trails to inform all citizens of grande Prairie of the options proposed so everyone knows and can respond & express their opinions & concerns. Not everyone is tech savy & keeps up to date using technology. Posting the options & when meetings will be held for those who walk the trails & live in the area would provide more input. We were never notified about what or when things were happening regarding the reservoir & we directly face the reservoir. I spoke with someone & he never did send an email as promised regarding the June 19th tours that were apparently cancelled. I had gone to the trouble of going to people in the neighbourhood to inform them when & where to go as I had to go to city hall to find out what's going on since the promised email never arrived as promised. Put up 4 signs around the reservoir loop & this will help inform those who do not embrace or know how to use technology. Please & thank you.

Thank you for your suggestions. We will keep them in mind once we reschedule the tours. We are currently assessing the best timing to reschedule and will share an update as soon as details are confirmed.

Please note, the best way to stay updated on this project and future City engagement projects is to subscribe to our newsletter. You can subscribe by going to the [Bear Creek Dam engagement page](#) to the "Stay Informed" section and entering your email address. We send out regular updates through these newsletters, along with the City's social media platforms. If you need further assistance with subscribing please respond back to this message.

Question 13: Can you please provide more information to go with the survey it is very difficult to give feedback without clear information of cost, impact to property taxes and what additional positives/negatives each option provides -example one of them says supports summer and winter recreation what does that mean what will be added ? I find it very vague and hard to provide feed back when there isn't much to go on

We are currently finalizing cost estimates for each option and will publish them on this page in early June. In the meantime, the survey has been temporarily paused to allow for these updates. It will reopen in early June with the cost information included. You may also reference the [Comparison Tables](#) document that highlights the following:

- Community benefits
- Environmental benefits
- Flooding & stability benefits
- Cost benefits

Question 14: What is the cost of removing the Dam compared to its up keep and maintenance? It would be nice to know the estimated costs of each option as that will probably be the cities deciding factor.

We are currently finalizing cost estimates for each option and will publish them on this page in early June. In the meantime, the survey has been temporarily paused to allow for these updates. It will reopen in early June with the cost information included.

Question 15: Can you please publish a visual along with the table comparison? It's really hard to get an idea of the scope of new trails, land changes or parking lot size and effect from the table comparison.

Please refer to the "Photos" tab located on the page that provides visuals of each option.

Comments:

- I support option #5. Complete restoration of the reservoir. It is also important that we have a ready source of water in case of large fires as we had a in the past at the Canfor site.
- Just want to say that I hope we can restore this area to it's former glory it was such a beautiful place pre-2018.

IN PERSON ENGAGEMENT SESSION

Engineers and city administration held an in person engagement session on July 24, 2025 to give residents the opportunity to learn more information and ask questions about the Bear Creek Dam. This allowed engineers and city administration to educate 20 participants on the five options while also collecting valuable feedback.





CONCLUSION

The 2025 Bear Creek Dam engagement process provided valuable insights from both the public and key stakeholders, helping to identify community priorities for the upcoming year. Through online tools, public events and a focused stakeholder session, a wide range of feedback was collected, highlighting key themes such as road maintenance, snow and ice control, public safety and economic development. This input will guide City Council and Administration in developing a budget that aligns with the community's needs and the City's strategic priorities, ensuring responsible fiscal planning and enhancing quality of life.

APPENDIX C

Investigation Results



PARTICLE-SIZE ANALYSIS, LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY

ASTM D422 & ASTM D4318

PROJECT: Bear Creek Reservoir Investigation

SAMPLE DATE: May 20, 2025

PROJECT#: 25-0508GP

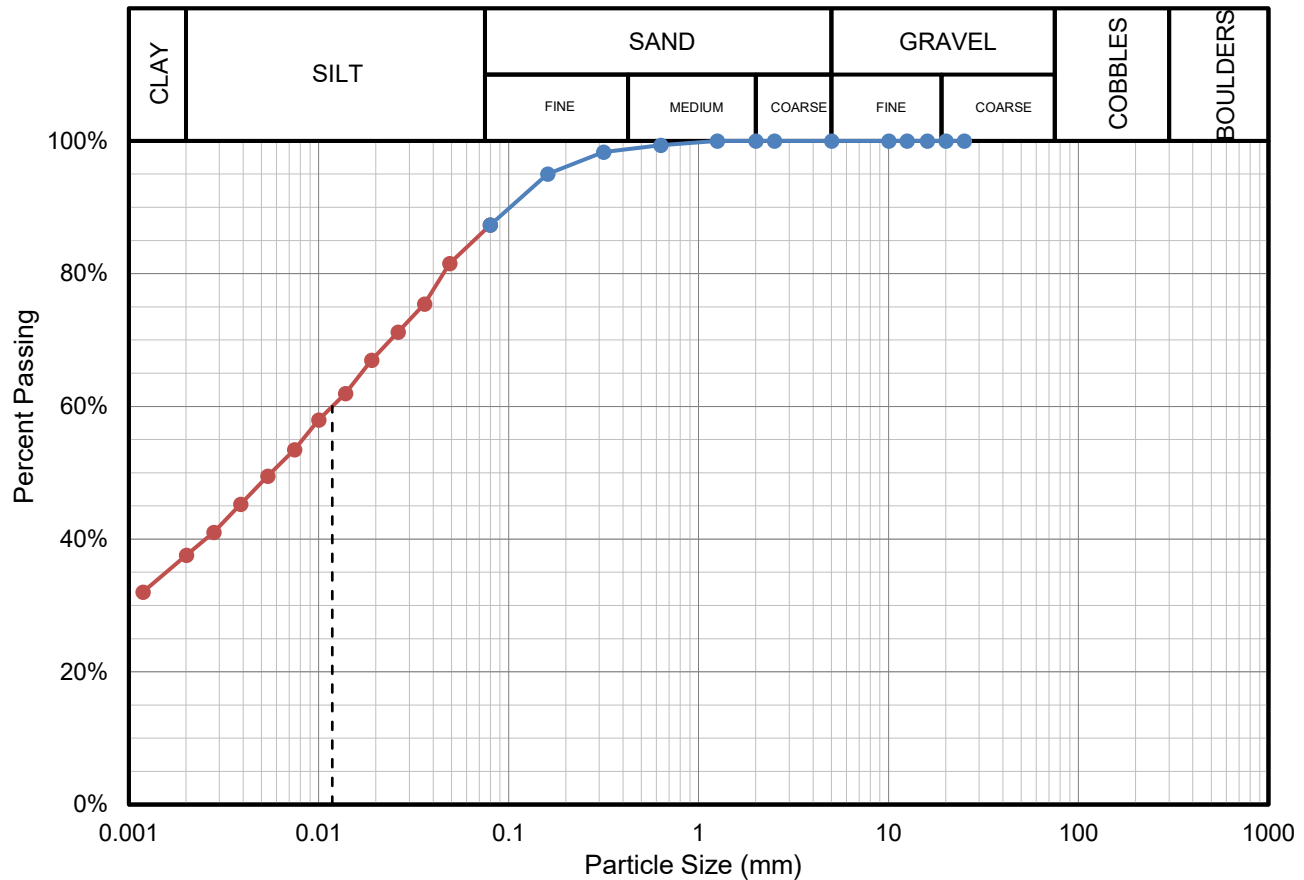
TEST DATE: May 26, 2025

CLIENT: Atkins Realis

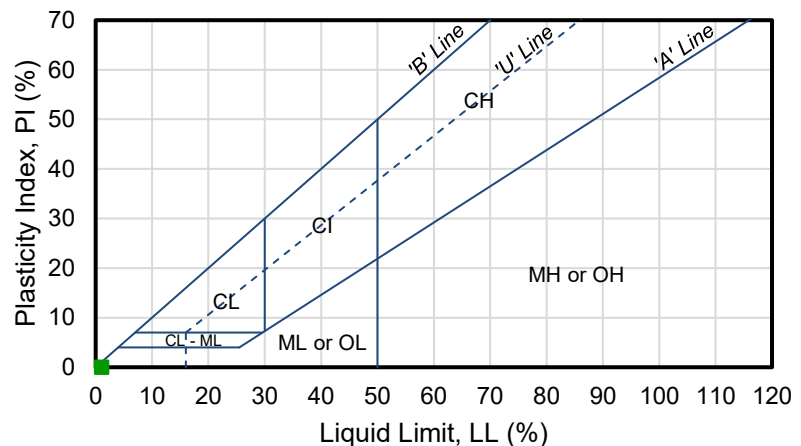
SAMPLE ID: TP-01

SOIL DESCRIPTION: silt, and clay, little sand

DEPTH: 0



PARTICLE-SIZE ANALYSIS	Gravel	0.0%
	Sand	13.4%
	Silt	49.0%
	Clay	37.5%
	D ₁₀	---
	D ₃₀	---
	D ₆₀	0.0118 mm
	C _u	---
LIMITS	C _c	---
	PL	---
	LL	---
	PI	---



Modified Unified Soil Classification	Group Symbol
---	---

TECH: JL
CHECKED: ITH



PARTICLE-SIZE ANALYSIS, LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY

ASTM D422 & ASTM D4318

PROJECT: Bear Creek Reservoir Investigation

SAMPLE DATE: May 20, 2025

PROJECT#: 25-0508GP

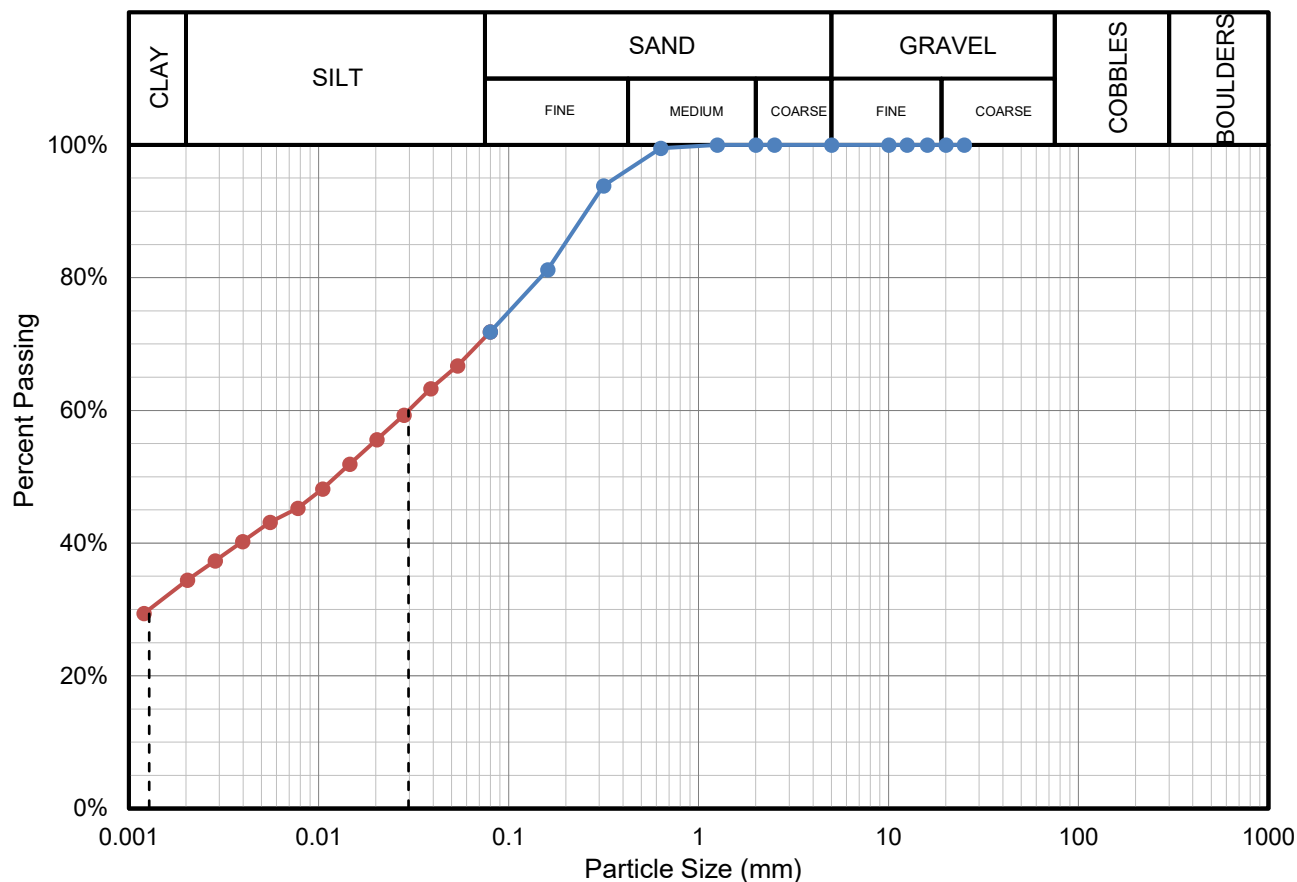
TEST DATE: May 26, 2025

CLIENT: Atkins Realis

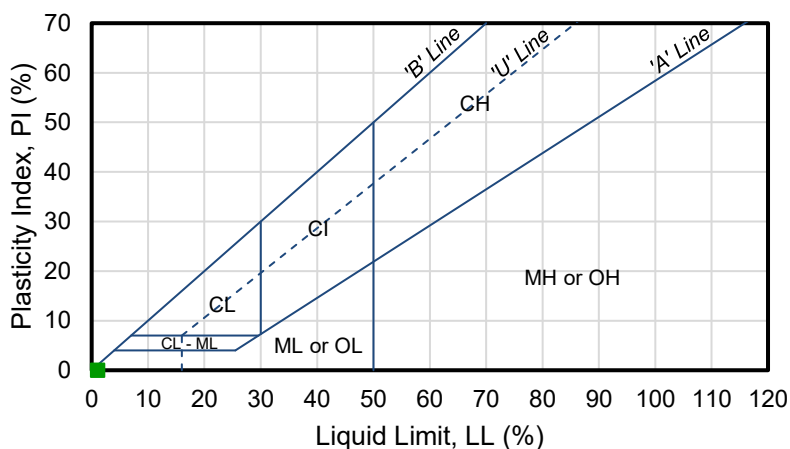
SAMPLE ID: TP-02

SOIL DESCRIPTION: silt, some clay, some sand

DEPTH: 0



PARTICLE-SIZE ANALYSIS	Gravel	0.0%
	Sand	29.0%
	Silt	36.8%
	Clay	34.2%
	D ₁₀	---
	D ₃₀	0.0013 mm
	D ₆₀	0.0297 mm
	C _u	---
LIMITS	C _c	---
	PL	---
	LL	---
	PI	---



Modified Unified Soil Classification	Group Symbol
---	---

TECH: JL
CHECKED: ITH



PARTICLE-SIZE ANALYSIS, LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY

ASTM D422 & ASTM D4318

PROJECT: Bear Creek Reservoir Investigation

SAMPLE DATE: May 20, 2025

PROJECT#: 25-0508GP

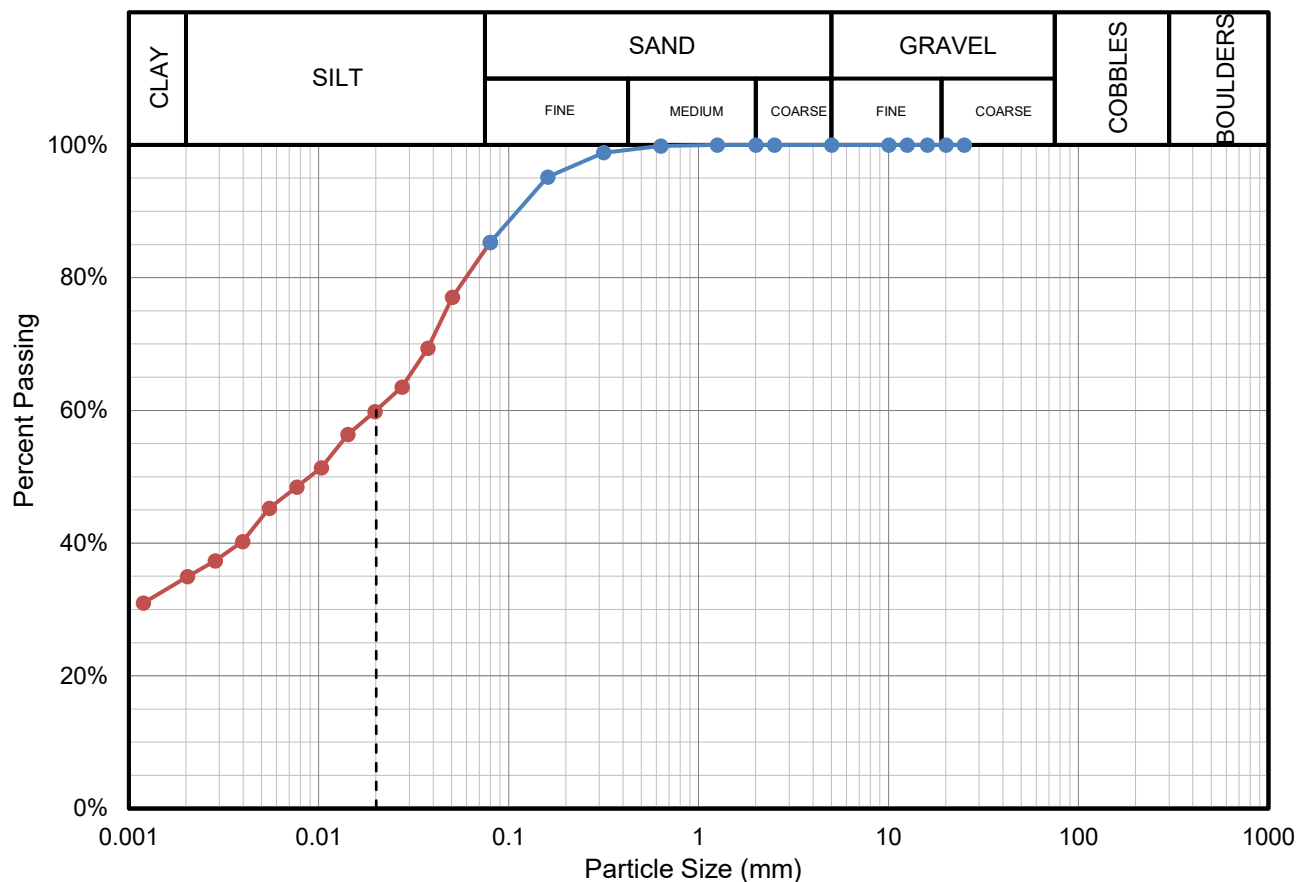
TEST DATE: May 26, 2025

CLIENT: Atkins Realis

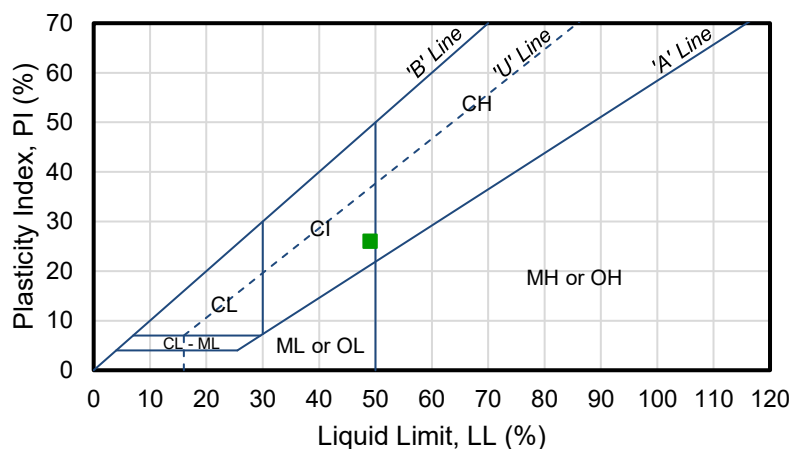
SAMPLE ID: TP-03

SOIL DESCRIPTION: silt, some clay, little sand

DEPTH: 0



PARTICLE-SIZE ANALYSIS	Gravel	0.0%
	Sand	15.8%
	Silt	49.3%
	Clay	34.8%
	D ₁₀	---
	D ₃₀	---
	D ₆₀	0.0201 mm
	C _u	---
	C _c	---
LIMITS	PL	23
	LL	49
	PI	26



Modified Unified Soil Classification	Group Symbol
Lean clay with sand	CL



PARTICLE-SIZE ANALYSIS, LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY

ASTM D422 & ASTM D4318

PROJECT: Bear Creek Reservoir Investigation

SAMPLE DATE: May 20, 2025

PROJECT#: 25-0508GP

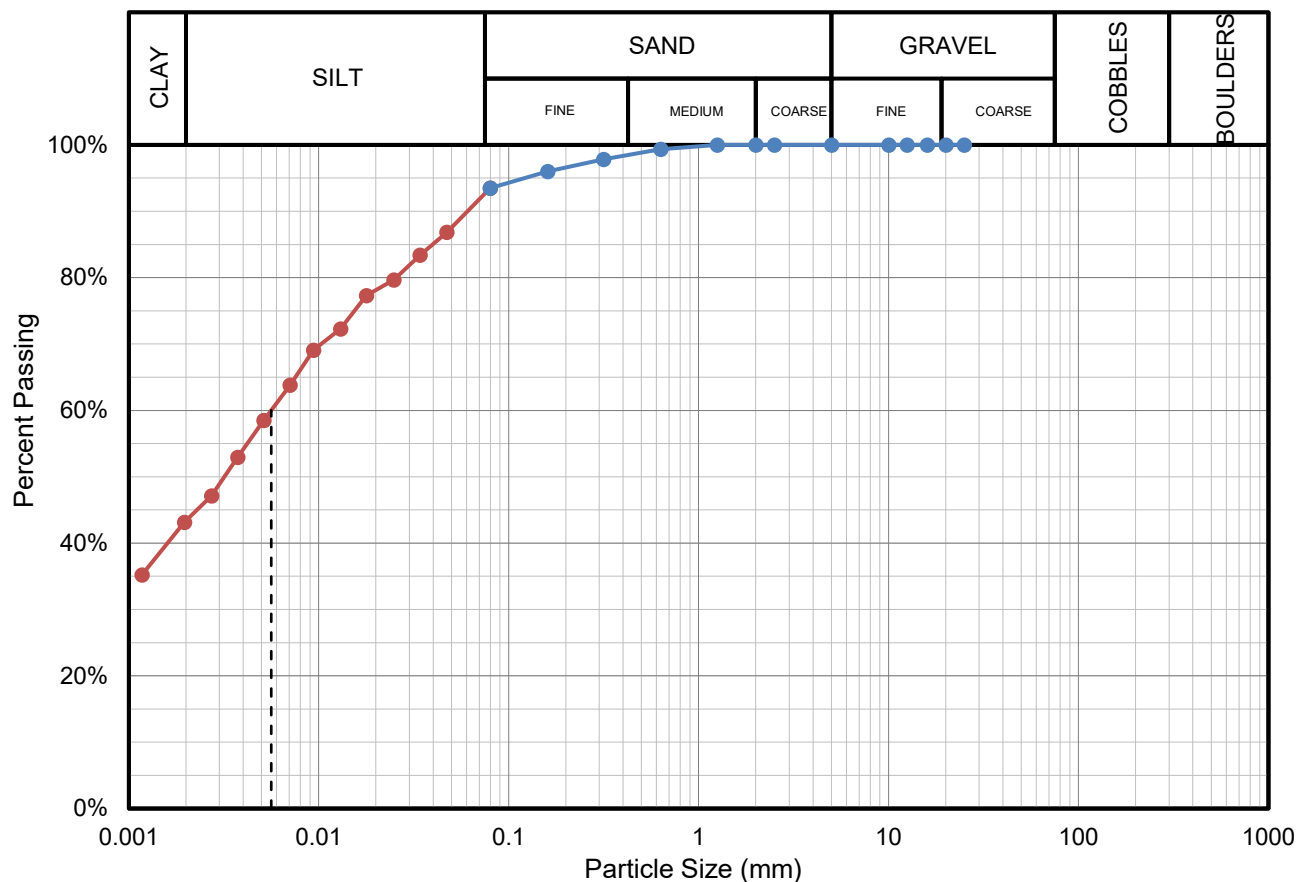
TEST DATE: May 26, 2025

CLIENT: Atkins Realis

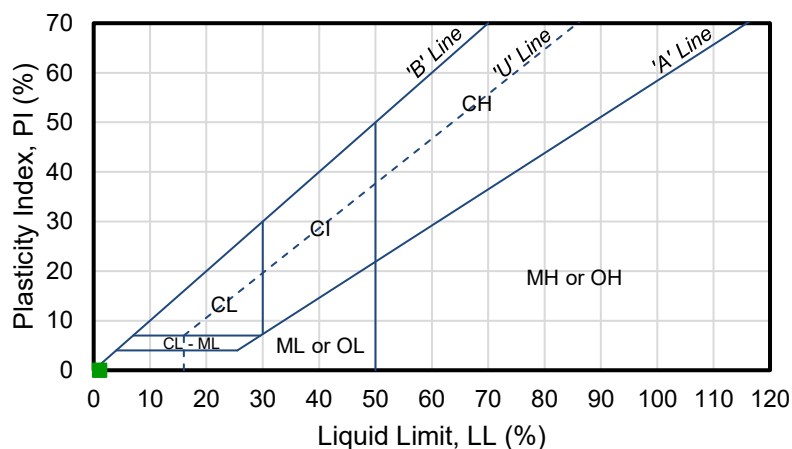
SAMPLE ID: TP-04

SOIL DESCRIPTION: silt, and clay, trace sand

DEPTH: 0



PARTICLE-SIZE ANALYSIS	Gravel	0.0%
	Sand	7.3%
	Silt	49.3%
	Clay	43.4%
	D ₁₀	---
	D ₃₀	---
	D ₆₀	0.0056 mm
	C _U	---
LIMITS	C _C	---
	PL	---
	LL	---
	PI	---



Modified Unified Soil Classification	Group Symbol
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PARTICLE-SIZE ANALYSIS, LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY

ASTM D422 & ASTM D4318

PROJECT: Bear Creek Reservoir Investigation

SAMPLE DATE: May 20, 2025

PROJECT#: 25-0508GP

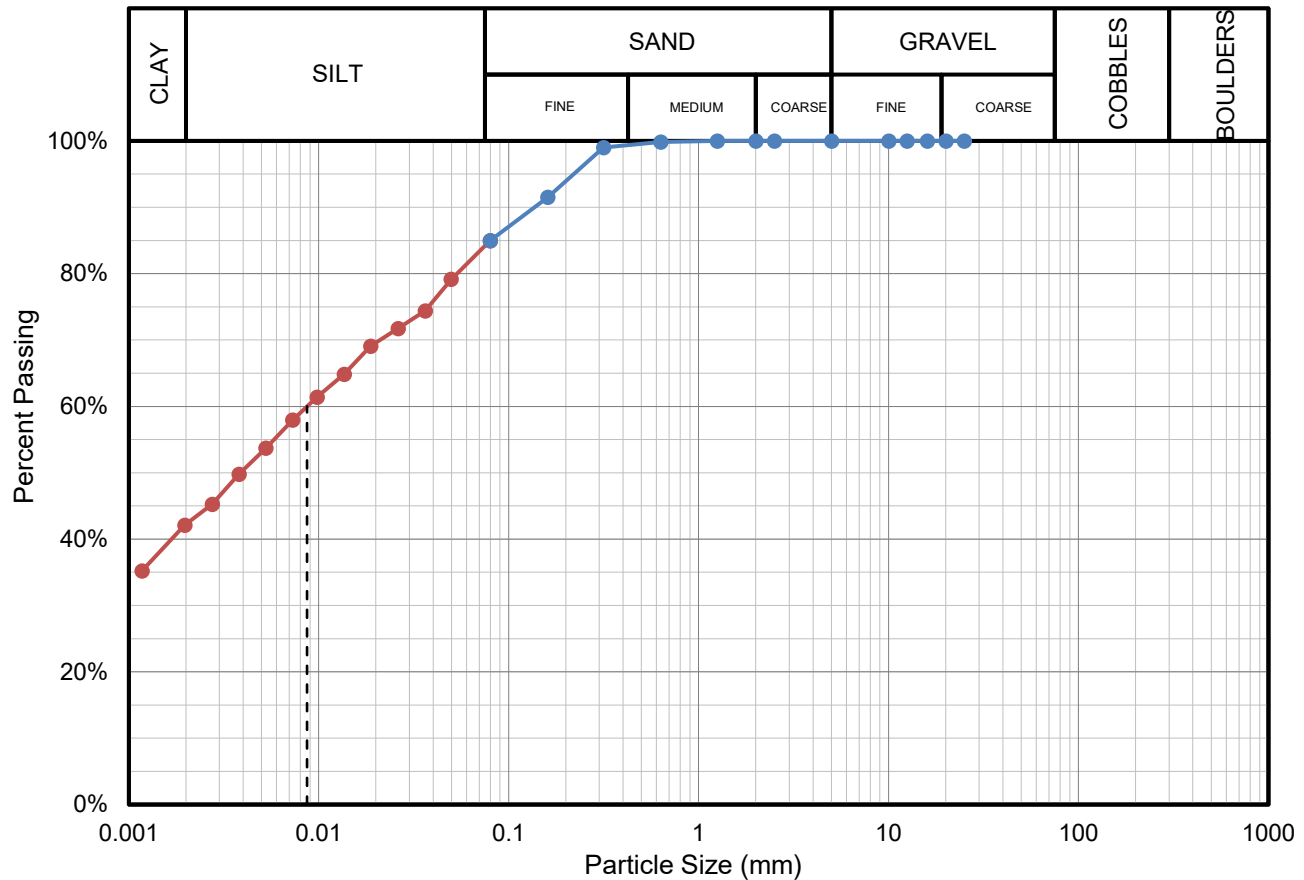
TEST DATE: May 26, 2025

CLIENT: Atkins Realis

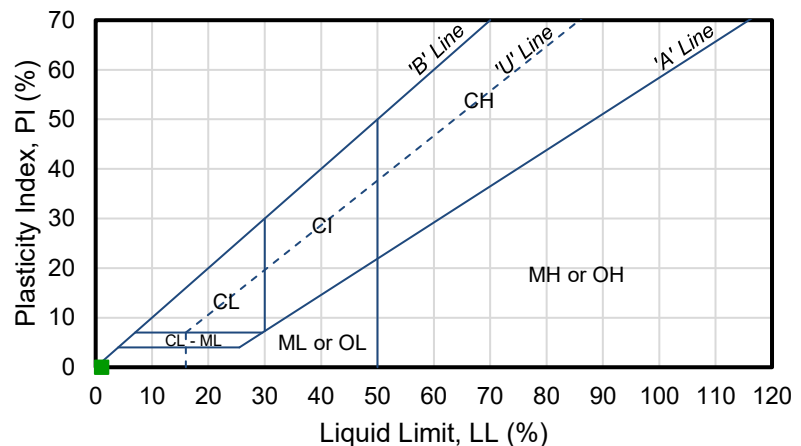
SAMPLE ID: TP-05

SOIL DESCRIPTION: clay, and silt, little sand

DEPTH: 0



PARTICLE-SIZE ANALYSIS	Gravel	0.0%
	Sand	15.8%
	Silt	42.0%
	Clay	42.2%
	D ₁₀	---
	D ₃₀	---
	D ₆₀	0.0087 mm
	C _U	---
LIMITS	PL	---
	LL	---
	PI	---



Modified Unified Soil Classification	Group Symbol
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PARTICLE-SIZE ANALYSIS, LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY

ASTM D422 & ASTM D4318

PROJECT: Bear Creek Reservoir Investigation

SAMPLE DATE: May 20, 2025

PROJECT#: 25-0508GP

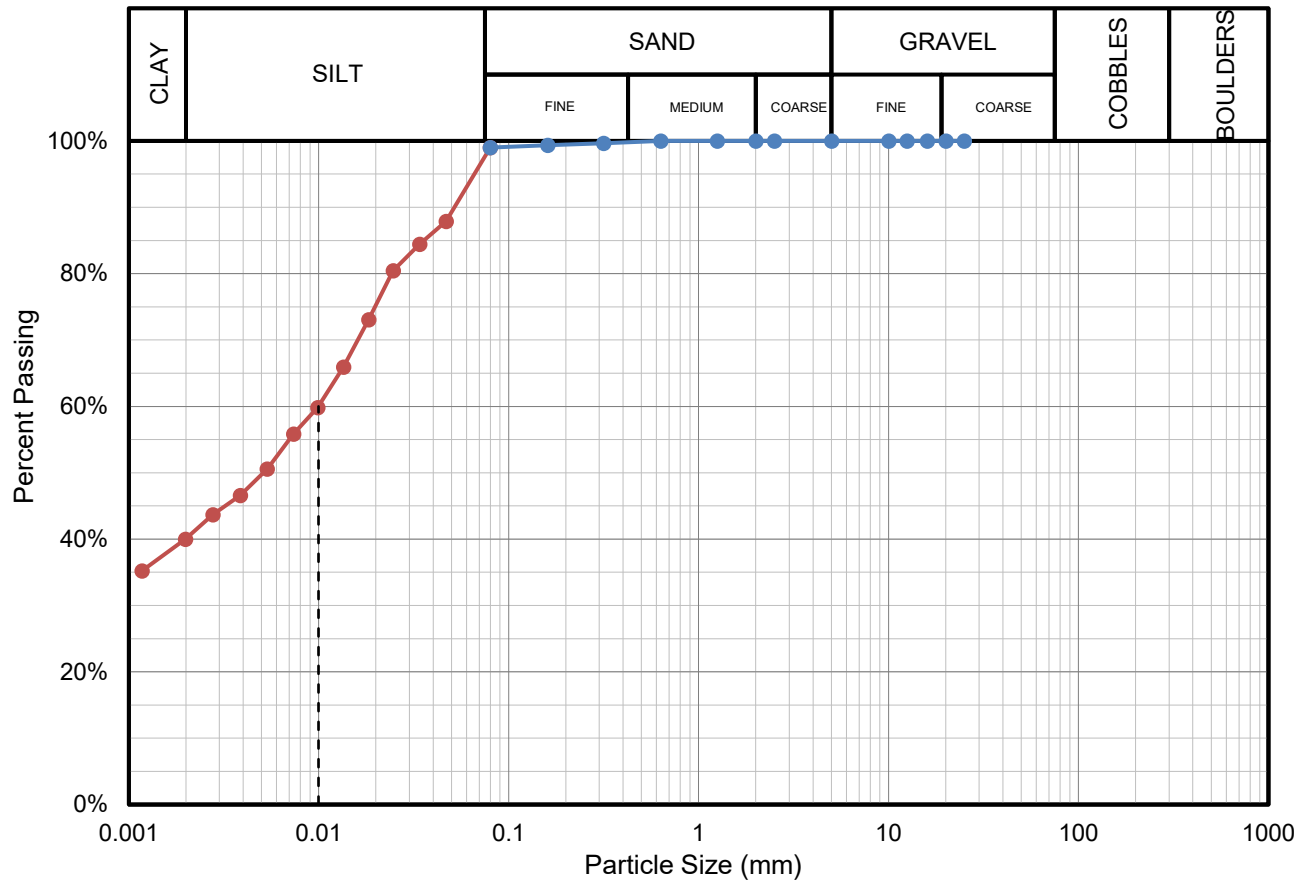
TEST DATE: May 26, 2025

CLIENT: Atkins Realis

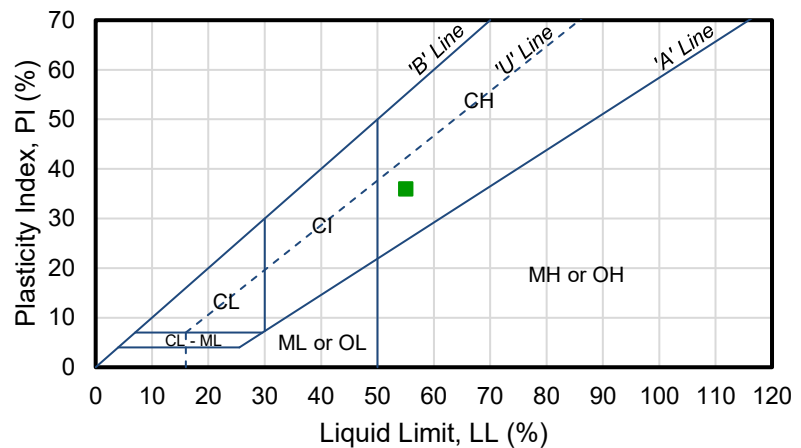
SAMPLE ID: TP-06

SOIL DESCRIPTION: silt, and clay, trace sand

DEPTH: 0



PARTICLE-SIZE ANALYSIS	Gravel	0.0%
	Sand	2.3%
	Silt	57.6%
	Clay	40.0%
	D ₁₀	---
	D ₃₀	---
	D ₆₀	0.0100 mm
	C _u	---
	C _c	---
LIMITS	PL	19
	LL	55
	PI	36



Modified Unified Soil Classification	Group Symbol
Fat clay	CH



PARTICLE-SIZE ANALYSIS, LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY

ASTM D422 & ASTM D4318

PROJECT: Bear Creek Reservoir Investigation

SAMPLE DATE: May 20, 2025

PROJECT#: 25-0508GP

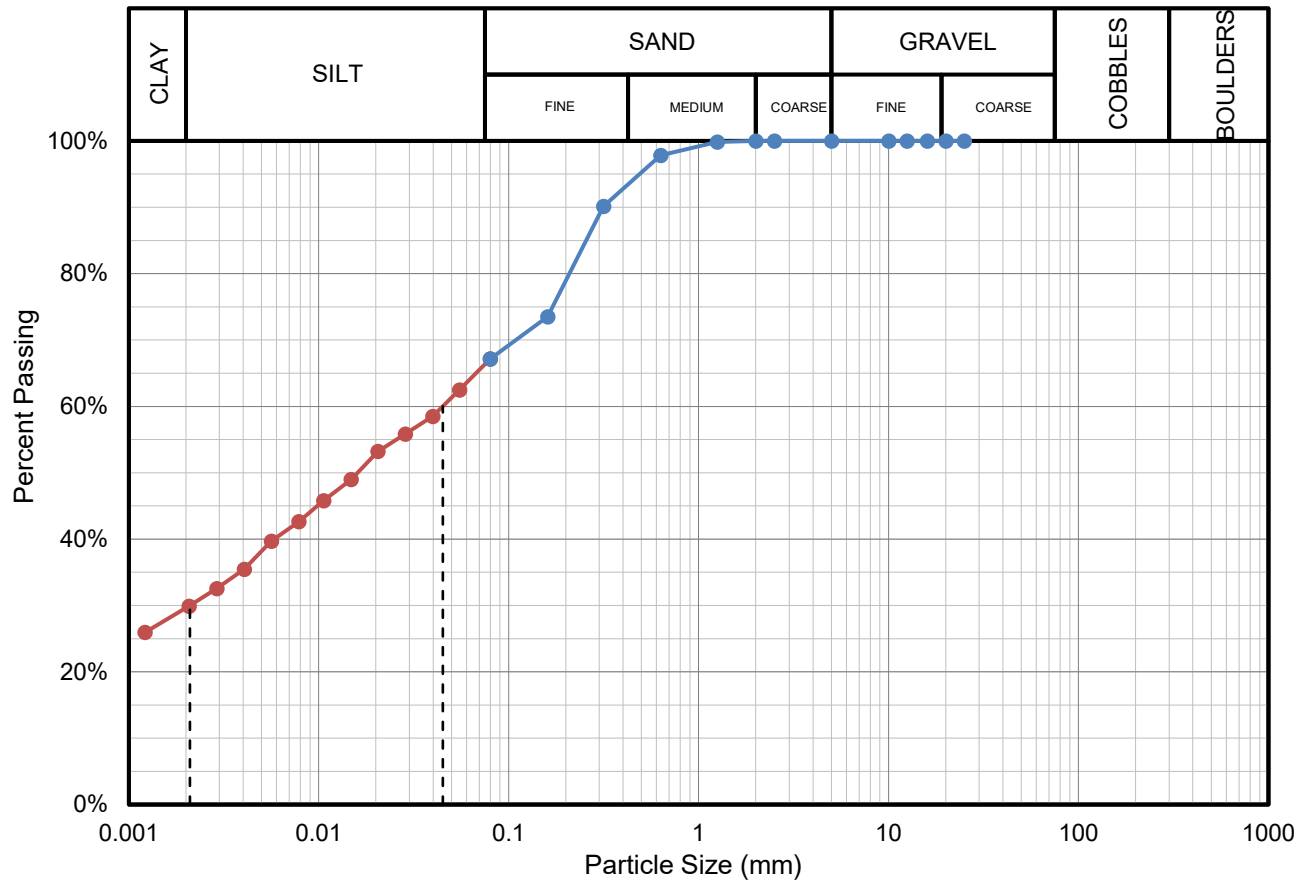
TEST DATE: May 26, 2025

CLIENT: Atkins Realis

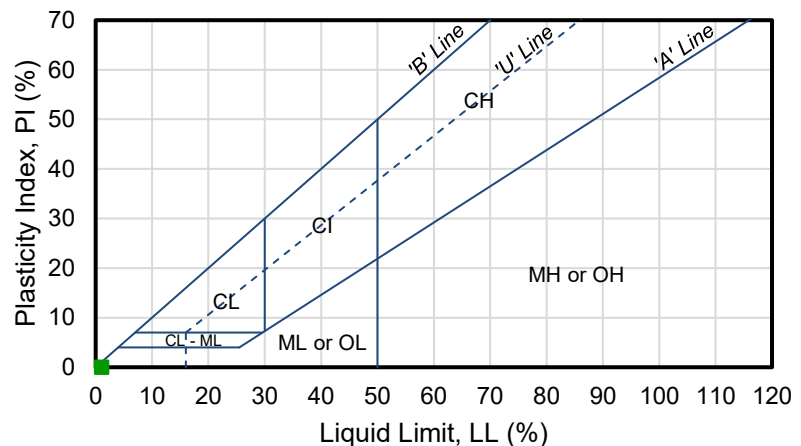
SAMPLE ID: TP-07

SOIL DESCRIPTION: silt, some sand, some clay

DEPTH: 0



PARTICLE-SIZE ANALYSIS	Gravel	0.0%
	Sand	33.6%
	Silt	36.7%
	Clay	29.6%
	D ₁₀	---
	D ₃₀	0.0021 mm
	D ₆₀	0.0450 mm
	C _u	---
LIMITS	C _c	---
	PL	---
	LL	---
	PI	---



Modified Unified Soil Classification	Group Symbol
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PARTICLE-SIZE ANALYSIS, LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY

ASTM D422 & ASTM D4318

PROJECT: Bear Creek Reservoir Investigation

SAMPLE DATE: May 20, 2025

PROJECT#: 25-0508GP

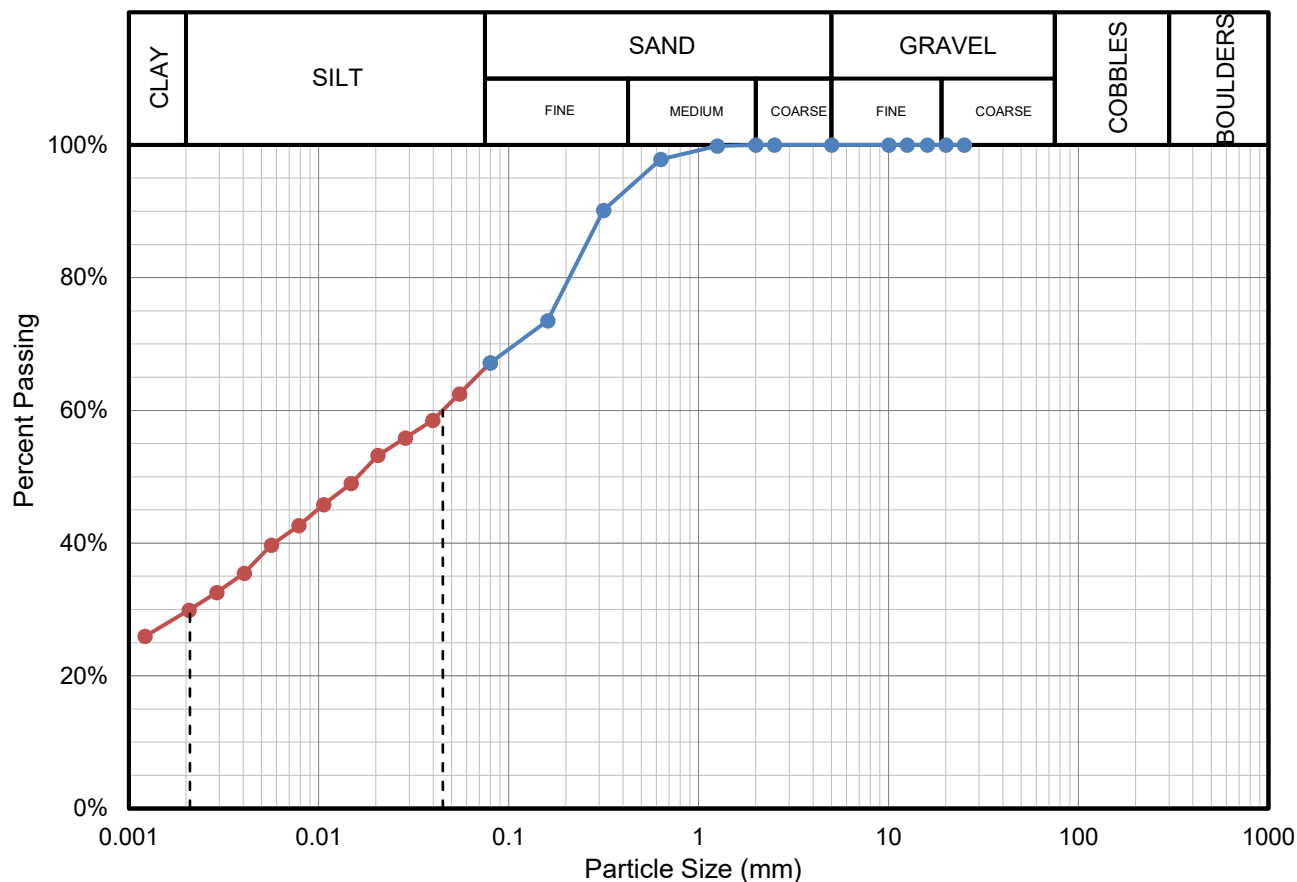
TEST DATE: May 26, 2025

CLIENT: Atkins Realis

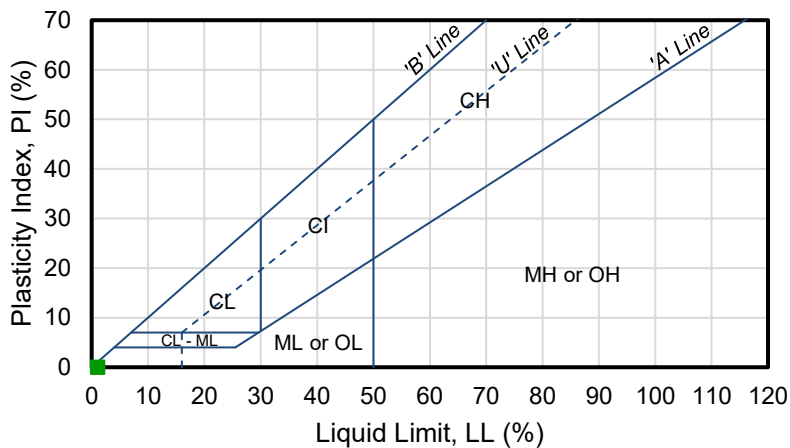
SAMPLE ID: TP-08

SOIL DESCRIPTION: silt, some sand, some clay

DEPTH: 0



PARTICLE-SIZE ANALYSIS	Gravel	0.0%
	Sand	33.6%
	Silt	36.7%
	Clay	29.6%
	D ₁₀	---
	D ₃₀	0.0021 mm
	D ₆₀	0.0450 mm
	C _U	---
LIMITS	C _C	---
	PL	---
	LL	---
	PI	---



Modified Unified Soil Classification	Group Symbol
---	---



LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX

ASTM D4318 - Method B: One-Point

PROJECT: Bear Creek Reservoir Investigation

SAMPLE DATE: 5/20/2025

PROJECT#: 25-0508GP

TEST DATE: 6/10/2025

CLIENT: Atkins Realis

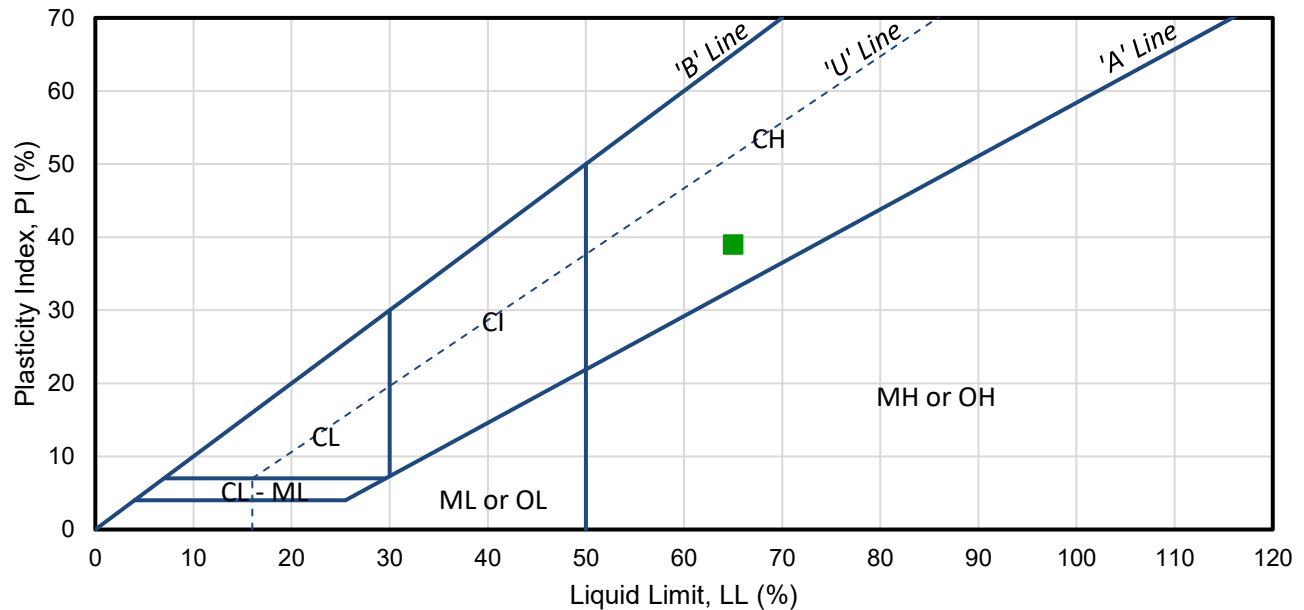
SAMPLE ID: TP-01

SOIL DESCRIPTION:

DEPTH:

PROCEDURE USED: Dry Preparation - Method B: One-Point

	AS RECEIVED	PLASTIC LIMIT				LIQUID LIMIT	
		1	2	3	4	1	2
Number of blows, N						30	30
Container Number		0	53	133		116	125
Tare Container, M_C (g)		11.462	11.466	11.701		29.201	29.201
Wet Sample + Tare, M_{CMS} (g)		12.941	12.951	13.178		55.051	56.362
Dry Sample + Tare, M_{CDS} (g)		12.634	12.645	12.880		45.001	45.799
Dry Sample, M_S (g)		1.172	1.179	1.179		15.800	16.598
Water, M_W (g)		0.307	0.306	0.298		10.050	10.563
Moisture Content, w (%)		26.2	26.0	25.3		63.6	63.6
One point liquid limit for given trial, $LL^n = w^n \cdot (N/25)^{0.121}$ (%)						65.0	65.1



Plastic Limit, PL or w_p (%)	26
Liquid Limit, LL or w_L (%)	65
Plasticity Index, PI (%)	39
Modified USCS Classification	CH



LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX

ASTM D4318 - Method B: One-Point

PROJECT: Bear Creek Reservoir Investigation

SAMPLE DATE: 5/20/2025

PROJECT#: 25-0508GP

TEST DATE: 6/10/2025

CLIENT: Atkins Realis

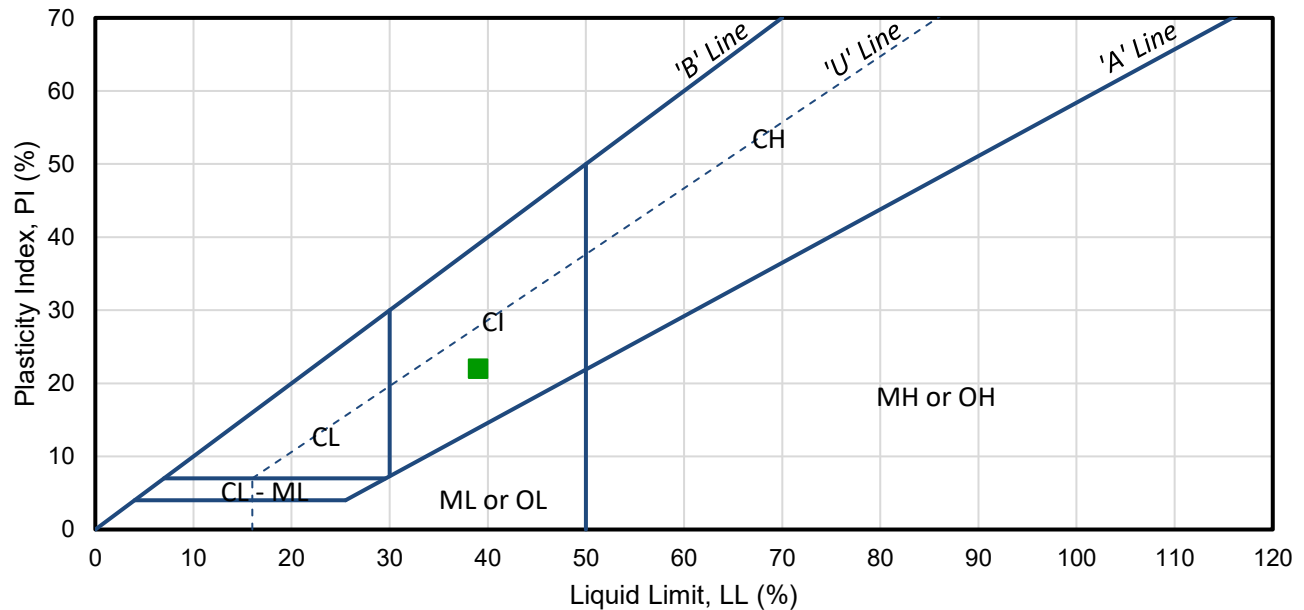
SAMPLE ID: TP-07

SOIL DESCRIPTION:

DEPTH:

PROCEDURE USED: Dry Preparation - Method B: One-Point

	AS RECEIVED	PLASTIC LIMIT				LIQUID LIMIT	
		1	2	3	4	1	2
Number of blows, N						30	30
Container Number		13	101	123		96	113
Tare Container, M_C (g)		11.651	11.569	11.486		28.730	29.105
Wet Sample + Tare, M_{CMS} (g)		13.183	13.095	12.989		58.926	61.490
Dry Sample + Tare, M_{CDS} (g)		12.963	12.872	12.778		50.509	52.493
Dry Sample, M_S (g)		1.312	1.303	1.292		21.779	23.388
Water, M_W (g)		0.220	0.223	0.211		8.417	8.997
Moisture Content, w (%)		16.8	17.1	16.3		38.6	38.5
One point liquid limit for given trial, $LL^n = w^n \cdot (N/25)^{0.121}$ (%)						39.5	39.3



Plastic Limit, PL or w_p (%)	17
Liquid Limit, LL or w_L (%)	39
Plasticity Index, PI (%)	22
Modified USCS Classification	CI



SOIL MOISTURE CONTENT WORKSHEET

PROJECT Bear Creek Reservoir Investigation

PROJECT # 25-0508GP

DATE 20-May-25

BH #	DEPTH (m)	TP-01	TP-02	TP-03	TP-04	TP-05	TP-06	TP-07
	Wt. Sample Wet + Tare	393.3	410	512	376.3	504.9	499.5	495
	Wt. Sample Dry + Tare	256.8	291.2	342.7	239.2	343.7	343.5	354.7
	Wt. Water	136.5	118.8	169.3	137.1	161.2	156	140.3
	Tare Container	14	14	14	14	14	14	14
	Wt. Dry Soil	242.8	277.2	328.7	225.2	329.7	329.5	340.7
	Moisture Content	56.2	42.9	51.5	60.9	48.9	47.3	41.2

BH #	DEPTH (m)	TP-08						
	Wt. Sample Wet + Tare	404.5						
	Wt. Sample Dry + Tare	275.3						
	Wt. Water	129.2	0	0	0	0	0	0
	Tare Container	14						
	Wt. Dry Soil	261.3	0	0	0	0	0	0
	Moisture Content	49.4	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

BH #	DEPTH (m)							
	Wt. Sample Wet + Tare							
	Wt. Sample Dry + Tare							
	Wt. Water	0	0	0	0	0	0	0
	Tare Container							
	Wt. Dry Soil	0	0	0	0	0	0	0
	Moisture Content	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

BH #	DEPTH (m)							
	Wt. Sample Wet + Tare							
	Wt. Sample Dry + Tare							
	Wt. Water	0	0	0	0	0	0	0
	Tare Container							
	Wt. Dry Soil	0	0	0	0	0	0	0
	Moisture Content	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

BH #	DEPTH (m)							
	Wt. Sample Wet + Tare							
	Wt. Sample Dry + Tare							
	Wt. Water	0	0	0	0	0	0	0
	Tare Container							
	Wt. Dry Soil	0	0	0	0	0	0	0
	Moisture Content	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

BH #	DEPTH (m)							
	Wt. Sample Wet + Tare							
	Wt. Sample Dry + Tare							
	Wt. Water	0	0	0	0	0	0	0
	Tare Container							
	Wt. Dry Soil	0	0	0	0	0	0	0
	Moisture Content	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

TECHNICIAN _____



Your Project #: 703582
Your C.O.C. #: 755771-01-01

Attention: Karem Mohamed

ATKINSREALIS CANADA INC.
CALGARY ENVIRONMENT DIV.
500, 640 - 5th AVENUE S.W.
CALGARY, AB
CANADA T2P 3G4

Report Date: 2025/06/11
Report #: R3672818
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C546956

Received: 2025/05/23, 12:13

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1)	2	N/A	2025/05/26	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX	2	N/A	2025/05/27		Auto Calc
Cation/EC Ratio	8	N/A	2025/05/28		Auto Calc
Chloride (Soluble)	8	2025/05/27	2025/05/28	AB SOP-00033 / AB SOP-00020	SM 24-4500-Cl-E m
Hexavalent Chromium (2)	2	2025/05/26	2025/05/26	AB SOP-00063	SM 24 3500-Cr B m
Hexavalent Chromium (2)	5	2025/05/27	2025/05/27	AB SOP-00063	SM 24 3500-Cr B m
Hexavalent Chromium (2)	1	2025/05/27	2025/05/28	AB SOP-00063	SM 24 3500-Cr B m
Conductivity @25C (Soluble)	8	2025/05/27	2025/05/28	AB SOP-00033 / AB SOP-00004	SM 24 2510 B m
Elements by ICPMS - Soils	8	2025/05/27	2025/05/28	AB SOP-00001 / AB SOP-00043	EPA 6020b R2 m
Sum of Cations, Anions	8	N/A	2025/05/28		Auto Calc
Moisture	2	N/A	2025/05/25	AB SOP-00002	CCME PHC-CWS m
Moisture	6	N/A	2025/05/26	AB SOP-00002	CCME PHC-CWS m
Available NO3 (N)	8	2025/05/23	2025/06/11		Auto Calc
pH @25C (1:2 Calcium Chloride Extract)	8	2025/05/28	2025/05/28	CAL SOP-00180 / AB SOP-00006	SM 24 4500 H+B m
Sodium Adsorption Ratio	8	N/A	2025/05/28		Auto Calc
Soluble Ions	8	2025/05/27	2025/05/28	AB SOP-00033 / AB SOP-00042	EPA 6010d R5 m
Sulphur (Available)	7	2025/06/10	2025/06/10	AB SOP-00029 / AB SOP-00042	EPA 6010d R5 m
Soluble Paste	8	2025/05/27	2025/05/27	AB SOP-00033	Carter 2nd ed 15.2 m
Soluble Boron Calculation	8	N/A	2025/05/28		Auto Calc
Soluble Ions Calculation	2	N/A	2025/05/25		Auto Calc
Soluble Ions Calculation	6	N/A	2025/05/26		Auto Calc
Theoretical Gypsum Requirement (3)	8	N/A	2025/05/28		Auto Calc

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.



Your Project #: 703582
Your C.O.C. #: 755771-01-01

Attention: Karem Mohamed

ATKINSREALIS CANADA INC.
CALGARY ENVIRONMENT DIV.
500, 640 - 5th AVENUE S.W.
CALGARY, AB
CANADA T2P 3G4

Report Date: 2025/06/11
Report #: R3672818
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C546956

Received: 2025/05/23, 12:13

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) No lab extraction date is given for F1BTX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

(2) Some soil samples may react with the Cr(VI) spike reducing it to Cr(III). These samples are highly unlikely to contain native hexavalent chromium. Thus a failed spike recovery does not invalidate a negative result on the native sample.

(3) TGR calculation is based on a theoretical SAR of 4. Salt Contamination and Assessment and remediation guideline 2001 recommended SAR is ranging 4-8. TGR is reported in tonnes/ha.

Encryption Key



Bureau Veritas

11 Jun 2025 16:03:16

Please direct all questions regarding this Certificate of Analysis to:

Cynny Hagen, Key Account Specialist

Email: Cynny.HAGEN@bureauveritas.com

Phone# (403)735-2273

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Scott Cantwell, General Manager responsible for Alberta Environmental laboratory operations.



RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		DLO240			DLO241			DLO242		
Sampling Date		2025/05/20 11:00			2025/05/20 11:00			2025/05/20 11:00		
COC Number		755771-01-01			755771-01-01			755771-01-01		
	UNITS	TP-01	RDL	QC Batch	TP-02	RDL	QC Batch	TP-03	RDL	QC Batch

Calculated Parameters										
Anion Sum	meq/L	25	N/A	B959646	28	N/A	B959646	60	N/A	B959646
Cation Sum	meq/L	28	N/A	B959646	28	N/A	B959646	65	N/A	B959646
Cation/EC Ratio	N/A	12	0.10	B959614	10	0.10	B959614	12	0.10	B959614
Available (NH ₄ F) Nitrate (N)	mg/kg	<20	20	B959731	<20	20	B959731	<20	20	B959731
Calculated Calcium (Ca)	mg/kg	240	1.2	B959683	220	0.98	B959683	320	0.77	B959683
Calculated Magnesium (Mg)	mg/kg	70	0.82	B959683	53	0.65	B959683	72	0.51	B959683
Calculated Sodium (Na)	mg/kg	120	2.0	B959683	56	1.6	B959683	250	1.3	B959683
Calculated Potassium (K)	mg/kg	20	1.1	B959683	22	0.85	B959683	23	0.67	B959683
Calculated Boron (B)	mg/kg	0.24	0.082	B959667	0.26	0.065	B959667	0.099	0.051	B959733
Calculated Chloride (Cl)	mg/kg	150	8.2	B959683	330	6.5	B959683	340	5.1	B959683
Calculated Sulphate (SO ₄)	mg/kg	780	4.1	B959683	420	3.3	B959683	1000	2.6	B959683

Elements										
Hex. Chromium (Cr 6+)	mg/kg	<0.080	0.080	B961853	<0.080	0.080	B961853	<0.40	0.40	B961853

Nutrients										
Available (CaCl ₂) Sulphur (S)	mg/kg	240	2.0	B981247				380	2.0	B981247

Soluble Parameters										
Soluble Boron (B)	mg/L	0.30	0.10	B964717	0.39	0.10	B964717	0.19	0.10	B964717
Soluble Chloride (Cl)	mg/L	180	10	B964716	510	10	B964716	660	10	B964716
Soluble Conductivity	dS/m	2.3	0.020	B964764	2.7	0.020	B964764	5.3	0.020	B964764
Soluble (CaCl ₂) pH	pH	6.37	N/A	B961986	6.44	N/A	B961986	7.08	N/A	B961986
Sodium Adsorption Ratio	N/A	1.9	0.10	B959662	1.1	0.10	B959662	4.5	0.10	B959662
Soluble Calcium (Ca)	mg/L	290	1.5	B964717	340	1.5	B964717	630	1.5	B964717
Soluble Magnesium (Mg)	mg/L	86	1.0	B964717	82	1.0	B964717	140	1.0	B964717
Soluble Sodium (Na)	mg/L	140	2.5	B964717	85	2.5	B964717	480	2.5	B964717
Soluble Potassium (K)	mg/L	25	1.3	B964717	34	1.3	B964717	44	1.3	B964717
Saturation %	%	82	N/A	B961972	65	N/A	B961972	51	N/A	B961972
Soluble Sulphate (SO ₄)	mg/L	950	5.0	B964717	640	5.0	B964717	2000	5.0	B964717
Theoretical Gypsum Requirement	tonnes/ha	<0.20	0.20	B959691	<0.20	0.20	B959691	0.96	0.20	B959691

RDL = Reportable Detection Limit

N/A = Not Applicable



RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		DLO243		DLO244		DLO245		
Sampling Date		2025/05/20 11:00		2025/05/20 11:00		2025/05/20 11:00		
COC Number		755771-01-01		755771-01-01		755771-01-01		
	UNITS	TP-04	RDL	TP-05	RDL	TP-06	RDL	QC Batch
Calculated Parameters								
Anion Sum	meq/L	72	N/A	65	N/A	23	N/A	B959646
Cation Sum	meq/L	75	N/A	65	N/A	25	N/A	B959646
Cation/EC Ratio	N/A	12	0.10	12	0.10	11	0.10	B959614
Available (NH ₄ F) Nitrate (N)	mg/kg	<20	20	<20	20	<20	20	B959731
Calculated Calcium (Ca)	mg/kg	390	0.84	510	1.0	150	1.0	B959683
Calculated Magnesium (Mg)	mg/kg	98	0.56	160	0.67	43	0.68	B959683
Calculated Sodium (Na)	mg/kg	310	1.4	98	1.7	130	1.7	B959683
Calculated Potassium (K)	mg/kg	29	0.73	31	0.88	12	0.88	B959683
Calculated Boron (B)	mg/kg	0.17	0.056	0.25	0.067	0.10	0.068	B959733
Calculated Chloride (Cl)	mg/kg	610	5.6	720	6.7	310	6.8	B959683
Calculated Sulphate (SO ₄)	mg/kg	1100	2.8	1100	3.4	330	3.4	B959683
Elements								
Hex. Chromium (Cr 6+)	mg/kg	<0.080	0.080	<0.32	0.32	<0.40 (1)	0.40	B961853
Nutrients								
Available (CaCl ₂) Sulphur (S)	mg/kg	660	2.0	600	2.0	89	2.0	B981247
Soluble Parameters								
Soluble Boron (B)	mg/L	0.31	0.10	0.37	0.10	0.15	0.10	B964717
Soluble Chloride (Cl)	mg/L	1100	10	1100	10	460	10	B964716
Soluble Conductivity	dS/m	6.4	0.020	5.6	0.020	2.4	0.020	B964764
Soluble (CaCl ₂) pH	pH	6.66	N/A	6.65	N/A	7.06	N/A	B961986
Sodium Adsorption Ratio	N/A	4.8	0.10	1.2	0.10	2.9	0.10	B959662
Soluble Calcium (Ca)	mg/L	700	1.5	760	1.5	220	1.5	B964717
Soluble Magnesium (Mg)	mg/L	170	1.0	230	1.0	63	1.0	B964717
Soluble Sodium (Na)	mg/L	550	2.5	150	2.5	190	2.5	B964717
Soluble Potassium (K)	mg/L	52	1.3	46	1.3	18	1.3	B964717
Saturation %	%	56	N/A	67	N/A	68	N/A	B961972
Soluble Sulphate (SO ₄)	mg/L	2000	5.0	1700	5.0	490	5.0	B964717
Theoretical Gypsum Requirement	tonnes/ha	2.1	0.20	<0.20	0.20	<0.20	0.20	B959691
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to matrix interference. Matrix Spike exceeds acceptance limits due to matrix interference. Reanalysis yields similar results.								



RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		DLO246		DLO247		
Sampling Date		2025/05/20 11:00		2025/05/20 11:00		
COC Number		755771-01-01		755771-01-01		
	UNITS	TP-07	RDL	TP-08	RDL	QC Batch
Calculated Parameters						
Anion Sum	meq/L	27	N/A	32	N/A	B959646
Cation Sum	meq/L	27	N/A	36	N/A	B959646
Cation/EC Ratio	N/A	9.9	0.10	10	0.10	B959614
Available (NH ₄ F) Nitrate (N)	mg/kg	<20	20	<20	20	B959731
Calculated Calcium (Ca)	mg/kg	160	0.88	290	1.0	B959683
Calculated Magnesium (Mg)	mg/kg	45	0.58	84	0.68	B959683
Calculated Sodium (Na)	mg/kg	77	1.5	49	1.7	B959683
Calculated Potassium (K)	mg/kg	17	0.76	22	0.89	B959683
Calculated Boron (B)	mg/kg	0.11	0.059	0.17	0.068	B959733
Calculated Chloride (Cl)	mg/kg	390	5.8	500	6.8	B959683
Calculated Sulphate (SO ₄)	mg/kg	230	2.9	370	3.4	B959683
Elements						
Hex. Chromium (Cr 6+)	mg/kg	<0.080	0.080	<0.080	0.080	B960444
Nutrients						
Available (CaCl ₂) Sulphur (S)	mg/kg	79	2.0	130	2.0	B981247
Soluble Parameters						
Soluble Boron (B)	mg/L	0.18	0.10	0.24	0.10	B964717
Soluble Chloride (Cl)	mg/L	660	10	740	10	B964716
Soluble Conductivity	dS/m	2.7	0.020	3.5	0.020	B964764
Soluble (CaCl ₂) pH	pH	6.71	N/A	6.69	N/A	B961986
Sodium Adsorption Ratio	N/A	1.8	0.10	0.79	0.10	B959662
Soluble Calcium (Ca)	mg/L	280	1.5	430	1.5	B964717
Soluble Magnesium (Mg)	mg/L	78	1.0	120	1.0	B964717
Soluble Sodium (Na)	mg/L	130	2.5	73	2.5	B964717
Soluble Potassium (K)	mg/L	29	1.3	32	1.3	B964717
Saturation %	%	58	N/A	68	N/A	B961972
Soluble Sulphate (SO ₄)	mg/L	390	5.0	550	5.0	B964717
Theoretical Gypsum Requirement	tonnes/ha	<0.20	0.20	<0.20	0.20	B959691
RDL = Reportable Detection Limit N/A = Not Applicable						



Bureau Veritas Job #: C546956
Report Date: 2025/06/11

ATKINSREALIS CANADA INC.
Client Project #: 703582

PHYSICAL TESTING (SOIL)

Bureau Veritas ID		DLO240		DLO241	DLO242	DLO243	DLO244		
Sampling Date		2025/05/20 11:00		2025/05/20 11:00	2025/05/20 11:00	2025/05/20 11:00	2025/05/20 11:00		
COC Number		755771-01-01		755771-01-01	755771-01-01	755771-01-01	755771-01-01		
	UNITS	TP-01	QC Batch	TP-02	TP-03	TP-04	TP-05	RDL	QC Batch

Physical Properties									
Moisture	%	33	B960160	43	35	38	39	0.30	B960343
RDL = Reportable Detection Limit									

Bureau Veritas ID		DLO245		DLO246	DLO247		
Sampling Date		2025/05/20 11:00		2025/05/20 11:00	2025/05/20 11:00		
COC Number		755771-01-01		755771-01-01	755771-01-01		
	UNITS	TP-06	QC Batch	TP-07	TP-08	RDL	QC Batch

Physical Properties							
Moisture	%	38	B960160	36	34	0.30	B960343
RDL = Reportable Detection Limit							



ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		DLO240	DLO241	DLO242	DLO243	DLO244	DLO245		
Sampling Date		2025/05/20 11:00	2025/05/20 11:00	2025/05/20 11:00	2025/05/20 11:00	2025/05/20 11:00	2025/05/20 11:00		
COC Number		755771-01-01	755771-01-01	755771-01-01	755771-01-01	755771-01-01	755771-01-01		
	UNITS	TP-01	TP-02	TP-03	TP-04	TP-05	TP-06	RDL	QC Batch

Elements									
Total Antimony (Sb)	mg/kg	0.61	0.62	<0.50	0.57	<0.50	<0.50	0.50	B962903
Total Arsenic (As)	mg/kg	5.9	7.2	5.6	6.4	6.3	6.6	1.0	B962903
Total Barium (Ba)	mg/kg	250	250	170	240	260	280	1.0	B962903
Total Beryllium (Be)	mg/kg	0.81	0.85	0.57	0.74	0.95	0.94	0.40	B962903
Total Cadmium (Cd)	mg/kg	0.52	0.56	0.29	0.43	0.43	0.41	0.050	B962903
Total Chromium (Cr)	mg/kg	23	25	15	25	26	27	1.0	B962903
Total Cobalt (Co)	mg/kg	10	11	7.7	9.2	11	10	0.50	B962903
Total Copper (Cu)	mg/kg	27	29	16	25	27	26	1.0	B962903
Total Lead (Pb)	mg/kg	14	33	12	15	17	14	0.50	B962903
Total Mercury (Hg)	mg/kg	0.071	0.064	0.077	0.068	0.068	0.066	0.050	B962903
Total Molybdenum (Mo)	mg/kg	0.94	0.79	0.64	0.99	0.75	0.67	0.40	B962903
Total Nickel (Ni)	mg/kg	27	30	18	26	30	30	1.0	B962903
Total Selenium (Se)	mg/kg	0.60	0.60	<0.50	0.50	0.60	0.54	0.50	B962903
Total Silver (Ag)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	B962903
Total Thallium (Tl)	mg/kg	0.21	0.21	0.15	0.21	0.25	0.26	0.10	B962903
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	1.0	B962903
Total Uranium (U)	mg/kg	1.2	1.2	0.75	1.0	1.2	1.2	0.20	B962903
Total Vanadium (V)	mg/kg	38	40	27 (1)	36	43	44	1.0	B962903
Total Zinc (Zn)	mg/kg	140	190	91	140	110	100	10	B962903

RDL = Reportable Detection Limit

(1) Matrix spike exceeds acceptance limits due to matrix interference.



ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		DLO246	DLO247		
Sampling Date		2025/05/20 11:00	2025/05/20 11:00		
COC Number		755771-01-01	755771-01-01		
	UNITS	TP-07	TP-08	RDL	QC Batch
Elements					
Total Antimony (Sb)	mg/kg	<0.50	<0.50	0.50	B962903
Total Arsenic (As)	mg/kg	6.5	6.8	1.0	B962903
Total Barium (Ba)	mg/kg	210	270	1.0	B962903
Total Beryllium (Be)	mg/kg	0.74	0.95	0.40	B962903
Total Cadmium (Cd)	mg/kg	0.48	0.51	0.050	B962903
Total Chromium (Cr)	mg/kg	21	24	1.0	B962903
Total Cobalt (Co)	mg/kg	11	11	0.50	B962903
Total Copper (Cu)	mg/kg	21	27	1.0	B962903
Total Lead (Pb)	mg/kg	14	16	0.50	B962903
Total Mercury (Hg)	mg/kg	0.052	0.068	0.050	B962903
Total Molybdenum (Mo)	mg/kg	0.65	0.65	0.40	B962903
Total Nickel (Ni)	mg/kg	26	30	1.0	B962903
Total Selenium (Se)	mg/kg	<0.50	0.61	0.50	B962903
Total Silver (Ag)	mg/kg	<0.20	<0.20	0.20	B962903
Total Thallium (Tl)	mg/kg	0.21	0.25	0.10	B962903
Total Tin (Sn)	mg/kg	<1.0	<1.0	1.0	B962903
Total Uranium (U)	mg/kg	1.1	1.3	0.20	B962903
Total Vanadium (V)	mg/kg	35	43	1.0	B962903
Total Zinc (Zn)	mg/kg	89	100	10	B962903
RDL = Reportable Detection Limit					



VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		DLO240	DLO245		
Sampling Date		2025/05/20 11:00	2025/05/20 11:00		
COC Number		755771-01-01	755771-01-01		
	UNITS	TP-01	TP-06	RDL	QC Batch
Volatiles					
Xylenes (Total)	mg/kg	<0.045	<0.045	0.045	B959601
F1 (C6-C10) - BTEX	mg/kg	<10	<10	10	B959601
Field Preserved Volatiles					
Benzene	mg/kg	<0.0050	<0.0050	0.0050	B960066
Toluene	mg/kg	<0.050	<0.050	0.050	B960066
Ethylbenzene	mg/kg	<0.010	<0.010	0.010	B960066
m & p-Xylene	mg/kg	<0.040	<0.040	0.040	B960066
o-Xylene	mg/kg	<0.020	<0.020	0.020	B960066
F1 (C6-C10)	mg/kg	<10	<10	10	B960066
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	124	119		B960066
4-Bromofluorobenzene (sur.)	%	93	93		B960066
D10-o-Xylene (sur.)	%	98	101		B960066
D4-1,2-Dichloroethane (sur.)	%	114	116		B960066
RDL = Reportable Detection Limit					



Bureau Veritas Job #: C546956
Report Date: 2025/06/11

ATKINSREALIS CANADA INC.
Client Project #: 703582

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	19.0°C
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Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
B960066	RIL	Matrix Spike		1,4-Difluorobenzene (sur.)	2025/05/26		118	%	50 - 140
				4-Bromofluorobenzene (sur.)	2025/05/26		98	%	50 - 140
				D10-o-Xylene (sur.)	2025/05/26		94	%	50 - 140
				D4-1,2-Dichloroethane (sur.)	2025/05/26		106	%	50 - 140
				Benzene	2025/05/26		92	%	50 - 140
				Toluene	2025/05/26		93	%	50 - 140
				Ethylbenzene	2025/05/26		92	%	50 - 140
				m & p-Xylene	2025/05/26		94	%	50 - 140
				o-Xylene	2025/05/26		91	%	50 - 140
				F1 (C6-C10)	2025/05/26		84	%	60 - 140
B960066	RIL	Spiked Blank		1,4-Difluorobenzene (sur.)	2025/05/27		118	%	50 - 140
				4-Bromofluorobenzene (sur.)	2025/05/27		96	%	50 - 140
				D10-o-Xylene (sur.)	2025/05/27		96	%	50 - 140
				D4-1,2-Dichloroethane (sur.)	2025/05/27		115	%	50 - 140
				Benzene	2025/05/27		107	%	60 - 130
				Toluene	2025/05/27		103	%	60 - 130
				Ethylbenzene	2025/05/27		100	%	60 - 130
				m & p-Xylene	2025/05/27		103	%	60 - 130
				o-Xylene	2025/05/27		105	%	60 - 130
				F1 (C6-C10)	2025/05/27		104	%	60 - 140
B960066	RIL	Method Blank		1,4-Difluorobenzene (sur.)	2025/05/26		121	%	50 - 140
				4-Bromofluorobenzene (sur.)	2025/05/26		93	%	50 - 140
				D10-o-Xylene (sur.)	2025/05/26		95	%	50 - 140
				D4-1,2-Dichloroethane (sur.)	2025/05/26		121	%	50 - 140
				Benzene	2025/05/26	<0.0050		mg/kg	
				Toluene	2025/05/26	<0.050		mg/kg	
				Ethylbenzene	2025/05/26	<0.010		mg/kg	
				m & p-Xylene	2025/05/26	<0.040		mg/kg	
				o-Xylene	2025/05/26	<0.020		mg/kg	
				F1 (C6-C10)	2025/05/26	<10		mg/kg	
B960066	RIL	RPD		Benzene	2025/05/26	NC		%	50
				Toluene	2025/05/26	NC		%	50
				Ethylbenzene	2025/05/26	NC		%	50
				m & p-Xylene	2025/05/26	NC		%	50
				o-Xylene	2025/05/26	NC		%	50
				F1 (C6-C10)	2025/05/26	NC		%	30
B960160	RJF	Method Blank		Moisture	2025/05/25	<0.30		%	
B960160	RJF	RPD [DLO240-02]		Moisture	2025/05/25	6.9		%	20
B960343	A2K	Method Blank		Moisture	2025/05/26	<0.30		%	
B960343	A2K	RPD		Moisture	2025/05/26	5.3		%	20
B960444	SKM	Matrix Spike		Hex. Chromium (Cr 6+)	2025/05/26		114	%	75 - 125
B960444	SKM	QC Standard		Hex. Chromium (Cr 6+)	2025/05/26		75	%	75 - 125
B960444	SKM	Spiked Blank		Hex. Chromium (Cr 6+)	2025/05/26		103	%	80 - 120
B960444	SKM	Method Blank		Hex. Chromium (Cr 6+)	2025/05/26	<0.080		mg/kg	
B960444	SKM	RPD		Hex. Chromium (Cr 6+)	2025/05/26	NC		%	35
B961853	MOP	Matrix Spike [DLO245-01]		Hex. Chromium (Cr 6+)	2025/05/27		64 (1)	%	75 - 125
B961853	MOP	QC Standard		Hex. Chromium (Cr 6+)	2025/05/27		96	%	N/A
B961853	MOP	Spiked Blank		Hex. Chromium (Cr 6+)	2025/05/27		112	%	80 - 120
B961853	MOP	Method Blank		Hex. Chromium (Cr 6+)	2025/05/27	<0.080		mg/kg	
B961853	MOP	RPD [DLO245-01]		Hex. Chromium (Cr 6+)	2025/05/27	NC		%	35
B961972	S4M	QC Standard		Saturation %	2025/05/27		100	%	75 - 125
B961972	S4M	RPD [DLO242-01]		Saturation %	2025/05/27	0.90		%	12
B961986	JAY	QC Standard		Soluble (CaCl2) pH	2025/05/28		100	%	97 - 103
B961986	JAY	Spiked Blank		Soluble (CaCl2) pH	2025/05/28		100	%	97 - 103
B961986	JAY	RPD [DLO242-01]		Soluble (CaCl2) pH	2025/05/28	1.9		%	N/A



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC		QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
Batch	Init							
B962903	YHK	Matrix Spike [DLO242-01]	Total Antimony (Sb)	2025/05/28		92	%	75 - 125
			Total Arsenic (As)	2025/05/28		94	%	75 - 125
			Total Barium (Ba)	2025/05/28		NC	%	75 - 125
			Total Beryllium (Be)	2025/05/28		97	%	75 - 125
			Total Cadmium (Cd)	2025/05/28		94	%	75 - 125
			Total Chromium (Cr)	2025/05/28		119	%	75 - 125
			Total Cobalt (Co)	2025/05/28		92	%	75 - 125
			Total Copper (Cu)	2025/05/28		91	%	75 - 125
			Total Lead (Pb)	2025/05/28		94	%	75 - 125
			Total Mercury (Hg)	2025/05/28		87	%	75 - 125
			Total Molybdenum (Mo)	2025/05/28		97	%	75 - 125
			Total Nickel (Ni)	2025/05/28		96	%	75 - 125
			Total Selenium (Se)	2025/05/28		96	%	75 - 125
			Total Silver (Ag)	2025/05/28		95	%	75 - 125
			Total Thallium (Tl)	2025/05/28		95	%	75 - 125
			Total Tin (Sn)	2025/05/28		95	%	75 - 125
			Total Uranium (U)	2025/05/28		98	%	75 - 125
			Total Vanadium (V)	2025/05/28		153 (1)	%	75 - 125
			Total Zinc (Zn)	2025/05/28		NC	%	75 - 125
B962903	YHK	QC Standard	Total Arsenic (As)	2025/05/28		100	%	68 - 133
			Total Barium (Ba)	2025/05/28		96	%	77 - 123
			Total Beryllium (Be)	2025/05/28		99	%	46 - 154
			Total Cadmium (Cd)	2025/05/28		102	%	56 - 147
			Total Chromium (Cr)	2025/05/28		88	%	65 - 136
			Total Cobalt (Co)	2025/05/28		96	%	79 - 122
			Total Copper (Cu)	2025/05/28		97	%	83 - 117
			Total Lead (Pb)	2025/05/28		103	%	87 - 113
			Total Mercury (Hg)	2025/05/28		119	%	71 - 129
			Total Molybdenum (Mo)	2025/05/28		102	%	69 - 132
			Total Nickel (Ni)	2025/05/28		98	%	85 - 115
			Total Silver (Ag)	2025/05/28		96	%	82 - 118
			Total Uranium (U)	2025/05/28		92	%	78 - 121
			Total Vanadium (V)	2025/05/28		98	%	69 - 131
B962903	YHK	Spiked Blank	Total Antimony (Sb)	2025/05/28		102	%	80 - 120
			Total Arsenic (As)	2025/05/28		103	%	80 - 120
			Total Barium (Ba)	2025/05/28		100	%	80 - 120
			Total Beryllium (Be)	2025/05/28		105	%	80 - 120
			Total Cadmium (Cd)	2025/05/28		102	%	80 - 120
			Total Chromium (Cr)	2025/05/28		101	%	80 - 120
			Total Cobalt (Co)	2025/05/28		100	%	80 - 120
			Total Copper (Cu)	2025/05/28		100	%	80 - 120
			Total Lead (Pb)	2025/05/28		102	%	80 - 120
			Total Mercury (Hg)	2025/05/28		97	%	80 - 120
			Total Molybdenum (Mo)	2025/05/28		102	%	80 - 120
			Total Nickel (Ni)	2025/05/28		100	%	80 - 120
			Total Selenium (Se)	2025/05/28		104	%	80 - 120
			Total Silver (Ag)	2025/05/28		100	%	80 - 120
			Total Thallium (Tl)	2025/05/28		104	%	80 - 120
			Total Tin (Sn)	2025/05/28		102	%	80 - 120
			Total Uranium (U)	2025/05/28		107	%	80 - 120
B962903	YHK	Method Blank	Total Vanadium (V)	2025/05/28		101	%	80 - 120
			Total Zinc (Zn)	2025/05/28		100	%	80 - 120
			Total Antimony (Sb)	2025/05/28	<0.50		mg/kg	
			Total Arsenic (As)	2025/05/28	<1.0		mg/kg	
			Total Barium (Ba)	2025/05/28	<1.0		mg/kg	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
B962903	YHK	RPD [DLO242-01]		Total Beryllium (Be)	2025/05/28	<0.40		mg/kg	
				Total Cadmium (Cd)	2025/05/28	<0.050		mg/kg	
				Total Chromium (Cr)	2025/05/28	<1.0		mg/kg	
				Total Cobalt (Co)	2025/05/28	<0.50		mg/kg	
				Total Copper (Cu)	2025/05/28	<1.0		mg/kg	
				Total Lead (Pb)	2025/05/28	<0.50		mg/kg	
				Total Mercury (Hg)	2025/05/28	<0.050		mg/kg	
				Total Molybdenum (Mo)	2025/05/28	<0.40		mg/kg	
				Total Nickel (Ni)	2025/05/28	<1.0		mg/kg	
				Total Selenium (Se)	2025/05/28	<0.50		mg/kg	
				Total Silver (Ag)	2025/05/28	<0.20		mg/kg	
				Total Thallium (Tl)	2025/05/28	<0.10		mg/kg	
				Total Tin (Sn)	2025/05/28	<1.0		mg/kg	
				Total Uranium (U)	2025/05/28	<0.20		mg/kg	
				Total Vanadium (V)	2025/05/28	<1.0		mg/kg	
				Total Zinc (Zn)	2025/05/28	<10		mg/kg	
				Total Antimony (Sb)	2025/05/28	NC		%	30
				Total Arsenic (As)	2025/05/28	2.2		%	30
				Total Barium (Ba)	2025/05/28	4.3		%	35
				Total Beryllium (Be)	2025/05/28	1.2		%	30
				Total Cadmium (Cd)	2025/05/28	10		%	30
				Total Chromium (Cr)	2025/05/28	1.2		%	30
				Total Cobalt (Co)	2025/05/28	0.32		%	30
				Total Copper (Cu)	2025/05/28	2.9		%	30
				Total Lead (Pb)	2025/05/28	0.85		%	35
				Total Mercury (Hg)	2025/05/28	11		%	35
				Total Molybdenum (Mo)	2025/05/28	3.5		%	35
				Total Nickel (Ni)	2025/05/28	3.7		%	30
				Total Selenium (Se)	2025/05/28	NC		%	30
				Total Silver (Ag)	2025/05/28	NC		%	35
				Total Thallium (Tl)	2025/05/28	12		%	30
				Total Tin (Sn)	2025/05/28	NC		%	35
				Total Uranium (U)	2025/05/28	2.2		%	30
				Total Vanadium (V)	2025/05/28	2.9		%	30
				Total Zinc (Zn)	2025/05/28	5.1		%	30
B964716	PL	Matrix Spike [DLO242-01]		Soluble Chloride (Cl)	2025/05/28		NC	%	75 - 125
B964716	PL	QC Standard		Soluble Chloride (Cl)	2025/05/28		104	%	75 - 125
B964716	PL	Spiked Blank		Soluble Chloride (Cl)	2025/05/28		100	%	80 - 120
B964716	PL	Method Blank		Soluble Chloride (Cl)	2025/05/28	<10		mg/L	
B964716	PL	RPD [DLO242-01]		Soluble Chloride (Cl)	2025/05/28	4.8		%	30
B964717	ZI	Matrix Spike [DLO242-01]		Soluble Boron (B)	2025/05/28		96	%	75 - 125
				Soluble Calcium (Ca)	2025/05/28		92	%	75 - 125
				Soluble Magnesium (Mg)	2025/05/28		99	%	75 - 125
				Soluble Sodium (Na)	2025/05/28		88	%	75 - 125
				Soluble Potassium (K)	2025/05/28		95	%	75 - 125
				Soluble Calcium (Ca)	2025/05/28		98	%	75 - 125
				Soluble Magnesium (Mg)	2025/05/28		97	%	75 - 125
				Soluble Sodium (Na)	2025/05/28		96	%	75 - 125
				Soluble Potassium (K)	2025/05/28		87	%	75 - 125
				Soluble Sulphate (SO4)	2025/05/28		95	%	75 - 125
B964717	ZI	Spiked Blank		Soluble Boron (B)	2025/05/28		98	%	80 - 120
				Soluble Calcium (Ca)	2025/05/28		98	%	80 - 120
				Soluble Magnesium (Mg)	2025/05/28		101	%	80 - 120
				Soluble Sodium (Na)	2025/05/28		94	%	80 - 120
				Soluble Potassium (K)	2025/05/28		96	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
B964717	ZI	Method Blank		Soluble Boron (B)	2025/05/28	<0.10		mg/L	
				Soluble Calcium (Ca)	2025/05/28	<1.5		mg/L	
				Soluble Magnesium (Mg)	2025/05/28	<1.0		mg/L	
				Soluble Sodium (Na)	2025/05/28	<2.5		mg/L	
				Soluble Potassium (K)	2025/05/28	<1.3		mg/L	
				Soluble Sulphate (SO ₄)	2025/05/28	<5.0		mg/L	
B964717	ZI	RPD [DLO242-01]		Soluble Boron (B)	2025/05/28	5.0		%	30
				Soluble Calcium (Ca)	2025/05/28	3.1		%	30
				Soluble Magnesium (Mg)	2025/05/28	4.2		%	30
				Soluble Sodium (Na)	2025/05/28	5.7		%	30
				Soluble Potassium (K)	2025/05/28	3.7		%	30
				Soluble Sulphate (SO ₄)	2025/05/28	3.2		%	30
B964764	ZI	QC Standard		Soluble Conductivity	2025/05/28		99	%	75 - 125
B964764	ZI	Spiked Blank		Soluble Conductivity	2025/05/28		97	%	90 - 110
B964764	ZI	Method Blank		Soluble Conductivity	2025/05/28	<0.020		dS/m	
B964764	ZI	RPD [DLO242-01]		Soluble Conductivity	2025/05/28	1.7		%	20
B981247	BYM	Matrix Spike		Available (CaCl ₂) Sulphur (S)	2025/06/10		111	%	75 - 125
B981247	BYM	QC Standard		Available (CaCl ₂) Sulphur (S)	2025/06/10		104	%	75 - 125
B981247	BYM	Spiked Blank		Available (CaCl ₂) Sulphur (S)	2025/06/10		110	%	80 - 120
B981247	BYM	Method Blank		Available (CaCl ₂) Sulphur (S)	2025/06/10	<2.0		mg/kg	
B981247	BYM	RPD		Available (CaCl ₂) Sulphur (S)	2025/06/10	1.3		%	35

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference $\leq 2 \times$ RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.



VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Rahul Suryawanshi, Senior Analyst

Sandy Yuan, M.Sc., QP, Scientific Specialist

Suwan (Sze Yeung) Fock, B.Sc., Scientific Specialist

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

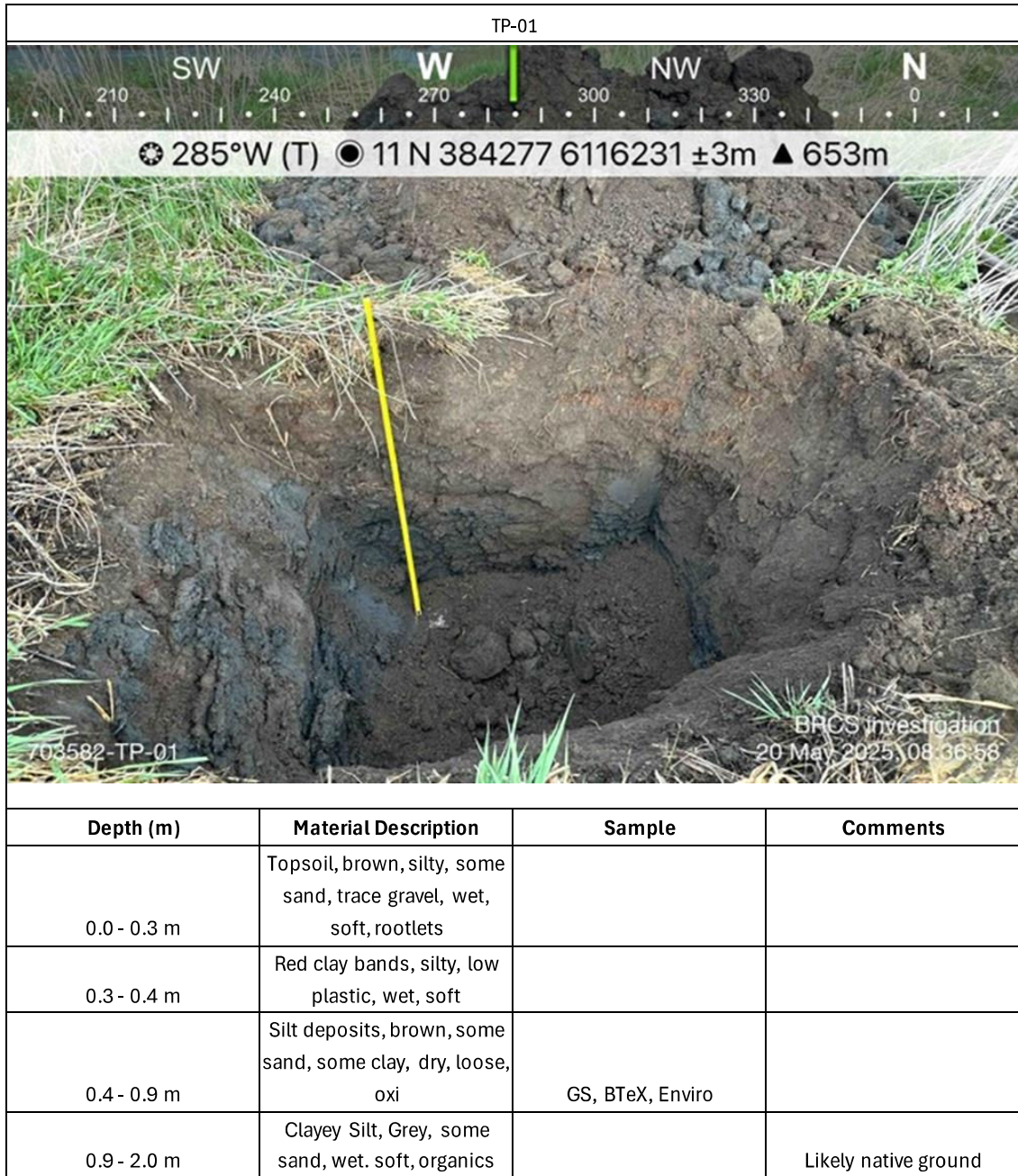
Bureau Veritas Certified by Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Scott Cantwell, General Manager responsible for Alberta Environmental laboratory operations.

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name: #1457 ATKINSREALIS CANADA INC.		Company Name: Karem Mohamed		Quotation #: C41451		Bottle Order #:	
Attention: 500, 640 - 5th AVENUE SW.		Attention: Karem Mohamed		P O #:		Bureau Veritas Job #:	
Address: CALGARY AB T2P 3G4		Address: CALGARY AB T2P 3G4		Project:		703582	
Tel: (403) 253-4333		Tel: (403) 253-4333		Project Name:		COC #:	
Fax: (403) 253-1975		Fax: (403) 253-1975		Site #:		Project Manager:	
Email: payables@atkinsrealis.com		Email: karem.mohamed@atkinsrealis.com		Sla #:		Cynthia Hagen	
				Sampled By:		C47571-01-01	

[illegible]











TP-06



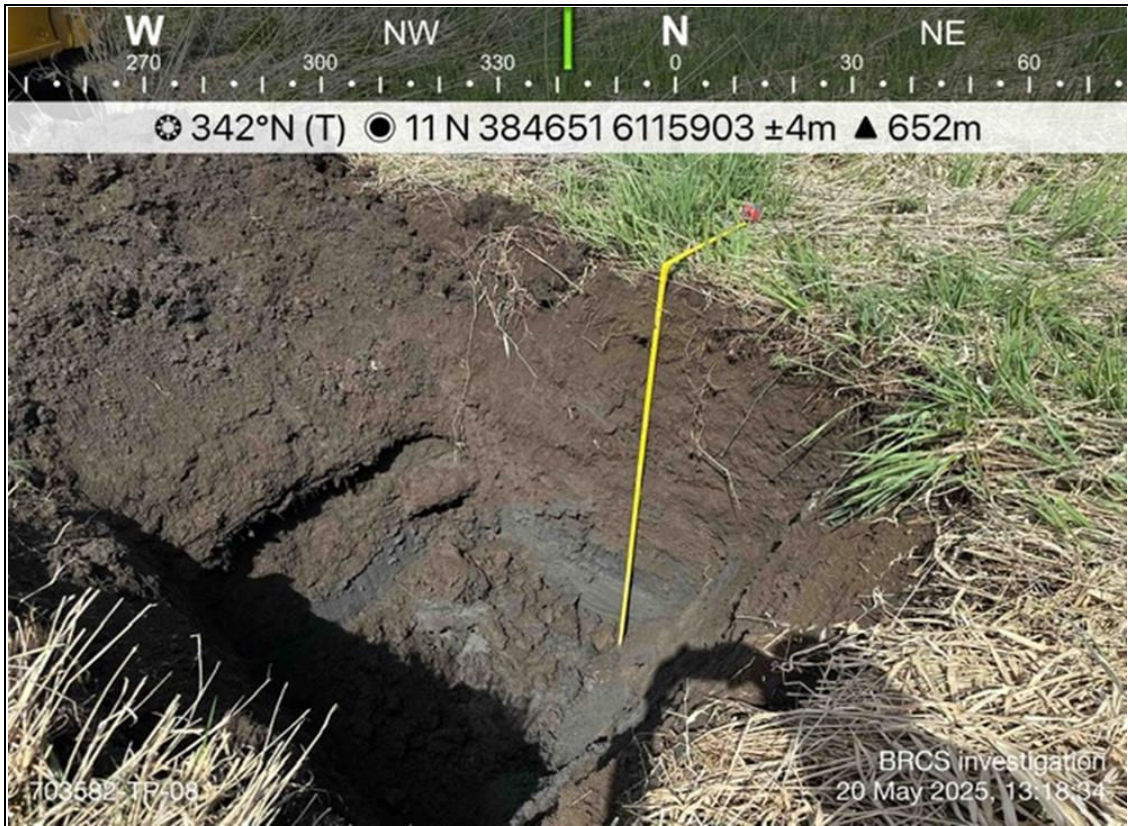
Depth (m)	Material Description	Sample	Comments
0.0 - 0.1 m	Topsoil, brown, silty, some sand, trace gravel, wet, soft, rootlets		
0.1 - 0.9 m	Silt deposits, dark brown, some sand, some clay, wet, soft, oxi	GS, BTeX, Enviro	
0.9- 2.0 m	Clayey Silt, Grey, some sand, wet, soft, organics		Likely Native Ground, rapid water seepage

TP-07



Depth (m)	Material Description	Sample	Comments
0.0 - 0.2 m	Topsoil, brown, silty, some sand, trace gravel, wet, soft, rootlets		
0.2 - 0.9 m	Silt deposits, dark brown, some sand, some clay, wet, soft, oxi	GS, Enviro	
0.9- 2.0 m	Clayey Silt, Grey, some sand, wet, soft, organics		Likely Native Ground, rapid water seepage

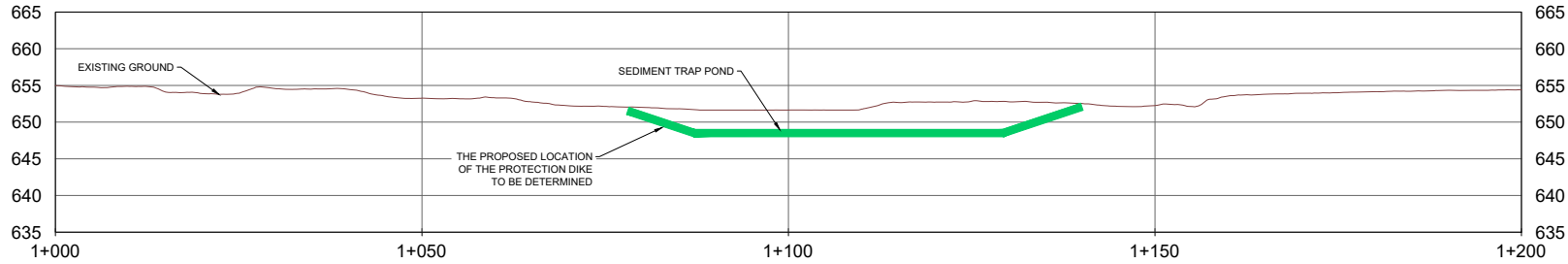
TP-08



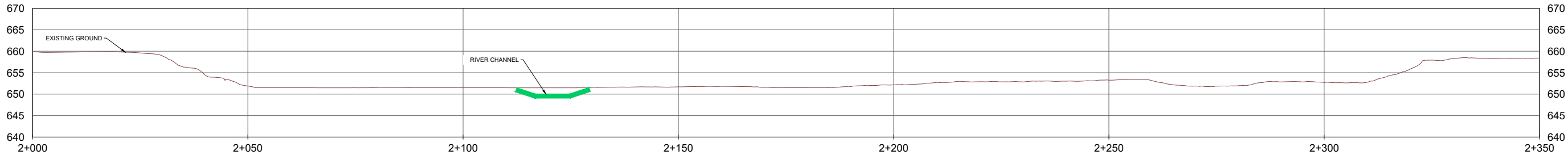
Depth (m)	Material Description	Sample	Comments
0.0 - 0.2 m	Topsoil, brown, silty, some sand, trace gravel, wet, soft, rootlets		
0.2 - 0.9 m	Silt deposits, dark brown, some sand, some clay, wet, soft, oxi	GS, Enviro	
0.9- 2.0 m	Clayey Silt, Grey, some sand, wet, soft, organics		Likely Native Ground, rapid water seepage

APPENDIX D

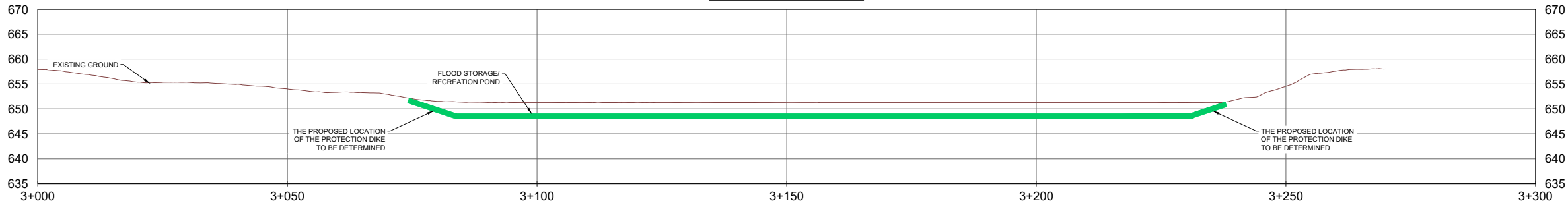
Concept Cross Sections



SECTION AT SEDIMENT TRAP POND



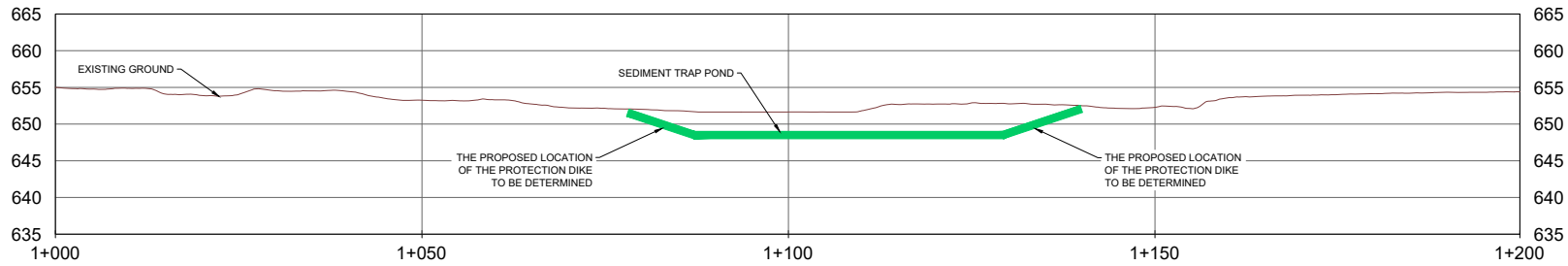
SECTION AT CHANNEL



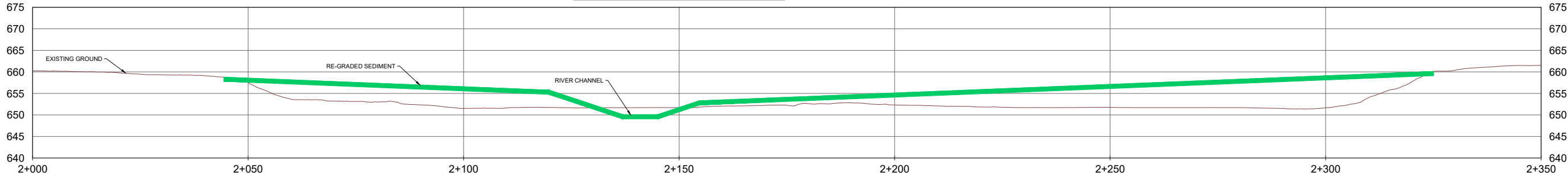
SECTION AT FLOOD STORAGE/RECREATION POND

OPTION 1 SECTIONS
HORZ. SCALE 1:500
VERT. SCALE 1:500

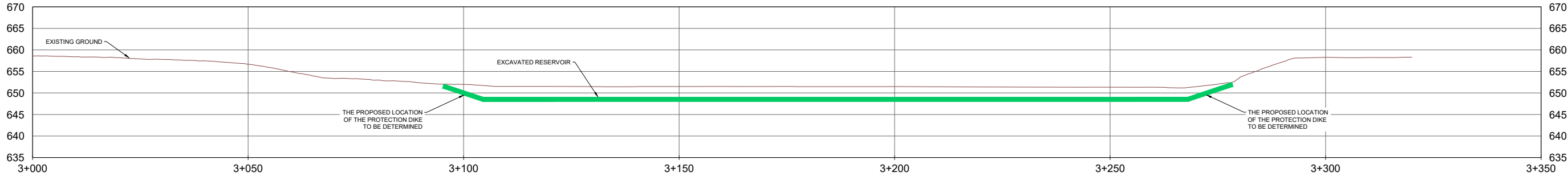
CLIENT 100-111-100  GRANDE prairie CANADA		CONSULTANT 	
PROJECT BEAR CREEK RESERVOIR FEASIBILITY STUDY			
TITLE GRANDE PRAIRIE BEAR RIVER RESERVOIR WATERSHED			
PROJECT No. 703582		DATE 2025-10-XX	DWG NO APPENDIX FIG 1



SECTION AT SEDIMENT TRAP POND



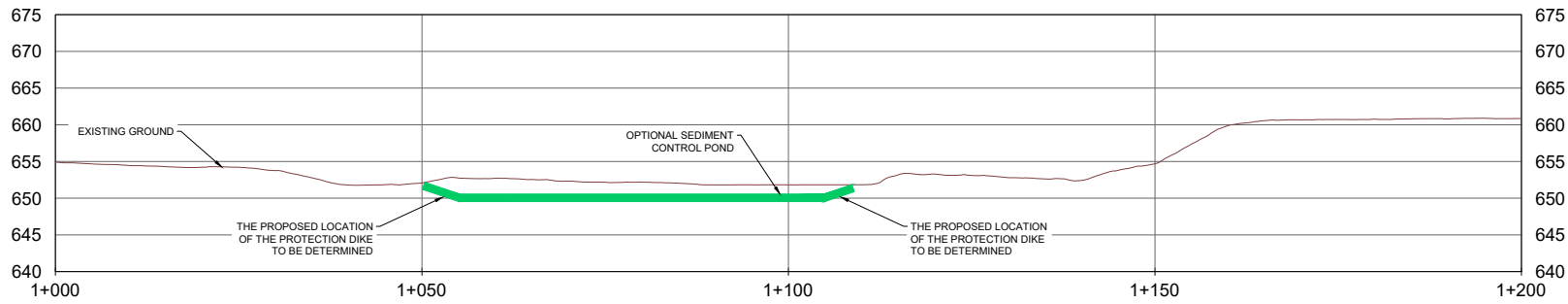
SECTION AT CHANNEL



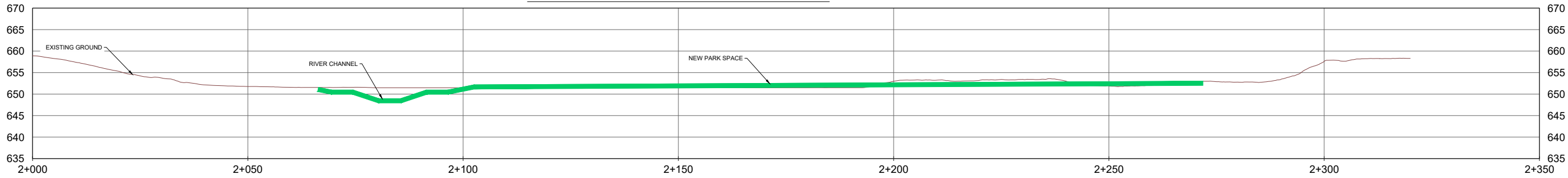
SECTION AT EXCAVATED RESERVOIR

OPTION 2 SECTIONS
HORZ. SCALE 1:500
VERT. SCALE 1:500

CLIENT 100-111-100  CANADA		CONSULTANT 	
PROJECT BEAR CREEK RESERVOIR FEASIBILITY STUDY			
TITLE GRANDE PRAIRIE BEAR RIVER RESERVOIR WATERSHED			
PROJECT No. 703582		DATE 2025-10-XX	DWG NO APPENDIX FIG 2



SECTION AT OPTIONAL SEDIMENT CONTROL POND

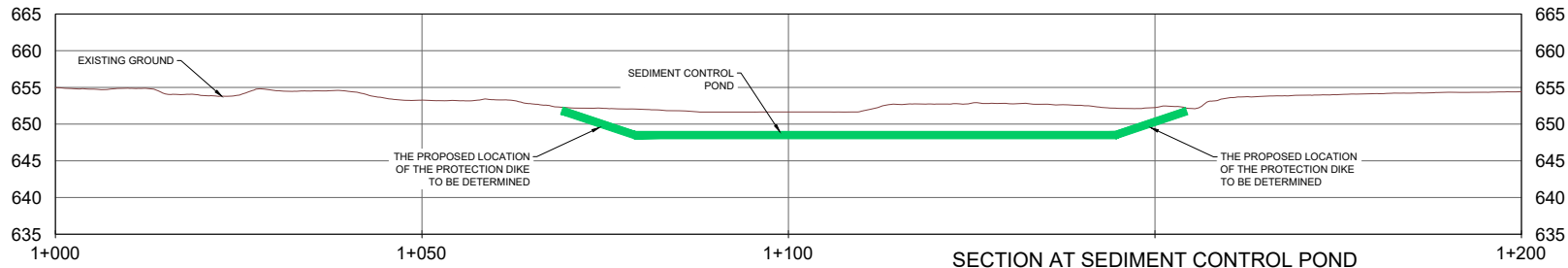


SECTION AT CHANNEL

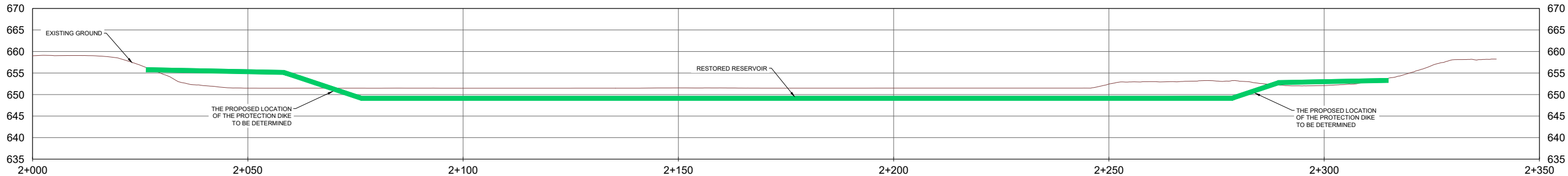
OPTION 3 & 4 SECTIONS

HORZ. SCALE 1:500
VERT. SCALE 1:500

CLIENT INCORPORATED  GRANDE prairie CANADA		CONSULTANT 	
PROJECT BEAR CREEK RESERVOIR FEASIBILITY STUDY			
TITLE GRANDE PRAIRIE BEAR RIVER RESERVOIR WATERSHED			
PROJECT No. 703582		DATE 2025-10-XX	DWG NO APPENDIX FIG 3



SECTION AT SEDIMENT CONTROL POND



SECTION AT RESTORED RESERVOIR

OPTION 5 SECTIONS
HORZ. SCALE 1:500
VERT. SCALE 1:500

CLIENT 1-800-333-3000 GRANDE prairie CANADA		CONSULTANT AtkinsRéalis	
PROJECT BEAR CREEK RESERVOIR FEASIBILITY STUDY			
TITLE GRANDE PRAIRIE BEAR RIVER RESERVOIR WATERSHED			
PROJECT No. 703582		DATE 2025-10-XX	DWG NO APPENDIX FIG 4

APPENDIX E

Available Funding Details

Appendix E: Funding Opportunities

The following funding opportunities were analyzed for applicability to the five options and found to have the highest likelihood of success according to the funding criteria and the latest option designs.

Eligibility	Funding Amount	Deadline	● Strong Fit	● Moderate Fit	● Limited or No Fit
Green Municipal Fund (GMF)					
Canadian municipalities and partners	Up to \$10M loan + up to \$1.5M grant (15% of loan)	Refer to the latest program guidelines for the official deadline	• All Options (1–5) • Supports feasibility and capital projects for water, climate adaptation, and infrastructure	• None	• None
Alberta Drought and Flood Protection Program (Drought & Flood)					
Municipalities, Indigenous communities	Up to 70% grant (cost-share) of eligible costs	Refer to the latest program guidelines for the official deadline	• Options 1, 2, 5 • Strong fit for berms, flood mitigation, and sediment control.	• Options 3, 4 • Natural floodplain benefits but no engineered infrastructure	• None
Watershed Resiliency and Restoration Program (WRRP)					
Municipalities, NGOs, Indigenous orgs	Grant Varies (typically \$200K–\$600K; recent approvals ≈ \$160K–\$1.95M)	Refer to the latest program guidelines for the official deadline	• Options 2, 3, 4 • Supports riparian restoration, sediment removal, and re-naturalization	• Option 5 • Some restoration, but infrastructure-heavy	• Option 1 • No ecological restoration

Environmental Damages Fund (EDF)					
Municipalities, NGOs, Indigenous orgs	\$100K–\$500K grant	Rolling	- Options 2, 3, 4 - Funds restoration, education, and habitat recovery.	- Options 1, 5 - Limited restoration	None
Habitat Stewardship Program (HSP)					
Municipalities, NGOs, Indigenous orgs	Min \$25K grant; typical \$25K–\$100K per year	Refer to the latest program guidelines for the official deadline	- Options 2, 3, 4 - Strong fit for fish passage and riparian habitat restoration	- Option 5 - Some habitat benefit	- Option 1 - No species-at-risk or habitat restoration
Ducks Unlimited Canada (DU)					
Municipalities with a conservation partner (DU, ACA, Land Stewardship Centre)	- Varies by program and partner - Typically project-based restoration grants	Rolling	- Options 3, 4, 5 - Wetland, riparian, and habitat restoration - River naturalization and stewardship initiatives	- Option 2 - Partial ecological restoration or habitat components	Option 1 Primarily infrastructure maintenance with limited ecological benefit
EcoAction Community Funding Program (EcoAction)					
NGOs (municipalities must partner)	Up to \$100K grant (50% non-federal match)	Refer to the latest program guidelines for the official deadline	- Options 3, 4 - Strong community engagement and freshwater quality focus	Options 2, 5 Some engagement and water quality work	- Option 1 - No community or ecological engagement

Canada Nature Fund – Target 1 Challenge

Indigenous orgs, NGOs, municipalities	Varies	Rolling	• None	• Options 2, 3, 4 • Includes ecological restoration, renaturalization, or connectivity benefits that may contribute to conservation objectives	• Options 1, 5 • Primarily focused on infrastructure maintenance or permanent water storage • Does not inherently establish protected or conserved areas aligned with Target 1 objectives
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Community Facility Enhancement Program (CEEP)-Small & Large

Nonprofits (municipalities must partner)	\$125K–\$1M grant	Refer to the latest program guidelines for the official deadline	• Options 2, 3, 5 • Supports recreational infrastructure (e.g., canoe launch, trails, festival spaces)	• Option 1 • Limited recreation	• Option 4 • Less infrastructure
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