AGENDA
COUNCIL MEETING
MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9
Tuesday, January 27, 2026
3:00 pm
Council Chambers

A. ADOPTION OF AGENDA

B. DELEGATION

C. MINUTES/NOTES

1. Council Committee Minutes
   - January 13, 2026
2. Council Meeting Minutes
   - January 13, 2026

D. UNFINISHED BUSINESS

E. BUSINESS ARISING FROM THE MINUTES

F. COMMITTEE REPORTS / DIVISIONAL CONCERNS

1. Councillor Tony Bruder – Division 1
   - Carnivores and Communities Program Meeting
   - CARLS Board Report December 2025
2. Reeve Rick Lemire – Division 2
3. Councillor Dave Cox– Division 3
4. Councillor Jim Welsch - Division 4
5. Councillor John MacGarva – Division 5

G. ADMINISTRATION REPORTS

1. Operations

a) Public Works Department Report
   - Report from Public Works dated January 20, 2026
   - Schedule A – Shop/Fleet Report
b) Utilities & Infrastructure Report
   - Report from Utilities & Infrastructure dated January 20, 2026
c) Oldman Reservoir Emergency Intake - 2026 Budget Allocation & Capital Adjustment
   - Report from Utilities & Infrastructure dated January 20, 2026
d) Cridland Dam - Hydrotechnical and Geotechnical Reports
   - Report from Utilities & Infrastructure dated January 20, 2026

2. Finance

a) Request to Waive Tax Penalties – Tax Roll 1736.000
   - Report from Finance, dated January 14, 2026

3. Planning and Community Services

a) Bylaw 1365-25 (Traffic Bylaw) ***in Council Committee package***
   - Report from Development, dated January 21, 2026
b) Bylaw 1368-26 (Land Use Bylaw Amendment Secondary Suites)
   - Report from Development, dated January 21, 2026

4. Municipal

a) CAO Report
   - Report from Administration, dated January 21, 2026
b) Corporate Policy C-CO-009 Enforcement Services Appeal Board & Committee Members
   - Report from Administration, dated January 21, 2026

H. CORRESPONDENCE

1) For Action

a) Alberta CARE (Coordinated Action for Recycling Enterprises) Seminar 2026
   - Registration Form for March 18 Conference
b) Pincher Creek & District Municipal Library
   - Question for Motion for Pincher Creek MD Council
c) RMA Spring Convention – March 16 through 18, 2026
   - Invitation to Meet Minister of Transportation and Economic Corridors

2) <u>For Information</u>

a) Alberta Municipalities
   - Recognition of Participating CEIP Communities for Emerald Awards for Environmental Excellence
b) Water and Circular Economy Division, Alberta Environment and Protected Areas
   - Water (Ministerial) Regulation Change - Exemptions to support water availability
   - New Rules Boost Water Storage and Conservation
   - Freedom to Water

I. NEW BUSINESS

J. CLOSED MEETING SESSION

a) Appointment to Agriculture Service Board Committee – ATIA 22.1
b) Request for use of closed alleyway - Pincher Station – ATIA 28.1
c) Road Closure and Purchase Request – Adjacent to Block 2, Plan 9411612 – ATIA 28.1
d) Road Closure Resolution Portion of Uncancelled Road Plans 197BM & 3299BZ – ATIA 28.1

K. ADJOURNMENT

`MINUTES
REGULAR COUNCIL COMMITTEE MEETING
MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9
Tuesday, January 13, 2026,
11:00 am
Council Chambers

Present: Reeve Rick Lemire, Deputy Reeve Tony Bruder, Councillors John MacGarva, Jim Welsch and Dave Cox.

Staff: CAO Roland Milligan, Director of Corporate Services Meghan Dobie, Public Works Manager Alan McRae, Utilities & Infrastructure Manager David Desabrais, Planner Gavin Scott, Development Officer Laura McKinnon, and Executive Assistant Jessica McClelland.

Reeve Rick Lemire called the meeting to order, the time being 11:00 pm.

1. Approval of Agenda

Councillor Dave Cox

Moved that the agenda for January 13, 2026, be approved as presented.

Carried

2. Delegations

3. Closed Session

Councillor Jim Welsch

Moved that the Council move into closed session to discuss the following, the time being 11:01 pm.

a) Delegation - Alberta Environment and Protected Areas – ATIA Sec. 29.1
b) Public Works Call Log – ATIA Sec. 29.1
c) Safety Issue Third Party – ATIA Sec. 19.1
d) Pincher Creek Emergency Services Commission Master Agreement – ATIA Sec. 28.1

Councillor John MacGarva

Moved that Council move out of closed session, the time being 1:45 pm.

Carried

4. Round Table

- Possible library expansion
- Business licensing
- 911 Addressing concerns
    - Education component for how to state your rural address
        - Social media, tax notices, newsletter, newspaper

5. Adjournment

Councillor Tony Bruder

Moved that the committee meeting adjourn at 2:13 pm.

Carried

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REEVE

_____

CHIEF ADMINISTRATIVE OFFICER

MINUTES **10060**
MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9
REGULAR COUNCIL MEETING
JANUARY 13, 2026

The Regular Meeting of Council of the Municipal District of Pincher Creek No. 9 was held on Tuesday, January 13, 2026, in the Council Chambers of the Municipal District Administration Building, Pincher Creek, Alberta.

PRESENT Reeve Rick Lemire, Deputy Reeve Tony Bruder, and Councillors Dave Cox, John MacGarva and Jim Welsch.

STAFF CAO Roland Milligan, Director of Corporate Services Meghan Dobie, Public Works Manager Alan McRae, Utilities & Infrastructure Manager David Desabrais, Development Officer Laura McKinnon, and Executive Assistant Jessica McClelland.

Reeve Rick Lemire called the meeting to order at 3:00 pm.

A. ADOPTION OF AGENDA

Councillor Jim Welsch 26/001

Moved that the agenda for January 13, 2026, be amended to include:

Action:

e) Regional Waste Technology Presentation

AND THAT the agenda be approved as amended.

Carried

B. DELEGATIONS

C. MINUTES

1) Council Committee Meeting Minutes – December 9, 2025

Councillor John MacGarva 26/002

Moved that the minutes of the Council Committee Meeting of December 9, 2025, be approved as presented.

Carried

2) Council Meeting Minutes – December 9, 2025

Councillor Tony Bruder 26/003

Moved that the minutes of the Council Meeting of December 9, 2025, be approved as presented.

Carried

3) Special Council Meeting Minutes – December 17, 2025

Councillor Dave Cox 26/004

Moved that the minutes of the Special Council Meeting of December 17, 2025, be approved as presented.

Carried

D. UNFINISHED BUSINESS

December 9, 2025 – Delegation

a) Northback Presentation

Councillor Dave Cox 26/005

Moved that the presentation from Northback, from the December 9, 2025, Council meeting, be received as information.

Carried

December 17, 2025 - Delegation

b) Pincher Creek Municipal Library Presentation and Formal Request

Councillor Dave Cox 26/006

Moved that the Pincher Creek Municipal Library presentation from the Special Council meeting of December 17, 2025, be received as information.

Carried

Council will review the request from the Pincher Creek Municipal Library once appropriate agreements are in place with the current landowner, the Town of Pincher Creek.

c) RIPPLE Community Fund Brochure

Councillor Tony Bruder 26/007

Moved that the RIPPLE brochure presented at the Special Council meeting of December 17, 2025, be received as information,

AND THAT the MD promote the program through social media and the MD website.

Carried

E. BUSINESS ARISING FROM THE MINUTES

F. COMMITTEE REPORTS / DIVISIONAL CONCERNS

1. Councillor Tony Bruder – Division 1
   - Agricultural Service Board Trade Show Event
   - Pincher Creek Regional Emergency Management Organization
   - Elected Officials Course – Emergency Management
   - Holiday Train Kudos
   - Waterton Biosphere
   - Crowsnest Pincher Creek Landfill Association
2. Reeve Rick Lemire – Division 2
   - Pincher Creek Emergency Services Commission
   - Holiday Train Kudos
   - Alberta Southwest
   - Municipal Addressing clarification for calling 911
3. Councillor Dave Cox– Division 3
   - Community Fund Cheque Presentation
   - Pincher Colony Tour
   - Holiday Train Kudos
   - Castle Mountain Resort Community Association
4. Councillor Jim Welsch - Division 4
   - Pincher Creek Emergency Services Commission
     - Suggestion to invite Fire Chief and EMS to Coffee with Council
   - Pincher Creek Foundation
5. Councillor John MacGarva – Division 5
   - Lundbreck Citizens Council

Councillor Dave Cox 26/008

Moved to accept the Committee Reports as information.

Carried

G. ADMINISTRATION REPORTS

1. Operations

a) Public Works Operations Report

Councillor John MacGarva 26/009

Moved that Council receive the Public Works Operations Report, including Schedule A – Shop/Fleet Report, for the period December 1, 2025, to January 4, 2026, as information.

Carried

b) Utilities & Infrastructure Report

Councillor John MacGarva 26/010

Moved that Council receive the Utilities & Infrastructure report for December 3, 2025, to January 7, 2026, as information.

Carried

c) Community Events Board - 2026 Budget Allocation

Councillor Tony Bruder 26/011

Moved that Council approve $22,000 in 2026 funds from the MD Buildings Reserve for the Community Events Board for a project total of $45,000.

Carried

2. Finance

a) Local Authorities Pension Plan (LAPP) Policy – C-HR-003

Councillor Jim Welsch 26/012

Moved that Council rescind policy A-ADM-001 Local Authorities Pension Plan (LAPP);

AND THAT Council approve policy C-HR-003 Local Authorities Pension Plan (LAPP).

Carried

b) Request to Waive Tax Penalties – Tax Roll 1940.020

Councillor Tony Bruder 26/013

Moved that Council deny waiving the tax penalties on tax roll 1940.020 in the amount of $263.19.

Carried

c) Request to Waive Tax Penalties – Tax Roll 6091.450

Councillor Jim Welsch 26/014

Moved that Council deny waiving the tax penalties on tax roll 6091.450, in the amount of $1,279.42.

Carried

3. Development and Community Services

a) Bylaw 1366-25 Community Standards Bylaw

Councillor Tony Bruder 26/015

Moved that Bylaw 1366-25, being the Community Standards Bylaw, be given second reading.

Carried

Councillor Dave Cox 26/016

Moved that Bylaw 1366-25 be given third and final reading.

Carried

4. Municipal

a) CAO Report

Councillor John MacGarva 26/017

Moved that Council receive the CAO Report for the period December 6, 2025, to January 4, 2026, as information.

Carried

H. CORRESPONDENCE

A. For Action

a) Slopes Studio – Creative Resistance (re: Grassy Mountain matter)

Councillor Tony Bruder 26/018

Moved that the Slopes Studio – Creative Resistance (re: Grassy Mountain matter), be received as information.

Carried

b) Community Grant Specialist

Councillor Tony Bruder 26/019

Moved that Council authorize the following letters of support:
- Southwest Alberta Search and Rescue Society and
- Pincher Creek Community Hall.

Carried

c) Request from Town of Pincher Creek to Co-Host Event

Councillor Dave Cox 26/020

Moved that the MD agree to partner with the Town for a joint event during Seniors' Week 2026, 40th Anniversary of Intergenerational Day.

Carried

d) Water Act Concerns - Beaver Mines Creek (Downstream Impacts) - List of Concerns from Tom Judd and Tori Bailer

Councillor Dave Cox 26/021

Moved that Council direct administration to send a letter to Tom Judd and Tori Bailer regarding their concerns about the downstream impacts of Beaver Mines Creek and other water act concerns, stating that all water licensing is done by Alberta's Environment and Protected Areas, that Municipalities don't have jurisdiction, and that we share the same concerns about transparency.

Carried

Councillor Tony Bruder 26/022

Moved that a letter be sent to the Minister of Alberta Environment and Protected Areas expressing concern about the approval process for statements of concern regarding changes to a water licence, including issuing of new licenses, requesting that notification be provided in a public format and directly to the local Municipality where the project is occurring.

Carried

e) Regional Waste Technology Presentation

Councillor Jim Welsch 26/023

Moved that Councillor Tony Bruder be authorized to attend the Regional Waste Technology Presentation on February 4, 2026, from 3:30-5:00 pm in the Town of Claresholm Council Chambers.

Carried

B. For Information

Councillor John MacGarva 26/024

Moved that the following be received as information:

a) Name that Grader
   - Poster – Submissions due before January 31, 2026
b) Quest Report (Net-Zero Communities Accelerator Program)
   - Updated Benchmark Assessment Report for December 2025
c) Southwest Alberta Rural Crime Watch
   - Advertisement for January 21, 2026, Meeting
d) Honourable Mike Ellis, Deputy Premier of Alberta, Minister of Public Safety and Emergency Services
   - Update on Changes to Alberta's Police Funding Model
e) Municipal Affairs
   - Municipal Musings December Newsletter
f) Honourable Ric McIver, MLA
   - Letter of Congratulations on Election to Municipal Office
g) Public Safety and Emergency Services
   - Police Funding Model Changes - Preliminary Estimation Process
   -

Carried

Minutes
Council Meeting
Municipal District of Pincher Creek No. 9
January 13, 2026

I. NEW BUSINESS

J. CLOSED SESSION

Councillor Jim Welsch 26/025

Moved that Council move into closed session to discuss the following, the time being 5:14 pm.

a) Request to Upgrade Road to Minimum Standard – ATIA Sec. 29.1

Councillor Dave Cox 26/026

Moved that Council move out of closed session, the time being 5:28 pm.

Carried

a) Request to Upgrade Road to Minimum Standard

Councillor Dave Cox 26/027

Moved that Tom Judd be authorized to clear trees along the MD undeveloped road allowance adjacent to SW 13-06-02 W5M to allow vehicular access to his parcel in the NE 14-06-02 W5M, pending authorization with Environment and Protected areas (EPA) regarding provincial water act regulations,

AND THAT should a development occur on his parcel in the future, he will need to reapply and build to a minimum standard, as per policy C-PW-019 (Minimum Standard Policy)

Carried

K. ADJOURNMENT

Councillor Jim Welsch 26/028

Moved that Council adjourn the meeting, the time being 5:30 pm.

Carried

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REEVE

_____
CHIEF ADMINISTRATIVE OFFICER

Carnivores and Communities Program

WATERTON BIOSPHERE REGION

WORKING TO REDUCE CONFLICT WITH LARGE CARNIVORES

UPCOMING COMMUNITY MEETINGS

Learn the latest news about carnivores and tools you can use to help reduce the risk of conflict

Featured Speakers

Jeff Bectell, CACP Program Coordinator
Andrea Morehouse, CACP Science Lead
Paul Frame, Alberta Carnivore Specialist

Topics Include

- **Resources available to help decrease large carnivore conflict on farms & acreages**
- **Large carnivore occurrence record trends**
- **Predator compensation survey results**
- **Alberta Wildlife Responder Program**

Meeting Dates & Locations

Feb. 10th -Claresholm Community Centre

Feb. 11th - Pincher Creek MD Office

Feb. 12th - Cardston Tanner Seniors Centre

All meetings run from 6 - 9 p.m.

MD of Willow Creek

Parks Canada | Parcs Canada

Alberta Government

Environment and Climate Change Canada | Environnement et Changement climatique Canada

www.watertonbiosphere.com

info@watertonbiosphere.com

For more information on these community meetings you can contact the CACP Coordinator Jeff Bectell at 403-653-2219 or jbectell@watertonbiosphere.com.

BOARD REPORT

CHINOOK ARCH REGIONAL LIBRARY SYSTEM

Chinook Arch Library Board Meeting - December 4, 2025

Executive Elections

The following trustees were elected to the Board's Executive Committee for 2025-2026:

Darryl Christensen (Town of Magrath) – Chair
Jim Monteith (Town of Fort Macleod) – Treasurer
Marie Logan (Village of Lomond) - Vice Chair*
*The position of Vice Chair is up for election in 2026.

Directors-At-Large:
Mark Barber (Town of Pincher Creek)
Doreen Glavin (Municipality of Crowsnest Pass)
Melissa Jensen (Town of Nobleford)
Doug Logan (Vulcan County)
Maryanne Sandberg (MD Willow Creek)

Allan Quinton (Lethbridge Public Library rep)

Thank you to everyone who volunteers their time to sit on the Executive Committee!

Thank you to Outgoing Trustees

The board and staff of Chinook Arch would like to thank the following outgoing trustees for their service and support.

Terry Penney (Village of Champion)
Marsha Jensen (Town of Cardston)
Justin Davis (Village of Stirling)
Christopher Northcott (Village of Milo)
Tom Nish (Cardston County)
Merrill Harris (MD of Taber)
Monica McLean (Town of Taber)
Dave Cox (Pincher Creek MD)
Lesley Little (ID #4 Waterton)
Kelly Jensen (Town of Raymond)
Anne Michaelis (Town of Milk River)
Tory Campbell (Lethbridge County)
Lyndsay Montina (Town of Coalhurst)
Jenn Schmidt-Rempel (City of Lethbridge)
Ron Gorzitza (Village of Barons)
Linda Allred (Village of Glenwood)
Morgan Rockenbach (Warner County)

Board Members Present

Corry Walk – Village of Arrowwood
Belinda Rempel – Village of Barons
Tim Court – Town of Cardston
LeGrande Bevans – Cardston County
Lori Harasem – Town of Coalhurst
Stephen Pain – Village of Coutts
Doreen Glavin – Municipality of Crowsnest Pass
Jim Monteith – Town of Fort Macleod
Suzanne French – Village of Hillspring
Al Beeber – City of Lethbridge
Kevin Slomp – Lethbridge County
Marie Logan (Vice Chair) – Village of Lomond
Darryl Christensen (Chair) – Town of Magrath
Dorothy Fraser – Town of Milk River
JoAnne LeBlanc – Village of Milo
Crystal Neels –Town of Picture Butte
Mark Barber – Town of Pincher Creek
Chelsey Hurt – Town of Stavely
Stacey Maynes – Village of Stirling
Naomi Wiebe – Town of Taber
Tamara Miyanaga – Taber MD
Lorraine Kirk – Town of Vulcan
Doug Logan – Vulcan County
Derek Baron – Village of Warner
David Nilsson – County of Warner
Maryanne Sandberg – Willow Creek MD
Allan Quinton – LPL Resource Centre

Regrets

Blanche Anderson – Village of Carmangay
Judy Perkin – Village of Champion
Jordan Sailer – Town of Coaldale
Amanda Bustard – Town of Nanton
Melissa Jensen – Town of Nobleford
Marilyn Forchuk – Town of Vauxhall

Not Present

Jane Johnson – Village of Barnwell
Brad Schlossberger - Town of Claresholm
John Doney – Village of Glenwood
Tony Bruder – Pincher Creek MD
Kate Kindt – Town of Raymond

2026 Operating Budget Approved

The Board reviewed and approved its 2026 Operating Budget, with a forecast surplus of $209.

Policies Approved

The board reviewed and approved the following policies. All board policies are reviewed once every three years, or as necessary.
All policies can be found on the Chinook Arch website at https://chinookarch.ca/about-us/board-policies.

- Gifts in Kind
- Records Retention
- Expenses
- Employee Benefits
- Hours of Work and Overtime
- Personnel Files

Contact Us

Chinook Arch Regional Library System
2902 7th Avenue North
Lethbridge, AB T1H 5C6 | 403-380-1500
www.chinookarch.ca | arch@chinookarch.ca

facebook.com/chinook.arch7

@chinooklibs

Recommendation to Council

TITLE: PUBLIC WORKS DEPARTMENT REPORT	
PREPARED BY: Alan McRae	**DATE: January 20, 2026**
DEPARTMENT: Public Works	
ATTACHMENTS: **1.Shop/Fleet Report**	

APPROVALS:

	January 20, 2026		2026/01/20
Public Works Manager	**Date**	**CAO**	**Date**

RECOMMENDATION:

THAT Council accepts the Public Works Department Report for the period of January 5 to January 18, 2026, as information.

Permanent snow fence maintenance- R&R PSF04-31 in Div 4 (Gap Road)
Permanent snow fence maintenance- Repair PSF04-25 (Ashvale Road)
Gravel pit operations- Sloping work done in Waldron pit after crushing operations.
Gravel pit operations- Tank truck to wash dozer at Waldron before moving it to Summerview.
Gravel pit operations- Dirt work in Summerview pit that crusher requested.
Gravel pit operations-Scrape floor at Heritage pit- Dozer, hoe and loader- OTJ training opportunity
Bridge maintenance- Replace hazard markers on BF74119 and reset all markers on BF8586.
Water services maintenance- Put up and take down delineators and repair ground at Pincher standpipe.
Park maintenance- Cut up and remove blown down trees within Beaver Mines Park.
Park maintenance-Empty garbage's at Patton Park and dog park, fix dog on leash sign at Patton Park
Gravel road maintenance- Grading and ice removal
Hard surface maintenance-Plowing
AES/Airport operations- Haul water to terminal and shop
Guard rail maintenance-Inspect damage to cable on Summerview road hill, set up delineators and order parts.
Culvert Maintenace-Put together a list of culverts needing replaced in 2026 for planning purposes.
Texas gate maintenance- Put together list of Texas gates that need replaced in 2026 for planning purposes.
Safety- Safe work practice review, bis trainer courses.

PUBLIC WORKS REPORT SCHEDULE "A"

SHOP/FLEET OPERATIONAL REPORT	
PREPARED BY: Brett Ackerman	**DATE: January 19, 2026**
DEPARTMENT: Public Works	**ATTACHMENTS: N/A**

SHOP/FLEET OPERATIONS SUMMARY: January 05, 2026 – January 18, 2026

Graders

Unit # 070 (160) – Leak on differential lock valve.
Unit # 073 (150) – Fuel/Water sensor warning. Loose plug on sensor.
Unit # 074 (150) – Initial 250hr service. Install beacon and slow-moving signage.
Unit # 075 (150) – Upfit new unit. Dash cam, 2-way, MRF, Wabasso, Chain rack, Dozer blade.

Heavy Trucks/Trailers/Equipment

Unit # 434 (water truck) – emissions, EGR valve replacement, turbo lines, door light switch, water valves on tank repair and replace.
Unit # 080 (Renn LB) – CVIP.
Unit # 007 (Cat Loader) – Emissions code. R&R soot sensor.
Unit # 007 SB (snow blade) – Straighten skid shoe leg. Install new retaining bolt on mount pin.
Unit # 007 (Cat Loader) – Field service by OK Tire, flat repair.

Light Duty and Light Trailers

Unit # 477 (Chev 3500) – stalling, diesel fuel heater/filter housing, exhaust mounts, fuel filter and primer assembly.
Unit # 501 (Chev 2500) – wiper arm transmission stripped. R&R. Flat repair.
Unit # 488 (Chev 2500) – Oxygen sensor R&R.
Unit # 479 (Chev 2500) – Battery R&R.
Unit # 509 (Chev 2500) – Lube – Oil -Filter.
Unit # 503 (Chev 2500 – Lube – Oil – Filter. Lubricate caliper slides.

EVENTS

Hotsy pressure washer repaired by Hosty Lethbridge. High pressure/heat bypass valve replaced.

M.D. OF PINCHER CREEK NO. 9

UTILITIES & INFRASTRUCTURE REPORT

SUMMARY OF MAJOR UPDATES SINCE JAN. 8th – 20th

GENERAL PROJECTS

- 2026 budget approved for Community Events Board closeout.
- Project invoice processing 90% complete for all 2025 projects with exception Events Board, and Oldman Reservoir Intake project.

LARGE (PRE-2026) PROJECTS

- Working to order Potassium Permanganate Treatment for VIS intakes, 2026 budget required.
- Events Board finalized install anticipated to be complete by Council, followed by training.
- Watercourse Remediation Program Status Report 5 complete.
- BF 75481 Olin Creek: Revise land package fully executed. Awaiting contractor revisions to TAS/detour prior to kickoff.
- Closeout UROW/road plan survey work complete. Sent back to surveyor for land titles closeout.

LARGE 2026 IMPLEMENTATION PROJECTS

- No major updates.

LARGE 2027+ IMPLEMENTATION PROJECTS

- No major updates.

STUDIES & PLANNING WORK

- Transportation Master Plan: Received draft proposal of revised road classifications, under review prior to report finalization.
- Cridland Dam: Final spillway (hydrotechnical) report and geotechnical report presented to Council for information.
- 10-Year Bridge Study update: Review complete of draft report, finalization anticipated by Council meeting.

Operations Updates

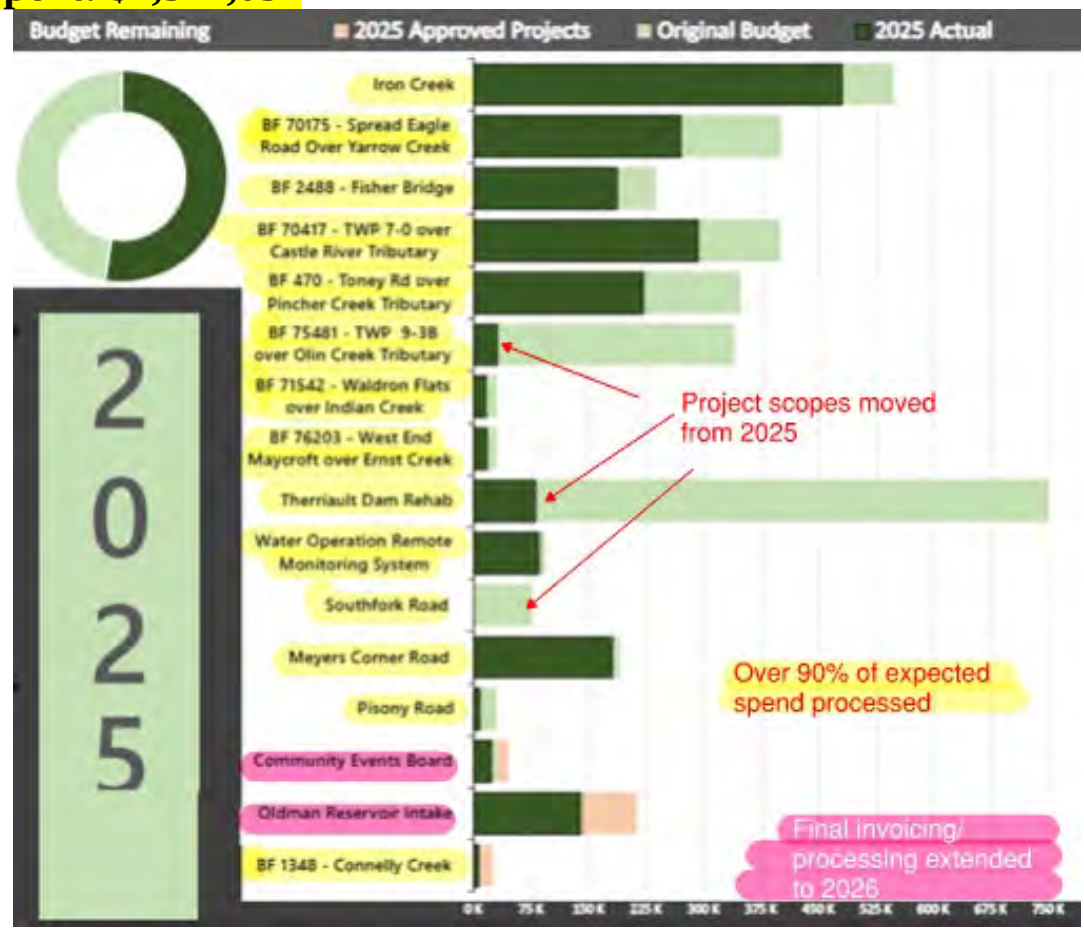
- Water restriction risk scoring being updated once/month due to low risk.
- 2025 Implementation Report complete Jan. 14th.
- Working to calibrate standpipes to new pricing and to come up with a solution regarding PC standpipe getting stuck on.
- Sewer Service Line blockage identified in Lundbreck. Emergency excavation and repair complete.
- Cowley leak remerged Jan 18th, under repair
- Contravention regarding Level II Treatment certifications formally closed out (contractor successfully accelerated certification)
- Fort Macleod MoU for backup under final steps, organizing orientation
- Revised shared operations agreement with Cowley fully executed.

General Projects Budget Update

2026 Approved Budget: $3,111,000. Jan 19th Spent: $0

Graphic under development

2025 Approved Budget: $3,862,000. Jan 19th Spent: $2,029,909 ~~Jan 5th Spent: $1,512,034~~



Large Ongoing Projects (Pre-2026 Construction Start)

Oldman Reservoir Water Intake Low Level Project

- $1.68M grant application finalized Jan 30th, 2024
  - Approval received for $1.8M project, covering up to 75% of costs
- DFPP (Drought and Flood Protection Program) grant application approved, topping up Capital Project and covering 70% of costs for a Drought Projects Assessment
- Due to rising reservoir levels, access will not be possible this Winter to intakes for further troubleshooting
- Potassium Permanganate treatment setup order placed, scoping install location/building
- Additional budget request made to Council Jan 20th

Watercourse Crossing Inspection & Remediation Project – 100% Grant funded

- Funding agreement signed Mar. 28th, 2023 for $1.55M
  - Extension received to March 31st, 2027
- Status report 5 complete for up to Dec. 31st

Bridge File 75481 – TWN RD 93B over Olin Creek Trib., SW-23-009-01 W5M

1.5m x 24m L culvert with high deflection and corrosion. Replace with two (2) 1.2m x 36m L CSPs

- Tender closed Nov. 4th. Ten (10) bids received. Awarded to low bidder (Vitae Environmental Ltd.) for **$277,910** **(Eng. Est. $299,357)**
- Preliminary engineering complete Oct. 11th. STIP unsuccessful
- Council approved Mar. 31st, 2026 construction completion date at Sep. 23rd meeting
- Revised legal plan received Oct. 6th. Working to closeout alternate land plan with landowner prior to mobilization (road ROW swap)
  - Surveyor has finalized plan and land agent has signed new package with landowner, executed and returned
- Contractor has initiated contact with MD regarding work proceeding. Working through deliverables, major revisions required on TAS

Meyers Corner Road Culvert Replacement

Replace failed 900mm culvert via boring method with 1.37m x 35m welded pipe

- Work substantially complete. Temp. fence to be removed in Spring to allow seed to take
- UROW and road plan registration survey complete, sending to land titles.

Community Events Board, Admin Building

Single sided electric community events board on Admin building to advertise current events and upcoming meetings

- Sign installation complete Dec., 2025 with hookup test complete Jan., 2026.
- Exterior installation work complete, finalizing interior tie in work prior to training.

Bridge File 70175 – Yarrow Creek Bridge Rehabilitation, NW-22-003-030 W4M

Perform a pile splice repair on two piles in the west abutment, replace the east pile cap, place fill and riprap at the west headslope, minor wheel guard repairs & repairs to timber span, channel realignment, and west abutment riprap work

- UROW and road plan registration survey complete, sending to land titles.
- Construction complete including lattice rail installation, final inspection Dec. 5th. Seeding has not taken significantly, to be reviewed in Spring.

WCR #1: Iron Creek under Tapay (Carbondale) Road, LSD SE-15-006-03 W5M

Install new 4.7m x 2m x 15m L corrugated steel box culvert to remediate fish passage concerns on Iron Creek under the WCR program (100% funded)

- Project complete
- UROW registration survey complete, sending to land titles

Bridge File 70417 – TWN RD 70 over Castle River Trib., SE-05-007-01 W5M

6.1m clear span bridge with extensive rot and voids in piles and pile caps. Replace with two (2) 2m x 27m L CSPs

- Project complete including hydroseed
- UROW and road plan registration survey complete, sending to land titles

Bridge File 00470 – Toney Rd over Pincher Creek Trib., SE-02-006-01 W5M

1.6m x 43m L culvert with significant perforations and minor deflections. Install Steel Wall Pipe Liner (SWPL)

- Construction complete
- Road plan registration survey complete, sending to land titles

Large Projects Planned for 2026 Implementation

Lundbreck Wastewater Main Rehabilitation between Railway/Park St.

2021 inspection and subsequent wastewater study determined MH 5 to 6 is aggregate material and a good candidate for trenchless rehabilitation. Work required to install Cured in Place Pipe (CIPP).

- To be kicked off

WCR #3: Connelly Creek under Connelly Rd (BF 1348), LSD SW-03-008-02 W5M

Replace or design a maintenance solution for the 3m x 49m L (5.6m cover) structural plate corrugated steel pipe (SPCSP) and remediate fish passage under the WCR Program.

- STIP application submitted Nov. 24th
- Received funder guidance/approval to proceed with prelim eng. under WCR program
- Council approval received Mar. 11th, 2025
- Preliminary engineering kicked off Apr. 3rd, awaiting completion
- Survey complete Apr. 25th

Bridge File 71542 – Waldron Flats over Indian Creek, SE-07-010-01 W5M

2m x 2.2m x 32m L culvert with isolated perforations in the roof of 3 rings and 1 ring on the foot. Replace with a 2.7m diameter x 48m long culvert.

- STIP application submitted Nov. 24th

Bridge File 76203 – West End Maycroft over Ernst Creek, NW-26-010-03 W5M

2.5m x 1.8m x 20m L culvert with 3 cracked rings in sidewall with 85mm remaining. Deflection and corrosion also present. Replace with two (2) 1.8m diameter x 28m L culverts.

- STIP application submitted Nov. 24th

Pisony Road over Cow Creek Tributary Culvert, LSD NE-01-009-03 W5M

1m x 14m L culvert failing on dead end road. Dual 1m x 13m L culverts are anticipated solution.

- Preliminary engineering and basic aquatic assessment kicked off Jan. 31st, 2025 with Roseke. Reduced prelim. eng. scope compared to Bridge Files.
- Preliminary engineering assessment received Jun. 16th. Under review.
- Anticipate Fall 2026 construction.

Large Projects Planned for 2027 Implementation

Gladstone Rd. over Mill Creek Trib., LSD SE-01-006-02 W5M

0.6m x 17m L culvert failing and causing significant scour and erosion downstream. Preliminary engineering required to determine replacement requirements.

- Located on an unmapped Class A waterbody. Fish passage not expected to be required due to downstream barriers.
- Revising proposal based on reduced scope of DFO requirements.
- Potential for project to get accelerated to 2026.

Southfork Hill Road

Emergent investigatory and repair work for the Southfork Hill slide issues

- STIP LMI resubmission complete Nov. 27th, 2025.
- Geotechnical scope awarded and complete. Final geotech. report received Dec 9th.
  - Initial STIP application submitted Nov. 28th, 2024 – Unsuccessful.
- Project paused pending further deterioration or future grant opportunities. Design work pending STIP decision.

Therriault Dam – Rehabilitation Work

Geotechnical and Hydrogeology study complete in 2023. 2024 preliminary engineering determined most economically viable solution to address undersized spillway/overtop potential. 2025 work included detailed design work to rehabilitate spillway. 2026 work set to begin after DFPP funding decision and (if successful) shall include a lifecycle assessment on how to best use water source during drought.

- DFPP application submitted Nov. 27th. Anticipate response Q1 2026.
- Spillway design complete, regulatory submissions pending grant timing.
- Significant amount of history related to Therriault Dam reviewed during application process. Disaster Recovery Program (DRP) accessed in 1995, 2002, 2005, 2010, and 2014 related to Therriault Dam and spillway rebuilds. About $600,000 spend (inflation adjusted) on flood recovery since 1994. A flood was also noted in 2006.
- Additional design work pending grant decision.

Bridge File 73608 – Twin Butte Rd. Over Waterton River, NW-34-003-10 W4M W5M

78m L steel truss bridge with isolated pile and stringers in fair-poor condition. Preliminary engineering required to determine extend of recommend repair work and costs.

- MD to reach out to Cardston upon conclusion of preliminary engineering to discuss potential for cost sharing.

Bridge File 673 – Skyline Rd. Over Olin Creek, SE-31-009-01 W5M

2m x 2.2m x 54m L culvert (7m cover) with roof/sidewall deflection and cracked seems. Preliminary engineering required to determine feasibility of maintenance vs. replacement.

- Fish passage anticipated to be a requirement at this site. Current site likely inhibits.

Beaver Creek Rd. over Beaver Creek Trib., LSD NE and SE-33-008-28 W4M

Two separate failing culverts along Beaver Creek Rd. One 0.9m x 28m L (5m cover) has failed section in middle with cavity in ditch. One 0.75m x 30m L (9-10m cover) silted off/failed at downstream end. Preliminary engineering required to determine appropriate replacement/boring feasibility.

- Maintenance not anticipated to be feasible. Assessment of options required.

Studies and Planning Work

Regional Facilities Condition Assessment & Master Plan

- Grant application submitted Nov. 25th for Alberta Community Partnership – Intermunicipal Collaboration Grant with Cowley support.
- Awaiting funding decision.

Regional Drought Strategic Implementation Strategy & Raw Water Storage Project

- Grant received (up to 70%) for a Drought Projects Assessment under DFPP.
- Grant application for 3 month (25-year) forecasted volumes received from AEPA.
  - $3.4M project, up to 75% of costs.
  - ATEC has confirmed stacking of AMMWP Raw Water Storage grant funds acceptable for the Drought Projects Assessment (Phase 2).
- Forecasted demand and water requirement scenarios presented to Council June 10th.
- Draft water resource assessment received Aug. 8th, comments sent back Aug. 12th.
  - Assessment sent to MD for final review Nov 10th. Review complete Nov. 30th, minor comments sent back prior to finalization.
- Received draft land siting and design criteria to approach stakeholders. Three (3) of three (3) initially planned stakeholders approached. Discussions ongoing. Approaching additional stakeholders.

Transportation Master Plan

$200,000 grant received from ACP to complete a Transportation Master Plan, consisting of a paved, gravel road condition assessment, culvert (non Bridge File) condition assessment, gravel pit analysis, airport runway assessment

- Awarded August, 2024
- Gravel pit report complete
- Maycroft Road draft prelim. assessment received May 26th
- Draft TMP report received Jul. 21st, significant amount of comments on new sections of report. Internal comments to be sent back to MPE prior to Sep. 9th Council meeting
  - Received comments back and path forward plan Sep. 10th. Discussion held with MPE Oct. 10th. Comments incorporated and sent back for MD review Dec. 16th. MD review and additional comments sent back Dec. 19th
- Draft revised road classification sent to MD for review
- Anticipating final report by February

Cridland Dam

Geotechnical work as recommended in 2021 Dam Safety Review due to observed seepage and unknown soil properties

- Site visit complete Apr. 1st, costed plan received Apr. 25th
- Draft report for spillway discussed Jul. 22nd. Revised draft received Sep 25th, comments sent back for review Oct 8th. Final copy received Dec. 11th. Geotechnical report discussed Jul. 30th. Final copy received Aug. 27th
  - Initial results indicate spillway requires some (relatively minor) earthworks and spillway culverts are undersized
  - Confirmed observed dam face seepage coming from reservoir. Dam face does not meet long term Factor of Safety (FoS) requirements
    - At minimum, recommendation is quarterly monitoring of seepage
- Reports presented to Council for information Jan 27th

Miscellaneous

- Airport pavement assessment to be kicked off
- 10 yr. bridge study update kicked off Jan. 27th, 2025 with Roseke. Data entry complete
  - Draft received Dec. 18th, 2025. Reviewed, final copy expected by Council

Operations Updates

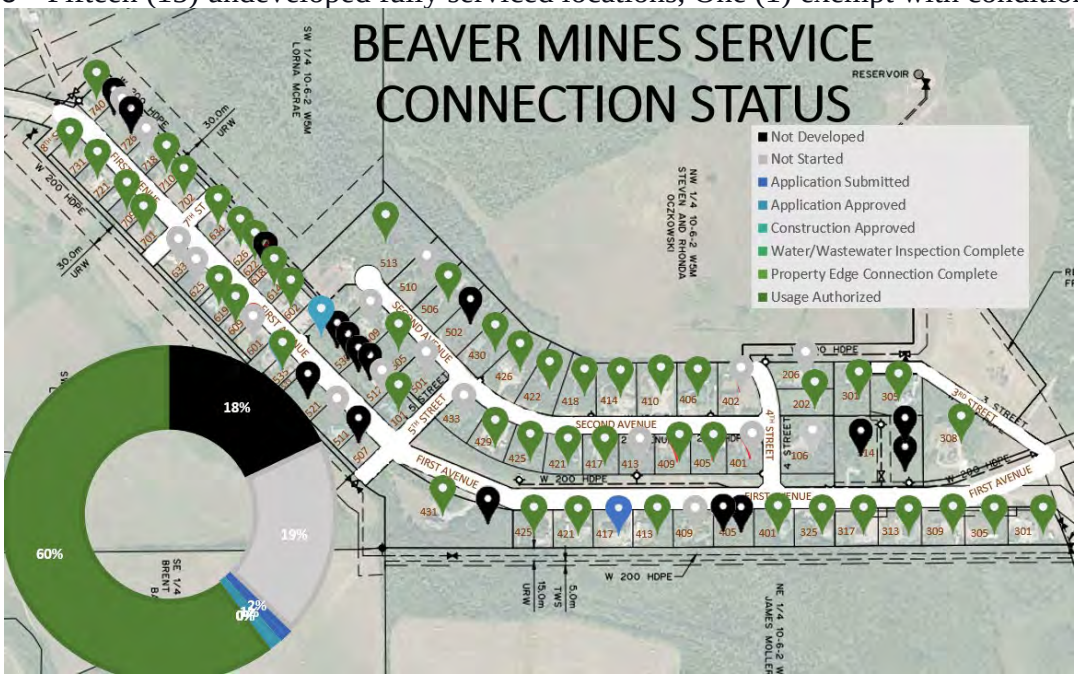
WATER SHORTAGE RESPONSE PLAN

Implemented Stage: Normal (Restrictions ended Dec. 13th)

- Monitoring risk scoring once/month
- Access will not be possible to VIS' this Winter/Spring for pressure testing. Pressure test parts have been shipped and received
- 2025 Implementation Report complete Jan 14th

Beaver Mines Lot Servicing

- 49/66 developed applications received, 48 approved, 47 connected (71%)
  - Fifteen (15) undeveloped fully serviced locations, One (1) exempt with conditions



General Water Operations Updates Jan. 20th, 2026:

- Working to calibrate standpipes to new pricing. PC Standpipe experienced a failure event resulting in upper fill getting stuck on. Working on more permanent solution
- Sewer blockage on Wastewater Service line Lundbreck line identified Jan 8th requiring emergent excavation/repair. Project complete Jan 15th

- Reviewing expiring water plant approval reapplication
- Cowley leak re-emerged Jan 18th, Cowley working on repairs
- Annual crane inspections complete Jan. 20th
- Reviewing 2026 operation budget plans
- Working on annual reports
- Heat trace grounding out on one (1) line at WWTP. Under investigation
- Contravention submitted to AEPA Oct. 28th for non-compliance due to operating without a Level II Water Treatment Operator during vacation/illness. Interim plan approved with AEPA, system still considered in non-compliance until a permanent resolution in place
    - Met with Fort Macleod Nov. 24th, potential for agreement. Sent draft Memorandum of Understanding (MoU) Nov. 28th. MoU ready for signature pending minor internal review by Fort Macleod
    - Fort Macleod remote monitoring setup, planning orientation day along with agreement finalization.
    - Contravention formally ended Jan 19th. Contract operator successfully obtained his Level II Water Treatment certification.
- Letter sent to Cowley Mar 28th detailing various requests and proposed path forward for water assets, licenses, and amended operations contract
    - Cowley sent comments back on amended operations contract Nov. 18th. Reviewed with CAO. Comments captured and sent back to Cowley for execution Dec. 27th. Agreement fully executed Jan. 9th
    - Regarding transfer of water reservoir and treatment building, indicated next step as *"two councils to determine how the asset valuation will be addressed and make a plan for next steps"*
- Beaver Mines Water/Wastewater Projects
    - Awaiting thaw/rain event to assess BM WWTP infiltration
    - Awaiting minor changes to Lift STN Record drawings

General Miscellaneous Operations Update Jan. 20th, 2026:

- Circular Materials notified regarding EPR reporting non-compliance with Paper. Circular Materials has indicated they have been working to resolve via meeting with CNPCL
    - Meeting Jan 22nd to discuss
- Waste handling contract expiring

Recommendation:

That the Utilities & Infrastructure report for Jan. 8th – Jan. 20th, 2026 is received as information.

Prepared by: David Desabrais Date: Jan. 20th, 2026

Council Meeting Date: Jan. 27th, 2026

Recommendation to Council

TITLE: Oldman Reservoir Emergency Intake – 2026 Budget Allocation & Capital Adjustment			
PREPARED BY: David Desabrais		**DATE: Jan. 21st, 2026**	
DEPARTMENT: Utilities & Infrastructure			
David Desabrais	26/01/21	**ATTACHMENTS:**	
Department Supervisor	**Date**	*1. Potassium Permanganate (KMnO4) Cost Estimate*	
APPROVALS:			
David Desabrais	26/01/21	**Roland Milligan**	2026/01/21
Department Director	**Date**	**CAO**	**Date**

RECOMMENDATION:

That Council approve $182,682 in 2026 funds for the Oldman Reservoir Emergency Intake Capital Project, and further;

That Council approve the same funding stream breakdown as the 2025 approved funds for $67,682 of the 2026 funds (75% covered by AMWWP, with 70% of remaining 25% covered by DFPP, and remaining covered by the Water and Wastewater Reserve), and that the remaining $115,000 be funded from the Water and Wastewater Reserve.

BACKGROUND:

- As per section 248(1) of the MGA, a council resolution is required for any capital work not included in the 2026 budget.
- In 2025, the total budget for the Oldman Reservoir Intake project (ORLLI) was $1.8M. $135,000 was funded from the Water and Wastewater Reserve and up to $1,665,000 funded through AMWWP and DFFP grants.
- To date **$1,732,318** has been spent (**$67,682** remaining).

2025 Updates

- Final install and commissioning of the permanent electrical drives for the new intakes was complete throughout 2025.
- Full pump performance could not be achieved with the new drives, despite achieving this performance with previously installed temporary drives.
- Troubleshooting options "above water line" were exhausted. Further troubleshooting will require access to the VIS' when water levels are low to pull pumps and (if necessary) pressure test lower pipeline sections.
- Raw water from the VIS' has continually contained higher Manganese than the current treatment system is capable of safely handling.

Recommendation to Council

2026 Planned Work

- To treat for high Manganese from the new intakes, a Potassium Permanganate dosing setup is required. The setup needs to be located near the Raw Water Station (RWS) to achieve required contact time.
- Administration recommends installing a moveable setup in the event that it make senses to locate the setup at a different location in the future (at Raw Water Storage for example).
- The estimated cost for installation in a dedicated building is **$173,000** (Attachment #1).

2026 Budget Request

- Administration is recommending allocating the remaining 2025 budget to 2026 to procure, install, and commission the dosing setup (**$67,682**).
    - Grant funding is capped at $1.8M total capital cost for this project.
- Administration is requesting allocation of an additional **$115,000** from the Water and Wastewater Reserve to complete this project bringing the MD's total contribution to **$250,000.**

FINANCIAL IMPLICATIONS:

Additional **$115,000** from Water and Wastewater Reserve for a total maximum contribution of **$250,000.**

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Municipal District of Pincher Creek
KMnO4 System Building

ORDER OF MAGNITUDE COST ESTIMATE

	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	COST
General Items					
1	General Requirements	1	L.S.	$ 6,000.00	$ 6,000.00
				SUBTOTAL	$ 6,000.00
KMnO4 System					
2	Process Piping and Installation	1	L.S.	$ 10,000.00	$ 10,000.00
3	KMnO4 Skid Package incl. Freight and Start Up	1	L.S.	$ 44,000.00	$ 44,000.00
4	Electrical Installation	1	L.S.	$ 25,000.00	$ 25,000.00
5	Programming and Commissioning	1	L.S.	$ 7,500.00	$ 7,500.00
				SUBTOTAL	$ 86,500.00
Site Works					
6	Site Preparation	1	L.S.	$ 5,000.00	$ 5,000.00
7	2.5m x 3.0m Precast Concrete Building c/w R20 Insulation, Panels, Door, etc.	1	L.S.	$ 46,200.00	$ 46,200.00
				SUBTOTAL	$ 51,200.00
				GRAND SUBTOTAL	**$ 143,700.00**
				CONTINGENCY (20%)	$ 29,000.00
				GRAND TOTAL	**$ 172,700.00**

Notes and Assumptions:

- General Requirements will be 7.5% of the construction costs.
- Land acquisitions to be verified. No allowance for land administration or legal survey services.
- No allowance for phasing of work.
- No allowance for relocation/modification of shallow and/or overhead utilities.
- The cost estimate is an opinion of probable cost and is a function of many factors that can change with time and hence must not be relied upon as the actual cost.

Recommendation to Council

TITLE: Cridland Dam – Hydrotechnical and Geotechnical Reports			
PREPARED BY: David Desabrais		**DATE: Jan. 21st, 2026**	
DEPARTMENT: Utilities & Infrastructure			
David Desabrais	26/01/21	**ATTACHMENTS:** **1. Dam History** **2. Final Geotechnical Report** **3. Final Hydrotechnical Report**	
Department Supervisor	**Date**		
APPROVALS:			
David Desabrais	26/01/21	**Roland Milligan**	2026/01/21
Department Director	**Date**	**CAO**	**Date**

RECOMMENDATION:

That Council receive for information the Cridland Geotechnical and Hydrotechnical Reports.

BACKGROUND:

- The MD completed a Dam Safety Review (DSR) in 2002 for five (5) dams as required by provincial and federal regulations.
- Forty (40) recommendations were identified, four (4) of which were "high" priority.
- The two (2) high priority recommendations related to the Cridland Dam were to complete a site specific geotechnical investigation, and to complete a more detailed freeboard and spillway capacity analysis (based on survey), due to the following findings:
  - "The minimum Factor of Safety (FoS) of downstream face of dam may not be adequate"
  - "Overtopping of the dam was observed in 2014 …"

A major events history of the Cridland Dam has been attached (*ATTACHMENT #1)*. The dam was decommissioned for 5-8 years due to historical seepage/slide concerns prior to stabilization measure installations in 2003 (no records available).

2025 Studies

- In May 2025, the MD awarded services to MPE Engineering to complete a Geotechnical Analysis Report and Spillway Capacity Analysis and Report.
- The Geotechnical Report was completed Aug. 27, 2025 (*ATTACHMENT #2*) and the Hyrdrotechnical Dec. 5th, 2025 (*ATTACHMENT #3*)

Recommendation to Council

- **Geotechnical report major conclusions:**
  - Spring observed on downstream abutments of dam are highly likely to be seepage from the dam as opposed to another stream/aquifer - potential for internal erosion over time.
  - The existing embankment does not meet Canadian Dam Association (CDA) long term steady state Factor of Safety (FoS) requirements
    - FoS met for other five (5) design cases including seismic, rapid drawdown, etc.
- **Geotechnical report recommendations:**
  - Until stabilization measures can be implemented, increase inspections to quarterly to ensure no slope stability issues.
  - Lowering Full Supply Level (FSL) to 1362.0 m (6m) would be required to satisfy FoS requirements as designed (*effectively eliminating the dam*).
- **Hydrotechnical report major conclusions:**
  - The Inflow Design Flood (IDF) may be underestimated, as "overtopping" has been observed six (6) times in last 50 years per previous DSRs.
    - *Note: Reported "Overtop" events may have actually been spillway/road overtop events as opposed to dam overtop. Records are unclear.*
  - Spillway vegetation, sloping, and obstructions are reducing capacity during high flow events.
  - Dam may have experienced more severe events than the IDF in the past.
  - Spillway culverts are not sized to pass IDF.
- **Hydrotechnical report major recommendations:**
  - Remove hydraulic obstructions (weir on spillway, trash/beaver rack, and routine debris) which prevent flow blockages and reduce spillway capacity.
  - Routinely manage vegetation to reduce flow resistance.
  - Additional protection:
    - Excavate spillway bed to remove flat section (significant increase in spillway capacity).
    - Upsize (install additional or replace) culvert at upstream end of spillway to reduce chance of access road overtop during IDF.
    - Upsize (install additional or replace) culvert across RR302A (Kerr W) to reduce chance of road overtop during IDF (*Note: this would become a BF sized culvert*).

FINANCIAL IMPLICATIONS:

- No major financial implications at this time.

Cridland Dam History
By: David Desabrais
Date: January 6th, 2026

- Earthfill dam constructed in 1958 by PFRA for supplementing existing creek water during low flow for stockwatering/irrigation. Level controlled by earthcut spillway. Transferred to MD in 1968.
    - Raised in 1975 and 1980 (no records found).
- 1975: Overflow spillway damaged due to excessive flow. Repaired in 1997.
- 1975 to 1980: Embankment raised.
- 1989: Inspection noted seepage on downstream face, among other deficiencies.
- 1993: Inspection noted sliding near 1989 seepage point. Monitoring program put in place
    - Remedial actions included decommissioning the dam (among others).
- 1994: Reservoir drained, filled unexpectedly during 1995 flood event (no overtop). Dam drained again after flood event.
- 1995 to 2003(?): Dam remains drained.
- 2003: Stabilization measures put in place, outlet upgrades complete, Full Supply Level (FSL) lowered.
- 2008 to 2022: Four (4) "overtop" events reported – likely overtops of the spillway, not the dam. Multiple spillway culvert replacement/upsize projects complete.

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MUNICIPAL DISTRICT OF PINCHER CREEK

CRIDLAND DAM

GEOTECHNICAL INVESTIGATION REPORT

Prepared By:
Chang Liu, P.Eng.
Geotechnical Engineer

MPE a division of Englobe
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Calgary, AB
T2E 7H7
P: (403) 250 1362
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Date: August 27, 2025
Project #: 1770-037

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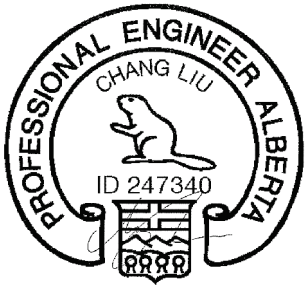
CORPORATE AUTHORIZATION

This report has been prepared by MPE a division of Englobe (MPE), for the sole use of the Municipal District of Pincher Creek. Any use that a third party makes of this report, or reliance on or decisions made based upon it is the responsibility of the third party. MPE accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions taken based upon this report. This report represents MPE's best judgement, based on the information available at the time of report preparation. Use of this report is subject to the appended Terms of Reference.

Respectfully submitted,

MPE a division of Englobe.

Prepared by:



2025-08-27

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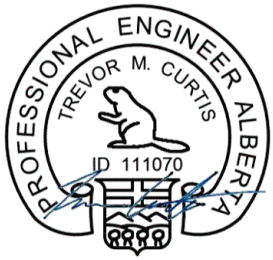

2025-08-27

Trevor Curtis, P.Eng.
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PERMIT TO PRACTICE
MPE, a division of Englobe Corp.
Signature
APEGA ID APEGA ID: 111070
Date 2025-08-27
PERMIT NUMBER: P 7841
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

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1.0 INTRODUCTION

MPE a division of Englobe (MPE) was retained by the Municipal District of Pincher Creek (MD, Client) to investigate the existing Cridland Dam approximately 13 km south of the Town of Pincher Creek. It is understood that the MD is looking to address safety concerns and dam safety deficiencies surrounding the existing Cridland Dam. Authorization to proceed with the work outlined in the proposal by MPE was received by Mr. David Desabrais, Utilities & Infrastructure Manager of the MD on May 16, 2025.

2.0 SCOPE OF WORK

Based on requirements from the client and previous discussions, the geotechnical investigation and study includes:

- A geotechnical site characterization to verify and quantify the material properties of the site soils.
- Stability analysis of the reservoir embankments in various scenarios.
- Geotechnical reviews and recommendations.

MPE also conducted a survey of the dam from which the topography of the dam and reservoir are shown on **Figure 2** in **Appendix B**.

The following documents were provided to facilitate the reporting and design of the project, applicable data extracted from the reports is included in **Appendix F**.

- Dam Safety Review for Cridland (Burmis) Dam, prepared by UMA Engineering Ltd. (UMA 1999).
- 2010 Dam Safety Reviews – Cridland Dam, Foothill Lake Dam, Fish Creek Dam, Sandy Lake Dam; prepared by Genivar Inc. (Genivar 2011).
- 2021 Dam Safety Reviews – Cridland Dam, Therriault Community Dam, Sandy Lake Project Dam, Fish Lake Project Dam, Foothill Lake Community Dam; prepared by SNC-Lavalin Inc. (SNC 2022).
- Various memorandums from the Government of Canada's Prairie Farm Rehabilitation Administration (PRFA) between 1993 and 1996 for the recommendations for noted issues and recommended rehabilitation of Cridland Dam.

3.0 BACKGROUND

The existing Cridland Dam was located within LSD NW-10-005-30-W4M. The topography surrounding the site was relatively flat with drainage from west to east towards downstream of the dam.

3.1 DAM SAFETY REQUIREMENTS

The Canadian Dam Association (CDA) defines a dam as a barrier used for water retention capable of holding at least 30,000 m^3 of liquid that is at least 2.5 m high. The embankment height of the existing Storage Cell exceeds these limits and must therefore be designed to CDA standards (CDA, 2013). In Alberta, dams and canals are defined and regulated by the Water Act (Alberta Environment, 2018a), and are subject to the Alberta Dam and Canal Safety Directive (Alberta Environment 2018b). The prevailing

Dam Safety Guidelines are those by the CDA (CDA 2007, 2013). This geotechnical design report has been prepared with consideration of the applicable regulations, directives, CDA Guidelines (2013) and related CDA technical bulletins.

The dam consequence classification is likely to be "Low" to "Significant"; MPE has assumed a dam consequence classification of "Significant" based on the potential damage to the environment, surrounding properties and infrastructure.

3.2 DESIGN STANDARD

The accepted factors of safety as per the Alberta Dam and Canal Safety Directive (Alberta Environment, 2018) and CDA (2013) consider the reliability of inputs to the stability analysis, the probability of the loading condition, and the consequences of potential failure. These accepted factor of safety (FS) values are provided in Table 1.

Table 1 – Target Factors of Safety for Slope Stability

Loading Condition	Minimum Factor of Safety	Slope
End of construction before reservoir filling	1.3	Upstream and Downstream
Long term (steady-state seepage, normal reservoir level)	1.5	Downstream
Full or partial rapid drawdown	1.2 – 1.3	Upstream
Pseudo-static	1.0	Upstream and Downstream
Post-earthquake	1.2 – 1.3	Upstream and Downstream

3.3 HISTORICAL RESERVOIR INFORMATION

Based on the provided information, the Cridland Dam was originally constructed in 1958 by Prairie Farm Rehabilitation Administration with the ownership passed to the MD in 1968. The dam was raised by about 1.7 m sometime between 1975 to 1980, no construction records were available for the original construction and the dam raising between 1975 to 1980.

Between 1993 and 1996, PRFA conducted several inspections of the Cridland Dam and encountered seepage along the downstream slope, a shallow slide area with two seepage outlets were noted above the outlet conduit, likely due to granular layers in the embankment fill or poor contact between the original dam crest and fill used in the raising of the dam crest. The initial recommendation of PRFA was to lower the reservoir level and perform ongoing seepage monitoring, but the lowering of the reservoir level was rejected by the MD.

A geotechnical investigation was also conducted in 1994 along with the field inspections by PRFA and a total of four boreholes were drilled along the top of dam embankments. The geotechnical investigation encountered embankment fill with 11% to 30% fines, 32% to 40% sand, and 30% to 53% gravel 30% to 50%. It was recommended by PFRA to replace the top 7-8 m of the upstream portion of the embankment with impervious fill. It was understood that the reservoir was drained following the geotechnical investigation, a flood event in 1995 had filled and spilled the reservoir, but the reservoir was again drained after the flood and left empty.

Additional inspections were conducted by PFRA after the reservoir was drained, and a new recommendation was made to install a PVC pipe in the existing CSP outlet, install new concrete inlet / outlet structures, and construct a granular filter blanket around the seepage areas surrounding the outlet. A complete design and tender package was submitted by PRFA in 1996, but no work was completed, and the reservoir was left empty.

In the 1998 Dam Safety Review (DSR) by UMA Engineering Ltd. (UMA 1999) indicated that the embankment had failed by piping due to the observed seepages along the downstream slope. The dam was concluded to be unsafe, and recommendations were made to leave the reservoir empty, and to either reconstruct the dam and outlet or decommission it. The DSR had classified the dam as “High Risk” consequence, and indicated a dam height of 11.2 m with a Full Supply Level (FSL) of 1370.1 m.

The 2010 DSR by Genivar Inc. (Genivar 2011) had indicated that the dam had undergone rehabilitation work in 2003. A PVC pipe was inserted into the 600 mm CSP outlet pipe, the spillway was widened from 5 m to 10 m and the upstream face of the dam and sections of the reservoir were riprapped. The DSR also indicated that in comparison with original PFRA design drawings, the existing top of dam is 1.4 m lower when surveyed in 2010 with a new dam height of 9.8 m at an elevation of approximately 1370.0 m. The FSL of the dam was also lowered 2.1 m to an elevation of 1368.0 m, and it was recommended to reclassify the dam as “Low Risk” consequence. The DSR had found the rehabilitated embankment to be structurally stable, but indicated that some areas of the reservoir shoreline and spillway channel were eroded and needed stabilizing.

The most recent 2021 DSR for Cridland Dam was conducted by SNC-Lavalin Inc. (SNC 2022). The DSR indicated that the reservoir bank stabilization and spillway erosion repairs were still outstanding, and a spring and seepage were observed at the toe of the downstream slope. The DSR also indicated that no instrumentation were observed on or around the dam, and the existing geotechnical information for the dam is considered inadequated. A new geotechnical investigation was recommended to collect information on the embankment / foundation soils, and pore water pressures to address the minimum FOS being below the CDA requirement of 1.5.

3.4 GEOLOGY

3.4.1 Surficial Geology

MPE reviewed mapping published by the Alberta Geological Survey (AGS). According to the surficial geology map (Alberta Geological Survey, 2013) the site surficial geology is classified as Stagnant Ice Moraine deposits bordered by Moraine deposits. The AGS defines the deposits as follows:

Stagnant Ice Moraine*: Sediments resulting from the collapse and slumping of englacial and supraglacial debris due to the melting of buried stagnant ice at the glacier margin; sediment is mainly till but locally includes stratified glaciolacustrine or glaciofluvial sediments; characterized by low- to high-relief hummocky topography.*

Moraine*: Diamicton (till) deposited directly by glacial ice with a mixture of clay, silt, and sand, as well as minor pebbles, cobbles, and boulders; characterized by a lack of distinctive topography. Locally, this unit may contain blocks of bedrock, stratified sediment, or lenses of glaciolacustrine and/or glaciofluvial sediment.*

3.4.2 Bedrock Geology

MPE reviewed the bedrock geology (Alberta Geological Survey, 2013) and the site bedrock geology is indicated as belonging to the Pakowski Formation. The AGS defines the Pakowski Formation as follows:

Pakowski Formation: *Recessive, dark grey to greenish-grey mudstone and shale; minor, silty, thin- to medium-bedded sandstone; chert pebble bed at base; typically <25 m thick; marine.*

4.0 INVESTIGATION

The field program was carried out on June 4th, 2025, using a drill rig contracted from Chilako Drilling Services Ltd. of Coaldale, AB. The drill rig was equipped with solid stem continuous flight augers. Soil samples were retrieved at intervals of approximately 0.6 m. The soil was classified and logged by MPE's field representative, Mr. Curtis Tams. Standard Penetration Testing was generally performed at intervals of 1.5 m. Piezometers were installed in all three boreholes drilled. Water levels were measured in the boreholes during drilling and on June 17th, 2024, approximately 13 days after completion of drilling.

The existing dam and the surrounding site are shown on **Figure 1, Appendix B** and borehole locations are labeled on **Figure 2**. The borehole locations were obtained by site survey and the coordinates are shown on the borehole logs. The borehole elevations were obtained from MPE's survey.

Laboratory testing was completed on selected soil samples to aid in the determination of engineering properties. Testing included natural moisture content, Atterberg limits, and grain size. The test results are summarized on the borehole logs included in **Appendix C**. Individual test reports for laboratory results are included in **Appendix D**.

The results of the field and laboratory work, and geotechnical recommendations for design and construction of the proposed development are included in this report.

5.0 SITE CONDITIONS

5.1 SITE INSPECTION

A site visit was conducted by MPE on April 1st, 2025. Based on the site inspection, the upstream embankment of the dam was riprapped to the water level. Minor erosion and scouring was noted along the southern shores of the reservoir. The downstream embankment was vegetated with grass, and small shrubs and trees were also noted along the embankment. A spring with active seepage was noted along the southern abutment of the dam. A shallow slide was noted directly above the spring, with a slide area of approximately 10 m^3. The downstream embankment was also noted to be relatively moist, and the area downstream of the dam embankment was noted to be marshy and heavily treed. The dam embankment did appear relatively stable except for the shallow slide along the southern abutment.

5.2 SOIL STRATIGRAPHY

The soil conditions encountered on site generally comprised of clay fill overlying clay till and siltstone bedrock. Sand seams and sand layers with varying thicknesses were encountered between the clay fill and clay layers. The clay fill is suspected to be comprised of clay or clay till materials due to the similarities between the fill layers and the soils below the fill. The main distinction between fill and till layers was the difference in soil moisture and gravel content within the fill.

A summary of the soil layers encountered is provided below. For a more detailed view of the soil conditions, refer to the borehole logs in **Appendix C**. A description of the terms and symbols used on the borehole logs is also included in **Appendix C.**

5.2.1 Fill

Fill was encountered at surface in all boreholes drilled. Clay fill was encountered in 25BH001 and 25BH003, extending to a depth of 4.5 m below ground surface (mbgs) and 7.6 mbgs, respectively. Clay and sand fill was encountered in 25BH002, extending to a depth of 9.5 mbgs. Based on the site topography and the record drawings, the fill was likely sourced from the surrounding in-situ soils. Construction records of the dam constructions and rehabilitations were not available for review. The fill was generally described as silty, sandy, some gravel and trace cobbles, stiff to very stiff, low plastic, brown and moist. with trace to some sand, light brown, and moist. In 25BH002, the fill was described as clay and sand fill. Groundwater seepage was encountered in all three boreholes within the clay fill.

Moisture contents taken from fill samples ranged between 6% and 12%. SPTs within the clay fill resulted in N values of 7 to 27 blows, indicating a firm to very stiff consistency. Atterberg Limit tests conducted on clay fill samples indicated Liquid Limits between 24% and 29%, and plastic limits between 10% to 15%, indicating that the clay fill was low plastic. Grain size analyses conducted on the clay fill samples indicated gravel content of 2% to 17%, sand content of 36% to 51%, silt content of 19% to 38%, and clay content of 13% to 24%.

5.2.2 Till

Till was encountered in all boreholes drilled. Clay till was encountered in 25BH002 and 25BH003, extending beyond the maximum drilled depths of 18.6 and 15.7 mbgs, respectively. In 25BH001, the clay and sand till extended to the underlying siltstone bedrock at 8.0 mbgs. The till was generally described as silty, sandy, trace gravel, was moist, stiff to hard, low plastic, dark brown or grey and moist. The local till is also known to contain cobbles and coarse-grained deposits, increased gravel and sand content was encountered in 25BH002 at 16.8 mbgs.

Moisture contents taken from till samples ranged between 9% and 24%. SPTs within the till resulted in N values of 4 to 54 blows, indicating a soft to hard consistency. Atterberg Limit tests conducted on till samples indicated Liquid Limits between 25% and 28%, and plastic limits between 11% to 13%, indicating that the till was low plastic. One grain size analysis conducted on the till samples indicated gravel content of 1%, sand content of 61%, silt content of 26%, and clay content of 12%.

5.2.3 Bedrock

Siltstone bedrock was encountered in 25BH001 below the clay and sand till from 8.0 mbgs to 10.9 mbgs. The siltstone was described as containing some silt, trace clay, was slightly weathered, medium plastic, extremely weak, light grey and damp.

Moisture contents taken from the siltstone samples ranged between 14% and 15%. SPTs within the siltstone resulted in N values of 72 blows for 300 mm of penetration to 50 blows for 75 mm of penetration.

5.3 GROUNDWATER CONDITIONS

At the time of drilling, groundwater seepage was encountered in all boreholes within the fill. Sloughing was also encountered in 25BH001 and minor sloughing was encountered in 25BH002 and 25BH003. Piezometers were installed in all boreholes upon completion. Groundwater readings were taken on June 17th, 2025, 13 days after completion of drilling. The groundwater readings are summarized in Table 2.

Table 2 – Groundwater Elevation – Measured June 17th, 2025

Borehole No.	Depth of Standpipe (m)	Depth of Groundwater (m)	Elevation of Borehole (m)	Elevation of Groundwater (m)
25BH001	7.0	4.0	1369.9	1365.8
25BH002	9.1	3.2	1369.8	1366.6
25BH003	14.9	7.2	1369.9	1362.8

Groundwater levels are expected to fluctuate seasonally and in response to climatic conditions. If groundwater conditions encountered during construction are observed to be drastically different from this report, MPE should be notified so that the implications of the changes can be reviewed.

6.0 ANALYSIS

6.1 STABILITY ANALYSIS

The intended goal of the stability analysis for this project is to confirm that the existing reservoir embankments meet the minimum factors of safety (FS) described previously in **Section 3.2** or what option(s) are available to satisfy this requirement. The FS is the ratio of soil shear strength to shear stress along a failure plane within the slope, perpendicular to the axis of the dam. A FS of 1.0 is defined as reaching limit equilibrium and therefore the slope being analyzed is in a state of failure or deformation. A FS larger than 1.0 is theoretically indicative of a stable slope. A FS between 1.0 and 1.5 in the long term is typically not considered safe due to the possible variability in conditions present across the site.

The cross sections used in the stability and seepage analyses was developed from the survey data combined with the record drawings. The dam section with the greatest embankment height was chosen in order to assess the stability of the existing dam**.**

Soil profiles were created from the borehole information across the site, and with comparison to the geotechnical investigation in 1994 and historical records. The material properties for the stability models were based on information discussed in the previous sections and the stability models are shown in in **Appendix E**.

6.1.1 Critical Sections

A topographic site plan of the project area associated with the existing dam was surveyed by MPE in June 2025. The survey combined with LiDAR information of the surrounding areas were used to create the critical cross-sections used in the stability and seepage analyses. Three cross sections were constructed using the survey and LiDAR data, as shown on **Figures 2 and 3** in **Appendix B**. The cross section at 0+044.14 were chosen as Section B for slope modeling as the critical cross section due to the thickest fill depth observed in 25BH002. The cross section at 0+019.70 were also chosen as Section A due to the changed soil stratigraphy observed in 25BH001.

The embankment heights for these cross sections were relatively similar, with top of dam at 1369.9m based on the MPE survey. The upstream slope was at 4.0H:1V to an inlet invert of 1359.99 m according to the Dam Section in Drawing No. 004 in UMA 1999. The downstream slope was surveyed by MPE and was at inclinations of approximately 3.0H:1V to varied elevations of 1358 to 1360 m. The sections are also shown in **Figures E 1.1 to E 2.6** in **Appendix E** with the slope modeling results.

6.1.2 Soil Strength and Seepage Parameters

Soil strength parameters were based on field and laboratory index testing conducted on samples collected from the site. The effective friction angles of the fine-grained materials were estimated using various data including Atterberg limit tests, hydrometer tests, in-situ testing, and experience with similar materials. Soil strength parameters selected for the analyses contained within this report are shown in Table 3 below.

Table 3 – Material Strength and Seepage Properties

Soil Unit	Bulk Unit Weight (kN/m^3)	Effective Cohesion (kPa)	Effective Angle of Friction (°)	Hydraulic Conductivity (m/s)	Strength Type
Clay Fill	19	0	28	5.5e-05	Mohr-Coulomb
Clay and Sand Fill	19	0	28	5.5e-05	Mohr-Coulomb
Clay and Sand Till	20	3	28	1.0e-06	Mohr-Coulomb
Clay Till	20	3	28	1.0e-07	Mohr-Coulomb
Siltstone	21	100	0	1.0e-10	Undrained

Values selected were intended to be representative of site conditions and reasonably conservative. The cohesion used in the model is interpreted from site soil conditions and considered conservative; this is typical in slopes where cohesion may degrade due to environmental effects over time. For the effective internal friction angle, representative values for each material were selected deemed reasonable for the soil description and available test results carried out on the respective soils.

The provided design geometry satisfies current guidelines (CDA, 2013). The stability model is sensitive to soil strength parameters, so the design strength parameters represent conservative values which are considered suitable based on laboratory testing and experience with similar soils.

6.1.3 Seepage Model

The geotechnical modelling computer program SLIDE, by RocScience, version 9.037, was utilized to complete the steady state and transient seepage analyses for this project to determine the phreatic surface in the embankment for stability modelling.

The Cridland Dam has a FSL of 1368.0 m. Steady-state seepage was conducted using the FSL to assess the long-term stability upstream and downstream, and a transient seepage analysis was conducted to assess the upstream stability during rapid drawdown. Based on the historical records and drawings, the dam does contain an outlet pipe at the toe of the upstream embankment. It is understood that the dam is usually left at FSL and not emptied. Rapid drawdown was assessed using an assumed draw down of 200 days due to the outlet pipe size, for a reservoir water surface elevation drop from 1368.0 m to a completely empty reservoir elevation of 1360.0 m. The material properties for the seepage model were

based on information discussed in the previous sections, and compared with groundwater conditions observed in **Section 5.4**.

6.1.4 Seismic Loading Condition

Seismic stability was modelled by performing a pseudo-static analysis for the design earthquake, as recommended by the CDA. The analysis for pseudo-static seismic conditions applies a horizontal force (seismic coefficient, K_H) to the stability model to simulate earthquake loading. The seismic coefficient is taken as a fraction of the Peak Ground Acceleration (PGA) for the site, for a given design earthquake. The design earthquake for Low Consequence dams has an Annual Exceedance Probability of 1:100. The National Building Code of Canada Seismic Hazard Calculator was used to obtain a site-specific PGA value of 0.019g for the 1:100-year event. The site PGA is for a "Stiff Soil" condition (National Building Code of Canada 2020 Site Classification D).

For the determination of the horizontal seismic coefficient, PGA was reduced by half. A lateral seismic coefficient of **0.0095g** was therefore used to complete the pseudo-static limit equilibrium analysis. It should be noted that this reduced seismic demand allows for up to 1 m of movement during the design seismic event.

6.1.5 Stability Models and Results

The GLE/Morgenstern-Price method was used to complete the analysis due to its ability to accommodate differing slip surface shapes, varied side force orientations, and because it satisfies force and moment equilibrium. Slip surfaces shallower than 2.0 m have been filtered out from the results.

The results of the loading conditions are summarized in Table 4 and are included in **Appendix E**.

Table 4 – Stability Results Summary

Loading Condition	Minimum FS Required by CDA	Section A, FS	Section B, FS
Long-Term (Steady State) Downstream	1.5	1.20	1.19
End of Construction Upstream	1.3	2.46	2.20
End of Construction Downstream	1.3	1.89	1.61
Rapid Drawdown Upstream	1.2	1.84	2.03
Pseudo-Static Seismic Downstream	1.0	1.16	1.16
Pseudo-Static Seismic Upstream	1.0	2.05	2.34

7.0 GEOTECHNICAL REVIEW

7.1 GEOTECHNICAL ASSESSMENT

As stated in Section 6.1.1, the upstream slope consists of a 4.0H:1V or flatter slope up to the crest elevation of 1369.9 m. The downstream slope was surveyed at 3H:1V at the sections analyzed. It is understood that the dam consists of fill with varied clay and sand content. No construction records were available for review, but the fill is likely excavated from the reservoir footprint.

Based on the field investigation and laboratory soil testing, the results showed that the embankment consisted of stiff to very stiff, low plastic fill similar to the on-site till with SPTs N-values ranging from 7-27 blows. Grain size analyses conducted on the clay fill samples indicated gravel content of 2% to 17%, sand content of 36% to 51%, silt content of 19% to 38%, and clay content of 13% to 24%. Based on the higher gravel and sand content, and the relatively low clay content, the fill is considered marginally suitable for embankment construction.

During the site inspection on April 1, 2025, a spring was observed along the southern downstream abutment of the dam. Based on the higher coarse-grained content from the laboratory soil testing, it is likely that preferential flow paths were created within the dam, which could in time lead to loss of material and embankment instability. In addition, historical records have also shown that the PRFA had concerns regarding the high coarse-grained content of the embankment fill, and requested the MD to replace the top 7-8 m of the upstream portion of the embankment with impervious fill. Groundwater seepage was also encountered in all three boreholes within the fill.

Based on the stability analysis, the existing embankment do not meet CDA (CDA, 2013) factors of safety under long term steady state condition for the downstream slope. Until stabilization measures can be implemented, the following recommendations can be followed:

- Quarterly inspections of the dam to ensure there are no slope stability issues for the dam embankments.
- Advanced laboratory testing was not included in this investigation, advanced laboratory testing can provide in-situ soil strength and seepage parameters for a more accurate stability analysis.
- Lowering the FSL to 1362.0 m, preliminary analysis indicates lowering the FSL to 1362.0 m would satisfy the CDA requirement of Long-Term (Steady State) Downstream FS of 1.5.

7.2 DAM SAFETY REQUIREMENTS

Based on MPE's visual assessment and engineering judgement, a dam Consequence Classification of "Low" is considered appropriate for the dam, in agreeance with Genivar 2011 and SNC 2022. This should be verified through inundation analysis and qualitative review. As per the 2018 Alberta Dam & Canal Safety Directive (the Directive), a number of requirements will need to be met for the operational life of the structure. For a comprehensive list of requirements, refer to the Directive.

At a minimum, the MD should prepare the following documents:

1. Emergency Preparedness Plan (EPP) and Emergency Response Plan (ERP)
2. Operations, Maintenance, and Surveillance (OMS) Manual.
3. Quarterly Inspection Reports.

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APPENDIX A:

TERMS OF REFERENCE

TERMS OF REFERENCE FOR GEOTECHNICAL REPORTS ISSUED BY MPE A DIVISION OF ENGLOBE.

MPE has prepared the following Terms of Reference to assist in the interpretation and use of MPE's Geotechnical Reports. Note that the information contained herein is considered supplemental to the body of the report. In case of any discrepancy between this appendix and the body of the report, the report will take precedence.

1.1 Use of The Report

This geotechnical report has been prepared for and tailored to the needs of a specific client, project, site, and purpose. Any party relying on this report other than the client for which it was prepared does so at their own risk.

In order to properly understand the suggestions, recommendations, and opinions expressed in the Report, reference must be made to the whole of the report. MPE cannot be responsible for improper use of portions of the report without reference to the whole report.

1.2 Changing Project Details

Important changes to project details which are made after this report has been prepared could render this report obsolete, or reduce its relevancy. MPE's geotechnical engineer should be retained to review project changes. Examples of important changes may include but are not limited to the following:

- Site layout.
- Function of a proposed structure.
- Type of structure or materials used.
- Elevations, design grades, or drainage.
- Project ownership or design team.

1.3 Nature and Exactness of Descriptions

Classification and identification of soils and rocks are based upon commonly accepted systems and methods used in professional geotechnical practice. Classification and identification of geological units are judgemental in nature as to their type, condition, or characteristics. MPE does not warrant conditions represented in the Report as being exact.

Changes from one geological zone to another may be indicated on the logs as a distinct line, but may in fact be transitional. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

1.4 Changes in Subsurface Conditions

This report has been prepared based on conditions that existed at the time the work scope was undertaken. Do not rely on this report if it is judged that the reliability of the report has been affected by:

- The passage of time;
- Man made events such as construction on or adjacent to the site;
- Natural events such as flood, drought, seismic activity, erosion, groundwater fluctuations, slope instability, etc;

Please contact MPE to confirm that this report is still reliable following any changes to the site or if the passage of time raises any question whether changes may have occurred.

1.5 Findings and Recommendations are Professional Opinion

Site exploration and testing are performed only at specific locations. The exploration provides a valuable yet incomplete picture of the site. In many cases, MPE will review regional geology alongside borehole and laboratory data. Engineering judgement has been applied in the interpretation of the data in order to render an opinion about the rest of the site. Actual subsurface conditions may differ significantly from those identified in the report. MPE should be retained to provide geotechnical design review and construction monitoring in order to manage the risks associated with unanticipated conditions.

1.6 Recommendations Are Not Final

Many of the recommendations presented in this report are considered confirmation-dependent, as they are developed on engineering judgement and opinion based on an incomplete investigation of site conditions. As such, they should not be considered final.

MPE's recommendations can be finalized only after the actual site conditions are revealed during construction. MPE cannot assume responsibility or liability for this report's recommendations if MPE has not been retained to perform the necessary construction monitoring.

1.7 Do Not Redraw Borehole Logs

MPE has prepared the final borehole logs based on interpretation of field logs and lab data. To prevent errors and omissions, the logs included in this report should not be redrawn for inclusion in other design drawings. Only photographic or complete electronic reproduction of the original is acceptable. Note that separating logs from the report can elevate risk.

1.8 Design Parameters

Where MPE's Report includes design parameters which have been derived from a site investigation, those recommended parameters are based on engineering judgement and may take into account multiple factors. Third party designers who apply their own interpretation to MPE's borehole logs do so at their own risk. MPE cannot be liable for third party interpretations.

1.9 Protection of Exposed Ground

Weathering and disturbance can substantially alter the physical properties of soil or rock. In circumstances where the strength of soil or rock is to be relied upon (such as for foundation support, floor slabs, roads, excavation or embankment sideslopes, etc.), it must be protected against weathering and disturbance at all times. Weathering includes freezing, wetting, or drying conditions.

1.10 Groundwater Fluctuation

MPE's site investigation should not be considered an exhaustive study of groundwater conditions. Groundwater levels will fluctuate, and MPE's boreholes may not have penetrated all natural flow paths. Groundwater conditions encountered during construction may differ dramatically from this report. Local experience and sound judgement will be required in the development of care-of-water procedures.

1.11 Support of Adjacent Structures

The influence that construction activity can have on adjacent structures or facilities should be considered by the owner, architect, prime engineer, contractor, or developer. MPE's geotechnical engineers should be consulted if adverse conditions are suspected.

Support of ground and structures adjacent to the proposed construction, which may be impacted by construction, is required.

APPENDIX B:

FIGURES

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MUNICIPAL DISTRICT OF PINCHER CREEK

CRIDLAND DAM HYDROLOGY ASSESSMENT
SITE PLAN

SCALE:	1:1000	DATE:	JULY 2025	JOB:	1770-037-00	FIGURE:	1

BOREHOLE LOCATION (NAD83 UTM12 COORDINATES)			
BH ID	NORTHING	EASTING	ELEVATION
25BH001	5473057.1	285040.5	1369.9
25BH002	5473080.6	285020.4	1369.8
25BH003	5473103.6	285002.1	1369.9

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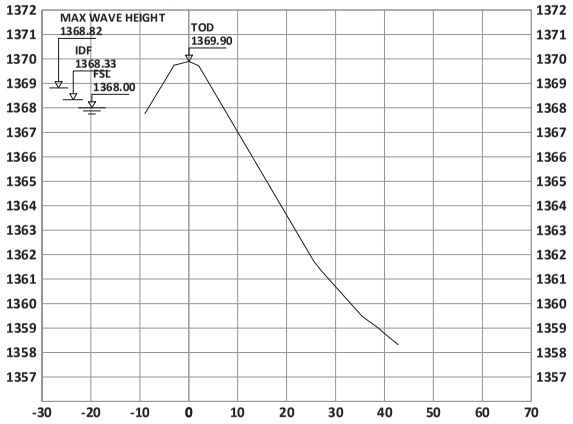
MUNICIPAL DISTRICT OF PINCHER CREEK

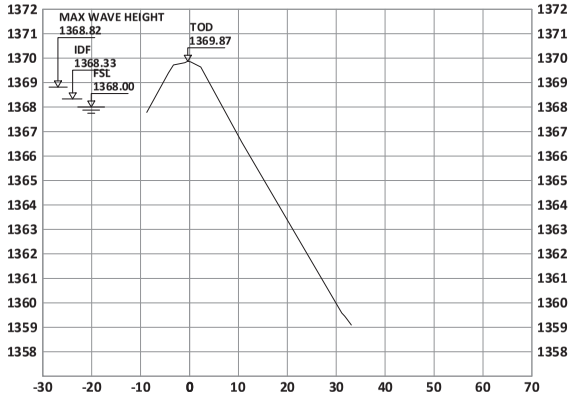
CRIDLAND DAM HYDROLOGY ASSESSMENT
CRIDLAND DAM PLAN

SCALE:	1:500	DATE:	JULY 2025	JOB:	1770-037-00	FIGURE:	2



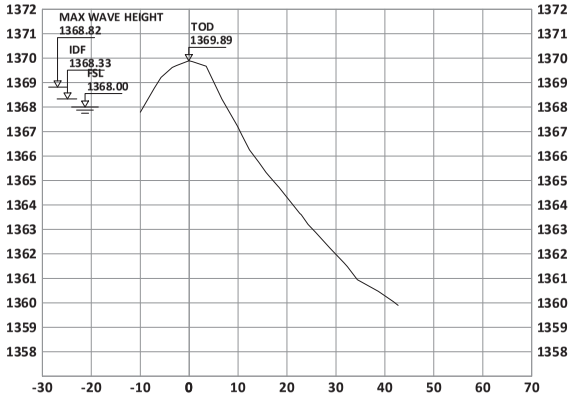
STA 0+020 - 25BH001

A
7



STA 0+044 - 25BH002

B
7



STA 0+074 - 25BH003

C
7

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MUNICIPAL DISTRICT OF PINCHER CREEK

CRIDLAND DAM HYDROLOGY ASSESSMENT
DAM SECTIONS

SCALE:	1:1000	DATE:	JULY 2025	JOB:	1770-037-00	FIGURE:	3

APPENDIX C:

BOREHOLE LOGS

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BOREHOLE No : 25BH001

CLIENT	MD of Pincher Creek	PROJECT NAME	Cridland Dam Geo & Hydro Assess
PROJECT NUMBER	1770-037-00	PROJECT LOCATION	Pincher Creek, AB
DATE STARTED	2025/06/04 COMPLETED 2025/06/04	GROUND ELEVATION	1369.9m N 5473057 E 285040
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	1365.8 m 4.03 m
DRILLING METHOD	8" HSA	DATE GROUND WATER RECORDED	2025/06/17

Depth (m)	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Elevation (m)
0	CLAY FILL, silty, sandy, some gravel, trace cobbles, moist, stiff, low plastic, brown, trace oxide specks						1369
1			SPT1	12	12.2	1.5 m - Gravel = 2.1% Sand = 36.0% Silt = 38.3% Clay = 23.6% 1.5 m - LL = 28% PL = 11% PI = 17%	
2							1368
3			ST1			3 m - Shelby Tube refusal to cobbles, poor recovery	1367
4			SPT2	9	8.2		1366
5	CLAY AND SAND TILL, silty, some fine gravel, very moist, firm, low plastic, dark brown, trace oxidation staining ...4.6 m - SEEPAGE		SPT3	6	13.7		1365
6			SPT4	4	15.0	6.1 m - Gravel = 0.7% Sand = 61.4% Silt = 25.7% Clay = 12.2%	1364
7							1363
8	...7.6 m - becoming moist, stiff, brown SILTSTONE, some silt, trace clay, slightly weathered, light grey, damp, medium plastic, extremely weak, blocky, thinly laminated, unoxidized		SPT5	14	18.5		1362
9			SPT6	72	15.3		1361
							1360

MOISTURE CONTENT
PLASTIC - LIQUID
SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
POCKET PEN, qu (kPa)

Standpipe/ Instrument

Notes:

Seepage encountered at 4.6 m, borehole sloughed in to 7.0 m upon completion. Slotted 50 mm PVC standpipe installed to a depth of 6.1 m. Water level read at 4.03 m on June 17, 2025.

Logged By: C. Tams

Reviewed By: C. Liu

2025/07/23

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BOREHOLE No : 25BH001

CLIENT	MD of Pincher Creek	PROJECT NAME	Cridland Dam Geo & Hydro Assess
PROJECT NUMBER	1770-037-00	PROJECT LOCATION	Pincher Creek, AB
DATE STARTED	2025/06/04 COMPLETED 2025/06/04	GROUND ELEVATION	1369.9m N 5473057 E 285040
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	1365.8 m 4.03 m
DRILLING METHOD	8" HSA	DATE GROUND WATER RECORDED	2025/06/17

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	MOISTURE CONTENT / PLASTIC - LIQUID / SPT (N) Blows/300 mm (10 20 30 40) / POCKET PEN, qu (kPa) (100 200 300 400)	REMARKS	Standpipe/ Instrument	Elevation (m)
11		SILTSTONE, some silt, trace clay, slightly weathered, light grey, damp, medium plastic, extremely weak, blocky, thinly laminated, unoxidized		SPT7	50	14.1	●	10.7 m - Auger refusal ~~10.93 m - SPT Refusal~~ 50 blows for 3"		1359
		10.7 m - becoming unweathered, very weak End of Borehole @10.9 m								
12										1358
13										1357
14										1356
15										1355
16										1354
17										1353
18										1352
19										1351
										1350

Notes:

Seepage encountered at 4.6 m, borehole sloughed in to 7.0 m upon completion. Slotted 50 mm PVC standpipe installed to a depth of 6.1 m. Water level read at 4.03 m on June 17, 2025.

Logged By: C. Tams

Reviewed By: C. Liu

2025/07/23

a division of Englobe

BOREHOLE No : 25BH002

CLIENT	MD of Pincher Creek	PROJECT NAME	Cridland Dam Geo & Hydro Assess
PROJECT NUMBER	1770-037-00	PROJECT LOCATION	Pincher Creek, AB
DATE STARTED	2025/06/04 COMPLETED 2025/06/05	GROUND ELEVATION	1369.8m N 5473081 E 285020
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	1366.6 m 3.21 m
DRILLING METHOD	8" HSA	DATE GROUND WATER RECORDED	2025/06/17

Depth (m)	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Elevation (m)
0	CLAY AND SAND FILL, some silt, some coarse gravel, trace cobbles, moist, very stiff, low plastic, brown, trace oxidation staining, trace white precipitates						1369
1			SPT1	18	11.7		
2							1368
3			ST1				1367
4			SPT2	17	7.3	3.45 m - Gravel = 17.1% Sand = 50.7% Silt = 19.4% Clay = 12.8%	1366
5			SPT3	18	7.6		1365
6	...5.5 m - becoming some gravel to gravelly		SPT4	17	9.5	6.1 m - LL = 29% PL = 15% PI = 14%	1364
7							1363
8	...7.6 m - SEEPAGE, becoming stiff		ST2 SPT5	13	9.9	7.6 m - Shelby Tube refusal to gravel, poor recovery	1362
9	CLAY TILL, silty, sandy, trace coarse gravel, moist, stiff, low plastic, dark brown to grey mottling, some oxidation staining, trace coal specks, trace white precipitates		SPT6	12	14.2		1361
							1360

MOISTURE CONTENT
PLASTIC - LIQUID
SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
POCKET PEN, qu (kPa)

Standpipe/ Instrument

Notes:

Seepage encountered at 7.6 m, minor sloughing observed upon completion. Slotted 50 mm PVC standpipe installed to a depth of 9.1 m. Water level read at 3.21 m on June 17, 2025.

Logged By: C. Tams

Reviewed By: C. Liu

2025/07/23

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BOREHOLE No : 25BH002

CLIENT	MD of Pincher Creek	PROJECT NAME	Cridland Dam Geo & Hydro Assess
PROJECT NUMBER	1770-037-00	PROJECT LOCATION	Pincher Creek, AB
DATE STARTED	2025/06/04 COMPLETED 2025/06/05	GROUND ELEVATION	1369.8m N 5473081 E 285020
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	1366.6 m 3.21 m
DRILLING METHOD	8" HSA	DATE GROUND WATER RECORDED	2025/06/17

Depth (m)	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Elevation (m)
11	CLAY TILL, silty, sandy, trace coarse gravel, moist, stiff, low plastic, dark brown to grey mottling, some oxidation staining, trace coal specks, trace white precipitates		SPT7	13		10.7 m - No recovery SPT7	1359
12	...12.2 m - becoming grey, trace oxide specks		SPT8	9	17.3		1358
13							1357
14			ST3				1356
			SPT9	12	16.2	14.2 m - LL = 25% PL = 11% PI = 14%	
15	...15.2 m - becoming very stiff		SPT10	17	17.5		1355
16							1354
17	...16.8 m - becoming hard, some coarse gravel and sand		SPT11	54	8.8		1353
18			SPT12	50	14.3	18.3 m - Auger refusal ~~18.58 m - SPT Refusal~~ 50 blows for 5"	1352
	End of Borehole @18.6 m						1351
19							1350

MOISTURE CONTENT
PLASTIC - LIQUID
SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
POCKET PEN, qu (kPa)

Standpipe/ Instrument

Notes:

Seepage encountered at 7.6 m, minor sloughing observed upon completion. Slotted 50 mm PVC standpipe installed to a depth of 9.1 m. Water level read at 3.21 m on June 17, 2025.

Logged By: C. Tams

Reviewed By: C. Liu

2025/07/23

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BOREHOLE No : 25BH003

CLIENT	MD of Pincher Creek	PROJECT NAME	Cridland Dam Geo & Hydro Assess
PROJECT NUMBER	1770-037-00	PROJECT LOCATION	Pincher Creek, AB
DATE STARTED	2025/06/05 COMPLETED 2025/06/05	GROUND ELEVATION	1369.9m N 5473104 E 285002
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	1362.8 m 7.17 m
DRILLING METHOD	8" HSA	DATE GROUND WATER RECORDED	2025/06/17

Depth (m)	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Elevation (m)
0	CLAY FILL, silty, sandy, some coarse gravel, trace cobbles, moist, very stiff, plastic, brown, trace oxide specks						1369
1			ST1				
2			SPT1	18	9.8	1.95 m - LL = 24% PL = 10% PI = 14%	1368
3			SPT2	27	5.7	3 m - Rock in SPT	1367
4							1366
5	...4.6 m - becoming stiff		SPT3	8	9.8		1365
6	...6.1 m - becoming firm ...6.3 m - SEEPAGE		SPT4	7	7.4		1364
7							1363
8	CLAY TILL, silty, sandy, trace fine gravel, moist, stiff, low plastic, grey		ST2				1362
			SPT5	9	14.2	8.05 m - LL = 28% PL = 13% PI = 15%	
9	...9.1 m - becoming very stiff, some brown mottling, trace oxide specks		SPT6	18	16.0		1361

MOISTURE CONTENT
PLASTIC - LIQUID
SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
POCKET PEN, qu (kPa)

Standpipe/ Instrument

Notes:

Seepage encountered at 6.3 m, minor sloughing observed upon completion. Slotted 50 mm PVC standpipe installed to a depth of 14.9 m. Water level read at 7.17 m on June 17, 2025.

Logged By: C. Tams

Reviewed By: C. Liu

2025/07/23

a division of Englobe

BOREHOLE No : 25BH003

CLIENT	MD of Pincher Creek	PROJECT NAME	Cridland Dam Geo & Hydro Assess
PROJECT NUMBER	1770-037-00	PROJECT LOCATION	Pincher Creek, AB
DATE STARTED	2025/06/05 COMPLETED 2025/06/05	GROUND ELEVATION	1369.9m N 5473104 E 285002
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	1362.8 m 7.17 m
DRILLING METHOD	8" HSA	DATE GROUND WATER RECORDED	2025/06/17

Depth (m)	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Elevation (m)
11	CLAY TILL, silty, sandy, trace fine gravel, moist, stiff, low plastic, grey		SPT7	18	23.5		1359
12			ST3				1358
13							1357
14	...13.7 m - becoming stiff		SPT8	9	23.0		1356
15			SPT9	15	19.6		1355
	End of Borehole @15.7 m						
16							1354
17							1353
18							1352
19							1351

MOISTURE CONTENT
PLASTIC - LIQUID
SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
POCKET PEN, qu (kPa)

Standpipe/ Instrument

Notes:

Seepage encountered at 6.3 m, minor sloughing observed upon completion. Slotted 50 mm PVC standpipe installed to a depth of 14.9 m. Water level read at 7.17 m on June 17, 2025.

Logged By: C. Tams

Reviewed By: C. Liu

2025/07/23

EXPLANATION OF SYMBOLS AND TERMS

The symbols and terms used on the test hole logs to summarize the results of the field investigation and the laboratory testing are described on the following sheets.

Soils are classified and described according to their engineering properties and behaviour. The descriptions applied to the various soil units as shown on the logs follow the Unified Soil Classification system with slight modification to recognize inorganic clays to medium plasticity (CI). Such descriptions are judgmental in nature and may differ in detail from that actually encountered in the field. The descriptions noted in the logs from test holes are based solely on inspections of soil and rock samples recovered or cuttings observed. The actual nature of the materials between samples may vary.

Laboratory tests have been performed on the various samples noted, following standard testing procedures or protocol unless otherwise noted. The test results are intended to provide a general indication of some of the engineering properties of the material.

ABBREVIATIONS

w or MC	Moisture content (ASTM D2216)	PP	Pocket Penetrometer
W_P or PL	Plastic limit (ASTM D4318)	γ	Unit weight
W_L or LL	Liquid limit (ASTM D4318)	γ_d	Dry unit weight
I_P or PI	Plasticity Index	ρ	Density
NP	Non-plastic soil	ρ_d	Dry density
SH	Shelby tube sample	q_u	Unconfined compressive strength
AU	Auger sample	C_u	Undrained shear strength
B	Bulk Sample	SO_4	Concentration of water-soluble sulphates
UD	Undisturbed Sample	TCR	Total Core Recovery
RC	Rock Core Sample	RQD	Rock Quality Index
SPT	Standard Penetration Test	SCR	Solid Core Recovery
VST	Vane Shear Test	FI	Fracture Index
JSI	Jar Slake Index (I_j)		

SIZE RANGES OF SOIL COMPONENTS	
Component	Size Range mm (US Sieve)
Boulders	Over 300 (12 inch)
Cobbles	75 (3 inch) to 300 (12 inch)
Gravel:	
Coarse	19 (3/4 inch) to 75 (3 inch)
Fine	5 (#4) to 19 (3/4 inch)
Sand:	
Coarse	2 (#10) to 5 (#4)
Medium	0.4 (#40) to 2 (#10)
Fine	0.08 (#200) to 0.4 (#40)
Clay and Silt	Less than 0.08 (#200)

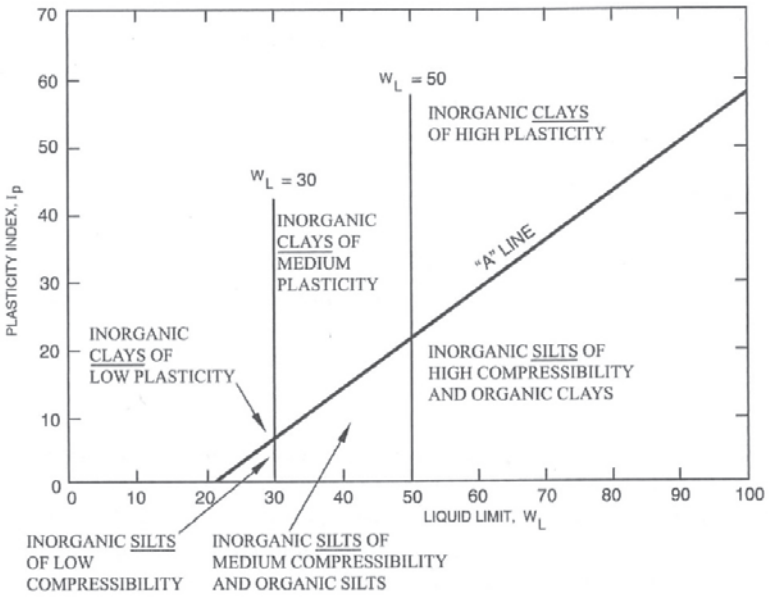
SECONDARY CONSTITUENTS	
Term	Percentage
and	35% - 50%
y/ey	20% - 35%
some	10% - 20%
trace	0 – 10%

CONSISTENCY OF FINE GRAINED SOILS			
Term	Undrained Shear Strength (kPa)	SPT N	Description
Very soft	< 12	< 2	Easily penetrated with fist
Soft	12 – 25	2 – 4	Easily penetrated with thumb
Firm	25 – 50	4 – 8	Moderate effort to penetrate with thumb
Stiff	50 – 100	8 – 15	Great effort to indent with thumb
Very Stiff	100 – 200	15 – 30	Easily indented with thumbnail
Hard	> 200	> 30	Effort required to indent with thumbnail

DENSITY OF COARSE GRAINED SOILS		
Term	SPT N	Approx. Relative Density (%)
Very loose	0 – 4	0 – 15
Loose	4 – 10	15 – 35
Compact	10 – 30	35 - 65
Dense	30 – 50	65 – 85
Very Dense	> 50	85 - 100

UNIFIED SOIL CLASSIFICATION SYSTEM (MODIFIED)

MAJOR DIVISION			GROUP SYMBOL	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA	
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic soils	Strong colour or odor and fibrous texture	
COARSE-GRAINED SOILS MORE THAN HALF BY WEIGHT LARGER THAN 75 µm	GRAVELS MORE THAN HALF THE COARSE FRACTION LARGER THAN 4.75 mm	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well-graded gravels, gravel-sand mixtures	$C_U=D_{60}/D_{10}$ >4	$C_C=(D_{30})^2/D_{10} \times D_{60}$ 1 to 3
			GP	Poorly graded gravels, gravel-sand mixtures	Not meeting all above requirements	
		GRAVELS WITH FINES (MORE THAN 12% FINES)	GM	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or PI < 4	
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits above "A" line or PI > 7	
	SANDS MORE THAN HALF THE COARSE FRACTION LARGER THAN 4.75 mm	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well-graded sands, gravelly sands	$C_U=D_{60}/D_{10}$ >6	$C_C=(D_{30})^2/D_{10} \times D_{60}$ 1 to 3
			SP	Poorly graded sands or gravelly sands	Not meeting all above requirements	
		SANDS WITH FINES (MORE THAN 12% FINES)	SM	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or PI < 4	
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line or PI > 7	
FINE-GRAINED SOILS MORE THAN HALF BY WEIGHT SMALLER THAN 75 µm	SILTS BELOW "A" LINE ON PLASTICITY CHART; NEGLIGIBLE ORGANIC CONTENT		ML	Inorganic silts and very fine sands, rock flour, silty sands of slight plasticity	LL < 50	SEE PLASTICITY CHART BELOW
			MH	Inorganic silts, micaceous or diatomaceous, fine sandy or silty soils	LL > 50	
	CLAYS ABOVE "A" LINE ON PLASTICITY CHART; NEGLIGIBLE ORGANIC CONTENT		CL	Inorganic clays of low plasticity, gravelly, sandy, or silty clays	LL < 30	
			CI	Inorganic clays of medium plasticity, silty clays	30 < LL < 50	
			CH	Inorganic clays of high plasticity	LL > 50	
	ORGANIC SILTS AND CLAYS BELOW "A" LINE ON PLASTICITY CHART		OL	Organic silts and organic silty clays of low plasticity	LL < 50	
			OH	Organic clays of high plasticity	LL > 50	



APPENDIX D:

LAB TESTING

MPE a division of Englobe
1, 3320 18 Avenue North
Lethbridge, Alberta T1H 5J3
Tel: (403)892-6036

ATTERBERG LIMITS

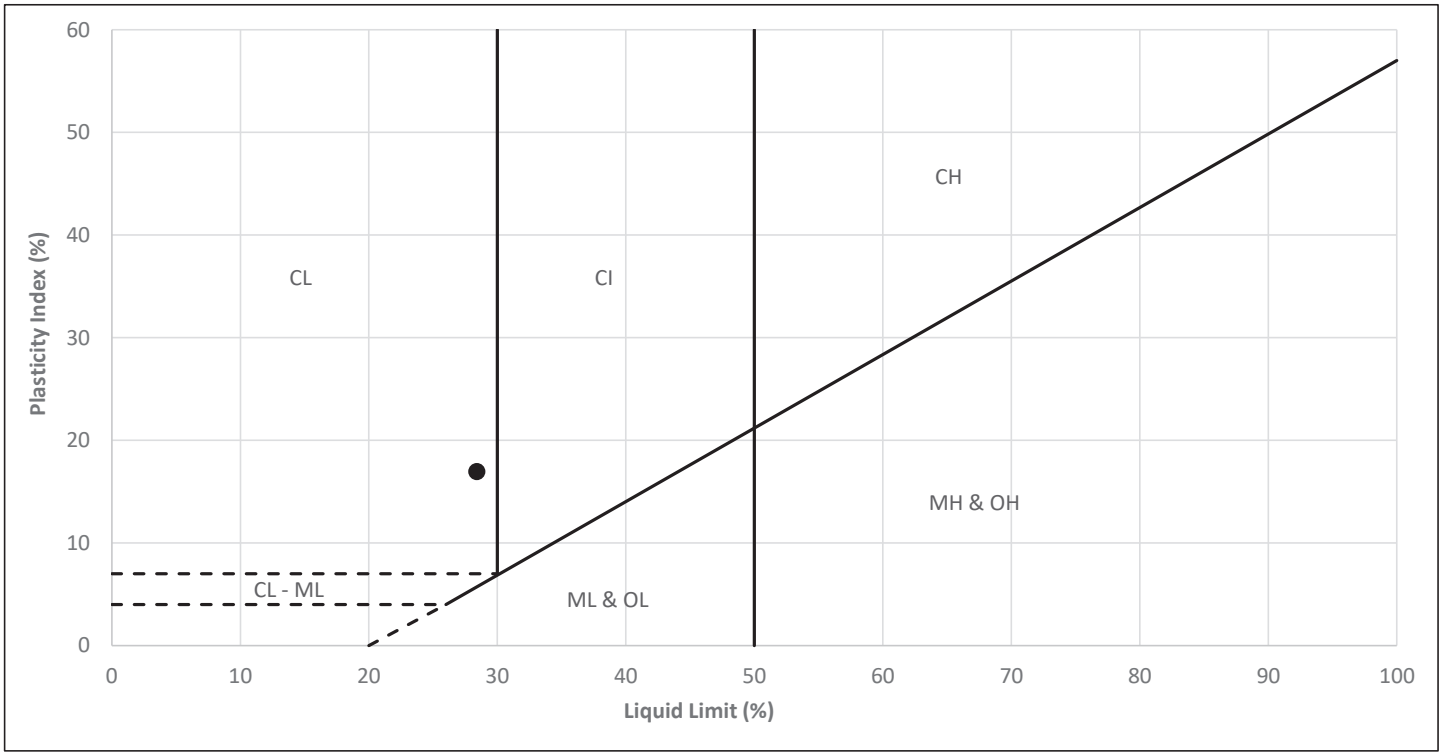
Project:	Cridland Dam Geo & Hydro Assess	**Sample #:**	1SPT1
Project No.:	1770-037-00	**Source:**	25BH001
Owner:	MD of Pincher Creek	**Sample Depth:**	1.5 m
File No.:	AL - 01	**Test Date:**	12-Jun-25

Tested in accordance with ASTM D4318 (Liquid Limit, Plastic Limit, and Plasticity of Soils). Additional test information available upon request.

Sample Description: Inorganic clays of low plasticity, gravelly clays, sandy clays, silty clays, lean clays

Liquid Limit (LL)	28.4
Plastic Limit (PL)	11.4
Plasticity Index (PI)	17.0

Soil Plasticity	Low
Soil Classification	CL



Comments:

Reviewed By: _____
Kasz Leavitt, P.Tech. (Eng.)

MPE a division of Englobe
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Lethbridge, Alberta T1H 5J3
Tel: (403)892-6036

ATTERBERG LIMITS

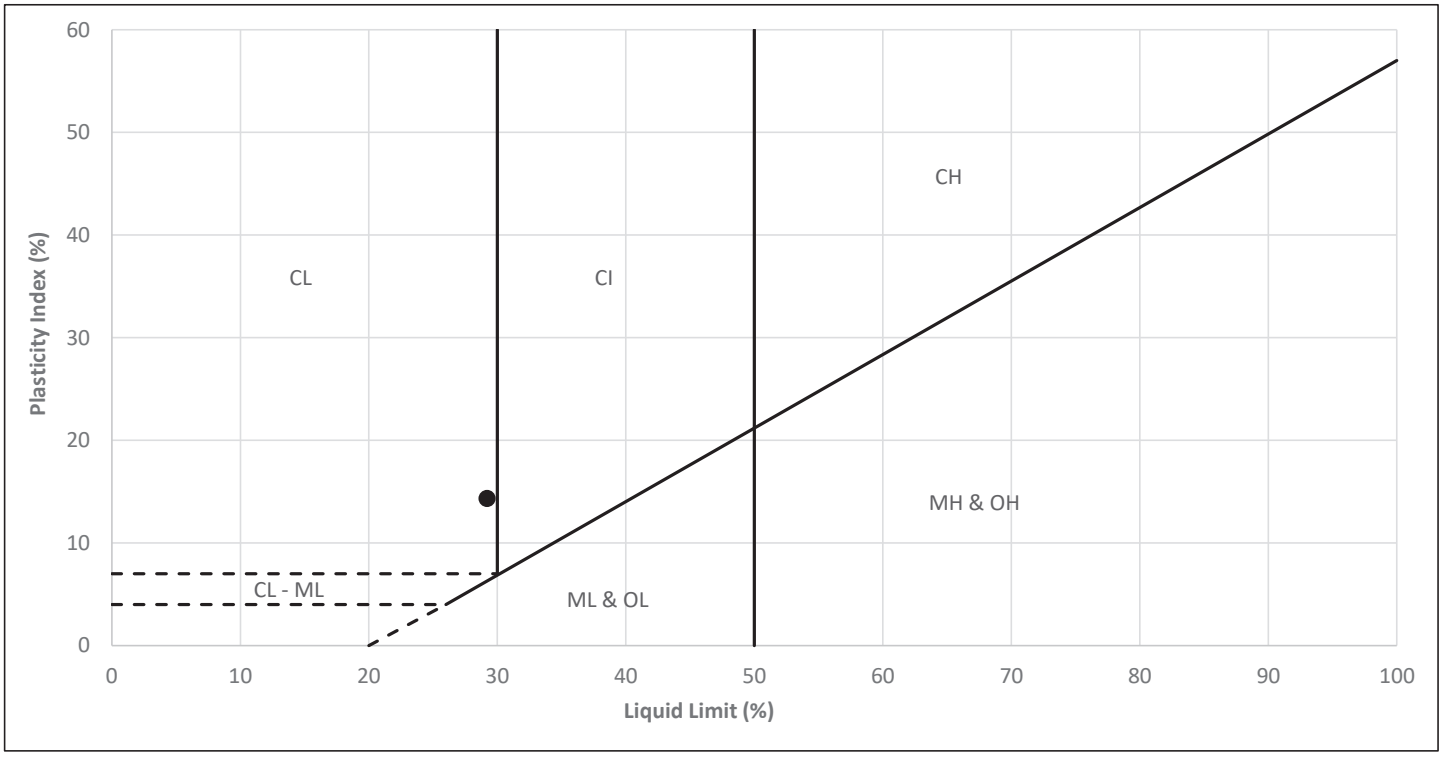
Project:	Cridland Dam Geo & Hydro Assess	**Sample #:**	2SPT4
Project No.:	1770-037-00	**Source:**	25BH002
Owner:	MD of Pincher Creek	**Sample Depth:**	6.1 m
File No.:	AL - 02	**Test Date:**	12-Jun-25

Tested in accordance with ASTM D4318 (Liquid Limit, Plastic Limit, and Plasticity of Soils). Additional test information available upon request.

Sample Description: Inorganic clays of low plasticity, gravelly clays, sandy clays, silty clays, lean clays

Liquid Limit (LL)	29.2
Plastic Limit (PL)	14.9
Plasticity Index (PI)	14.3

Soil Plasticity	Low
Soil Classification	CL



Comments:

Reviewed By: _____
Kasz Leavitt, P.Tech. (Eng.)

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ATTERBERG LIMITS

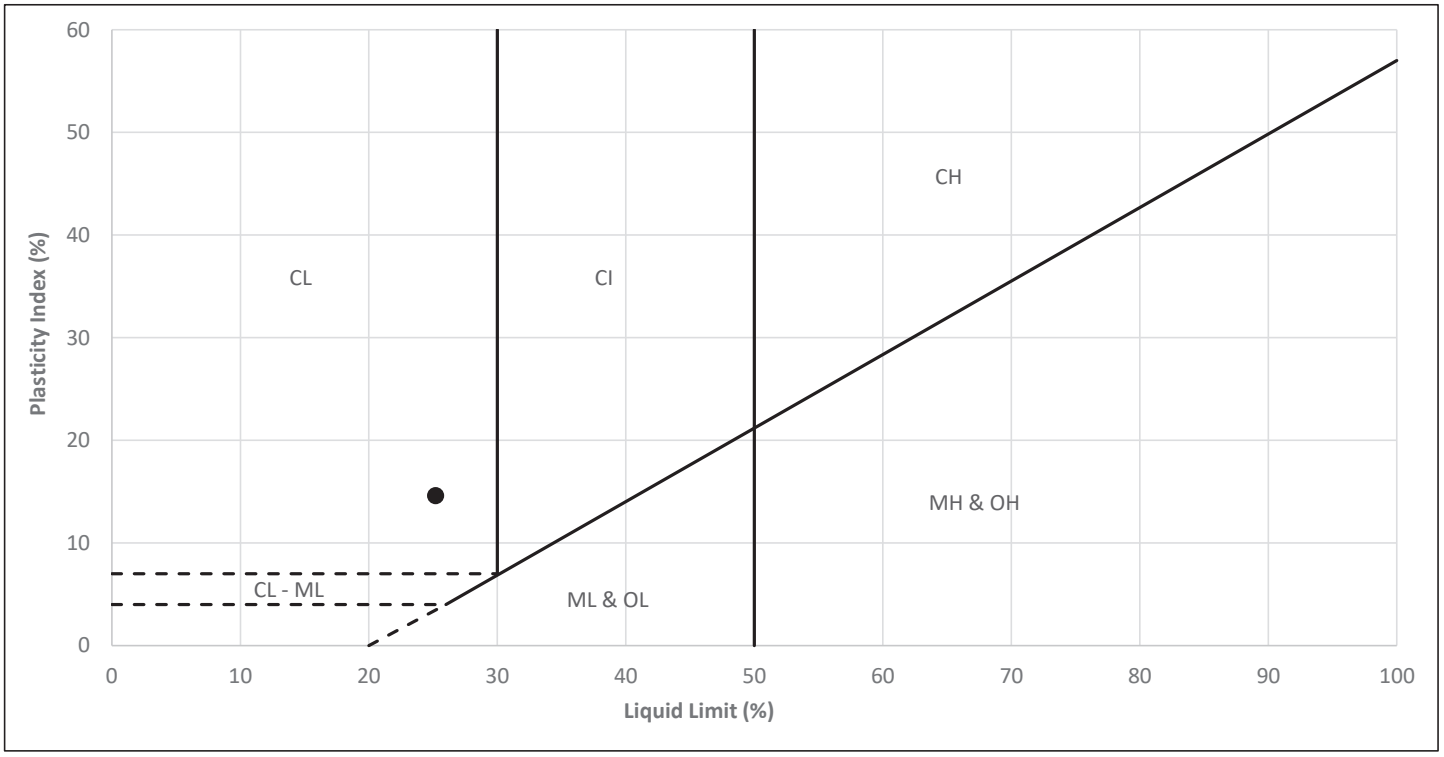
Project:	Cridland Dam Geo & Hydro Assess	**Sample #:**	2SPT9
Project No.:	1770-037-00	**Source:**	25BH002
Owner:	MD of Pincher Creek	**Sample Depth:**	14.2 m
File No.:	AL - 03	**Test Date:**	12-Jun-25

Tested in accordance with ASTM D4318 (Liquid Limit, Plastic Limit, and Plasticity of Soils). Additional test information available upon request.

Sample Description: Inorganic clays of low plasticity, gravelly clays, sandy clays, silty clays, lean clays

Liquid Limit (LL)	25.2
Plastic Limit (PL)	10.6
Plasticity Index (PI)	14.6

Soil Plasticity	Low
Soil Classification	CL



Comments:

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ATTERBERG LIMITS

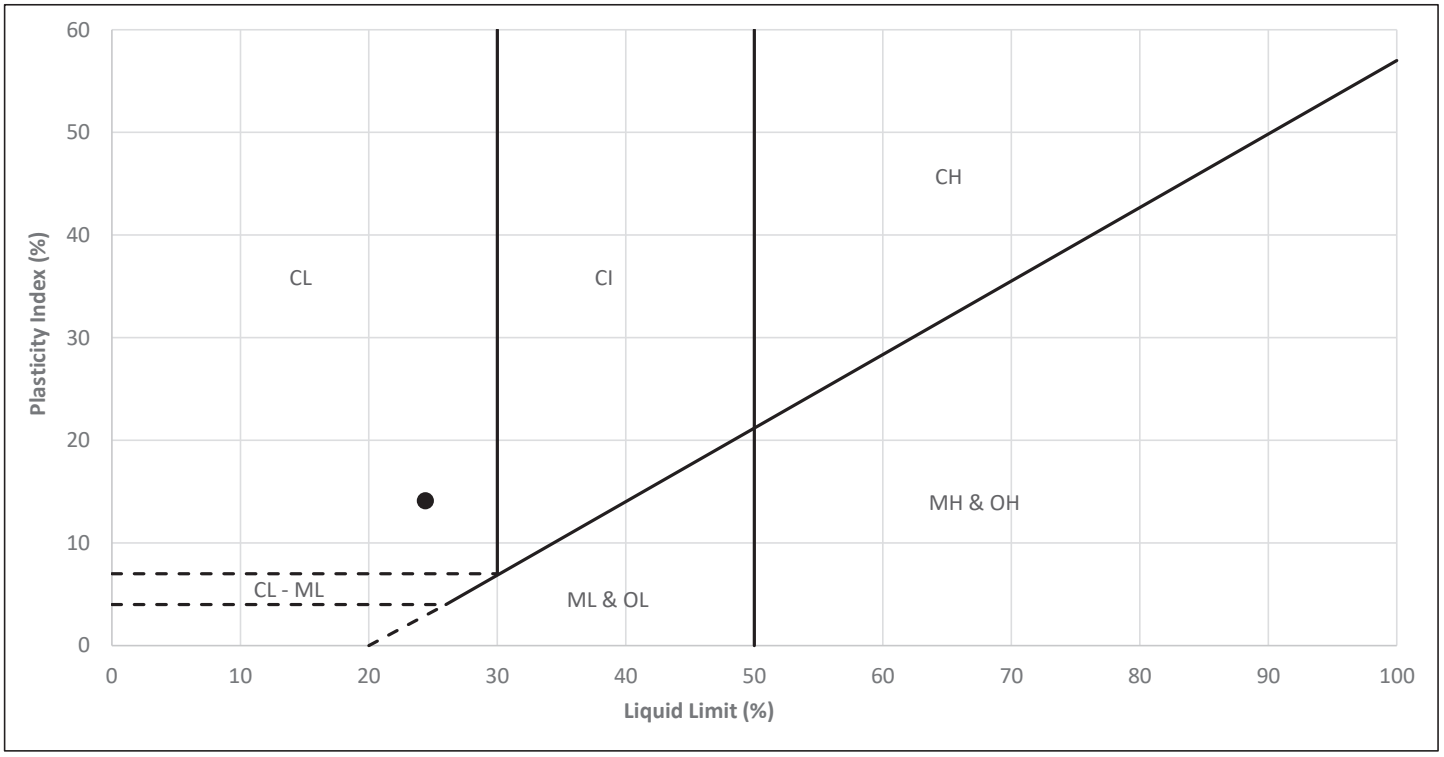
Project:	Cridland Dam Geo & Hydro Assess	**Sample #:**	3SPT1
Project No.:	1770-037-00	**Source:**	25BH001
Owner:	MD of Pincher Creek	**Sample Depth:**	1.5 m
File No.:	AL - 04	**Test Date:**	12-Jun-25

Tested in accordance with ASTM D4318 (Liquid Limit, Plastic Limit, and Plasticity of Soils). Additional test information available upon request.

Sample Description: Inorganic clays of low plasticity, gravelly clays, sandy clays, silty clays, lean clays

Liquid Limit (LL)	24.4
Plastic Limit (PL)	10.3
Plasticity Index (PI)	14.1

Soil Plasticity	Low
Soil Classification	CL



Comments:

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Lethbridge, Alberta T1H 5J3
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ATTERBERG LIMITS

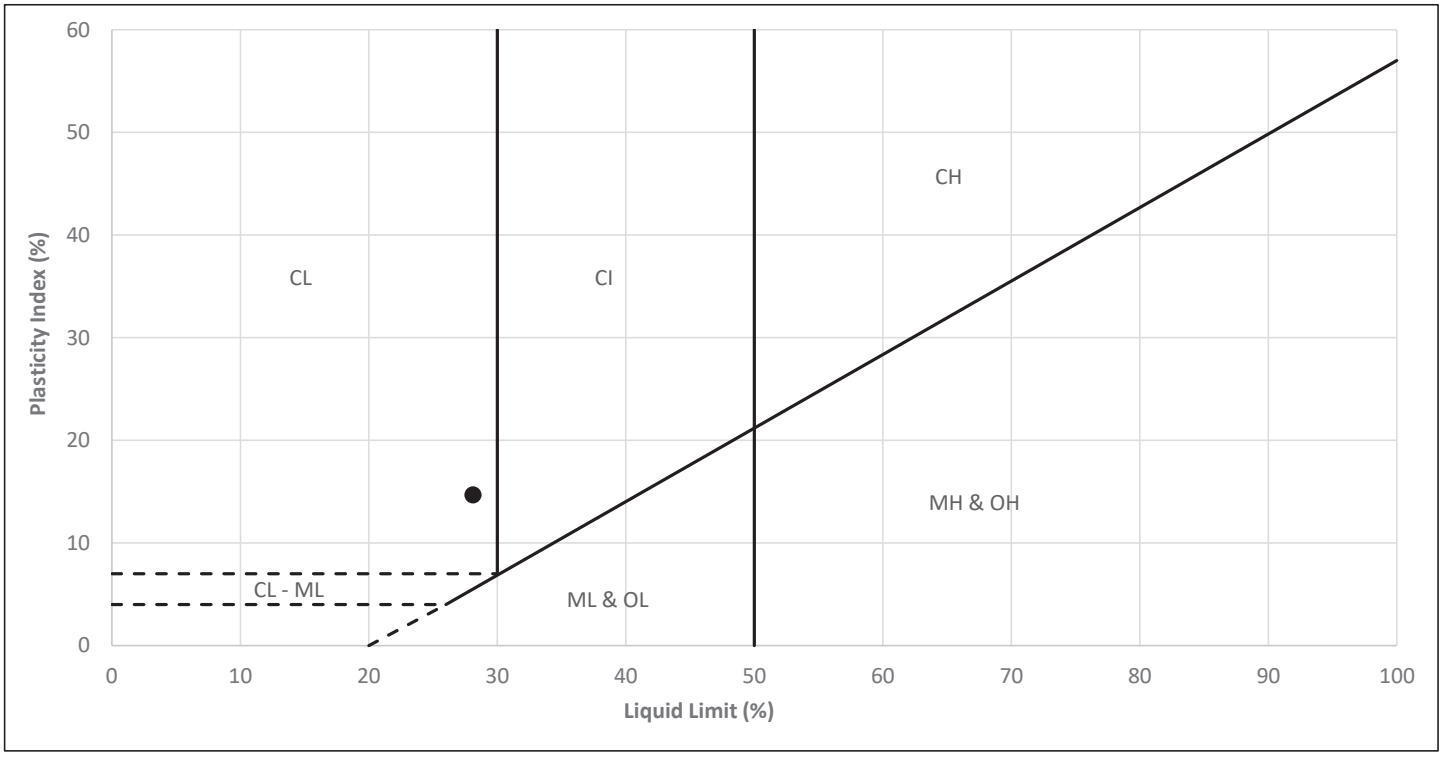
Project:	Cridland Dam Geo & Hydro Assess	**Sample #:**	3SPT5
Project No.:	1770-037-00	**Source:**	25BH003
Owner:	MD of Pincher Creek	**Sample Depth:**	8.1 m
File No.:	AL - 05	**Test Date:**	12-Jun-25

Tested in accordance with ASTM D4318 (Liquid Limit, Plastic Limit, and Plasticity of Soils). Additional test information available upon request.

Sample Description: Inorganic clays of low plasticity, gravelly clays, sandy clays, silty clays, lean clays

Liquid Limit (LL)	28.1
Plastic Limit (PL)	13.4
Plasticity Index (PI)	14.7

Soil Plasticity	Low
Soil Classification	CL



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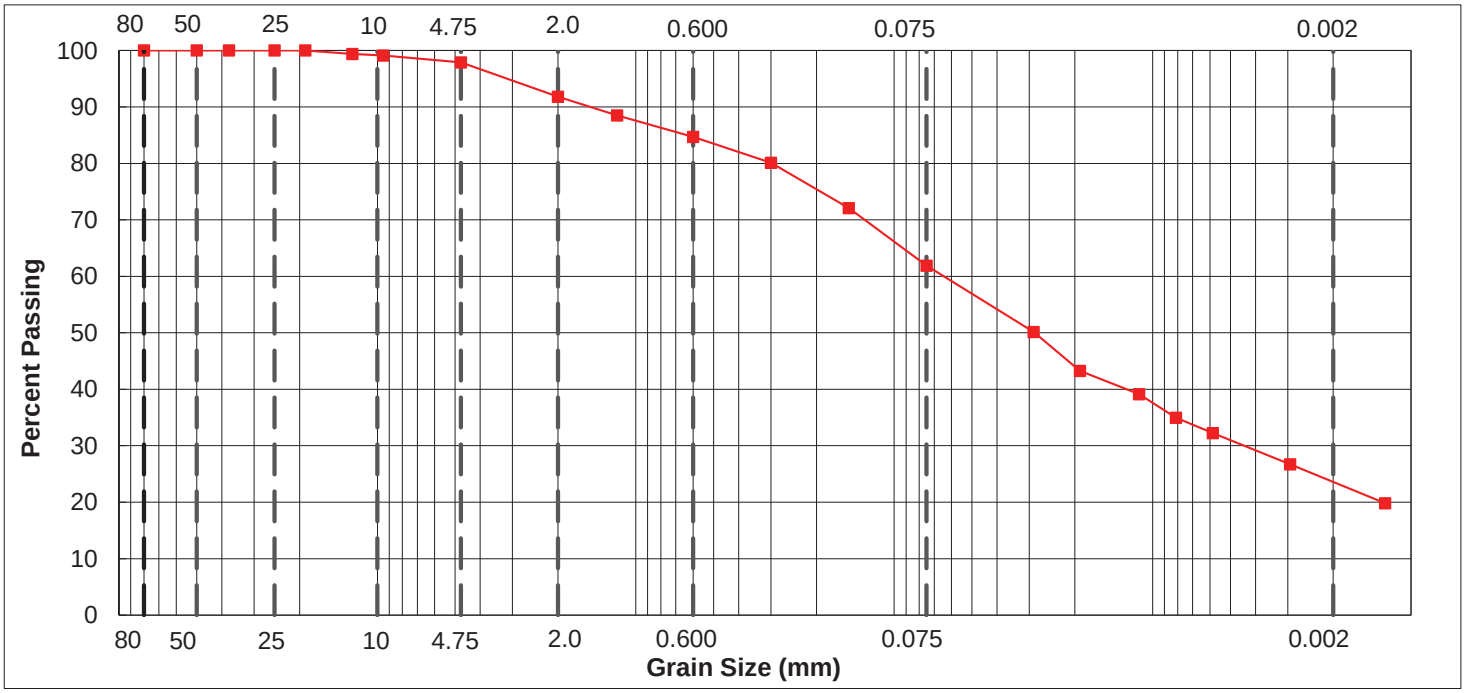
GRAIN SIZE ANALYSIS REPORT

Project:	Cridland Dam Geo & Hydro Assess	**Sample No.:**	1SPT1
Project No.:	1770-037-00	**Source:**	25BH001
Owner:	MD of Pincher Creek	**Sample Depth:**	1.5 m
File No.:	GSA - 1SPT1	**Date:**	23-Jun-25

Tested in accordance with AASHTO T 88 (Particle Size Analysis of Soils)

Grain Size (mm)	Percent Finer	Grain Size (mm)	Percent Finer
		0.600	84.7
80.0	100.0	0.300	80.1
50.0	100.0	0.150	72.1
37.5	100.0	0.075	61.9
25.0	100.0	0.0289	50.1
19.0	100.0	0.0191	43.2
12.5	99.4	0.0113	39.1
9.5	99.1	0.0081	35.0
4.75	97.9	0.0058	32.2
2.00	91.8	0.0029	26.7
1.180	88.5	0.0013	19.8

Material Description Proportion		
Type	**%**	**Particle Size Range**
Boulders	0.0	>300 mm
Cobbles	0.0	300 mm to 80 mm
Coarse Gravel	0.0	80 mm to 19 mm
Fine Gravel	2.1	19 mm to 4.75 mm
Coarse Sand	6.1	4.75 mm to 2.00 mm
Medium Sand	9.4	2.00 mm to 425 µm
Fine Sand	20.5	425 µm to 75 µm
Silt	38.3	75 µm to 2 µm
Clay	23.6	<2 µm



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Lethbridge, Alberta T1H 5J3
Tel: (403)892-6036

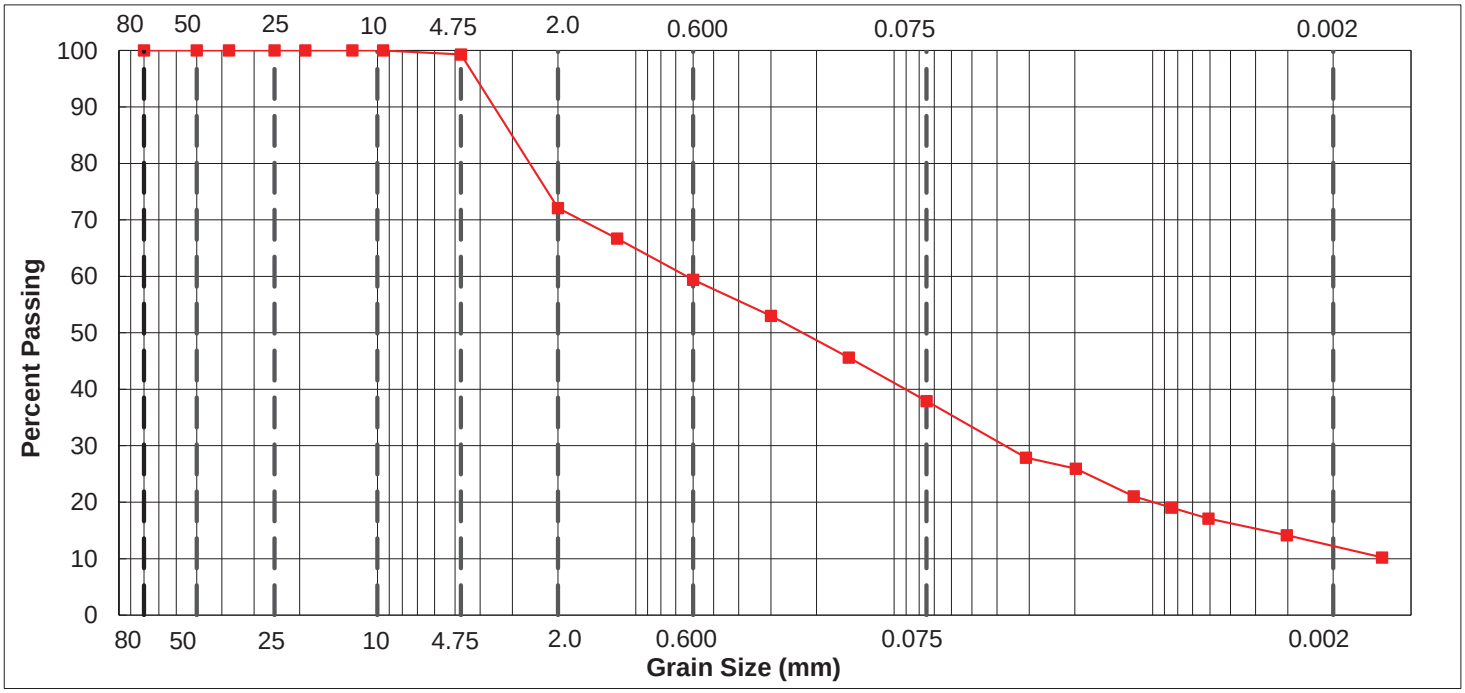
GRAIN SIZE ANALYSIS REPORT

Project:	Cridland Dam Geo & Hydro Assess	**Sample No.:**	1SPT4
Project No.:	1770-037-00	**Source:**	25BH001
Owner:	MD of Pincher Creek	**Sample Depth:**	3.0 m
File No.:	GSA - 1SPT4	**Date:**	23-Jun-25

Tested in accordance with AASHTO T 88 (Particle Size Analysis of Soils)

Grain Size (mm)	Percent Finer	Grain Size (mm)	Percent Finer
		0.600	59.4
80.0	100.0	0.300	53.0
50.0	100.0	0.150	45.6
37.5	100.0	0.075	37.9
25.0	100.0	0.0309	27.9
19.0	100.0	0.0198	25.9
12.5	100.0	0.0118	21.0
9.5	100.0	0.0085	19.1
4.75	99.3	0.0061	17.1
2.00	72.1	0.0030	14.2
1.180	66.7	0.0013	10.2

Material Description Proportion		
Type	**%**	**Particle Size Range**
Boulders	0.0	>300 mm
Cobbles	0.0	300 mm to 80 mm
Coarse Gravel	0.0	80 mm to 19 mm
Fine Gravel	0.7	19 mm to 4.75 mm
Coarse Sand	27.2	4.75 mm to 2.00 mm
Medium Sand	15.9	2.00 mm to 425 µm
Fine Sand	18.3	425 µm to 75 µm
Silt	25.7	75 µm to 2 µm
Clay	12.2	<2 µm



Reviewed By: _____
Kasz Leavitt, P.Tech. (Eng.)

Reporting of these results constitutes a testing service only. Engineering interpretation or evaluation of the results is provided only on written request.

MPE a division of Englobe
1, 3320 18 Avenue North
Lethbridge, Alberta T1H 5J3
Tel: (403)892-6036

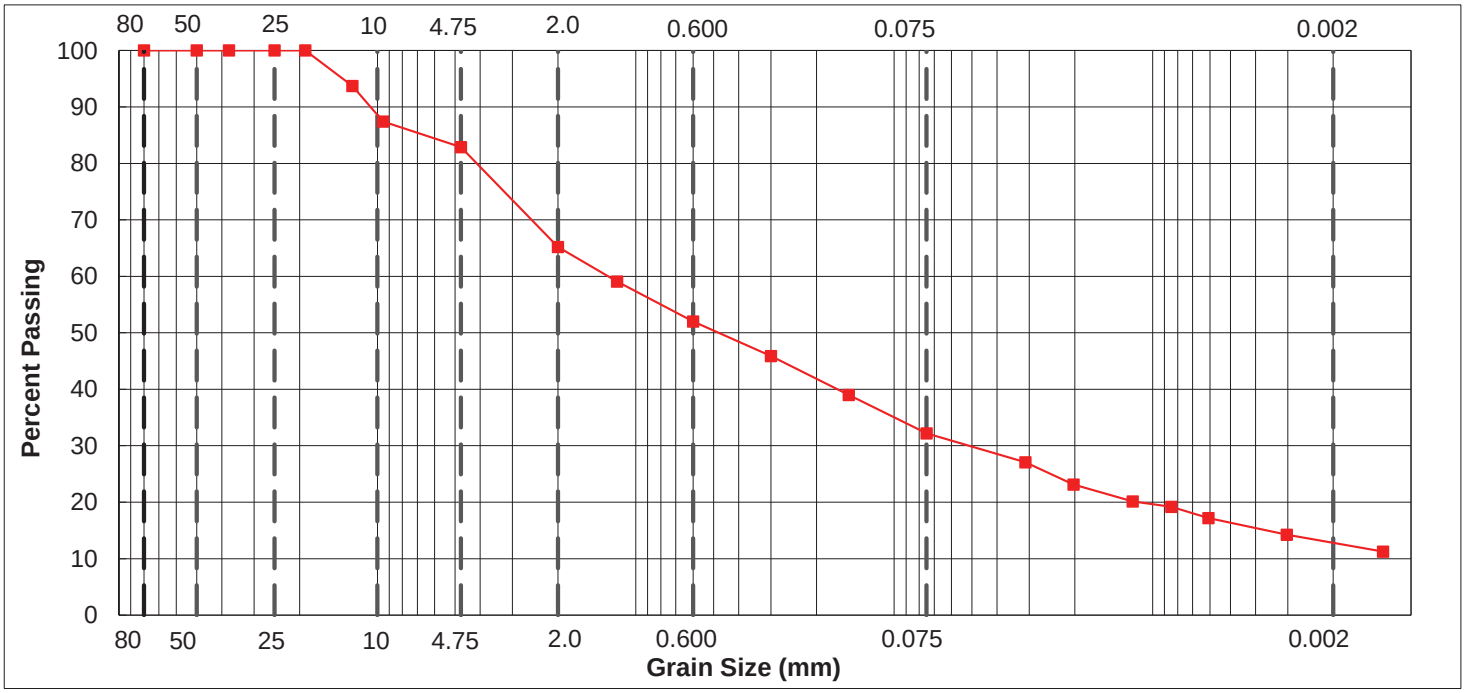
GRAIN SIZE ANALYSIS REPORT

Project:	Cridland Dam Geo & Hydro Assess	**Sample No.:**	2SPT2
Project No.:	1770-037-00	**Source:**	25BH002
Owner:	MD of Pincher Creek	**Sample Depth:**	6.1 m
File No.:	GSA - 2SPT2	**Date:**	23-Jun-25

Tested in accordance with AASHTO T 88 (Particle Size Analysis of Soils)

Grain Size (mm)	Percent Finer	Grain Size (mm)	Percent Finer
		0.600	52.0
80.0	100.0	0.300	45.9
50.0	100.0	0.150	39.0
37.5	100.0	0.075	32.2
25.0	100.0	0.0310	27.1
19.0	100.0	0.0202	23.1
12.5	93.7	0.0119	20.2
9.5	87.4	0.0085	19.2
4.75	82.9	0.0061	17.2
2.00	65.2	0.0030	14.2
1.180	59.1	0.0013	11.3

Material Description Proportion		
Type	**%**	**Particle Size Range**
Boulders	0.0	>300 mm
Cobbles	0.0	300 mm to 80 mm
Coarse Gravel	0.0	80 mm to 19 mm
Fine Gravel	17.1	19 mm to 4.75 mm
Coarse Sand	17.7	4.75 mm to 2.00 mm
Medium Sand	16.2	2.00 mm to 425 µm
Fine Sand	16.8	425 µm to 75 µm
Silt	19.4	75 µm to 2 µm
Clay	12.8	<2 µm



CERTIFIED BY CCIL Canadian Council of Independent Laboratories For specific tests as listed on www.ccil.com

Reviewed By: _____
Kasz Leavitt, P.Tech. (Eng.)

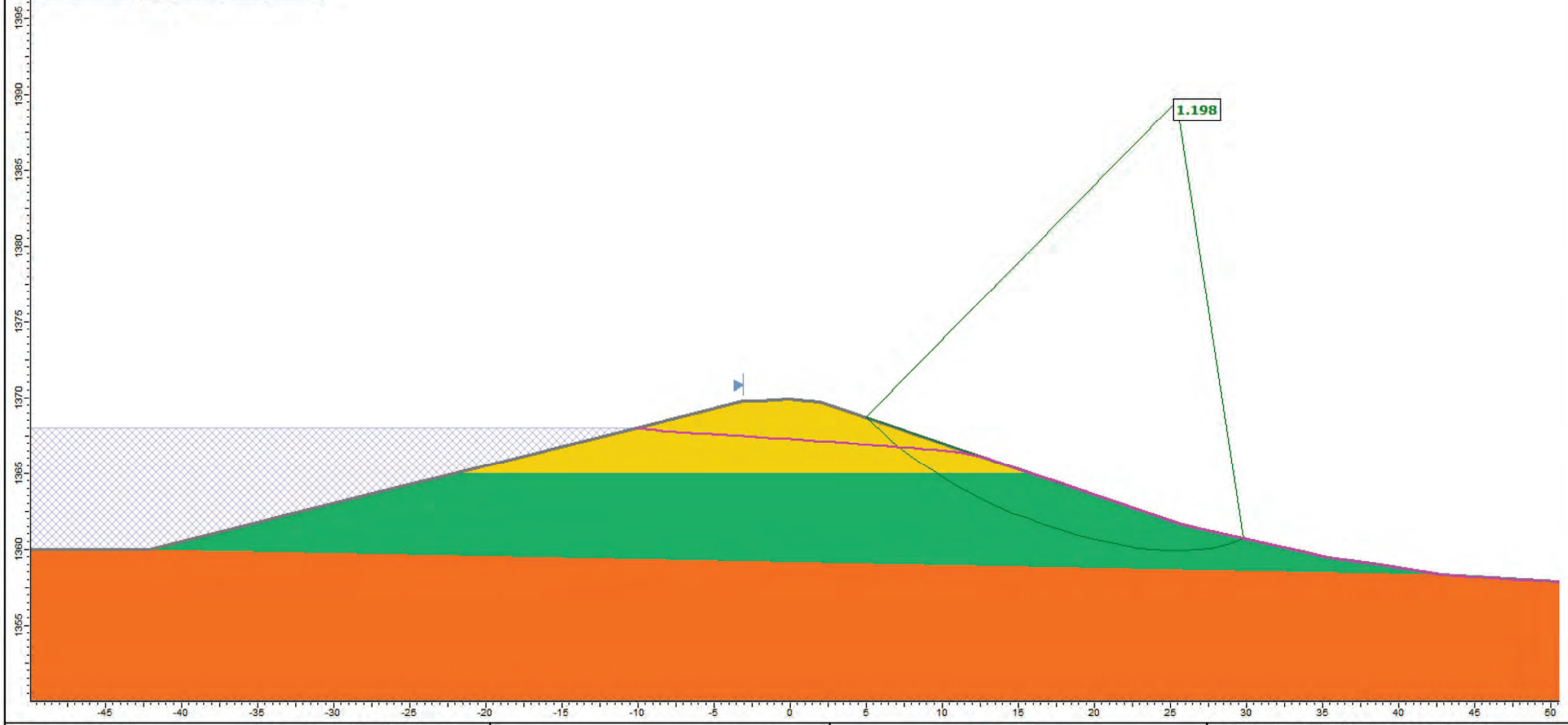
Reporting of these results constitutes a testing service only. Engineering interpretation or evaluation of the results is provided only on written request.

APPENDIX E:

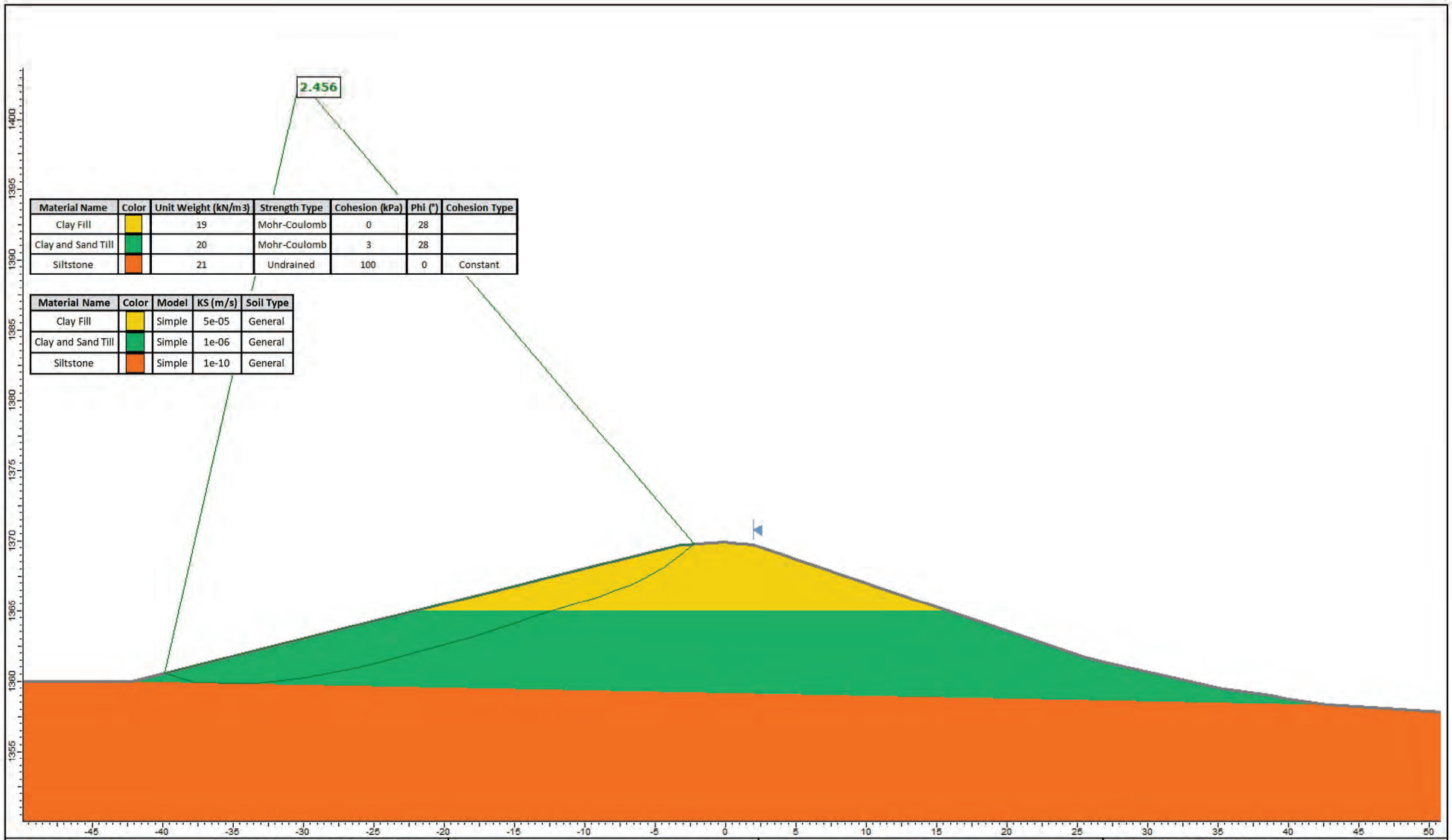
ANALYSIS FIGURES

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Cohesion Type
Clay Fill		19	Mohr-Coulomb	0	28	
Clay and Sand Till		20	Mohr-Coulomb	3	28	
Siltstone		21	Undrained	100	0	Constant

Material Name	Color	Model	KS (m/s)	Soil Type
Clay Fill		Simple	5e-05	General
Clay and Sand Till		Simple	1e-06	General
Siltstone		Simple	1e-10	General



ANALYSIS TYPE:	LONG TERM STEADY STATE	CLIENT:	MUNICIPAL DISTRICT OF PINCHER CREEK NO.9	MPE a division of Englobe		CRIDLAND DAM STABILITY ASSESSMENT GEOTECHNICAL INVESTIGATION REPORT ANALYSIS FIGURES - SECTION A-A	
UPSTREAM WATER LEVEL:	FSL (1368.0 m)						
ANALYSIS DIRECTION:	DOWNSTREAM	ANALYSIS BY:	CHANG LIU				
SEISMIC LOAD:	0	REVIEWED BY:	TREVOR CURTIS				
CONSTRUCTION STAGE:	FSL CONDITION	VERSION:	SLIDEINTERPRITE 9.037	SCALE: NTS	DATE: JULY 2025	JOB: 1770-037	FIGURE: E-1.1



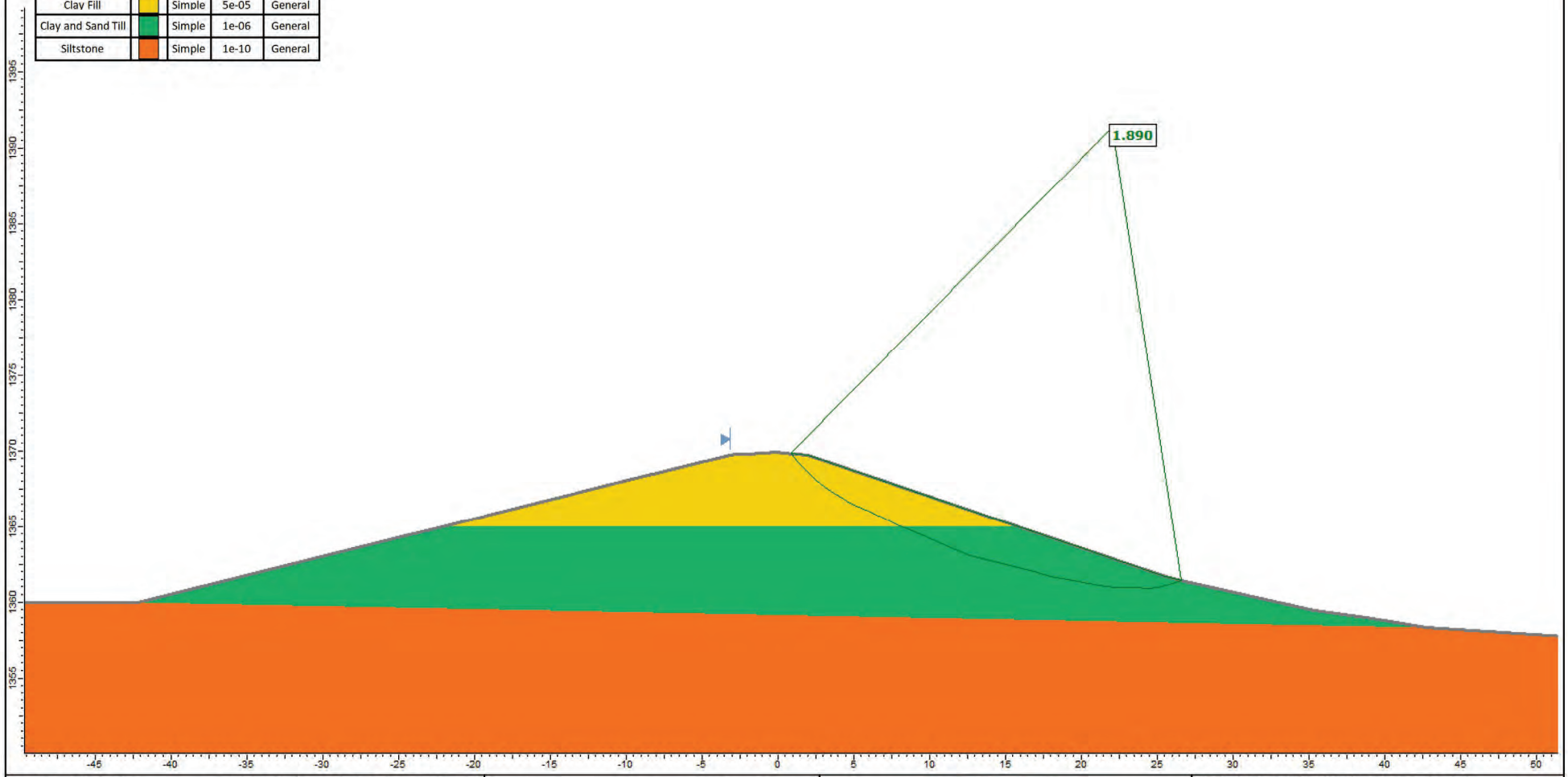
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Cohesion Type
Clay Fill		19	Mohr-Coulomb	0	28	
Clay and Sand Till		20	Mohr-Coulomb	3	28	
Siltstone		21	Undrained	100	0	Constant

Material Name	Color	Model	KS (m/s)	Soil Type
Clay Fill		Simple	5e-05	General
Clay and Sand Till		Simple	1e-06	General
Siltstone		Simple	1e-10	General

ANALYSIS TYPE:	END OF CONSTRUCTION UPSTREAM	CLIENT:	MUNICIPAL DISTRICT OF PINCHER CREEK NO.9	MPE a division of Englobe		CRIDLAND DAM STABILITY ASSESSMENT GEOTECHNICAL INVESTIGATION REPORT ANALYSIS FIGURES - SECTION A-A	
UPSTREAM WATER LEVEL:	N/A						
ANALYSIS DIRECTION:	UPSTREAM	ANALYSIS BY:	CHANG LIU				
SEISMIC LOAD:	0	REVIEWED BY:	TREVOR CURTIS				
CONSTRUCTION STAGE:	BEFORE RESERVOIR FILLING	VERSION:	SLIDEINTERPRITE 9.037	SCALE: NTS	DATE: JULY 2025	JOB: 1770-037	FIGURE: E-1.2

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Cohesion Type
Clay Fill		19	Mohr-Coulomb	0	28	
Clay and Sand Till		20	Mohr-Coulomb	3	28	
Siltstone		21	Undrained	100	0	Constant

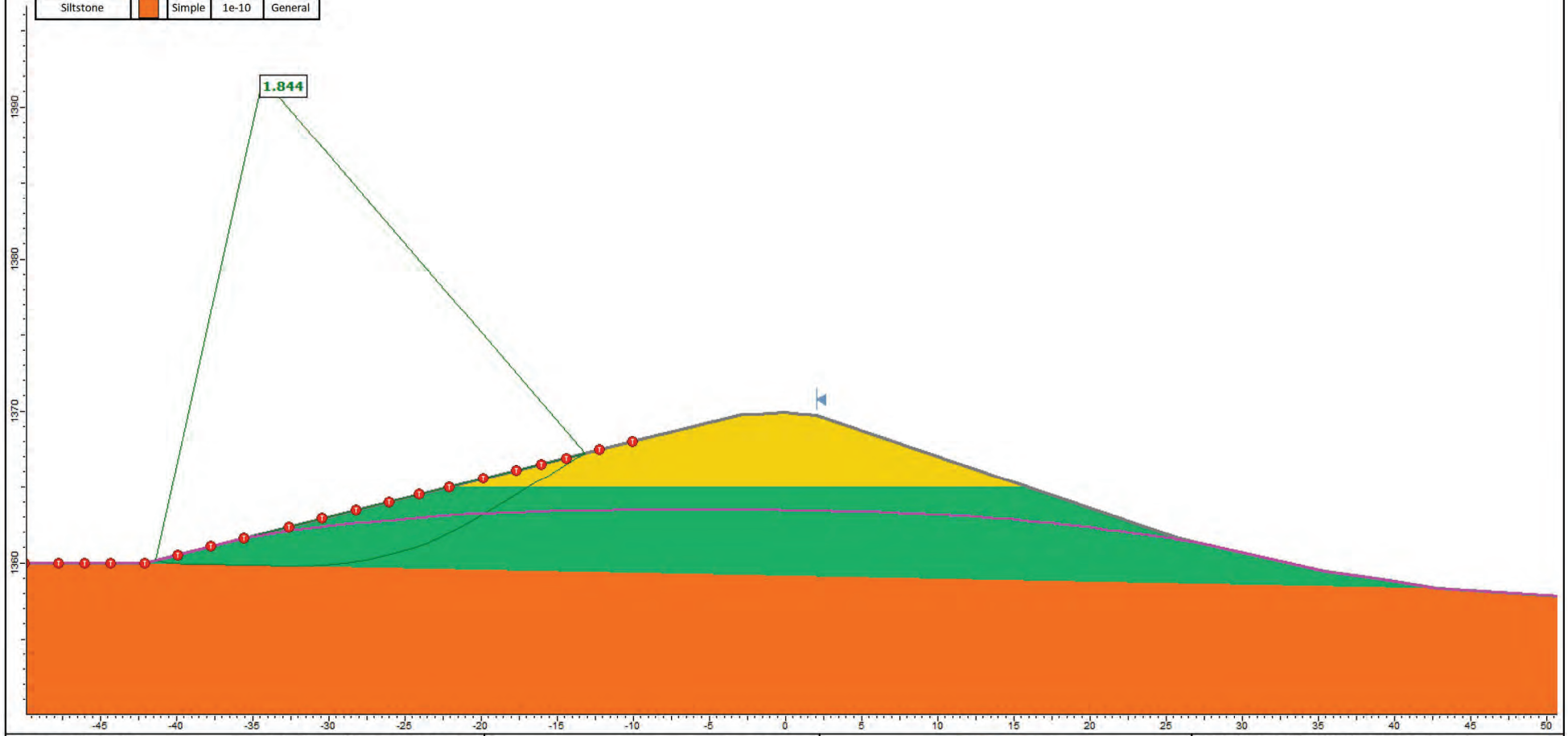
Material Name	Color	Model	KS (m/s)	Soil Type
Clay Fill		Simple	5e-05	General
Clay and Sand Till		Simple	1e-06	General
Siltstone		Simple	1e-10	General



ANALYSIS TYPE:	END OF CONSTRUCTION DOWNSTREAM	CLIENT:	MUNICIPAL DISTRICT OF PINCHER CREEK NO.9	MPE a division of Englobe		CRIDLAND DAM STABILITY ASSESSMENT GEOTECHNICAL INVESTIGATION REPORT ANALYSIS FIGURES - SECTION A-A	
UPSTREAM WATER LEVEL:	N/A						
ANALYSIS DIRECTION:	DOWNSTREAM	ANALYSIS BY:	CHANG LIU				
SEISMIC LOAD:	0	REVIEWED BY:	TREVOR CURTIS				
CONSTRUCTION STAGE:	BEFORE RESERVOIR FILLING	VERSION:	SLIDEINTERPRITE 9.037	SCALE:	NTS	DATE: JULY 2025	JOB: 1770-037 FIGURE: E-1.3

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Cohesion Type
Clay Fill		19	Mohr-Coulomb	0	28	
Clay and Sand Till		20	Mohr-Coulomb	3	28	
Siltstone		21	Undrained	100	0	Constant

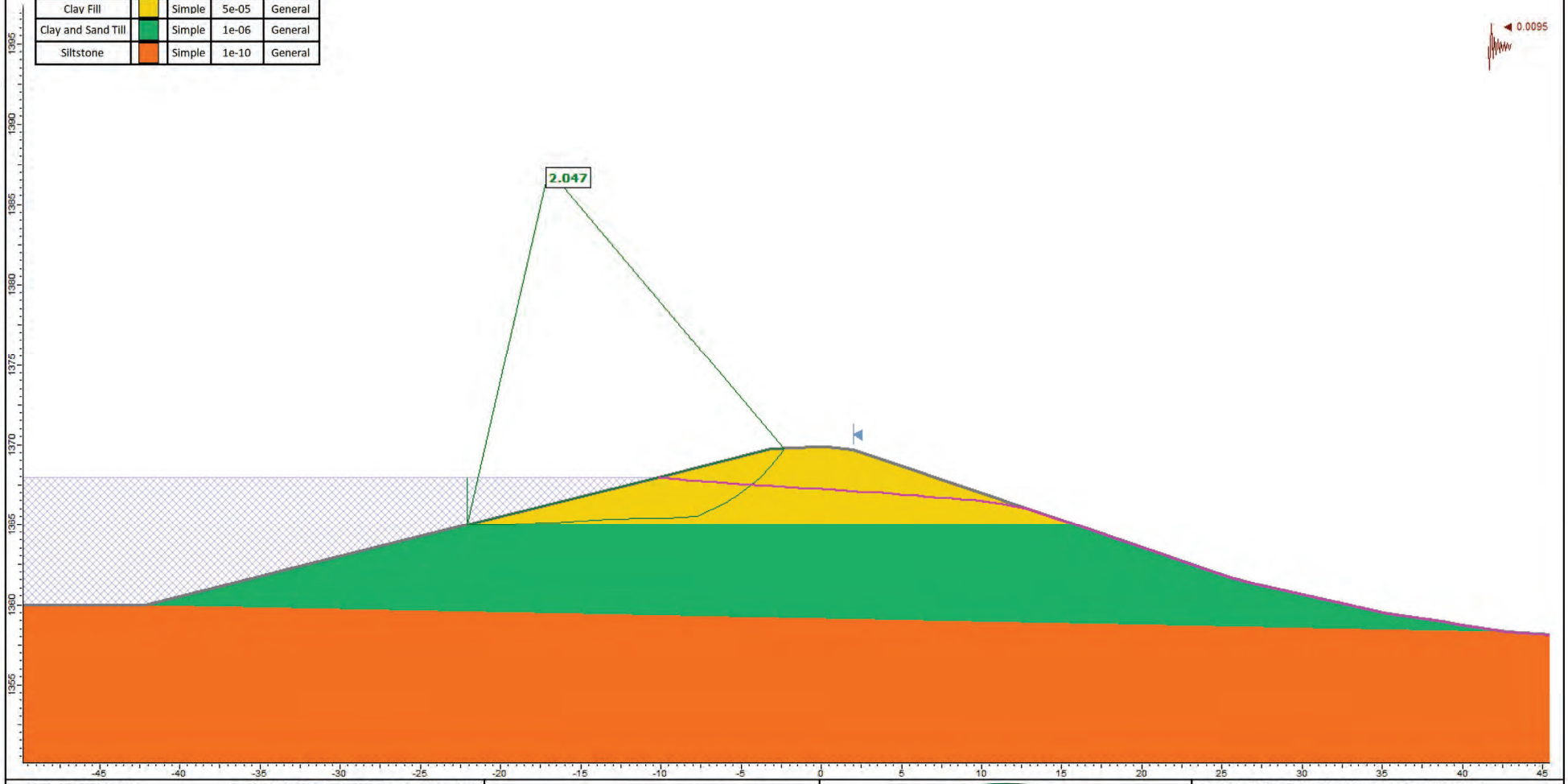
Material Name	Color	Model	KS (m/s)	Soil Type
Clay Fill		Simple	5e-05	General
Clay and Sand Till		Simple	1e-06	General
Siltstone		Simple	1e-10	General



ANALYSIS TYPE:	RAPID DRAWDOWN UPSTREAM	CLIENT:	MUNICIPAL DISTRICT OF PINCHER CREEK NO.9	MPE a division of Englobe		CRIDLAND DAM STABILITY ASSESSMENT GEOTECHNICAL INVESTIGATION REPORT ANALYSIS FIGURES - SECTION A-A	
UPSTREAM WATER LEVEL:	FSL (1368.0 m) TO EMPTY						
ANALYSIS DIRECTION:	UPSTREAM	ANALYSIS BY:	CHANG LIU				
SEISMIC LOAD:	0	REVIEWED BY:	TREVOR CURTIS				
CONSTRUCTION STAGE:	FSL CONDITION	VERSION:	SLIDEINTERPRITE 9.037	SCALE: NTS	DATE: JULY 2025	JOB: 1770-037	FIGURE: E-1.4

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Cohesion Type
Clay Fill		19	Mohr-Coulomb	0	28	
Clay and Sand Till		20	Mohr-Coulomb	3	28	
Siltstone		21	Undrained	100	0	Constant

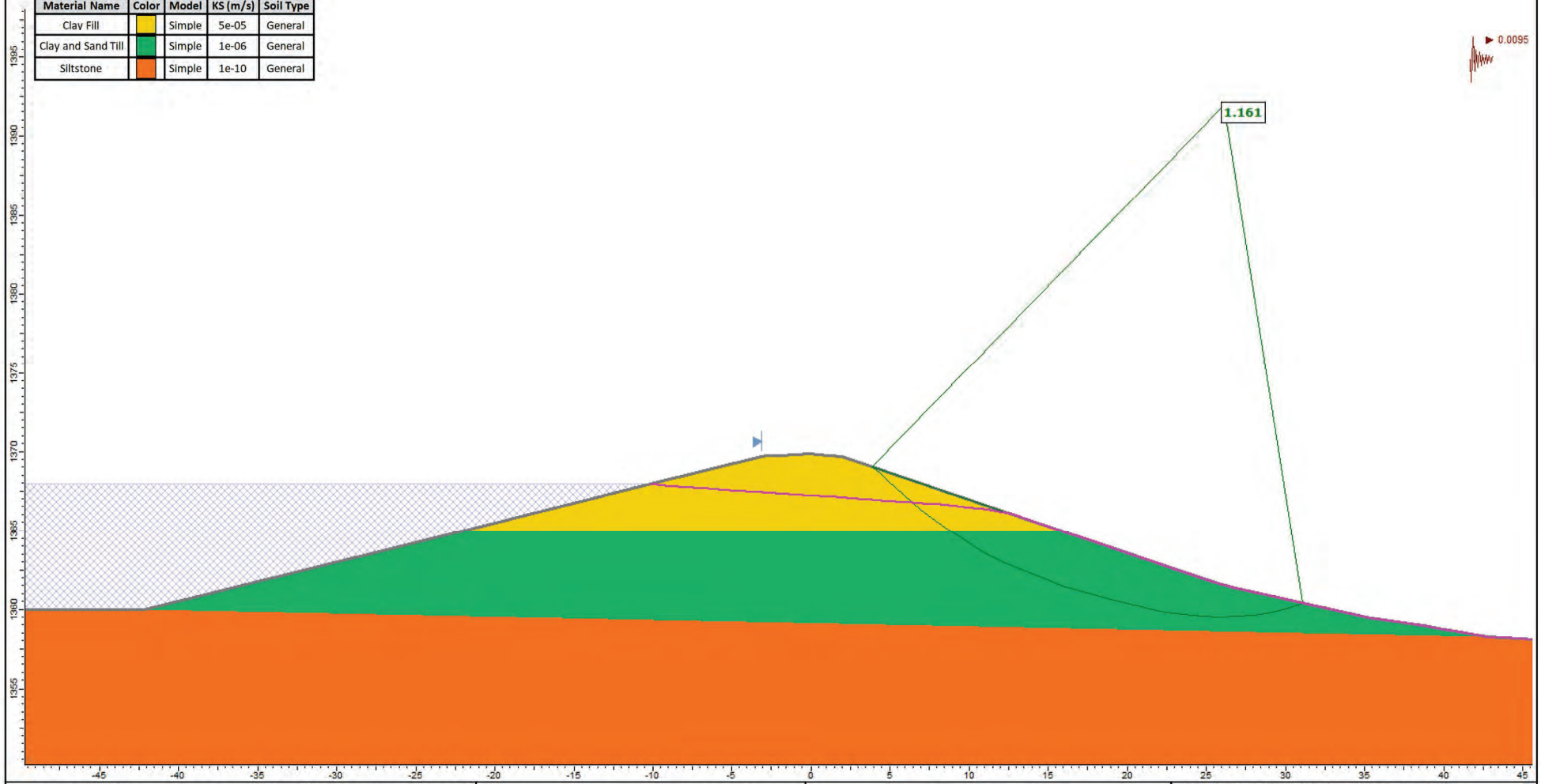
Material Name	Color	Model	KS (m/s)	Soil Type
Clay Fill		Simple	5e-05	General
Clay and Sand Till		Simple	1e-06	General
Siltstone		Simple	1e-10	General



ANALYSIS TYPE:	PSEUDO-STATIC UPSTREAM (1:100)	CLIENT:	MUNICIPAL DISTRICT OF PINCHER CREEK NO.9	MPE a division of Englobe			CRIDLAND DAM STABILITY ASSESSMENT GEOTECHNICAL INVESTIGATION REPORT ANALYSIS FIGURES - SECTION A-A
UPSTREAM WATER LEVEL:	FSL (1368.0 m)						
ANALYSIS DIRECTION:	UPSTREAM	ANALYSIS BY:	CHANG LIU				
SEISMIC LOAD:	0.0095g	REVIEWED BY:	TREVOR CURTIS				
CONSTRUCTION STAGE:	FSL CONDITION	VERSION:	SLIDEINTERPRITE 9.037	SCALE: NTS	DATE: JULY 2025	JOB: 1770-037	FIGURE: E-1.5

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Cohesion Type
Clay Fill		19	Mohr-Coulomb	0	28	
Clay and Sand Till		20	Mohr-Coulomb	3	28	
Siltstone		21	Undrained	100	0	Constant

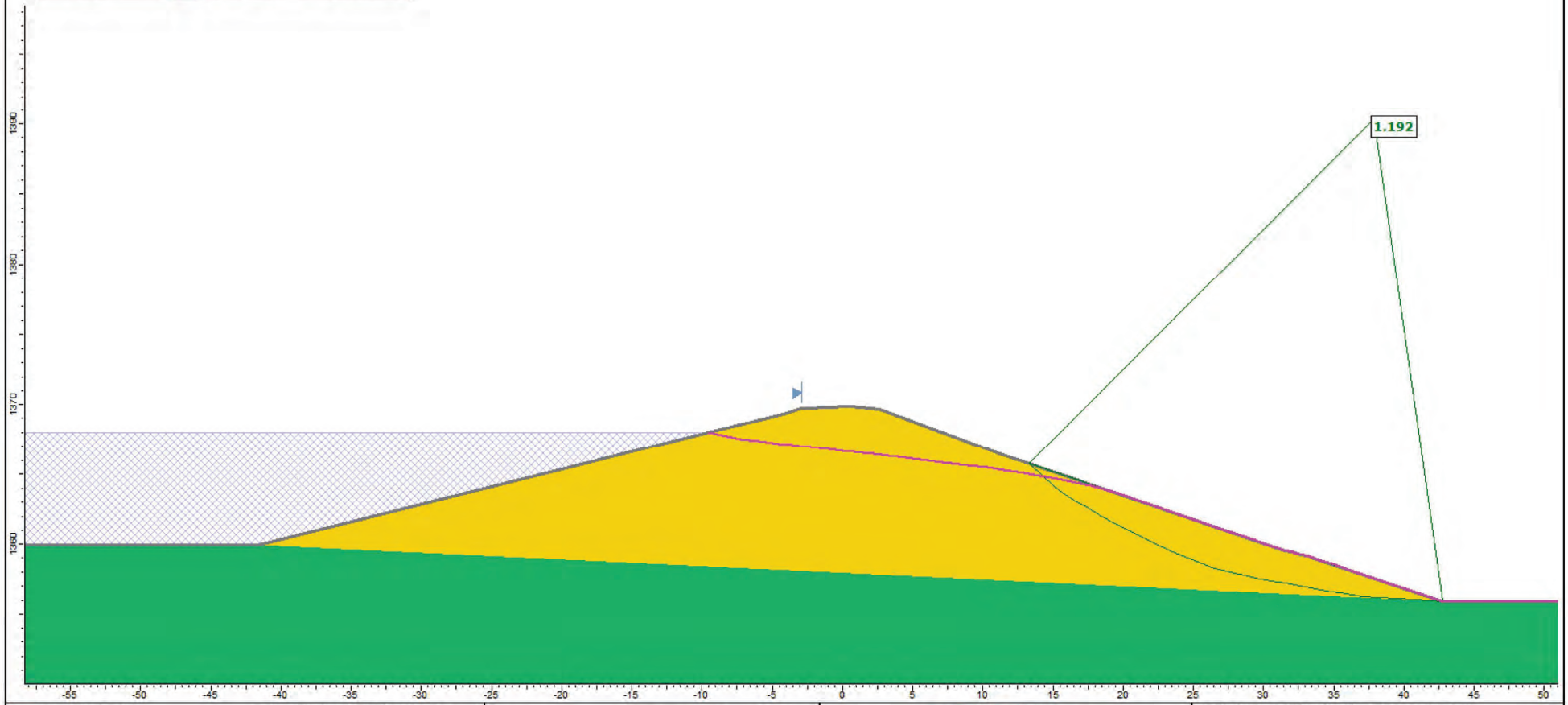
Material Name	Color	Model	KS (m/s)	Soil Type
Clay Fill		Simple	5e-05	General
Clay and Sand Till		Simple	1e-06	General
Siltstone		Simple	1e-10	General



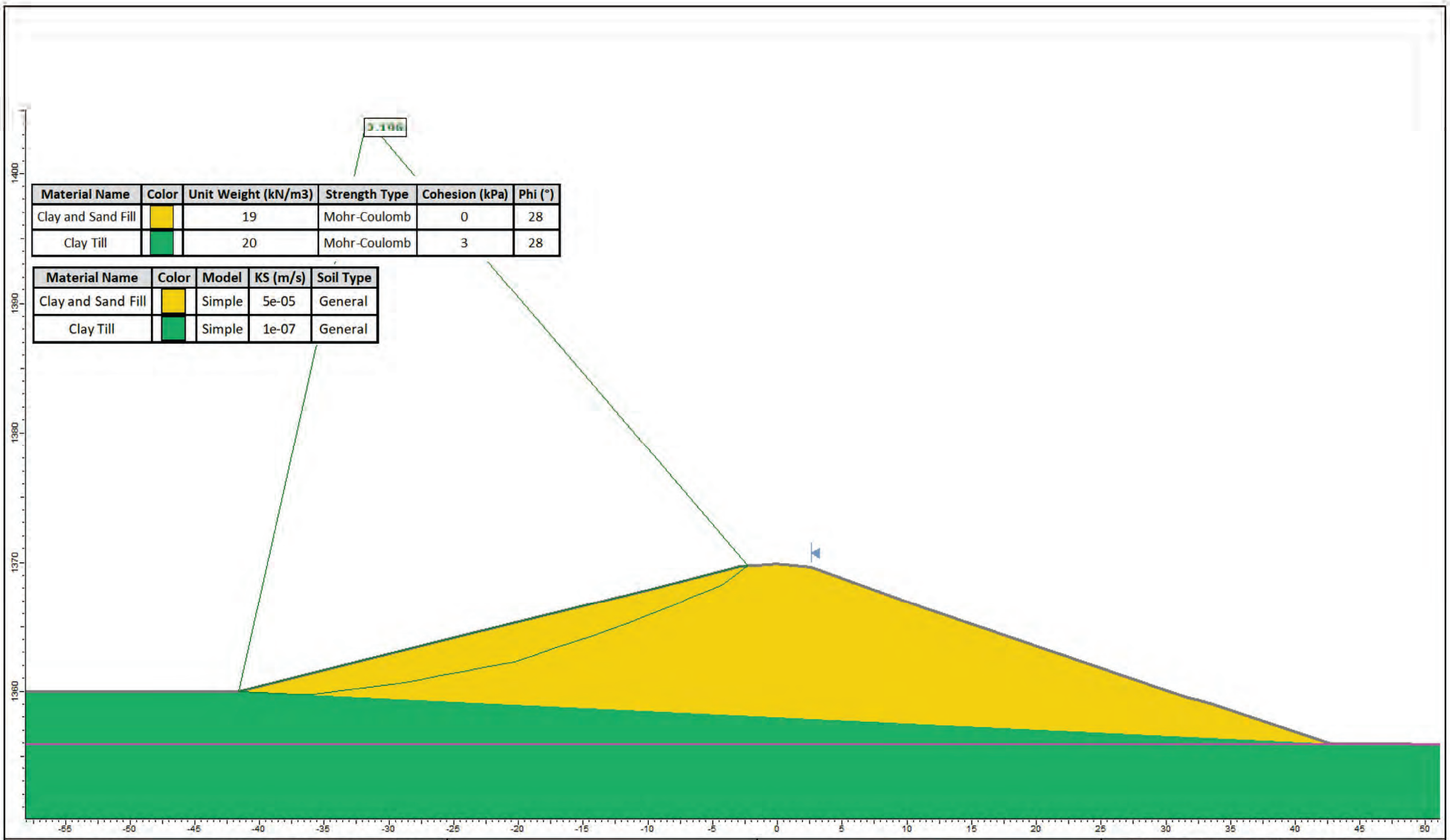
ANALYSIS TYPE:	PSEUDO-STATIC DOWNSTREAM (1:100)	CLIENT:	MUNICIPAL DISTRICT OF PINCHER CREEK NO.9	MPE a division of Englobe		CRIDLAND DAM STABILITY ASSESSMENT GEOTECHNICAL INVESTIGATION REPORT ANALYSIS FIGURES - SECTION A-A	
UPSTREAM WATER LEVEL:	FSL (1368.0 m)						
ANALYSIS DIRECTION:	DOWNSTREAM	ANALYSIS BY:	CHANG LIU				
SEISMIC LOAD:	0.0095g	REVIEWED BY:	TREVOR CURTIS				
CONSTRUCTION STAGE:	FSL CONDITION	VERSION:	SLIDEINTERPRITE 9.037	SCALE: NTS	DATE: JULY 2025	JOB: 1770-037	FIGURE: E-1.6

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)
Clay and Sand Fill		19	Mohr-Coulomb	0	28
Clay Till		20	Mohr-Coulomb	3	28

Material Name	Color	Model	KS (m/s)	Soil Type
Clay and Sand Fill		Simple	5e-05	General
Clay Till		Simple	1e-07	General



ANALYSIS TYPE:	LONG TERM STEADY STATE	CLIENT:	MUNICIPAL DISTRICT OF PINCHER CREEK NO.9	MPE a division of Englobe		CRIDLAND DAM STABILITY ASSESSMENT GEOTECHNICAL INVESTIGATION REPORT ANALYSIS FIGURES - SECTION B-B	
UPSTREAM WATER LEVEL:	FSL (1368.0 m)						
ANALYSIS DIRECTION:	DOWNSTREAM	ANALYSIS BY:	CHANG LIU				
SEISMIC LOAD:	0	REVIEWED BY:	TREVOR CURTIS				
CONSTRUCTION STAGE:	FSL CONDITION	VERSION:	SLIDEINTERPRITE 9.037	SCALE: NTS	DATE: JULY 2025	JOB: 1770-037	FIGURE: E-2.1



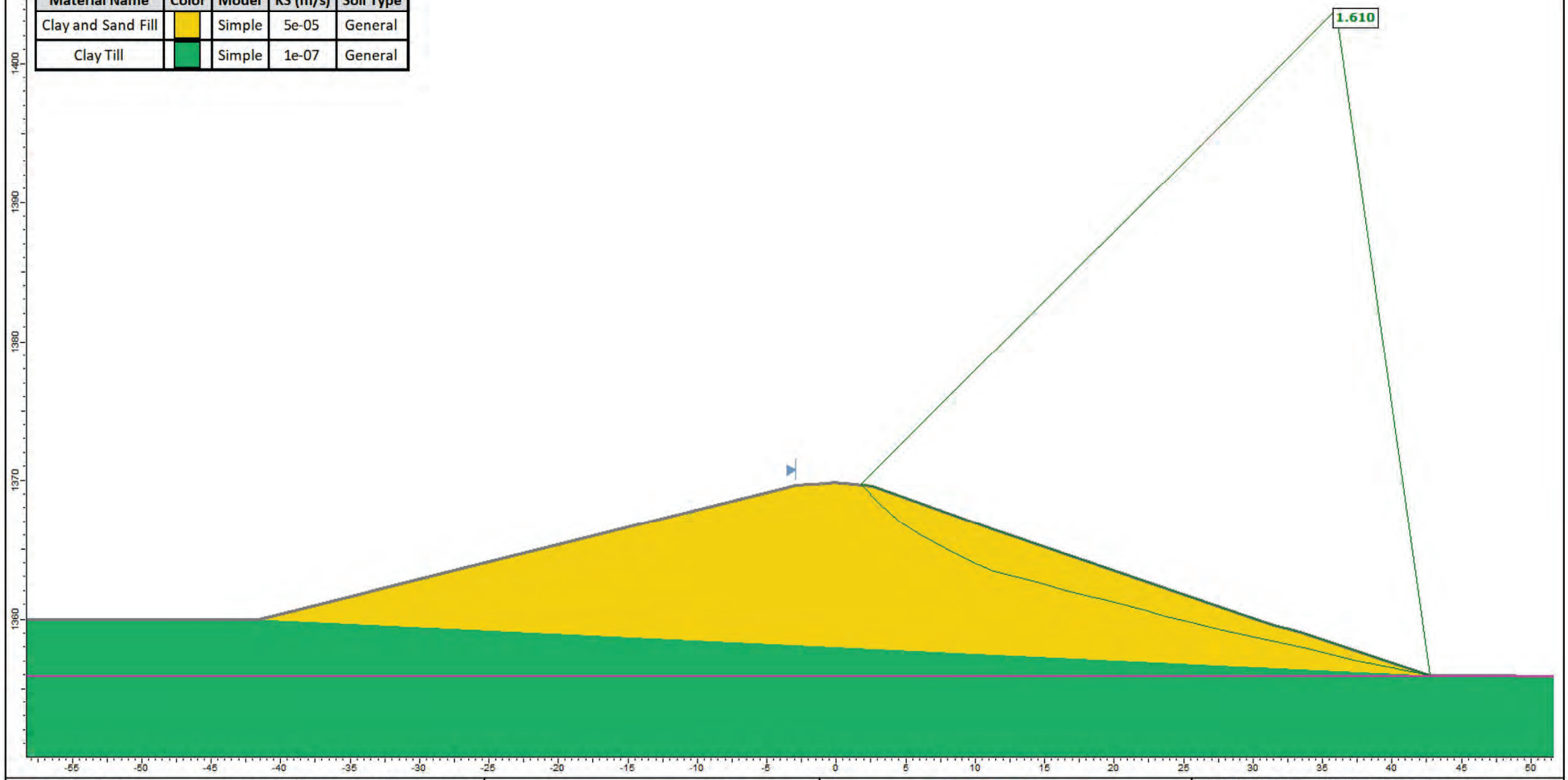
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)
Clay and Sand Fill		19	Mohr-Coulomb	0	28
Clay Till		20	Mohr-Coulomb	3	28

Material Name	Color	Model	KS (m/s)	Soil Type
Clay and Sand Fill		Simple	5e-05	General
Clay Till		Simple	1e-07	General

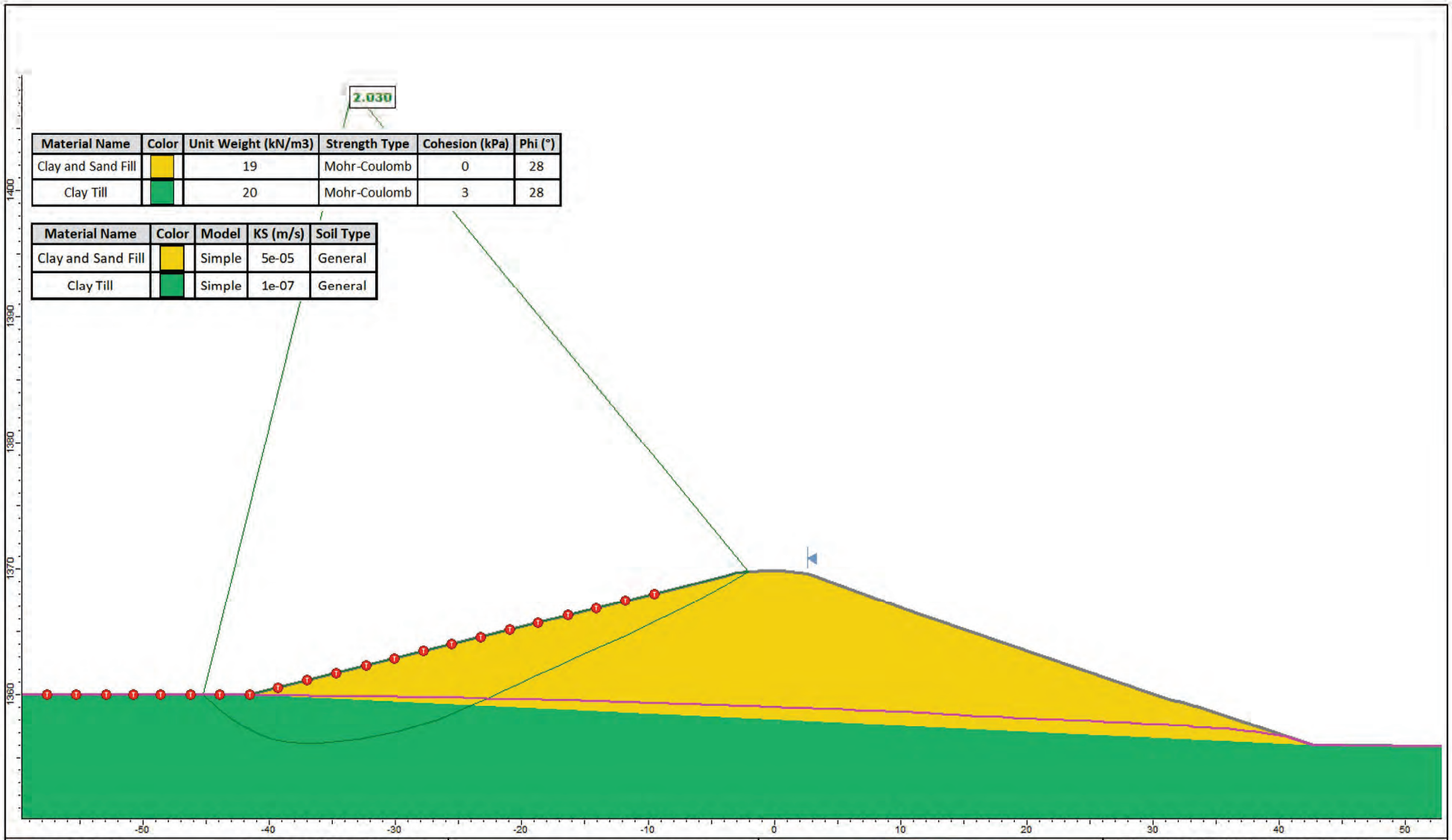
ANALYSIS TYPE:	END OF CONSTRUCTION UPSTREAM	CLIENT:	MUNICIPAL DISTRICT OF PINCHER CREEK NO.9	a division of Englobe		CRIDLAND DAM STABILITY ASSESSMENT GEOTECHNICAL INVESTIGATION REPORT ANALYSIS FIGURES - SECTION B-B	
UPSTREAM WATER LEVEL:	N/A						
ANALYSIS DIRECTION:	UPSTREAM	ANALYSIS BY:	CHANG LIU				
SEISMIC LOAD:	0	REVIEWED BY:	TREVOR CURTIS				
CONSTRUCTION STAGE:	BEFORE RESERVOIR FILLING	VERSION:	SLIDEINTERPRITE 9.037	SCALE: NTS	DATE: JULY 2025	JOB: 1770-037	FIGURE: E-2.2

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)
Clay and Sand Fill		19	Mohr-Coulomb	0	28
Clay Till		20	Mohr-Coulomb	3	28

Material Name	Color	Model	KS (m/s)	Soil Type
Clay and Sand Fill		Simple	5e-05	General
Clay Till		Simple	1e-07	General



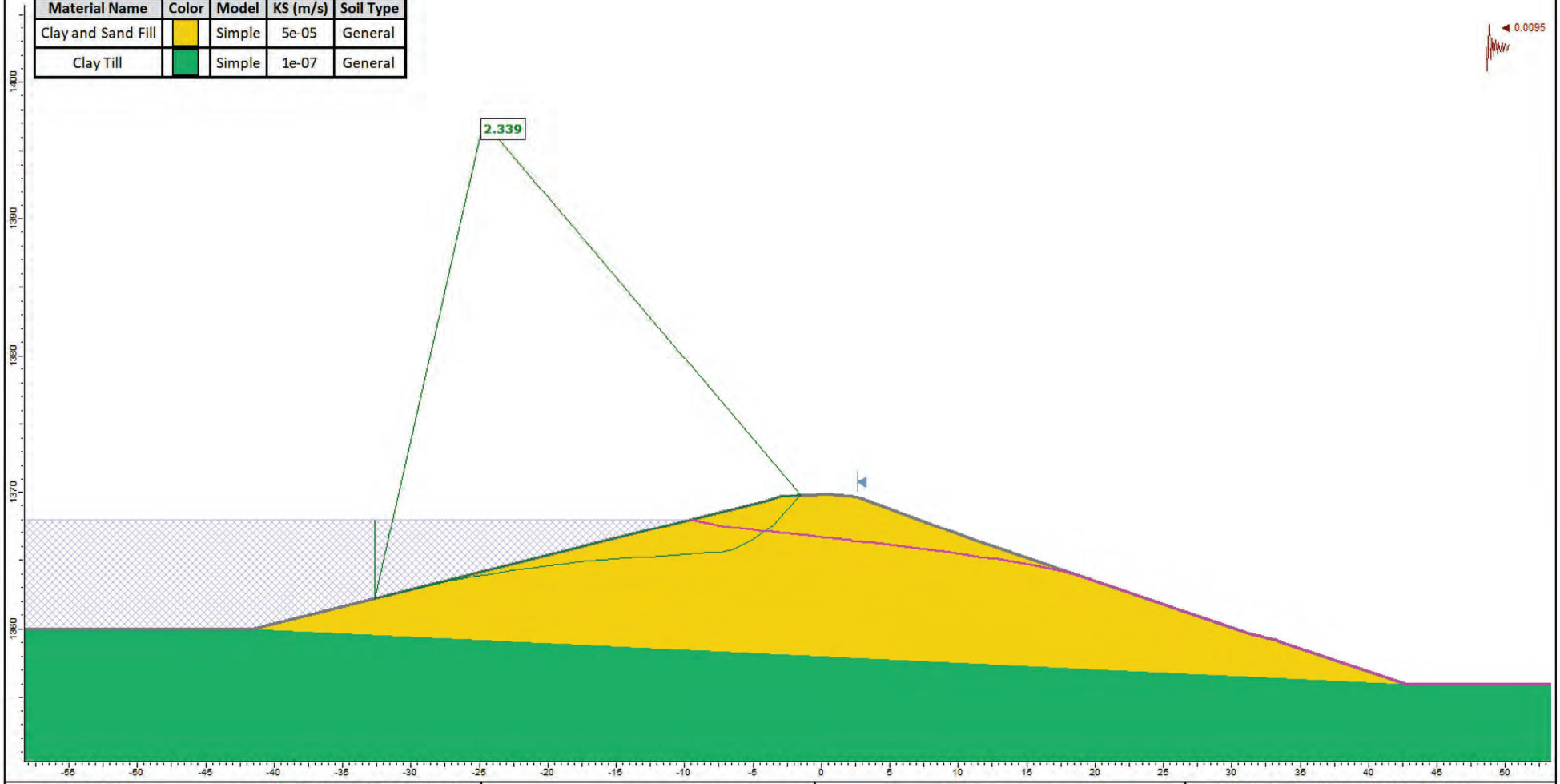
ANALYSIS TYPE:	END OF CONSTRUCTION DOWNSTREAM	CLIENT:	MUNICIPAL DISTRICT OF PINCHER CREEK NO.9	MPE a division of Englobe		CRIDLAND DAM STABILITY ASSESSMENT GEOTECHNICAL INVESTIGATION REPORT ANALYSIS FIGURES - SECTION B-B	
UPSTREAM WATER LEVEL:	N/A						
ANALYSIS DIRECTION:	DOWNSTREAM	ANALYSIS BY:	CHANG LIU				
SEISMIC LOAD:	0	REVIEWED BY:	TREVOR CURTIS				
CONSTRUCTION STAGE:	BEFORE RESERVOIR FILLING	VERSION:	SLIDEINTERPRITE 9.037	SCALE: NTS	DATE: JULY 2025	JOB: 1770-037	FIGURE: E-2.3



ANALYSIS TYPE:	RAPID DRAWDOWN UPSTREAM	CLIENT:	MUNICIPAL DISTRICT OF PINCHER CREEK NO.9	MPE a division of Englobe		CRIDLAND DAM STABILITY ASSESSMENT GEOTECHNICAL INVESTIGATION REPORT ANALYSIS FIGURES - SECTION B-B	
UPSTREAM WATER LEVEL:	FSL (1368.0 m) TO EMPTY						
ANALYSIS DIRECTION:	UPSTREAM	ANALYSIS BY:	CHANG LIU				
SEISMIC LOAD:	0	REVIEWED BY:	TREVOR CURTIS				
CONSTRUCTION STAGE:	FSL CONDITION	VERSION:	SLIDEINTERPRITE 9.037	SCALE: NTS	DATE: JULY 2025	JOB: 1770-037	FIGURE: E-2.4

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)
Clay and Sand Fill		19	Mohr-Coulomb	0	28
Clay Till		20	Mohr-Coulomb	3	28

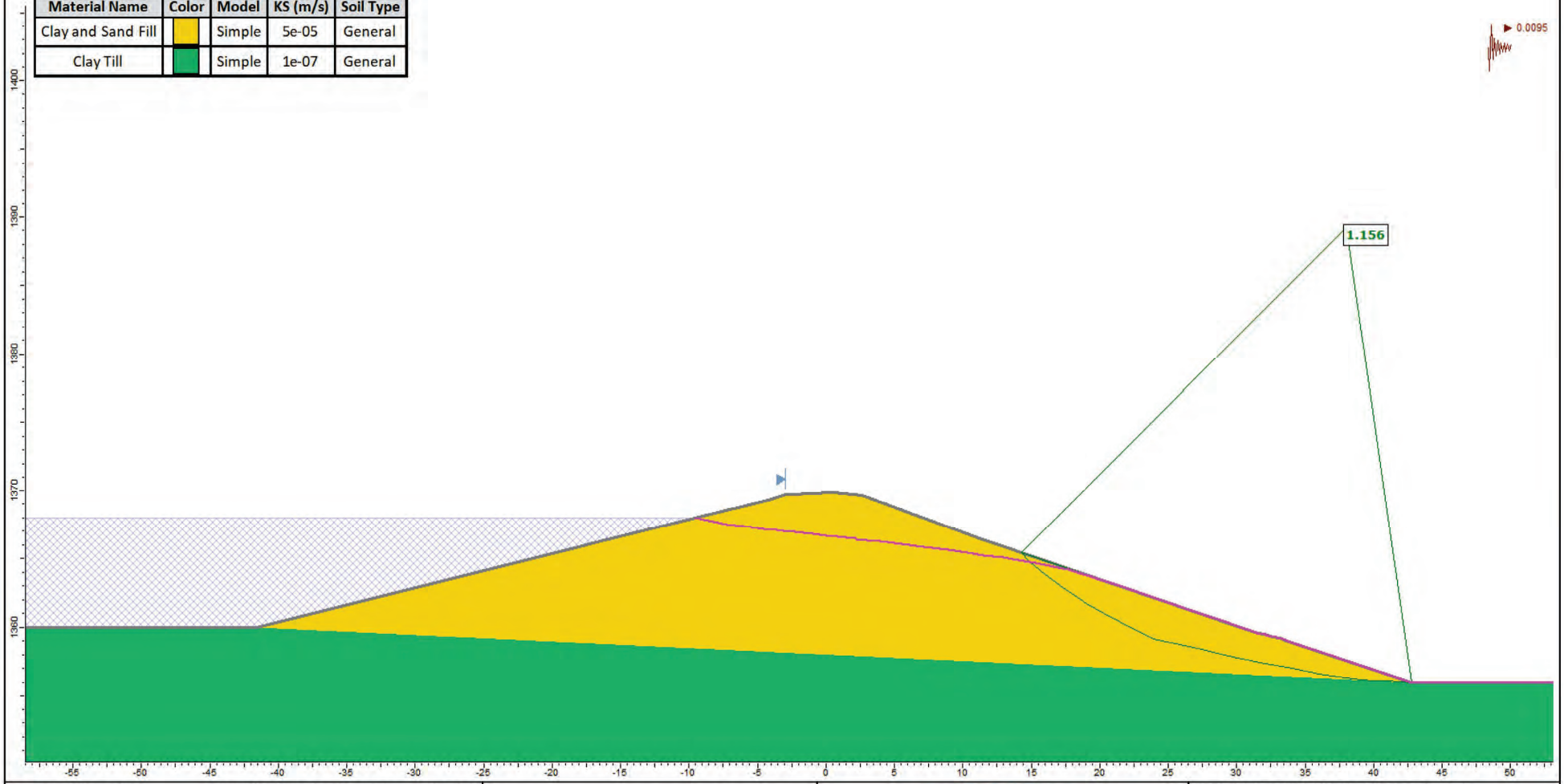
Material Name	Color	Model	KS (m/s)	Soil Type
Clay and Sand Fill		Simple	5e-05	General
Clay Till		Simple	1e-07	General



ANALYSIS TYPE:	PSEUDO-STATIC UPSTREAM (1:100)	CLIENT:	MUNICIPAL DISTRICT OF PINCHER CREEK NO.9	MPE a division of Englobe		CRIDLAND DAM STABILITY ASSESSMENT GEOTECHNICAL INVESTIGATION REPORT ANALYSIS FIGURES - SECTION B-B	
UPSTREAM WATER LEVEL:	FSL (1368.0 m)						
ANALYSIS DIRECTION:	UPSTREAM	ANALYSIS BY:	CHANG LIU				
SEISMIC LOAD:	0.0095g	REVIEWED BY:	TREVOR CURTIS				
CONSTRUCTION STAGE:	FSL CONDITION	VERSION:	SLIDEINTERPRITE 9.037	SCALE: NTS	DATE: JULY 2025	JOB: 1770-037	FIGURE: E-2.5

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)
Clay and Sand Fill		19	Mohr-Coulomb	0	28
Clay Till		20	Mohr-Coulomb	3	28

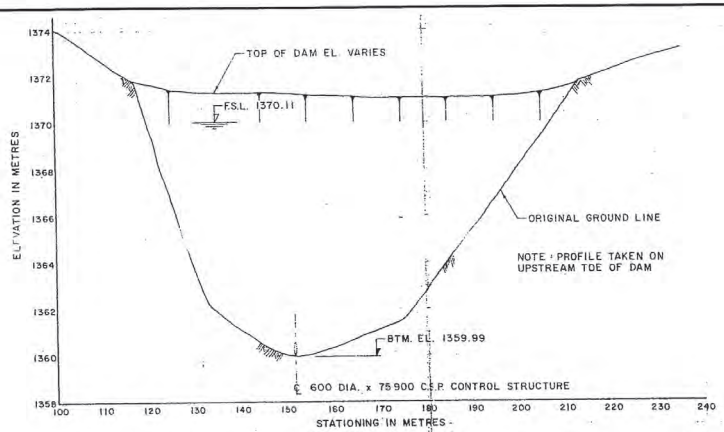
Material Name	Color	Model	KS (m/s)	Soil Type
Clay and Sand Fill		Simple	5e-05	General
Clay Till		Simple	1e-07	General



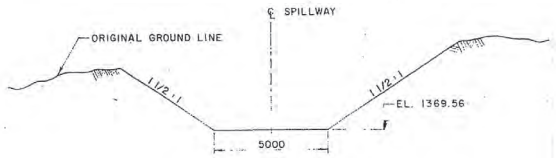
ANALYSIS TYPE:	PSEUDO-STATIC DOWNSTREAM (1:100)	CLIENT:	MUNICIPAL DISTRICT OF PINCHER CREEK NO.9	MPE a division of Englobe		CRIDLAND DAM STABILITY ASSESSMENT GEOTECHNICAL INVESTIGATION REPORT ANALYSIS FIGURES - SECTION B-B	
UPSTREAM WATER LEVEL:	FSL (1368.0 m)						
ANALYSIS DIRECTION:	DOWNSTREAM	ANALYSIS BY:	CHANG LIU				
SEISMIC LOAD:	0.0095g	REVIEWED BY:	TREVOR CURTIS				
CONSTRUCTION STAGE:	FSL CONDITION	VERSION:	SLIDEINTERPRITE 9.037	SCALE: NTS	DATE: JULY 2025	JOB: 1770-037	FIGURE: E-2.6

APPENDIX F:

REFERENCE HISTORICAL DOCUMENTS

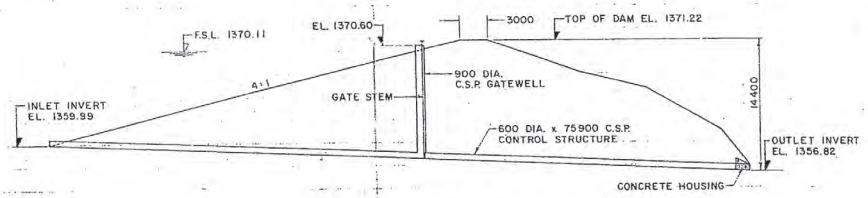


PROFILE OF DAM



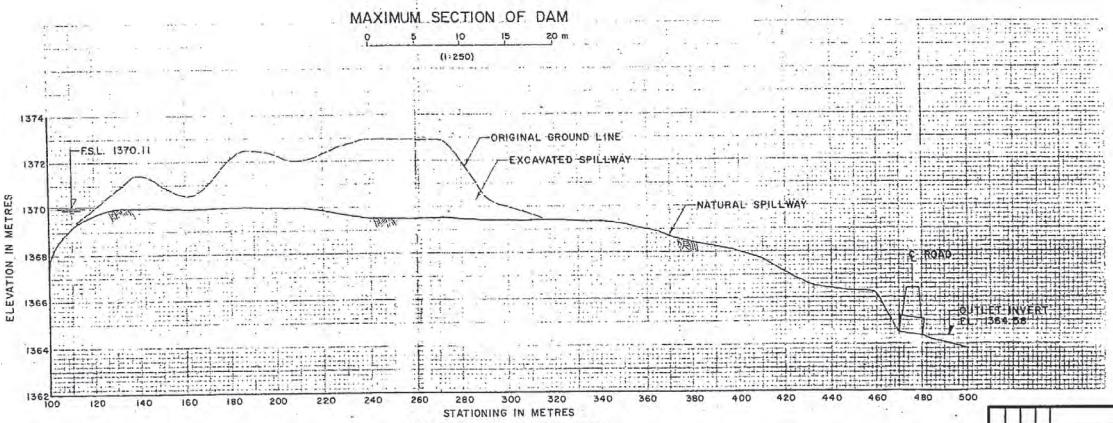
SECTION OF SPILLWAY STA. 237.50

0 1 2 3 4 5 6 7 8 m
(1:100)

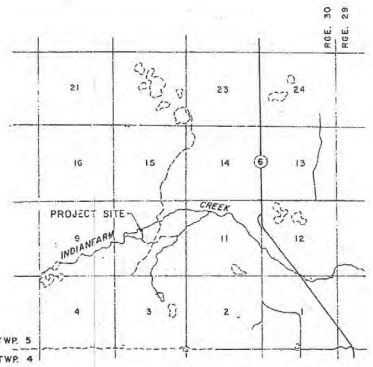


MAXIMUM SECTION OF DAM

0 5 10 15 20 m
(1:250)



PROFILE ON ℄ SPILLWAY



KEY PLAN

0 1000 2000 3000 4000 m
(1:50000)

NOTES:

1. THIS DRAWING HAS BEEN REDUCED TO FIT THE TITLE BLOCK AND IS NOT TO SCALE.
2. SOURCE: THE PRAIRIE FARM REHABILITATION ADMINISTRATION, 1958.

REV	Y	M	D	REVISION DESCRIPTION	DES	DRN	CHK
A	89	05	12	ISSUED FOR DAM SAFETY REVIEW	AKS	CO	HOW

PROJECT No. 0678-045-02 CALGARY, ALBERTA

File No. SW1483

uma

M.D. OF PINCHER CREEK

CRIDLAND DAM

SECTIONS AND PROFILES

Dwg. No. 004

A4 MODIFIED (11" x 17") 279mmx431mm

Government of Canada / Gouvernement du Canada

MEMORANDUM / **NOTE DE SERVICE**

CC Nsm & Council / SB

TO / À: R. Powley, Design Engineer
PFRA Regional Operations Division
Calgary, Alberta

FROM / DE: Yiming Lu, Head
Geotechnical Eng. Section
Saskatoon, Sask.

SECURITY - CLASSIFICATION - DE SÉCURITÉ	
OUR FILE/NOTRE RÉFÉRENCE	4548:928-8C16
YOUR FILE/VOTRE RÉFÉRENCE	
DATE	Jan. 11, 1995

SUBJECT / OBJET: Cridland Dam - Geotechnical Investigation

As you proposed (memo to Uhrbach, Sept. 8, 1994), three additional holes (C2 to C4) were drilled and 4 piezometers were installed on the crest of Cridland Dam in mid-October, 1994. The purpose of the investigation was to obtain further soil information to support the planning and implementation of any renovation options.

The approximate locations of all drill holes including C1 are shown on Figure 1. Hole logs C1 to C4 are attached. Note that soil descriptions "Till(Cl)" previously shown in C1 have been revised to " GC, glacial", or "Cl, glacial" in accordance with Unified Soil Classification System. The new descriptions duly reflect the engineering properties and geological origin of the materials as placed in the fill. The following paragraphs summarize soil conditions and piezometric levels within the embankment.

Soil Conditions

As shown in the hole logs, the entire embankment fill consists mainly of compacted clayey gravel (GC) of glacial origin to depths of 6.5 to 7.5 m, and glacial clay (Cl) below. Till overlying shale and sandstone occurs in the foundation in the left/west abutment (see C2), while till exists in the foundation to unknown depth in the right/east abutment (see C4).

Attempts were made to take continuous undisturbed samples in the fill. Because of the abundance of large sizes of gravels and cobbles, however, not all attempts were successful. Based on samples obtained, soil densities in the fill look satisfactory. Seven grain size analyses were performed on the GC, and the results indicate a wide range of grain size gradation distributions. Excluding the cobbles, the GC contains 11 to 30 % of fine grained soils, 32 to 40 % of sands, and 30 to 51 % of gravels. If the spaces between the sand and gravel particles within the GC were fully occupied by the fines, the GC materials should be impervious. On the other hand, voids and open-work structures could form in the GC at locations where the fines contents are low. The active seepage through the embankment indicate the existence of voids and open-work structures in the fill.

Piezometric levels taken shortly after installation are shown on the hole logs. The water levels ranged from 3.2 to 4.5 m below the dam crest approximately. The reservoir was maintained at its usual level during drilling.

Discussion

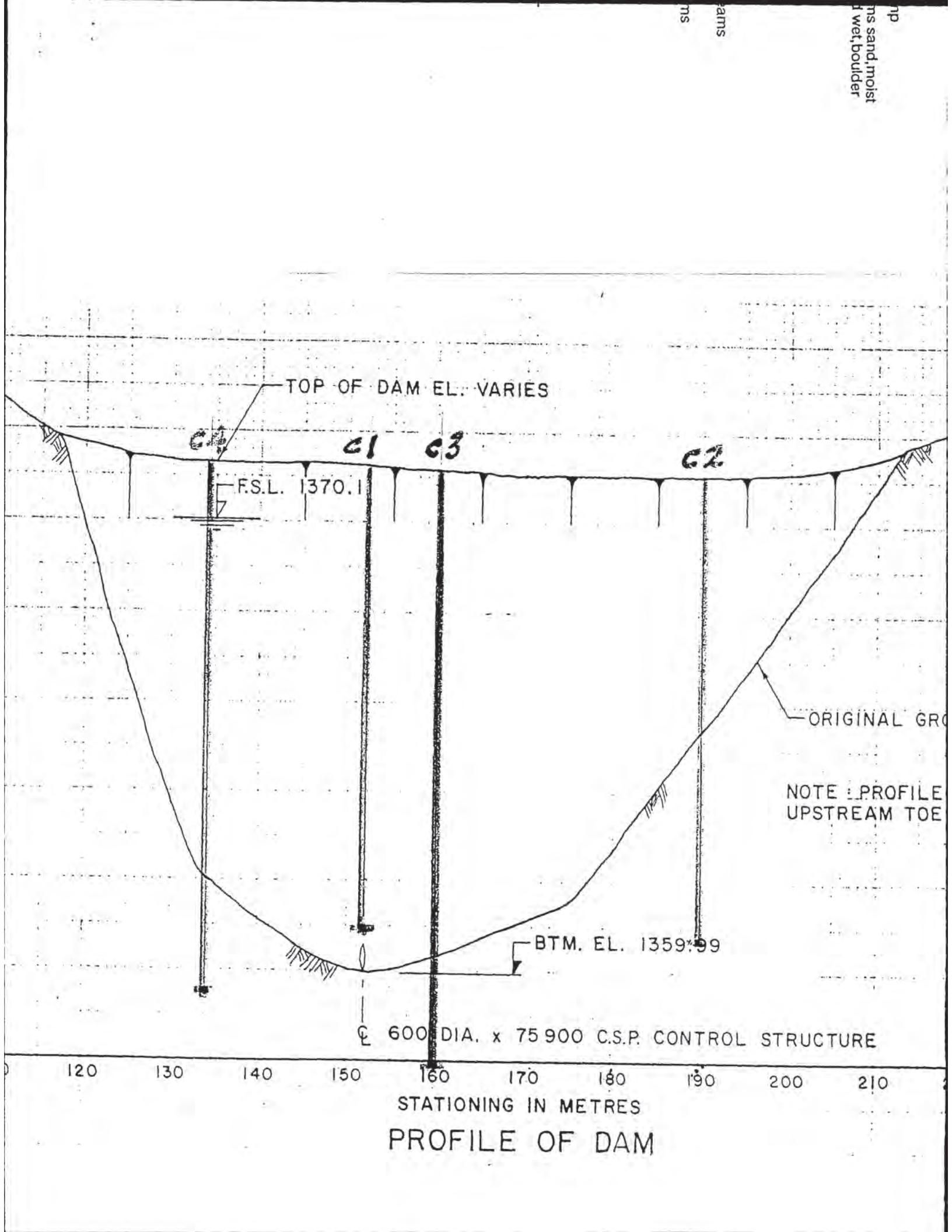
Obviously, the bulk of the embankment consists of compacted glacial materials with large proportions of sands, gravels and cobbles. In a normal construction practice without special precaution to prevent material segregation, voids and open-work structures would most likely have been incorporated in the fill. The current seepage conditions through the fill indicate that continuous flow paths have developed through these voids/structures over the years.

In connection with the Option 3 selected by the MD of Pincher Creek, the upstream portion of the GC materials in the embankment should be replaced with impervious fill to a depth of 7 to 8 m, at least locally. The final geometry of the impervious section will depend on availability of material, ease of construction, site layout, cost, ... etc. We will be willing to provide further details and assistance in geotechnical area to you in developing the construction plan.

The above is submitted for your information for now. Please call if you need further discussion.

Yiming Lu, Geotechnical Division

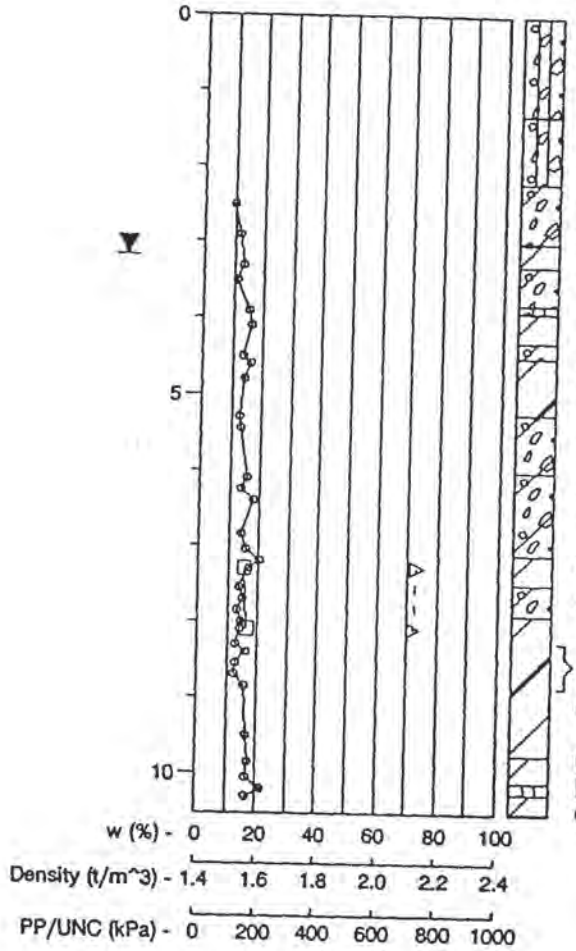
c.c. D. Uhrbach, M. D. of Pincher Creek
K. Stovra, PFRA Lethbridge



PROFILE OF DAM

C 1

EL. m



GPGM, fine, moist, very sandy, cobbles

(fn) GM, cobbles, dry

GC,glacial, very stiff, sandy,(fn) damp

CI,glacial,very stiff,gravelly,(fn) seams sand,moist
GC,glacial,very stiff,(fn) seams sand wet,boulder
GM, fine, wet, sandy
CI,glacial, very stiff, seams organic
GC,glacial
CI,glacial,stiff to very stiff,gravelly

GC,glacial, stiff, (fn) wet

GC,glacial,stiff,(fn) water bearing seams

CI,glacial,grey,gravelly,(fn) wet seams
GC,glacial, grey, (fn) wet seams

seepage

CI,glacial, stiff, gravelly

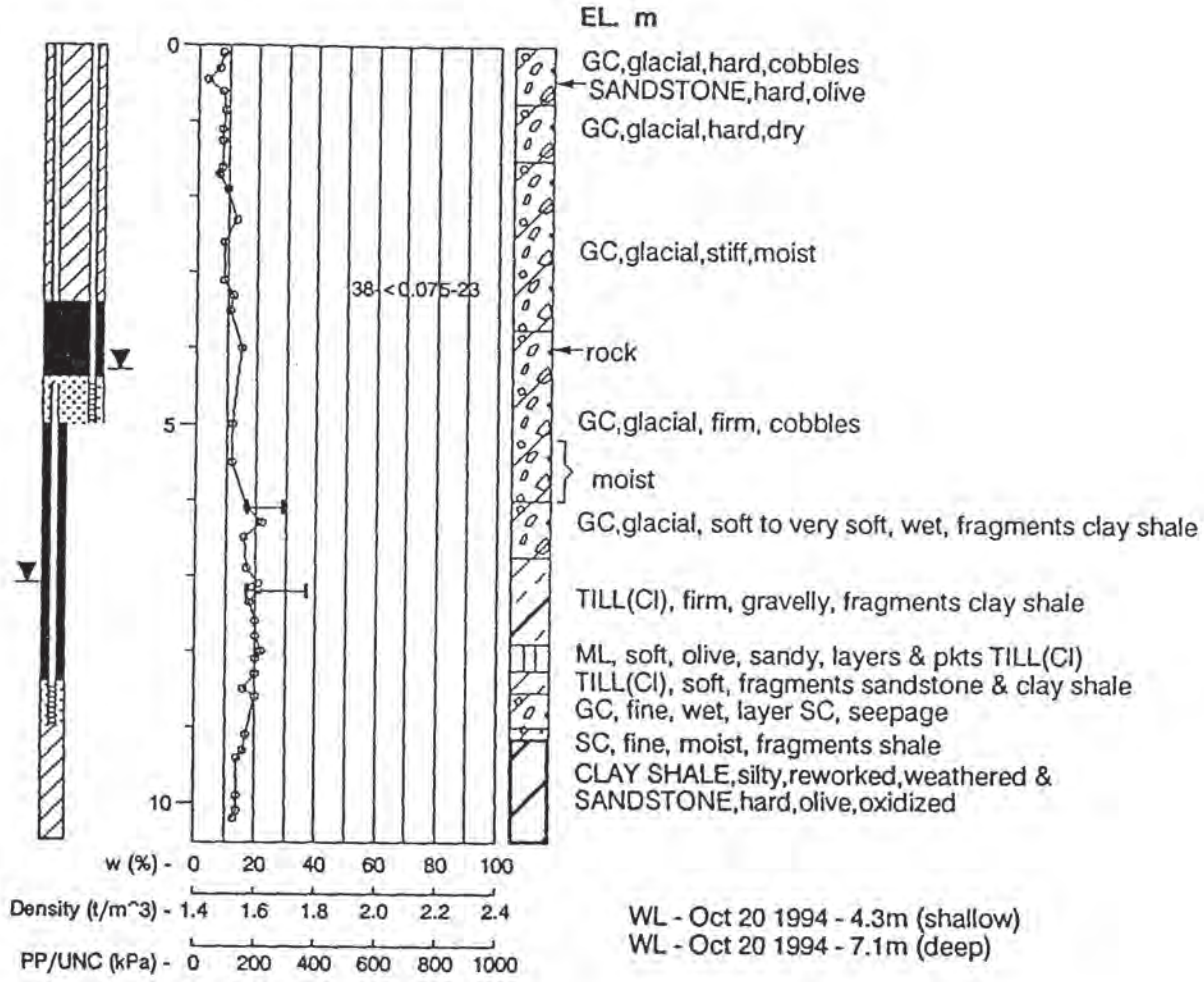
CI,glacial, stiff, grey, gravelly
ML, stiff, grey, gravelly
CI,glacial,stiff,grey,gravelly,layer ML

WL - May 31, 1994 - 3.2 m

Drilled - May 31, 1994 - 10.5 m

PFRA GEOTECHNICAL DIVISION	CRIDLAND DAM NW 10-5-30-W4		C 1
	Drawn/Checked: GF/SF/RG 01/03/95	4548:928-8C16	1 of 1

C 2



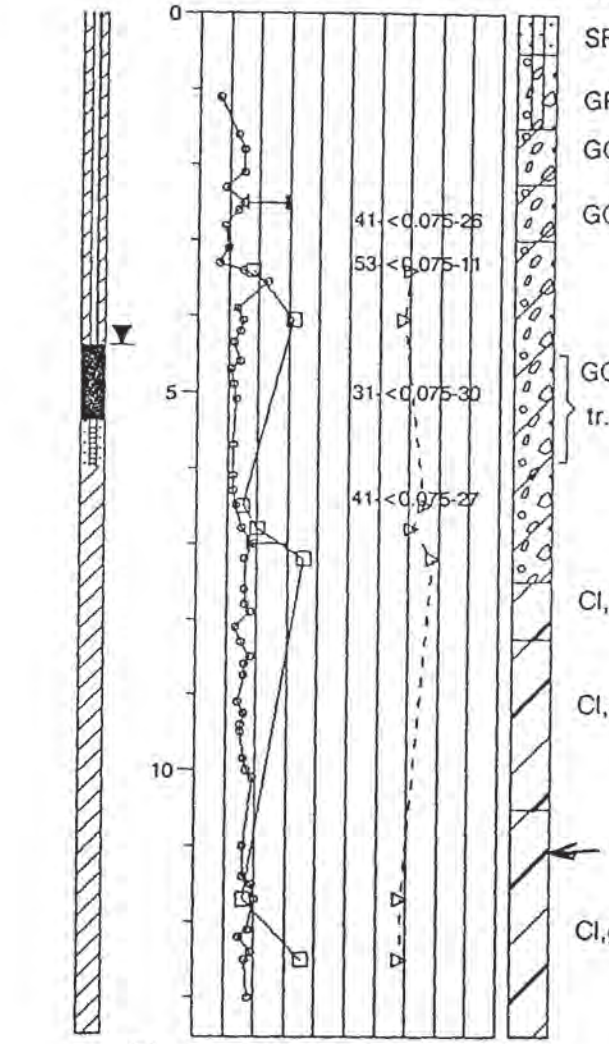
WL - Oct 20 1994 - 4.3m (shallow)
WL - Oct 20 1994 - 7.1m (deep)

Drilled - October 19, 1994 - 10.5 m

PFRA GEOTECHNICAL DIVISION	**CRIDLAND DAM** NW 10-5-30-W4	**C 2**
	Drawn/Checked: SF/SF/ML 01/03/95 | 4548:928-8C16	1 of 1

C 3

EL. m



SPSM,med.,moist,gravel,cobbles

GPGM,fine,moist,cobbles

GC,glacial,grey,cobbles

GC,glacial,fine,moist,cobbles

GC,glacial,very stiff,gravel,cobbles
tr. of seepage

Cl,glacial,soft to stiff,grey,wet

Cl,glacial,stiff,grey,cobbles,tr. seepage

Cl,glacial,very stiff to soft

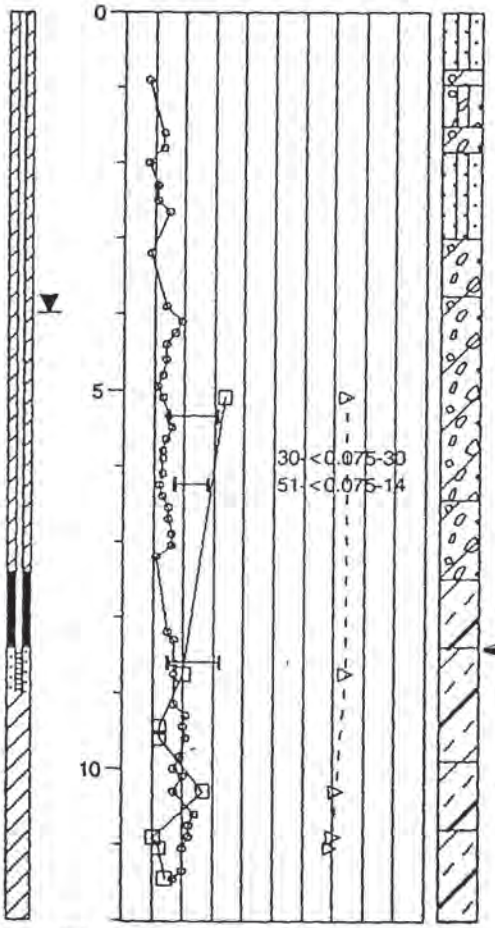
WL - Oct 19 1994 - 4.4m

Drilled - October 19, 1994 - 13.5 m

PFRA GEOTECHNICAL DIVISION	CRIDLAND DAM NW 10-5-30-W4		C 3
	Drawn/Checked: SF/SF/ML 01/03/95	4548:928-8C16	1 of 1

C 4

EL. m



SPSM, med.,moist,gravel

GC,fine,moist
GPGM,med.,moist
GC,glacial,stiff,cobbles
SM,fine,moist,gravel,cobbles

GC,glacial,fine,moist,cobbles

GC,glacial,stiff to very stiff,cobbles

GC,glacial,stiff,grey,cobbles

Cl,glacial,stiff,grey,moist,gravelly

TILL(Cl),very stiff,gravel

TILL(Cl),very stiff,grey,pkts organic

TILL(Cl),stiff,gravel

w (%) - 0 20 40 60 80 100

Density (t/m^3) - 1.4 1.6 1.8 2.0 2.2 2.4

PP/UNC (kPa) - 0 200 400 600 800 1000

WL - Oct 20 1994 - 4.0

Drilled - October 20, 1994 - 12.0 m

PFRA GEOTECHNICAL DIVISION	CRIDLAND DAM NW 10-5-30-W4		C 4
	Drawn/Checked: SF/SF/ML 01/03/95	4548:928-8C16	1 of 1

Suite 300, 714 - 5 Avenue South
Lethbridge, AB T1J 0V1
Phone: 403-329-3442
1-866-329-3442

a division of Englobe

MEMORANDUM

To:	**David Desabrais**	**From:**	**Dylan Postman**
		cc:	**Jeff Hust**
Re:	**Cridland Dam Hydrotechnical Assessment**	**Date:**	**December 5, 2025**
File:	**N/17/70/037.doc**	**Pages:**	**9**

BACKGROUND

The Municipal District of Pincher Creek (MDPC) has retained MPE a division of Englobe (MPE), to carry out geotechnical and hydrotechnical investigations of Cridland Dam and Spillway. As part of this work, MPE reviewed the Dam Safety Review (DSR) prepared by SNC-Lavalin in March 2022. The DSR concluded that the emergency spillway capacity and available freeboard at Cridland Dam were sufficient to safely convey the Inflow Design Flood (IDF). However, the DSR also noted that the dam has experienced overtopping in the past and recommended that a detailed freeboard and spillway capacity analysis, informed by updated survey data, be undertaken to confirm whether the spillway and freeboard meet current design requirements for passing the IDF.

SURVEY

On June 4, 2025, MPE completed a GPS survey of Cridland Dam and Spillway. Based on the collected data, three dam cross sections and eighteen spillway cross sections were developed. Elevations and dimensions of the two spillway culvert crossings were also recorded. The cross sections are provided in the appendices of this memorandum.

SPILLWAY CAPACITY

The spillway's flow capacity was initially assessed using Manning's equation. However, the first 90 m of the spillway could not be reliably analyzed with this method due to the flat slope and the presence of a weir at station 0+050 (see Figure 1).

Figure 1: Grassed Weir at Sta. 0+050 Backing Up Water

To address this, a HEC-RAS model was developed for the upstream portion of the spillway using the surveyed cross sections. Manning's *n* values of 0.027 for the spillway bed and 0.05 for the banks were used, consistent with those applied in the 2022 DSR.

The analysis determined that a reservoir level of 1,368.79 m is required to safely pass the peak IDF flow of 4.53 m^3/s. The minimum freeboard during the IDF is 490 mm, occurring on the right spillway bank at station 0+057. At this location, the maximum flow rate that can be conveyed without overtopping the spillway bank is 21 m^3/s, approximately 4.6 times the IDF. With 400 mm of freeboard on the spillway banks, the maximum allowable flow rate is 7.3 m^3/s.

To assess the influence of surface roughness, an additional model was completed using a Manning's *n* value of 0.045 for the spillway bed to reflect the effect of longer grass cover (approximately 100 mm). This scenario reduced the spillway capacity to 5.5 m^3/s while maintaining 400 mm of freeboard. Grass height, therefore, has a measurable effect on spillway hydraulics, with taller, ungrazed vegetation and brush producing higher resistance and reducing conveyance. Upstream of the barbed wire fence, where cattle do not graze, shrubbery was noted and grass was observed to be longer than within the active spillway channel (see Figure 2), which could locally reduce hydraulic capacity.

Figure 2: Vegetation Grown in Spillway Flat Section

The results indicate that the spillway appears to have sufficient hydraulic capacity to pass the current IDF under typical conditions. However, vegetation growth, uneven channel bed and surface roughness can reduce the spillway's effective capacity. Vegetation should be managed as part of ongoing maintenance to retain the spillway's capacity.

SPILLWAY CAPACITY

Despite the model indicating adequate capacity, site observations identified potential flow-limiting obstructions at the spillway inlet. Figure 3 shows a barbed-wire fence to contain cattle and metal blades (likely a make-shift trash rack) installed across the mouth of the spillway. These features could trap floating debris and significantly reduce the spillway's discharge capacity. Additionally, shrubbery and long grass observed in the flat upstream section of the spillway further reduce its capacity.

Figure 3: Flow Obstructions at Spillway Inlet

Such obstructions could explain past overtopping events despite the modelled capacity being adequate to handle the IDF. Hydraulic performance may be improved by:

- Removing fences and obstructions at the spillway entrance to prevent debris accumulation,
- Clearing vegetation and regrading portions of the spillway bed to improve flow conveyance, and
- Maintaining a clear channel to reduce flow restrictions during high inflows.

CAPACITY OF CULVERT CROSSINGS

Two culvert crossings exist along the spillway and were analyzed in Culvert Master:

- At station 0+234, a 1,200 mm culvert beneath the dam access road, and
- At the downstream end across Range Road 302A, one 900 mm and one 750 mm culvert.

Figure 4: Upstream Dam Access Road Culvert Crossing (Sta. 0+234)

The upstream culvert crossing shown in Figure 2 is likely to overtop during an IDF event as the maximum flow rate with no freeboard is approximately 4.0 m^3/s. However, overtopping of this crossing will not affect the spill capacity of the reservoir due to its lower elevation.

Figure 5: Downstream Range Road 302A Culvert Crossing

The downstream Range Road 302A crossing has a maximum capacity of 1.96 m^3/s with 400 mm freeboard and 2.65 m^3/s at the top of the road. As this is only 58% of the peak IDF, this crossing will likely overtop during the design event. Rating curves for both culverts are included in the appendices.

DAM FREEBOARD

Freeboard requirements were calculated using the wind speed return events from Alberta Transportation (AT, 2007) for station 3035206 (Pincher Creek), which has the largest calculated wind events of the nearby wind stations. No wind reduction factor was applied for design wind direction, resulting in conservative wave heights. Reservoir depth was estimated by dividing the reservoir's storage at FSL by the surface area at FSL; values for the storage volume and surface area were taken from the 2022 DSR. The top of dam elevation used was the lowest crest elevation of the three dam cross sections surveyed by MPE.

For a 'Low' consequence dam such as Cridland Dam, the freeboard must be high enough to protect against the 1:1,000 year 1-hr wind event at FSL and the 1:100 year 1-hr wind event during the IDF. The calculated freeboard requirements for Cridland Dam are summarised in Table 1 below. Sample freeboard calculations can be found at the end of this memorandum.

Table 1: Required Freeboard for Cridland Dam

Scenario	Reservoir Elevation	Wave Run-up + Set-up	Total Elevation	Top of Dam	Remaining Freeboard
	m	m	m	m	m
FSL w/ 1:1000 wind	1368.00	0.56	1368.56	1369.87	1.31
IDF w/ 1:100 wind	1368.79	0.51	1369.30	1369.87	0.57

Based on these calculations, Cridland Dam has sufficient freeboard to protect against wave action during normal operations and during passage of the IDF.

HYDROTECHNICAL CONCLUSION

According to the 2022 DSR, Cridland Dam has overtopped six times in the past 50 years – in 1975, 1995, 2008, 2009, 2010, and 2014. However, in the 1999 Cridland Dam DSR, it indicated the reservoir filled and spilled but did not overtop in 1995. Therefore, there could be some confusion on whether the dam over topped or it was primarily spillway discharge.

All events but the 1975 flood occurred after the dam was raised to its current elevation in 1980 according to the 1999 DSR. In 1977 repairs to the spillway channel were completed repairing damage from the 1975 flood. Based on the findings of this memorandum, the dam currently has 0.58 m of excess freeboard beyond what is required to protect against wave action during the IDF spill event. This presents a contradiction, as overtopping should not have occurred under these conditions.

There are several possible explanations for this discrepancy:

- **IDF Underestimation:** The 2022 DSR estimated that the 2014 flood event, which overtopped the dam, had a return period between 5 and 50 years, lower than the 1:100-year IDF. Since overtopping has occurred six times in the past 50 years, it is unlikely that every event exceeded the IDF, indicating that the design flood is possibly underestimated. An underestimated IDF could result from underestimating one or more variables used in the calculations, such as the design rainfall volume, the catchment area of the reservoir, and the percentage of rainfall that flows into the reservoir.

- **Spillway Obstructions:** Metal blades observed at the spillway entrance during inspection were assumed to be a trash rack. It is unclear when these were installed, however it would reduce the spillway's hydraulic capacity and raise reservoir levels during high flows by trapping debris. Additionally, long grass and brush growth in the 90 m flat upper section of the spillway further increases roughness and resistance, lowering the spillway's discharge capacity.

  The 1999 DSR noted, that in 1989 there was timber debris accumulated at the spillway inlet with heavy vegetation in the channel. This may have reduced the capacity of the spillway during the 1995 event where the spillway experienced erosion damage. According to the 2010 DSR, the spillway was then widened from 5m to 10m in 2003 to reduce flow velocity and increase spill capacity. As-built record drawings of the 2003 spillway upgrades were not located in the files.

  While these factors alone may not fully explain the repeated overtopping events, the overgrown vegetation, trash rack and build up of debris probably contributed to decreased spill capacity during flood conditions.

- **Larger-than-estimated flood events:** It is also possible that one or more overtopping events were caused by floods exceeding the current IDF estimate.

Hydraulic modeling conducted for this memorandum shows that the current spillway capacity at a reservoir elevation of 1369.36 m (the maximum level that maintains freeboard) is approximately 20 m^3/s. To cause the dam to overtop, reservoir inflows would need to exceed this rate.

The spillway capacity can be enhanced by modifying the existing spillway structure. Removing the weir at station 0+050 would reduce the reservoir elevation needed to pass the IDF by approximately 250 mm and increase the maximum spillway capacity to 30.5 m^3/s.

A larger increase in capacity could be achieved by excavating the flat 90 m section at the start of the spillway and increasing the bed slope to 1.24% as shown in the attached conceptual drawings. This work, along with clearing brush along the spillway and removing the fence and trash rack, would reduce flow restrictions and enhance hydraulic efficiency. With these modifications, the spillway capacity would increase to approximately 70 m^3/s with 400 mm of freeboard. Such upgrades would likely mitigate the overtopping issue without the need for further hydrological study.

Neither culvert crossing downstream of the spillway crest limits the spillway's capacity to pass the IDF due to their lower elevations, however, overtopping the existing roads is expected. The upstream culvert can pass approximately 4.0 m^3/s before overtopping. To improve freeboard, an additional 600 mm culvert could be installed, or the structure could be replaced with a 2.0 × 1.8 m pipe arch to pass the IDF. The downstream culvert cannot pass the IDF without overtopping. While some attenuation may occur in the natural terrain upstream, this has not been quantified. Passing the IDF through the downstream crossing would require either installing two additional 900 mm culverts, one 1,500 mm culvert, or replacing the current culverts with two 1,500 mm culverts.

RECOMMENDATIONS

To lower the risk of future overtopping at Cridland Dam, it is recommended that MDPC implement the following measures:

- **Remove Hydraulic Obstructions:** Eliminate the weir at Sta. 0+050, remove the barbed wire fence and trash rack at the spillway entrance, and regularly remove debris to prevent flow blockages.
- **Vegetation Management:** To reduce flow resistance and improve hydraulic efficiency, routinely cut grass short in the spillway channel and clear brush along the 90 m flat section.

These actions could be sufficient to prevent future overtopping if past events were primarily due to spillway obstructions.

If MDPC aims to increase the confidence and safety margin of the spillway capacity, it is advisable to excavate the spillway bed slope to remove the flat 90 m section as shown in the appended conceptual drawings. This would create a continuous slope of approximately 1.24%, maintain the spillway crest elevation, and increase the spillway capacity to about 70 m^3/s with 400 mm freeboard, which greatly exceeds the IDF estimate in the 2022 DSR.

If MDPC prefers to prevent overtopping of the existing roads during an IDF event, additional culvert recommendations are as follows:

- At the upstream culvert crossing, install an additional 600 mm culvert or replace the existing crossing with a 2.0 × 1.8 m arch culvert.

- At the downstream culvert crossing, enhance crossing capacity by installing one of the following: two additional 900 mm culverts, one additional 1,500 mm culvert, or replace the existing culverts with two new 1,500 mm culverts.

Respectfully submitted,

MPE a division of Englobe

Prepared by:
Timothy Brooks, E.I.T.
Water Resource Engineer

PROFESSIONAL ENGINEER ALBERTA
DYLAN L. POSTMAN
ID 226104

December 5, 2025

PERMIT TO PRACTICE
MPE, a division of Englobe Corp.
Signature
APEGA ID 106756
Date December 5, 2025
PERMIT NUMBER: P 7841
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Reviewed by:
Dylan Postman, P.Eng.
Project Manager

Attachment: Cridland Dam and Spillway Drawings, HEC-RAS Model Outputs, Sample Freeboard Calculations, Culvert Rating Curves

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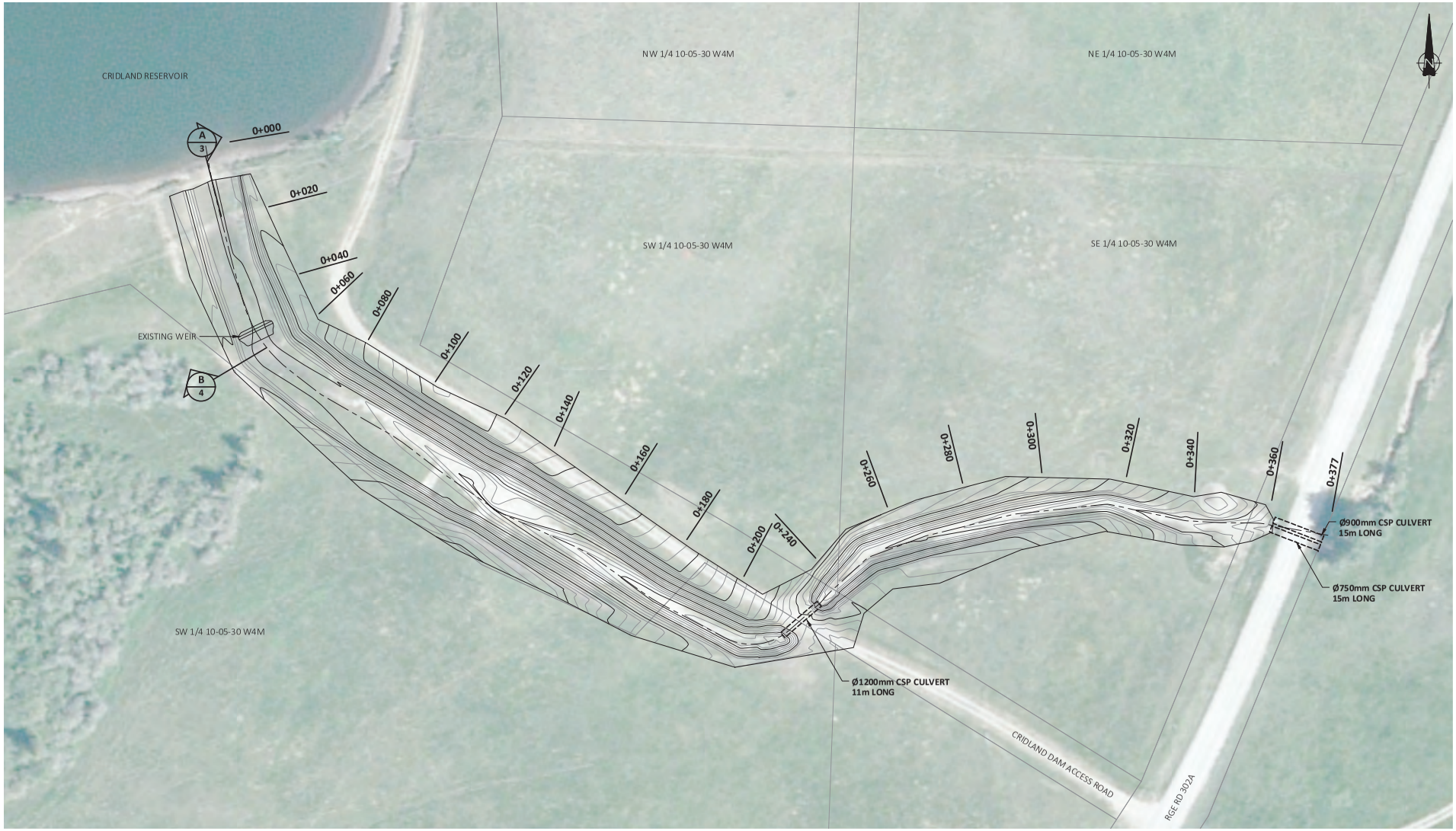
MUNICIPAL DISTRICT OF PINCHER CREEK

CRIDLAND DAM HYDROLOGY ASSESSMENT
SITE PLAN

SCALE:	1:1000	DATE:	JULY 2025	JOB:	1770-037-00	FIGURE:	1



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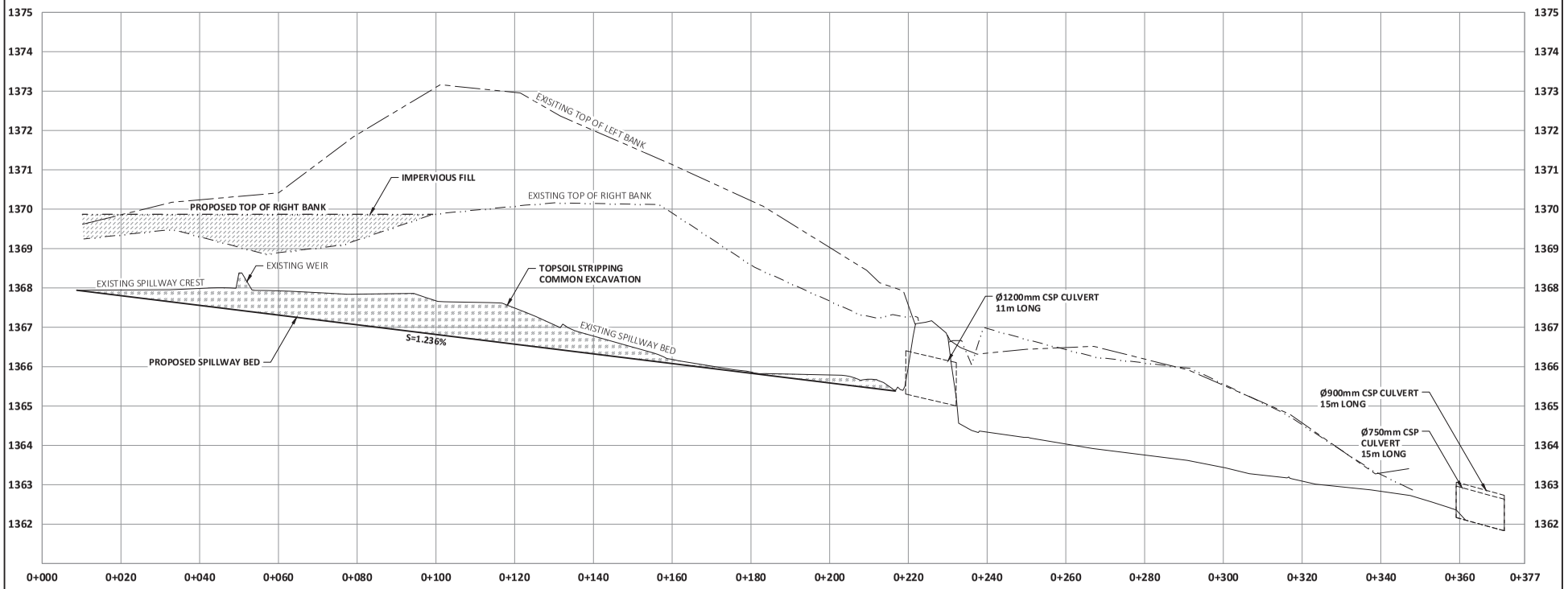
MUNICIPAL DISTRICT OF PINCHER CREEK			
CRIDLAND DAM HYDROLOGY ASSESSMENT EXISTING SPILLWAY PLAN			
SCALE: 1:1000	DATE: JULY 2025	JOB: 1770-037-00	FIGURE: 2



A
2

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MUNICIPAL DISTRICT OF PINCHER CREEK

CRIDLAND DAM HYDROLOGY ASSESSMENT
SPILLWAY CENTERLINE PROFILE

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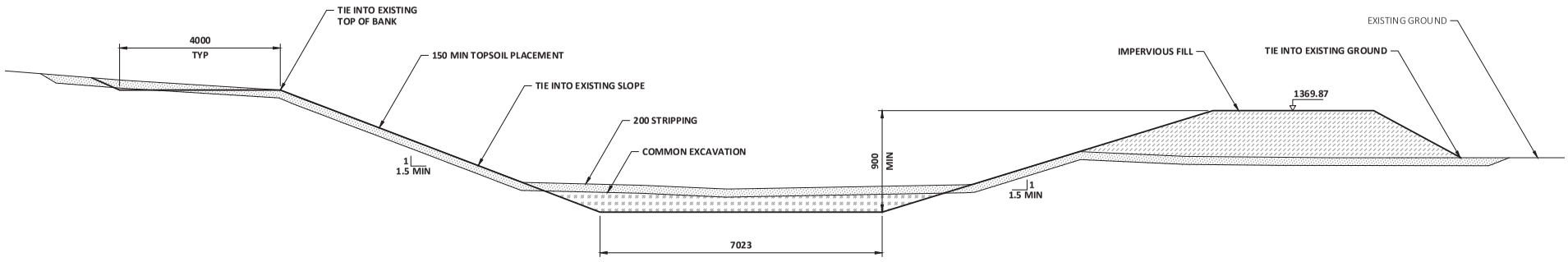
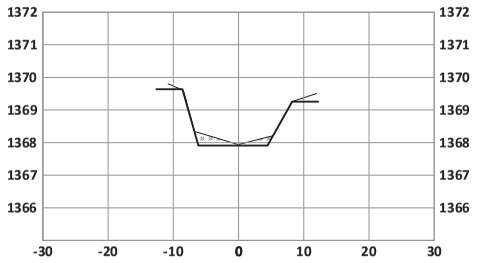


B
2

a division of Englobe		MUNICIPAL DISTRICT OF PINCHER CREEK CRIDLAND DAM HYDROLOGY ASSESSMENT PROPOSED SPILLWAY REHABILITATION TYPICAL SECTION	
SCALE: 1:100	DATE: JULY 2025	JOB: 1770-037-00	FIGURE: 4



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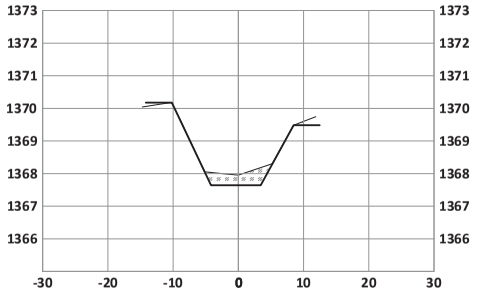

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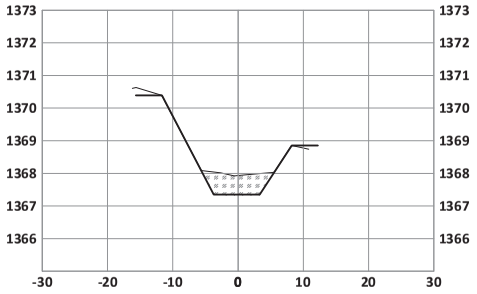

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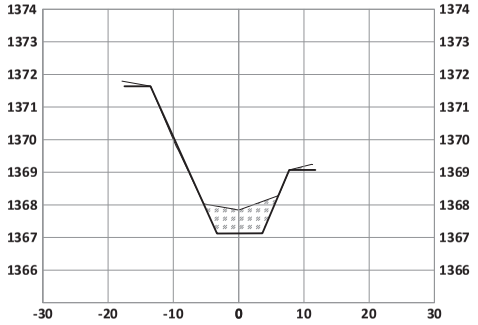

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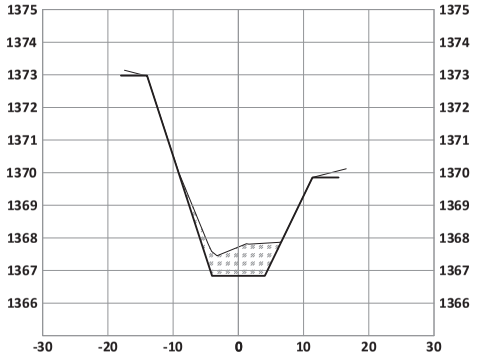

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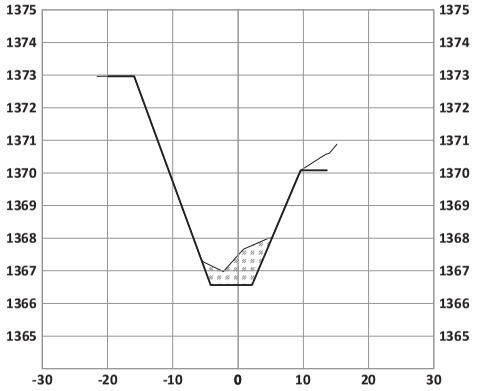

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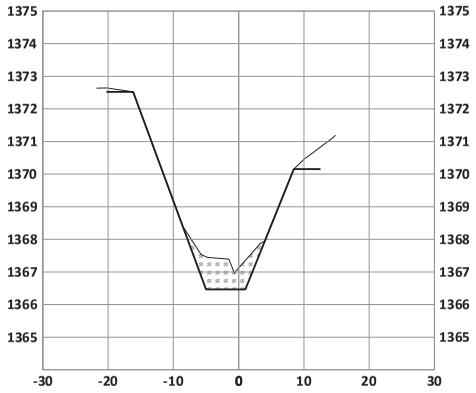
MUNICIPAL DISTRICT OF PINCHER CREEK

CRIDLAND DAM HYDROLOGY ASSESSMENT
PROPOSED SPILLWAY REHABILITATION
SECTIONS 1 OF 2

SCALE: 1:750	DATE: JULY 2025	JOB: 1770-037-00	FIGURE: 5



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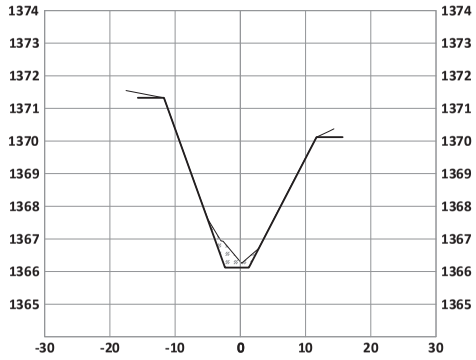

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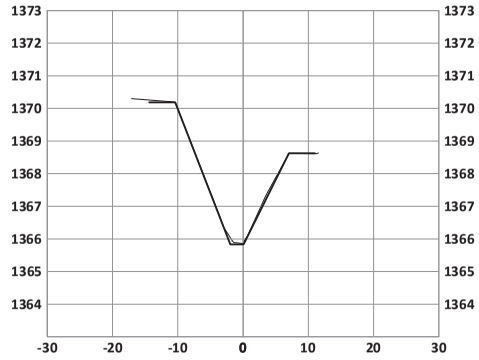

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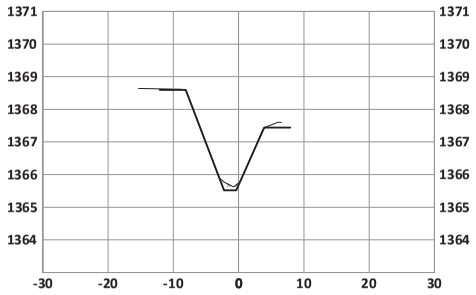

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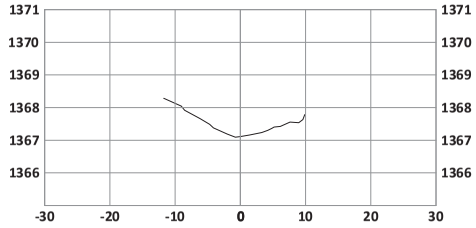

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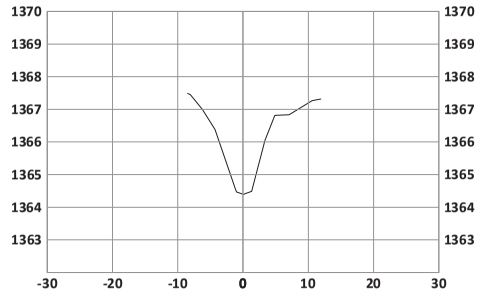

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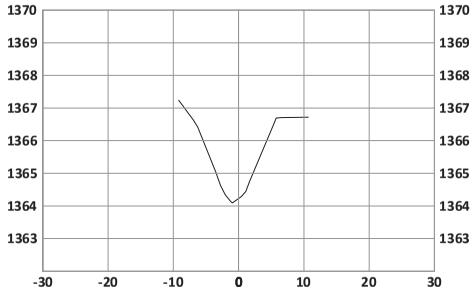
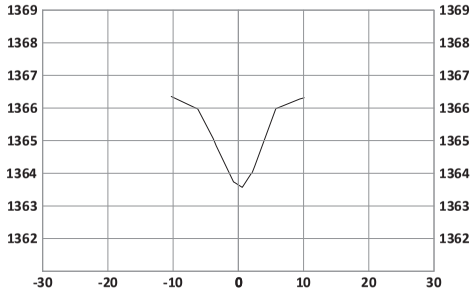
MUNICIPAL DISTRICT OF PINCHER CREEK

CRIDLAND DAM HYDROLOGY ASSESSMENT
PROPOSED SPILLWAY REHABILITATION
SECTIONS 2 OF 2

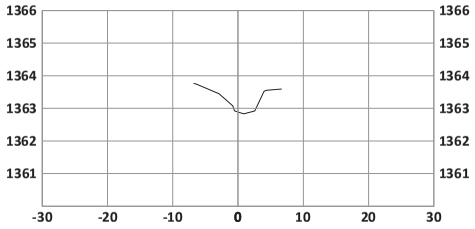
SCALE: 1:750	DATE: JULY 2025	JOB: 1770-037-00	FIGURE: 6



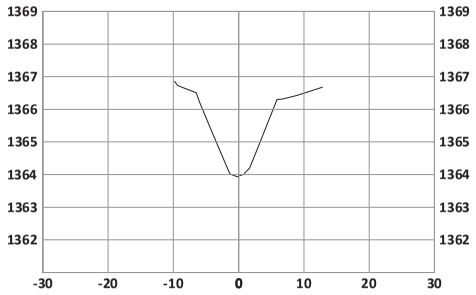
STA 0+248



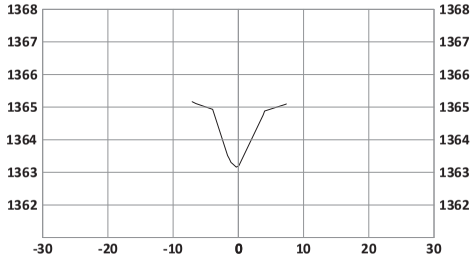
STA 0+289



STA 0+336



STA 0+265



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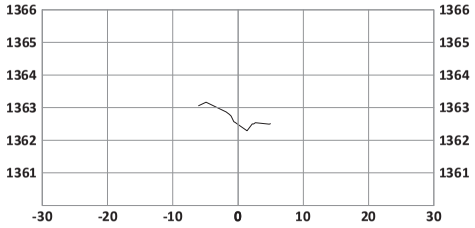


STA 0+355

a division of Englobe

MUNICIPAL DISTRICT OF PINCHER CREEK

CRIDLAND DAM HYDROLOGY ASSESSMENT
PROPOSED SPILLWAY REHABILITATION
SECTIONS X OF X

SCALE: 1:750	DATE: JULY 2025	JOB: 1770-037-00	FIGURE: 7

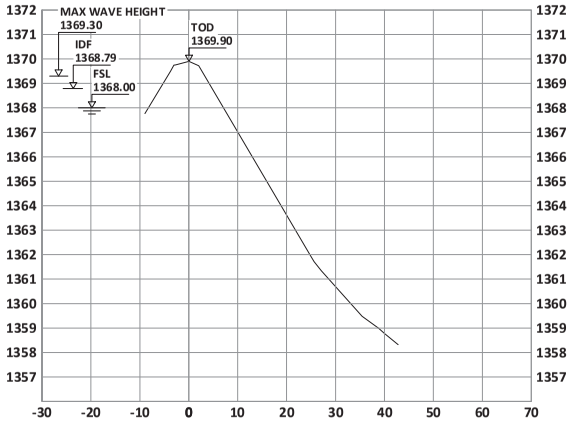
BOREHOLE LOCATION (NAD83 UTM12 COORDINATES)			
BH ID	NORTHING	EASTING	ELEVATION
25BH001	5473057.1	285040.5	1369.9
25BH002	5473080.6	285020.4	1369.8
25BH003	5473103.6	285002.1	1369.9

MPE
a division of Englobe

MUNICIPAL DISTRICT OF PINCHER CREEK

CRIDLAND DAM HYDROLOGY ASSESSMENT
CRIDLAND DAM PLAN

SCALE:	1:500	DATE:	JULY 2025	JOB:	1770-037-00	FIGURE:	8



STA 0+020 - 25BH001

A
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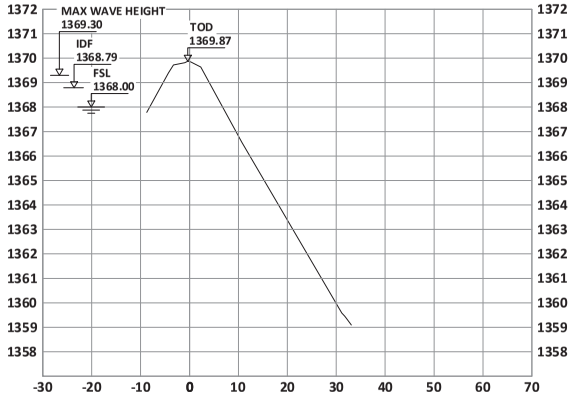

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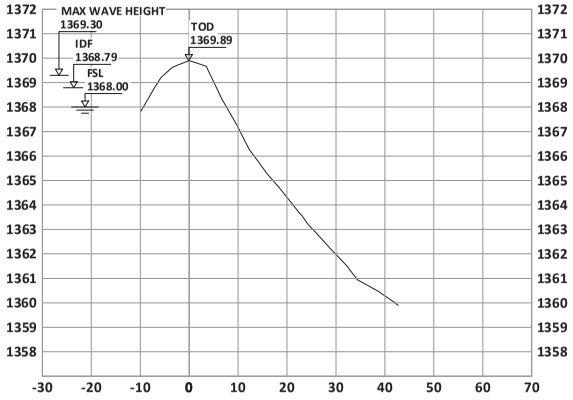


STA 0+074 - 25BH003

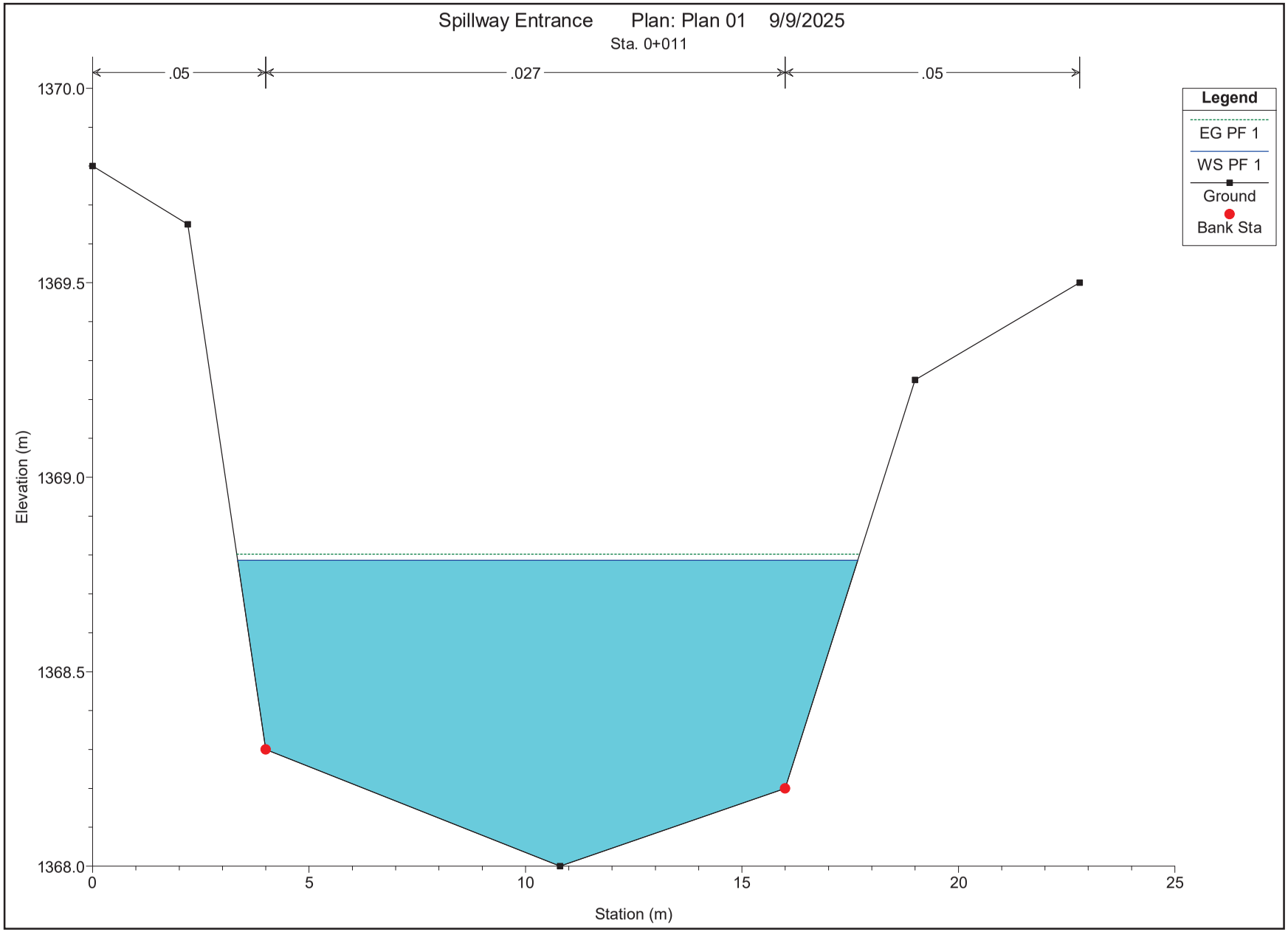
C
7

a division of Englobe

MUNICIPAL DISTRICT OF PINCHER CREEK

CRIDLAND DAM HYDROLOGY ASSESSMENT
DAM SECTIONS

SCALE:	1:1000	DATE:	JULY 2025	JOB:	1770-037-00	FIGURE:	9


Spillway Entrance Plan: Plan 01 9/9/2025
Sta. 0+011
.05
.027
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
1370.0
1369.5
1369.0
1368.5
1368.0
Elevation (m)
0
5
10
15
20
25
Station (m)

Plan: IDF Current Conditions Cridland Spillwa Entrance RS: 87 Profile: PF 1

E.G. Elev (m)	1368.80	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	Wt. n-Val.	0.050	0.027	0.050
W.S. Elev (m)	1368.79	Reach Len. (m)	20.00	22.00	24.00
Crit W.S. (m)		Flow Area (m2)	0.16	7.90	0.49
E.G. Slope (m/m)	0.000400	Area (m2)	0.16	7.90	0.49
Q Total (m3/s)	4.53	Flow (m3/s)	0.02	4.43	0.08
Top Width (m)	14.32	Top Width (m)	0.65	12.00	1.68
Vel Total (m/s)	0.53	Avg. Vel. (m/s)	0.13	0.56	0.17
Max Chl Dpth (m)	0.79	Hydr. Depth (m)	0.24	0.66	0.29
Conv. Total (m3/s)	226.4	Conv. (m3/s)	1.1	221.2	4.2
Length Wtd. (m)	22.00	Wetted Per. (m)	0.81	12.01	1.78
Min Ch El (m)	1368.00	Shear (N/m2)	0.76	2.58	1.09
Alpha	1.09	Stream Power (N/m s)	0.10	1.45	0.18
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.01	0.44	0.01
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.07	0.90	0.08

Cridland Dam (IDF) - Freeboard Calcuations

WIND DATA (Data from AT, 2007) Cridland Dam				
Station Used :	19 Pincher Creek			
1:2 Wind Speed (km/h)	115	Design Wind Direction	SW	(AT, 2007)
1:10 Wind Speed (km/h)	122	Wind Reduction Factor	1	(AT, 2007)
1:100 Wind Speed (km/h)	129	Overwater Factor	1.2	(CDA, 2007)
1:1000 Wind Speed (km/h)	137	5% Overtopping Height (H'_S)	1.37 H_s	(CDA, 2007)

RESERVOIR DATA Cridland Dam	
Longest Fetch, F (km)	0.42
Effective Fetch, F_E (km)	0.239
Embankment Slope (XH : 1V)	4
Reservoir Depth (m)	6.61

Dam Face Angles

Φ 14.04

Cot(Φ) X/1

Wave Calculations Cridland Dam				
Criteria	**AEP Return Period**			
	1:2	**1:10**	**1:100**	**1:1000**
Overwater Wind Speed, U (km/h)	138.00	146.40	154.80	164.40
Overwater Wind Speed, U (m/s)	38.33	40.67	43.00	45.67
Wind Stress Factor, U_A (m/s)	62.96	67.71	72.51	78.08
Significant Wave Height, H_S (m)	0.66	0.71	0.76	0.82
Design Wave Height H'_S, (m)	0.90	0.97	1.04	1.12
Wave Period, T (sec)	1.86	1.90	1.95	2.00
Wavelength, L (m)	5.39	5.66	5.92	6.22
Wave Run-up, R_S (m)*	0.44	0.47	0.50	0.53
Wave Setup, S (m)**	0.01	0.01	0.01	0.02
Freeboard Required (m), Run-up + Setup	**0.45**	**0.48**	**0.51**	**0.55**
Minimum Riprap D_{50} (mm)	**225**	**275**	**275**	**300**

** S Based on a reservoir length equal to the effective fetch from Wind Setup Table below

Wind Setup Sensitivity Analysis				
Fetch (km)	**Wind setup (m)**			
	1:2	**1:10**	**1:100**	**1:1000**
0.5	0.02	0.03	0.03	0.03
1	0.05	0.05	0.06	0.07
3	0.14	0.15	0.17	0.20
0.239	0.01	0.01	0.01	0.02

Based on the wind setup sensitivity analysis, the fetch length length has minimal impact on the wind setup result. Therefore the effective fetch of Cridland Dam was used for the wind set-up calculation

WAVE FORMULAS

$$S = \frac{U^2 * F_E}{4850 * d}$$ CDA, 2007

$$H_s = 1.616x10^{-2} * U_A * F_E{}^{0.5}$$ CDA, 2007

$$T = 6.238x10^{-1}(U_A * FE)^{1/3}$$ CDA, 2007

$$U_a = 0.71 * U^{1.23}$$ CDA, 2007

$$H'_S = 1.37H_s$$ CDA, 2007

$$L = 1.56T^2$$ CDA, 2007

$$R_s = \frac{H'_s}{0.4 + \left(H'_s/L\right)^{0.5} * \cot(\theta)}$$ USBR, 1981*

* Runup (R_S) assumes a riprap slope, if a smooth slope is present run-up must be mutlitied by up to 1.5 depending on smoothness of surface.

$$D_{50} = 0.57 * \frac{H_S}{cot^{\frac{1}{3}}(\theta)}$$ FHWA, 2000

* D_{50} size is estimated using a rock weight of 2650 kg/m^3

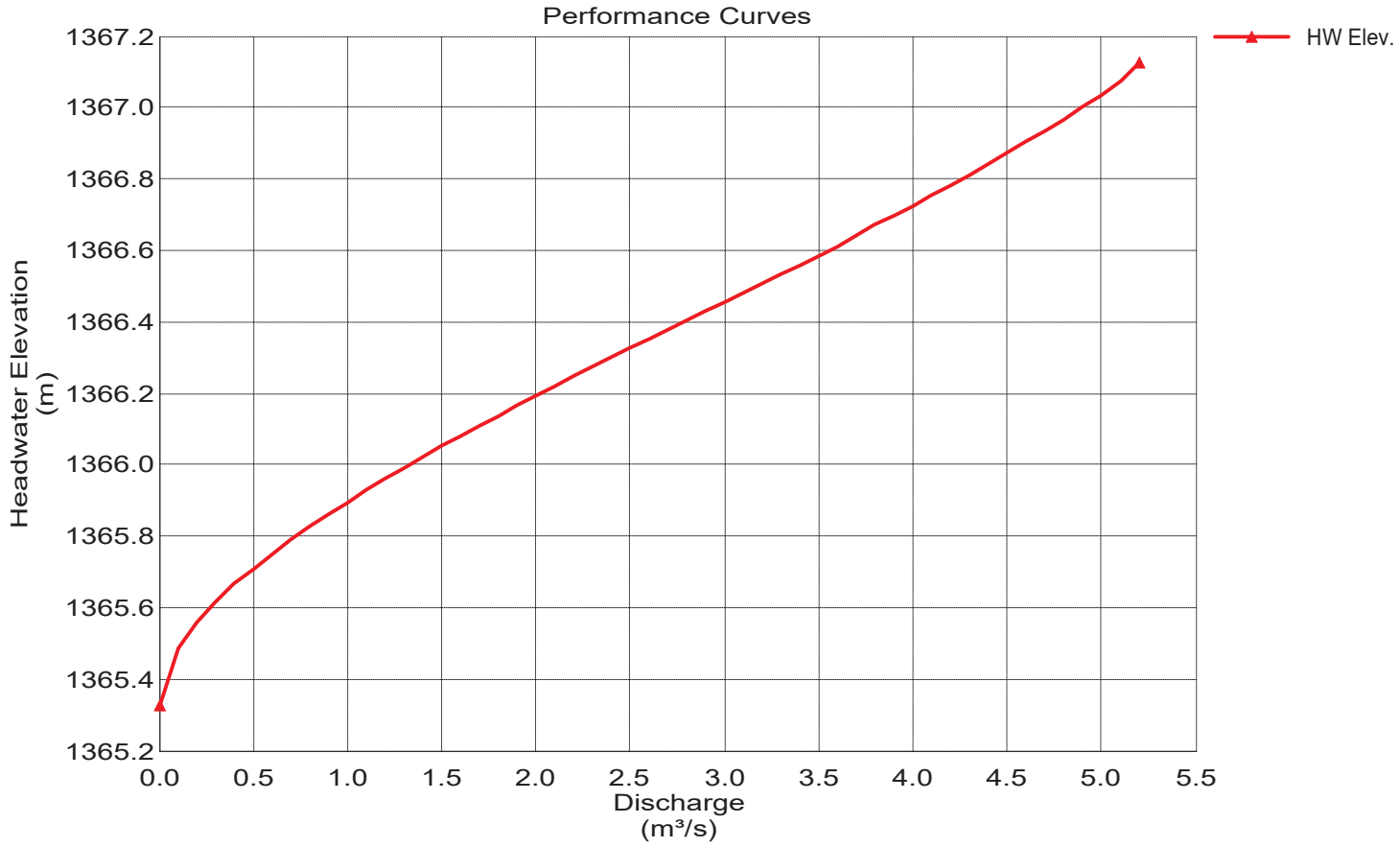
References Used:

1. Hydrotechnical Considerations for Dam Safety Design, Canadian Dam Association (CDA); 2007
2. Freeboard Criteria and Guidelines for Computing Freeboard Allowances for Storage Dams; United States Bureau of Reclamation (USBR), 1981
3. Shoreline Protection Manual; United States Army Corps of Engineers (USACE), 2003
4. Analysis of Alberta Hourly Wind Data; Alberta Transportation (AT), 2007
5. Design of Riprap Revetment, Federal Highway Administration (FHWA), 2000

ASSUMPTIONS AND ADDITIONAL INFORMATION
Fetch for wind height calculations is considered to be the longest distance between the dam and the opposing shoreline. (2007)
Effective Fetch for narrow reservoirs is calculated by drawing 9 radials from a point on the Main Dam to the opposing shoreline at 3 degree intervals. The length of these radials were measured and arithmetially averaged.
Effective Fetch for wind setup can be longer and should be assesed with a sensitivity analysis for long reservoirs.
Reservoir Depth (d) refers to the average depth of the reservoir.
Riprap Sizing rounded to nearest 25 mm. Wind speed reduction was considered for riprap sizing.

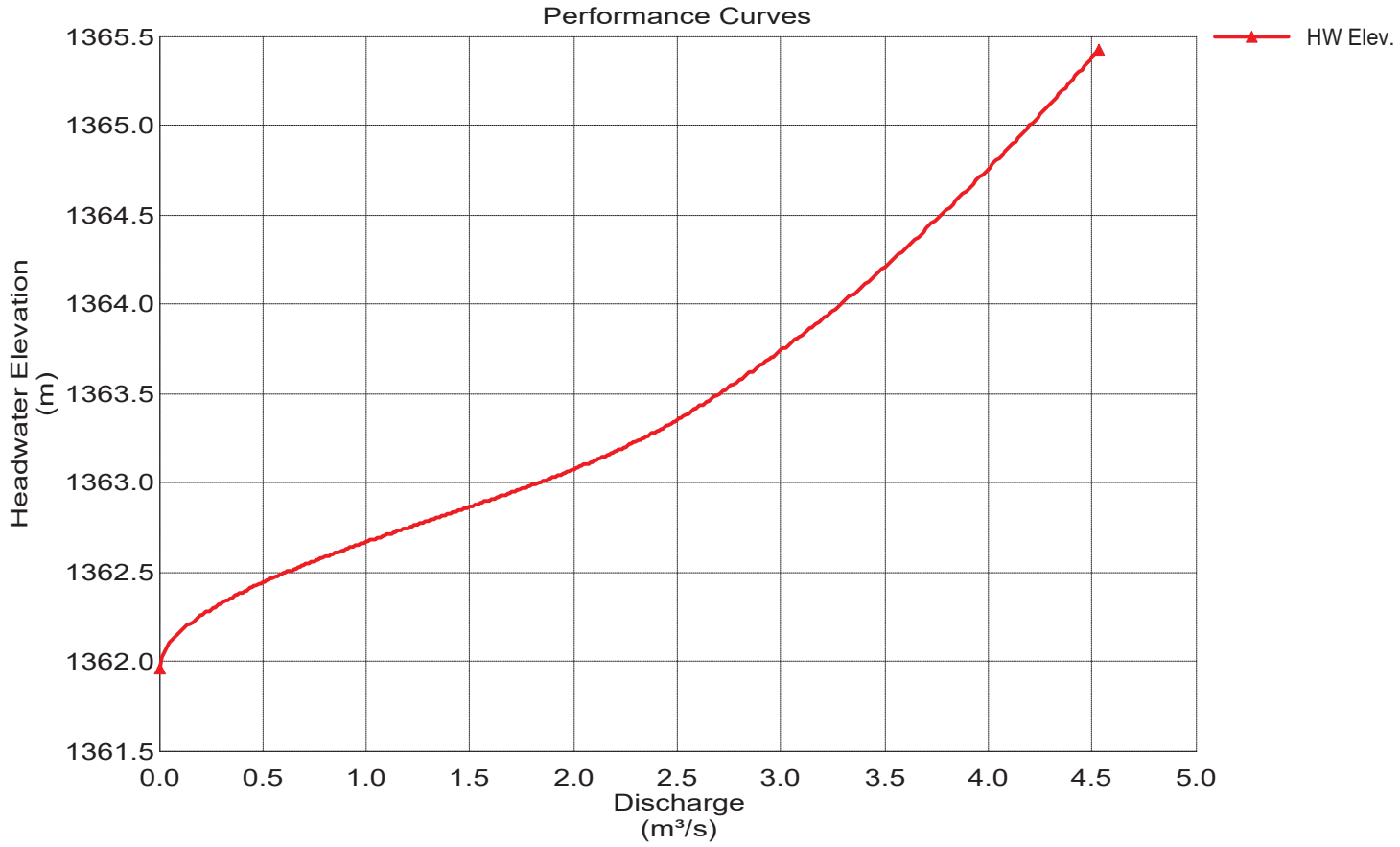
Performance Curves Report
Upstream Culvert

Range Data:				
	Minimum	Maximum	Increment	
Discharge	0.0000	5.2000	0.1000	m³/s



Performance Curves Report
Downstream Culverts

Range Data:				
	Minimum	Maximum	Increment	
Discharge	0.0000	4.5300	0.0100	m³/s



Administration Guidance Request

TITLE: Request to Waive Tax Penalties - Tax Roll 1736.000			
PREPARED BY: Sara-Lynn Warren		**DATE: January 14, 2026**	
DEPARTMENT: Finance			
			ATTACHMENTS: **1. Letter from Elisa Olsen**
Department Supervisor		**Date**	
APPROVALS:			
		2026/01/22	
Department Director	**Date**	**CAO**	**Date**

REQUEST:

That Council consider waiving the tax penalties on tax roll 1736.000 in the amount of $666.64

BACKGROUND:

Per MD Bylaw 1264-15, a 2% penalty was applied on July 2, 2025, 4% penalty was applied on November 1, 2025, and a 12% penalty was applied on January 2, 2026.

Elisa's tax notice was mailed to the address on file; however, it was returned. It is the responsibility of the rate payer to inquire if not received, or to change address if living elsewhere.

An arrears letter was sent to the same address in November 2025, which Elisa confirmed she received.

The account is paid in full.

FINANCIAL IMPLICATIONS:

TBD

Dear Counsel of Pincher Creek,

I hope you're well. I'm writing regarding my **2025 property tax account** for29111 highway 507, Ciaran Olsen. I would like to explain our situation and respectfully request consideration for a **waiver or reduction of the late penalty fees** that have accumulated.

Earlier in the year, we were **out of the country for an extended period**, and the original tax notice that was mailed was **returned to the Town office as undeliverable** we did not receive it at our address. Because we were unaware of the outstanding taxes and the due date, we did not know a payment was required until much later in the year when we returned and came into the office to make the payment in person.

We fully understand that property tax payments are due by **June 30 each year**, and that penalties are applied to outstanding balances thereafter if they're not paid on time. According to the Town's property tax information, penalties of **12 % on July 1 and a further 10 % on January 3** are added to unpaid current taxes.

However, we were never notified of the original deadline because the mailed notice was not delivered to us, and we were not aware of the payment requirement until much later. Had we received the notice in a timely manner, we would have made the payment well before the deadline. We did not intentionally delay or avoid payment it was simply a matter of **not receiving any notice** until after the year had ended.

We were surprised by the size of the accumulated late fees (including the recent $450 charge) and it has placed a significant financial strain on us, especially as we have **three children and another on the way**. These unexpected penalties are difficult for us to absorb, particularly given that we would have paid the taxes on time if we had been informed.

We understand that municipalities are permitted to apply penalties for unpaid taxes, and that responsibility for ensuring receipt of tax notices rests with the property owner.

However, given our situation where the notice was returned and we were unaware of the requirement we are kindly requesting that **Council consider waiving or reducing the late penalty fees** in this case due to the exceptional circumstances.

We would be very grateful for your understanding and assistance. Please let me know if any additional documentation is needed.

Thank you very much for your time and consideration.

Have a great rest of your week,

Elisa Olsen

Recommendation to Council

G3b

TITLE:	**BYLAW No. 1368-26 (Land Use Bylaw Amendment – Secondary Suites)**		
PREPARED BY:	**Laura McKinnon**	**DATE:**	**January 21, 2026**
DEPARTMENT:	**Planning and Development**		
	2026/01/21	**ATTACHMENTS:**	
Department Supervisor	**Date**	**1. Bylaw No. 1368-26**	

APPROVALS:

		2026/01/21	
Department Director	**Date**	**CAO**	**Date**

RECOMMENDATION:

That Council give first reading to Bylaw No. 1368-26, being the Land Use Bylaw Amendment (Secondary Suites), and set a date for the required Public Hearing on March 10, 2026 at 3:00 pm.

BACKGROUND:

Through the years bylaws can become outdated and require updates to keep current with the changing desires and wishes of Council, the public, and even provincial and/or federal regulations.

The current Land Use Bylaw, Bylaw No. 1349-23 was adopted in Spring 2024, with various amendments including alignment with the Municipal Development Plan and Castle Mountain Resort Area Structure Plan.

The general purpose of Bylaw No. 1368-26 is to allow for an adjustment in the Secondary Suite definitions, and subsequently those that are related to it, such as Tourist Homes, Principal Dwelling and the new concept of Maximum Density of a parcel.

FINANCIAL IMPLICATIONS:

None.

MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9
BYLAW NO. 1368-26

Being a bylaw of the Municipal District of Pincher Creek No. 9 in the Province of Alberta, to amend Bylaw No. 1349-23, being the Land Use Bylaw.

WHEREAS Section 640 of the Municipal Government Act, Revised Statutes of Alberta 2000, Chapter M-26, as amended, provides that a municipality must pass a Land Use Bylaw;

WHEREAS The Municipal District of Pincher Creek No. 9 desire to amend sections of the Land Use Bylaw as shown on Schedule 'A' attached hereto; and

WHEREAS The purpose of the proposed amendment is to add a detached secondary suite and to limit the dwelling density within the agriculturally oriented districts in the Land Use Bylaw;

NOW THEREFORE, under the authority and subject to the provisions of the *Municipal Government Act*, Revised Statutes of Alberta 2000, Chapter M-26, as amended, the Council of the Municipal District of Pincher Creek No. 9, in the Province of Alberta, duly assembled does hereby enact the following:

1. This bylaw shall be cited as "Land Use Bylaw Amendment No. 1368-26".

2. Amendments to Land Use Bylaw No. 1349-23 as per "Schedule A" attached. That the amendments to Bylaw No. 1349-23, being the Land Use Bylaw, include additions to section that affect numbering and formatting which will be changed to maintain the consistency of the portions of the Bylaw being amended.

3. This bylaw shall come into force and effect upon third and final passing thereof and a consolidated version of the Land Use Bylaw reflecting the amendment is authorized to be prepared.

READ a first time this ____ day of _____, 2026.

A PUBLIC HEARING was held this ____ day of _____, 2026.

READ a second time this ____ day of _____, 2026.

READ a third time and finally PASSED this ____ day of _____, 2026.

_____	_____
Reeve	***Chief Administrative Officer***
Rick Lemire	*Roland Milligan*

SCHEDULE 'A'

1. Revise Part I – General Section 6 Definitions as follows:

   6.140 Secondary Suite
   An additional dwelling unit located on a property containing a single unit residence, which is subordinate to the principal dwelling ~~primary residence~~. The secondary suite must be located within the same yard as the principal dwelling. ~~The unit must have a separate entrance from the principal dwelling, either from a common indoor landing or directly from the exterior of the house.~~ A secondary suite shall not be developed within a "Duplex", "Semi-detached dwelling", "Multi-unit dwelling", "Manufactured home park", "Rowhouse or townhouse" or "Apartment". "Garden suite", "Surveillance suite", and "Secondary farm residence" are separate uses.

   6.121 Principal Dwelling
   Principal dwelling means the primary residence unit located on a titled piece of land.

2. Delete and replace Part VII Section 42.1 and 42.2 with the following:

   42.1 The maximum number of dwelling units per parcel of land is as regulated through the applicable land use district and associated use specific standards of development of this Bylaw.

   42.2 No person shall construct or locate, or cause to be constructed or located, more than one dwelling unit on a parcel except as provided in the land use district for which the application is made and authorized by the Development Authority through issuance of a development permit for a use that allows for more than one dwelling in accordance with the provisions of this Bylaw.

3. Revise Part VII Section 42.3 with the following:

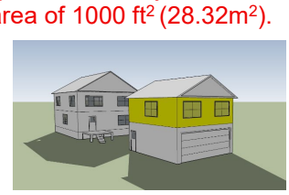
   42.3 Within the Agriculture – A, Airport Vicinity Protection – AVP, Urban Fringe – UF, Wind Farm Industrial – WFI districts, one or more additional dwelling units may be located on a parcel provided that:
   (a) all such dwelling units are secondary farm residences on a parcel that has an area greater than 32.4 ha (80 acres) and this use is a permitted or discretionary use in the applicable district; and
   (b) all such dwelling units comply with this bylaw.

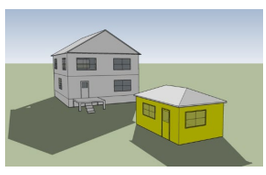
4. Revise Part VIII Tourist Home Section 47.15 by changing the following:

   47.15 Within the Agriculture – A district, a tourist home may be considered on properties that have a principal dwelling and that may also have a secondary suite or a secondary farm residence. ~~and/or~~ Only one of the dwelling units may be considered for the Tourist Home use. Alternatively, where a principal dwelling is located on the site, a tourist home may be approved as a maximum of two (2) ~~supplemental~~ recreation vehicle spaces and is to be designated as a seasonal tourist home in place of designating a dwelling unit as a tourist home.

5. Revise Part VIII Section 49 Garden and Secondary Suites by changing Section 49.5(c) to the following:

   (c) in the Agriculture – A, Airport Vicinity Protection – AVP, Urban Fringe – UF, Wind Farm Industrial – WFI districts where listed as a permitted or discretionary use, a secondary suite may be considered (as shown in figure below) as a second storey garage (or shop) suite or detached dwelling. All secondary suites in this category are limited to a maximum building footprint or floor area of 1000 ft^2 (28.32m^2).

6. Revise Part IX – Districts Section 2 by removing 'Garden Suite' from the Agriculture – A, Airport Vicinity Protection – AVP, Rural Business – RB, Urban Fringe – UF, Wind Farm Industrial – WFI districts.

7. Revise Part IX – Districts by adding to Agriculture – A, Airport Vicinity Protection – AVP, Rural Business – RB, Urban Fringe – UF, Wind Farm Industrial – WFI districts the following:

3. Maximum Density
For all subdivided parcels that are less than 32.4 ha (80 acres) the maximum number of dwelling units is two (2). This can be any combination of a principal dwelling with a secondary suite as defined by Section 49. For those properties that were approved for a secondary farm residence and were subdivided the secondary farm residence will need a permit to transition to a secondary suite. Where a subdivided parcel contains more than 2 dwelling units, each dwelling unit greater than two will be considered legal non-conforming and cannot be altered or added to with an addition or secondary suite.

CHIEF ADMINISTRATIVE OFFICER'S REPORT

January 12, 2025, to January 23, 2026

Discussion:

Jan 13	Council Committee and Regular Council Meetings
Jan 14	ASB Meeting
Jan 14	JHSC Meeting
Jan 15	Labour Management Meeting

Upcoming:

Jan 27	Council Committee and Regular Council Meetings
Jan 30	Leadership Education Session on OHS Responsibilities

RECOMMENDATION:

That Council receives for information the Chief Administrative Officer's report for the period January 12, 2026, to January 23, 2026.

Prepared by: Roland Milligan, CAO Date: January 20, 2026

Respectfully presented to: Council Date: January 27, 2026

ADMINISTRATIVE SUPPORT ACTIVITY
January 8, 2026 to January 22, 2026

Correspondence from the Last Council:

- Letters of Support
    - Pincher Creek Community Hall,
    - Search and Rescue and
    - Town of Pincher Creek Intergenerational Day
- Thank you for Attending
    - Pincher Creek & District Library
    - Northback
- Denial of Waiving Tax Penalties
- Notification of Water Licenses – Minister of Environment and Protected Areas

Advertising/Social:

- Producers Meeting – Alberta Beef Producers – Fort MacLeod January 29, 2026
- Closure of Offices and Eco Centre – Due to Water Main Break
- Pincher Standpipe Closure – Due to Water Main Break
- Information Session – Proposed Communication Tower
- Lundbreck Road Closure – Sewer Line Repair
- Crowsnest Pincher Creek Landfill Closure – Hazardous Winds
- Employment Opportunity – Ag Services Assistant Manager
- Agricultural Service Board Meeting
- Council/Committee Package

Other Activities:

- Regular Committee, Council
- ASB Meeting
- Assisted with Southwest Alberta Rural Crime Watch Meeting
- Meeting with Town staff regarding 2026 Joint Events (ReUse Fair, Volunteer Appreciation and Canada Day Fireworks)
- Emergency Management Meeting – Declaring State of Local Emergency

Invites to Council:

- Invitation to Waterton/ID #4 to Attend Council – they will reach out later this Fall with a presentation and to attend an MD Council meeting

Upcoming Dates of Importance:

- Southwest Alberta Rural Crime Watch Meeting – January 21, 2026
- Regular Committee, Council – January 26, 2026
- State of Local Emergency Training Session – January 22, 2026
- ATIA/POPA Coordinator's Virtual Roundtable 2026

Recommendation to Council

G4b

TITLE: CORPORATE POLICY C-CO-009 ENFORCEMENT SERVICES APPEAL BOARD & COMMITTEE MEMBERS			
PREPARED BY: JESSICA MCCLELLAND		**DATE: January 21, 2026**	
DEPARTMENT: ADMINISTRATION			
			ATTACHMENTS: Draft C-CO-009 ENFORCEMENT SERVICES APPEAL BOARD
Department Supervisor		**Date**	
APPROVALS:			
			2026/01/21
Department Director	**Date**	**CAO**	**Date**

RECOMMENDATION:

That Council approve policy C-CO-009, Enforcement Services Appeal Board.
AND ALSO
That Jeff Hammond and Laurie Klausen be appointed as the MD Community Members at Large to the Enforcement Services Appeal Board, until the Organizational Meeting of 2026,
AND THAT a Councillor be appointed as the Council Member for the Enforcement Services Appeal Board, until the Organizational Meeting of 2026.

BACKGROUND:

Policy C-CO-009: Enforcement Services Appeal Board, is to determine appeals brought forward to the MD by recipients of notices under Enforcement Services.

Members-at-large appointed to MD Committees are paid in accordance with C-CO-01, Council Remuneration and Expenses Policy, and are appointed at the Organizational meeting. As this is a new Council committee, members will be appointed now, and the committee will be added to the list for the 2026 Organizational meeting.

Jeff Hammond and Laurie Klausen have previously agreed to offer their time to serve on this committee, should the committee need to meet.

FINANCIAL IMPLICATIONS:

Payment for committee members at large for required meetings.

M.D. OF PINCHER CREEK NO. 9

CORPORATE POLICY

C-CO-009

TITLE: ENFORCEMENT SERVICES APPEAL BOARD

Approved by Council Date: Pending

APPLICABLE PROVINCIAL LEGISLATION: Municipal Government Act

PURPOSE OF POLICY:

To appoint an independent Enforcement Services Appeal Board.

POLICY STATEMENT

To hear and determine appeals brought forward to the MD by recipients of notices issued under Enforcement Services.

APPLICATION OF THIS POLICY

1. The Enforcement Services Appeal Board is hereby constituted under the following terms:

   (a) The Board shall be a Committee of Council;
   (b) The Board shall consist of 3 members, comprised of 1 Councillor and 2 members of the general public;
   (c) Members will be selected and appointed by Council annually at the Organizational Meeting of Council;
   (d) The Board may adopt a set of rules and procedures with respect to the conduct of appeals; and
   (e) In the event that any member of Council appointed as a member of the Board cannot be in attendance at a meeting of the Board, any other member of Council may sit as a substitute for that member of the Board.

2. Pursuant to Section 203 of the *Municipal Government Act*, Council hereby delegates its authority under Section 547 of the *Municipal Government Act*, to the Enforcement Services Appeal Board. This Board may hear appeals of Remedial Orders and Orders to Remedy issued pursuant to Sections 545 and 546 of the *Municipal Government Act*.

M.D. OF PINCHER CREEK NO. 9

CORPORATE POLICY

C-CO-009

TITLE: ENFORCEMENT SERVICES APPEAL BOARD

Approved by Council Date: Pending

3. The owner or occupant of a premises, who is subject to an Order issued by the Enforcement Services Appeal Board, shall comply with the provisions and conditions as set out in the Order.

Rick Lemire
Reeve

Roland Milligan
Chief Administrative Officer

Wednesday March 18th

9:00 a.m.- 5:00 p.m. Registration and Exhibit Set Up

11:00 a.m. - NOON Lunch and Refreshments

1:00 p.m. TOUR #1

- Newell Regional Waste Landfill and Pivot Spirits, Rolling Hills, AB

(Buses provided)

5:00 p.m. COCKTAILS (Cash Bar)

6:00 p.m. Welcoming Remarks from the Mayor of City of Brooks
Welcoming Remarks from the Reeve of County of Newell

6:30 p.m. BUFFET BANQUET

Newell Regional Solid Waste Authority

NEWELL
REGIONAL LANDFILL

Alberta CARE

Thursday, March 19th

7:00 a.m. Exhibit Viewing & Buffet Breakfast

8:15 a.m. Welcome – Rob Smith, Chairman of Alberta CARE

8:30 a.m. Newell Landfill Disaster
Kendra Johnston , Newell Regional Waste Authority

9:15 a.m. Waste to Energy Project
Joint Presentations –Shawn McKay, Newell Regional Waste Authority and John Swain, Global Green

10:00 a.m. Tire-Direved Aggregate (TDA)
Pat Sliworsky, Alberta Recycling Management Authority

10:45 a.m Beyond the Pile: Modern Composting Strategies to Overcome Contamination & Inefficiency in Rural Alberta
Roxanne Doerksen, Cyrus County

NOON BUFFET LUNCHEON

1:00 p.m. Alberta Recycling Management Authority Update
Ed Gugenhiemer,CEO

1:45 p.m. Alberta CARE Delegates Round Table - Circular Materials
Chairman Rob Smith

3:00 p.m. Circular Materials Presentation
Blaire Gaalaas, Director of Circular Materials

5:00 p.m. Cocktails

6:30 p.m. BUFFET BANQUET

8:00 p.m. Silent Auction Ends

$600.00 Registration Per Person
Register 3 or more Delegates and receive a....

10% Discount!

This Seminar is Alberta Environment approved for `Continuing Education Units`

Friday, March 20th

7:00 a.m. Exhibit Viewing & Hot Buffet Breakfast

8:30 a.m. Landfill Waste Wood Management
Jim Donaldson, Canadian Wood Waste Recycling

9:15 a.m. Small Drones for Landfill Ownership
Associated Engineers (Calgary)

10:00 a.m. RCMP Crime Prevention Liaison for Alberta
K Division for Waste Management and Recycling Facilities

11:00 a.m. Closing Remarks - Tom Moore, Alberta Care Member

(Coffee Side Bar all Morning)

JBS City Centre

Brooks Aqueduct

Cancellation Deadline March 13th 2026

Printed on 100% Post-Consumer Recycled Paper

ALBERTA Coordinated Action for Recycling Enterprises (CARE)
1-780-980-8089 Phone

Please forward registrations & payment to:
ALBERTA C.A.R.E.
Linda McDonald, Executive Director
5212-49 Street
Leduc, AB T9E 7H5
Cell:780-668-6767
Email: executivedirector@alberta care.org
Web: www.albertacare.org

Who Should Attend?

- Municipal Elected Officials
- Waste Commission Managers
- Landfill Operators
- Public Works Employees
- Eco Centre Employees
- Alberta Recycling Associations
- Alberta Landfill Engineers
- Waste Management Vendors
- Waste Disposal Companies
- School Boards, Education Facilitators
- Anyone interested in Reusing, Reducing, Recycling and Recovery

Silent Auction
Going once...
Going twice...
Ends March 19/26
at 8:00 p.m.

15th Annual Alberta CARE Spring Seminar

March 18th - March 20th

2026

Accommodations

Heritage Inn Hotel and Convention Centre
1217 2nd Street West
Brooks, Alberta

Group Reservation: Alberta CARE

Downtown Brooks

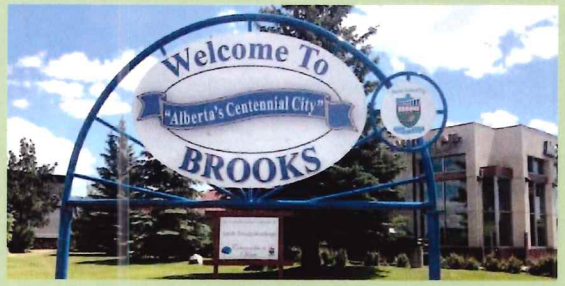
City of Brooks

15th Annual Alberta CARE Spring Seminar

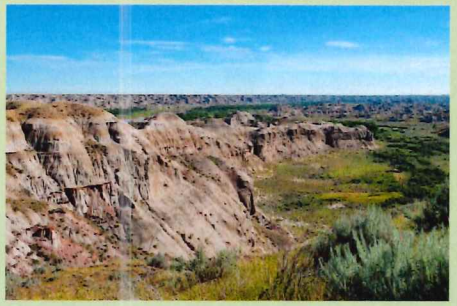
March 18th - March 20th

2026

Heritage Inn Hotel anf Convention Centre
1217 2nd Street West
Brooks, Alberta



Newell Lake



Dinosaur Provincial Park

Registration Form
ALBERTA CARE Spring Seminar 2026

March 18th to 20th, 2026
Heritage Inn Hotel and Convention Centra
1217 2nd Street West, Brooks, AB
Block of Room under Alberta CARE

Names:_____

_____

_____

Organization:_____

Address:_____

Email Address:_____ Phone:_____

NO CHARGE FOR TOURS:

Please indicate the number attending Wednesday Tour #1 _____

Sub Total $_____

Seminar Fee: $600.00 p.p $_____

LESS 10% *(if 3 or more attend)* $_____

GST $_____

Spouses or Guests attending meals:

Breakfast Buffet	@ $25.00 p.p.	$_____
Luncheon	@ 30.00 p.p.	$_____
Buffet	@ 60.00 p.p.	$_____

TOTAL $_____

MAIL PAYMENT OR EFT TO: Alberta CARE, 5212 49 Street, Leduc, Alberta T9E 7H5
EMAIL: executivedirector@albertacare.org or for information call Cell: 780-668-6767

Please indicate any food allergies: _____

Outlook

Fw: Question for Motion for Pincher Creek MD Council

From Roland Milligan <AdminCAO@mdpinchercreek.ab.ca>
Date Wed 2026-01-21 13:20
To Jessica McClelland <AdminExecAsst@mdpinchercreek.ab.ca>

Council Action Information

Roland Milligan
Chief Administrative Officer
M.D. of Pincher Creek No. 9
Box 279
1037 Herron Avenue
Pincher Creek, AB T0K1W0
Phone: 403-627-3130
Email: AdminCAO@mdpinchercreek.ab.ca

From: Kayla Lorenzen <klorenzen@pinchercreeklibrary.ca>
Sent: January 21, 2026 12:19
To: Roland Milligan <AdminCAO@mdpinchercreek.ab.ca>
Subject: Question for Motion for Pincher Creek MD Council

Hello Roland,

Question for Motion for Pincher Creek MD Council

Would MD Council be interested in staff from the Public Library Services Branch (PLSB) of Municipal Affairs with the Government of Alberta coming to Pincher Creek to present a session on the roles and responsibilities of municipal councils and library boards in the Province of Alberta?

This presentation would be a meeting in and of itself separate from any council or board meetings and usually takes about 2 hours in the evening or on the weekend.

If MD Council moves that they would like this presentation from PLSB staff, please let me know and I will organize the session for everyone.

Thanks so much and have a wonderful day,

Kayla

Kayla Lorenzen (She/Her)
Library Manager
Pincher Creek & District Municipal Library

899 Main Street, Box 2020
Pincher Creek, AB
T0K 1W0
(403) 627-3813
klorenzen@pinchercreeklibrary.ca
https://pinchercreeklibrary.ca

Outlook

Spring 2026 Rural Municipalities of Alberta Convention

From TEC Municipal Engagement <TEC.MunicipalEngagement@gov.ab.ca>
Date Thu 2026-01-22 09:36
Cc TEC Municipal Engagement <TEC.MunicipalEngagement@gov.ab.ca>

Good morning,

I am pleased to advise there may be an opportunity to meet with the Honourable Devin Dreeshen, Minister of Transportation and Economic Corridors, during the upcoming Spring 2026 Rural Municipalities of Alberta Convention in Edmonton, from March 16-18, 2026.

Please **REPLY to this email by Monday, February 2, 2026,** to express your interest for a meeting. We request that you include your top three priority items for discussion along with a list of potential meeting attendees.

A response will be provided once availability and a meeting schedule are confirmed.

Kind regards,

Jessica Kalmar (she/her)
Issues Manager, Office of the Assistant Deputy Minister
Construction and Maintenance Division
Transportation and Economic Corridors
Government of Alberta

Tel 780-644-3230
Cell 587-334-3664
Jessica.Kalmar@gov.ab.ca

Alberta

Classification: Protected A

Outlook

Recognition of Participating CEIP Communities for Emerald Awards for Environmental Excellence

From Eddie Chan <Eddie@abmunis.ca>
Date Mon 2026-01-19 16:46
To

Hello CEIP Municipalities,

Alberta Municipalities is in the process of submitting a nomination for the **Emerald Awards for Environmental Excellence** in recognition of the **Clean Energy Improvement Program (CEIP)**.

As part of this submission, we plan to recognize **Alberta Municipalities and all participating municipalities** for their role in delivering CEIP and advancing community-level environmental action across Alberta. The intent is to acknowledge the collective impact made through municipal participation in the program.

We are reaching out to confirm whether your municipality is comfortable being included as a participating municipality in this nomination. **No additional work or information is required from you or your municipality**, and inclusion would be limited to recognition as a CEIP participant.

If your municipality would prefer **NOT** to be included in the nomination, please let us know by **Friday, January 30th**. If we do not hear from you by that time, we will assume your municipality is comfortable being included.

If you have any questions, feel free to reach out.

Thank you!

Eddie

Eddie Chan | Marketing Advisor

D: 780.989.7416 | E: Eddie@abmunis.ca
300, 8616 51 Ave NW Edmonton, AB T6E 6E6
Toll Free: 310-MUNI | 877-421-6644 |
www.abmunis.ca

Alberta Municipalities
Strength In Members

We respectfully acknowledge that we live, work, and play on the traditional and ancestral territories of many Indigenous, First Nations, Métis, and Inuit peoples. We acknowledge that what we call Alberta is the traditional and ancestral territory of many peoples, presently subject to Treaties 4, 6, 7, 8 and 10 and Six Regions of the Métis Nation of Alberta.

Outlook

Fw: Water (Ministerial) Regulation Change - Exemptions to support water availability

From Roland Milligan <AdminCAO@mdpinchercreek.ab.ca>
Date Tue 2026-01-20 10:38
To Jessica McClelland <AdminExecAsst@mdpinchercreek.ab.ca>

Council info

Roland Milligan
Chief Administrative Officer
M.D. of Pincher Creek No. 9
Box 279
1037 Herron Avenue
Pincher Creek, AB T0K1W0
Phone: 403-627-3130
Email: AdminCAO@mdpinchercreek.ab.ca

From: EPA Water <EPA.Water@gov.ab.ca>
Sent: January 20, 2026 10:16
To: EPA Water <EPA.Water@gov.ab.ca>
Cc: Kate Rich <Kate.Rich@gov.ab.ca>; Gary Sandberg <gary.sandberg@gov.ab.ca>; Amy Mannix <Amy.Mannix@gov.ab.ca>; Robyn Saude <Robyn.Saude@gov.ab.ca>; Erika Rebus <Erika.Rebus@gov.ab.ca>
Subject: Water (Ministerial) Regulation Change - Exemptions to support water availability

Sent to: all municipal CAOs contacts in the Municipal Officials Directory

Hello,
I am writing to inform you of amendments to the Water (Ministerial) Regulation regarding exemptions from requiring a *Water Act* licence or approval that are effective from January 13, 2026. The changes follow from the water availability engagement.

The Government of Alberta has expanded some existing exemptions and added new exemptions for low risk activities, namely:

- Expansions / changes to existing exemptions:
  - Increased quantity and/or size limits for existing exemptions for dugouts, stormwater ponds, wetland construction, and temporary camps.
  - A definition of dugout has been added to the regulation, specifying the intended agricultural purpose of dugouts. This clarifies and reinforces that to qualify for the exemption, the purpose of the storage and use of the water must be for agricultural purposes. This means the exemption is for agricultural purposes only, and that a licence is required (and in some areas a water transfer) to use dugouts for purposes other than agriculture.
- New exemptions:

- Exemptions established for emergency preparedness, bridge and sign washing, dust control, and Green Area borrow pits on public lands.

Information on the changes are available online, including:
- News release at: New rules boost water storage and conservation | alberta.ca
- Ministerial Order (Effective January 13, 2026) at: M.O. 26/2025 - Environment and Protected Areas
- Water (Ministerial) Regulation at: Alberta King's Printer
- These are additional to regulation amendments to exempt riparian restoration watering announced in July - Freedom to water | alberta.ca

Thank you to those who provided feedback on the exemptions during the water availability engagement.

If you have questions on the changes, please let me know or contact epa.water@gov.ab.ca.

Kate
Kathleen Rich
Assistant Deputy Minister, Water and Circular Economy Division, Alberta Environment and Protected Areas
Government of Alberta
Level 12, South Petroleum Plaza, 9915-108 Street, Edmonton, Alberta
E: kate.rich@gov.ab.ca I M: 780-203-0844

Classification: Protected A

From: EPA Water <EPA.Water@gov.ab.ca>
Sent: October-30-25 4:44 PM
To: EPA Water <EPA.Water@gov.ab.ca>
Cc: Kate Rich <Kate.Rich@gov.ab.ca>; Gary Sandberg <gary.sandberg@gov.ab.ca>
Subject: Government of Alberta Bill 7 Water Amendment Act

Sent to: all municipal CAOs contacts in the Municipal Officials Directory

I am writing to inform you that a bill to amend the *Water Act* was tabled today in the Alberta Legislature.

Bill 7, the *Water Amendment Act*, follows from the water availability engagement held earlier this year. If passed, the proposed act amendments will:
- streamline regulatory requirements;
- improve water monitoring and transparency;
- allow lower risk inter-basin transfers to be approved by the Minister; and,
- support the use of alternative water sources, including rainwater and wastewater.

Information on the Bill 7 is online, including:
- News release at: Meeting Alberta's rising demand for water | alberta.ca
- Legislation at: https://www.assembly.ab.ca/assembly-business/bills/bills-by-legislature
- The water availability engagement information at: www.alberta.ca/water-availability-engagement

The proposed act changes enable future regulations and policy to be developed to enhance water availability. Continued engagement is planned to inform policy development, such as related to measurement and reporting.

Thank you to those who submitted feedback on the proposed act changes earlier this year, and thank you in advance for your continued involvement in engagement to enhance water availability.

If you have questions on the tabled bill, please let me know or contact epa.water@gov.ab.ca.

Kate
Kathleen Rich
Assistant Deputy Minister, Water and Circular Economy Division, Alberta Environment and Protected Areas
Government of Alberta
Level 12, South Petroleum Plaza, 9915-108 Street, Edmonton, Alberta
E: kate.rich@gov.ab.ca I M: 780-203-0844

From: EPA Water <EPA.Water@gov.ab.ca>
Sent: April-29-25 10:21 AM
To: EPA Water <EPA.Water@gov.ab.ca>
Cc: Kate Rich <Kate.Rich@gov.ab.ca>; Gary Sandberg <gary.sandberg@gov.ab.ca>
Subject: Water Availability Engagement - Phase 2

Sent to: all municipal CAOs contacts in the Municipal Officials Directory

I am writing to inform you that the next phase of water availability engagement launched today. It focusses on proposed changes to the *Water Act* and complementary policy to increase the availability of water licences to Alberta municipalities, businesses, agricultural producers and others, while continuing to protect the aquatic ecosystem.

Please see the attached letter with details. Also, here are the links to the news release and to the engagement website:

- News release: Making every drop of water count | alberta.ca
- Engagement site: Water availability engagement | Alberta.ca

Thank you for your feedback during the first phase to identify opportunities and barriers to enhance water availability, and we appreciate your feedback on these proposals.

Please do not hesitate to contact me or EPA Water with any questions.

Thanks.

Kate
Kathleen Rich
Assistant Deputy Minister, Water and Circular Economy Division, Alberta Environment and Protected Areas
Government of Alberta
Level 12, South Petroleum Plaza, 9915-108 Street, Edmonton, Alberta
E: kate.rich@gov.ab.ca I M: 780-203-0844

Alberta.ca

Government news
Jan 20, 2026

New rules boost water storage and conservation

Alberta's government is making it easier for farmers, ranchers, communities, businesses and emergency responders to store and use water.

On this page:

New and expanded *Water Act* exemptions will increase water availability, improve conservation, support agricultural production and help protect communities from future emergencies.

Currently, many dugouts are sized too small to capture available water because of a 2,500 cubic metre exemption limit. Effective immediately, farmers and ranchers can fill their dugouts up to 7,500 cubic metres – triple the previous limit – provided the water is used for agricultural purposes. This change helps protect them from future droughts and supports strong agricultural operations.

> "Albertans asked for practical improvements to make more water available, and we're delivering. These changes make it easier for farmers, businesses and communities to access and store water. It's good for communities, the environment and the economy."
>
> *Grant Hunter, Minister of Environment and Protected Areas*

> "Reliable access to water is essential for Alberta's farmers and ranchers, especially as they manage drought risk and plan for the future. These practical changes respond directly to what producers and rural communities have been asking for – making it easier to store and use water responsibly so agricultural operations can remain strong, resilient and productive."
>
> *R.J. Sigurdson, Minister of Agriculture and Irrigation*

Alberta's government is also making it easier for communities and businesses to use less fresh water by using stormwater instead. Under the new exemptions, a newly constructed wetland will also be able to capture and fill with up to 7,500 cubic metres of local surface runoff per year. That's a 1,250 cubic metre increase from the previous limit, supporting more wetlands across the province.

Other changes include making it easer to:

- Use water for bridge, sign washing and dust control.

- Supply water to a temporary work camp.
- Access water from borrow pits on unoccupied public land in the Green Area.

As demand for water increases across our province, Alberta's government is modernizing the water management system to ensure we meet the challenges of today. Recent improvements include passing the *Water Amendment Act,* which removes the requirement for riparian restoration projects to get a temporary diversion licence for watering plants, while also ending the unnecessary 10 per cent holdbacks on most water licence transfers, giving Albertans more freedom to water.

Quick facts

- New exemptions:
  - Up to 100 cubic metres per source per day for fire prevention and training activities related to firefighting and spill response (water used for active firefighting has long been exempt under the *Water Act*).
  - Up to 1,000 cubic metres per day for water accessed from borrow pits on unoccupied public land in the Green Area, provided there are no fish present and no connection to a wetland or watercourse.
  - Up to 100 cubic metres per source per day for bridge and sign washing, and dust control.
- Expanded exemptions:
  - Water use from a dugout has been increased to 7,500 cubic metres per year, while dugouts up to 7,500 cubic metres in size may be built with no approval required under the *Water Act.* These exemptions must only be used for agricultural purposes.
  - Annual use from stormwater ponds of up to 7,500 cubic metres with an outflow or up to 15,000 cubic metres with no outflow are now exempt from licensing requirements.
  - The wetland construction exemption has increased to 7,500 cubic metres.
  - The exemption for water use by temporary camps has increased to 2,500 cubic metres per year.

Alberta.ca

Government news
Jul 31, 2025

Freedom to water

Communities and businesses can now spend more time restoring watersheds and less time filling out government forms.

On this page:

To ensure that plants receive the water they need, Alberta is removing the requirement to have a temporary diversion licence to water plants as part of a riparian restoration project. This change will cut unnecessary red tape, keep plants alive and ensure the time and money that communities and businesses put into watershed restoration projects are not wasted.

Traditionally, a licence has been required in Alberta to water newly planted trees, shrubs, grasses and other vegetation along rivers, creeks and lakes. This requirement means that otherwise healthy plants could die from lack of water if a licence could not be obtained in time due to bureaucratic delays, water shortages or drought conditions in the area.

A solar-powered irrigation system at a riparian restoration site along the Elbow River in Calgary (Credit: Leaf Ninjas)

> “Freedom to water is about cutting through the clutter of bureaucracy so real work can happen. This change stops the waste, ends the delays and lets communities focus on restoring Alberta’s rivers, creeks and lake banks – not filling out forms.”

Rebecca Schulz, Minister of Environment and Protected Areas

> "This amendment is a huge step forward for practical, common-sense riparian restoration in Alberta. This simple change will reduce flood and drought risk, protect our watersheds and ensure Alberta's restoration efforts are resilient and effective. We applaud the Alberta government for listening to restoration practitioners, cutting red tape and delivering a solution that benefits both the environment and Albertans."

Andrew Renaux, chief executive officer and founder, Leaf Ninjas

Riparian restoration projects are crucial for expanding, repairing and rejuvenating ecosystems near water bodies. The requirement to have a temporary diversion licence made this important work more difficult by adding additional costs onto small companies and organizations and delaying projects while waiting for licences. It also meant that if a licence could not be obtained or water shortages were seen in an area, water had to be trucked in, or the plants were left to die.

> "Our government is pleased to support the important work of restoring riparian areas and improving the health of our rivers. Allowing a small quantity of water to be used without a licence will help establish healthy, lush vegetation along previously degraded riverbanks and help make these projects successful over the long term."

Grant Hunter, Associate Minister of Water

> "By cutting unnecessary red tape, we're empowering communities and ecological restoration groups to focus on what really matters: restoring Alberta's watersheds. This change will ensure that their hard work and investment won't be lost to bureaucratic delays, allowing more time to focus on helping plants thrive and our environment flourish."

Dale Nally, Minister of Service Alberta and Red Tape Reduction

With the removal of the requirement to have a temporary diversion licence, more restoration projects will be able to adapt to changing conditions. In addition to the removal of the temporary diversion licence requirement, there are new industry-led technologies like solar-powered drip systems that make watering more efficient than ever and reduce the amount of water needed.

Quick facts:

- The exemption only applies to small projects consuming no more than 100 cubic metres per day, for water that will be used to support the growth and establishment of plants along a watercourse or water body.
- Strong, healthy vegetation around waterways helps restore native habitats, prevents erosion to riverbanks, stabilizes nearby land and improves water quality.
- Alberta's Watershed Resiliency and Restoration Program provides grants to restore riverbanks and riparian areas across the province.

Related Information:

- Watershed Resiliency and Restoration Program