



Nose Creek Re-Alignment

Working with Multi-disciplines and Regulators to Improve Transportation Impacts/Interfacing with Natural Assets

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February 27, 2023

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INTRODUCTION

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Project Location

40th Avenue and QEII (Hwy 2) Interchange

- South side of the City of Airdrie

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Project Partners

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Project Contractor



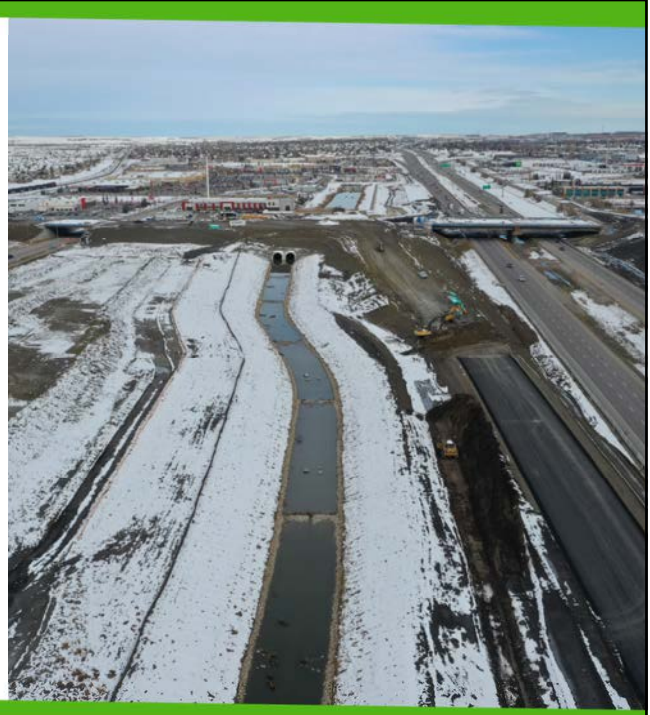
Estimated Budget (Capital): \$83M

Construction Start: May 2021

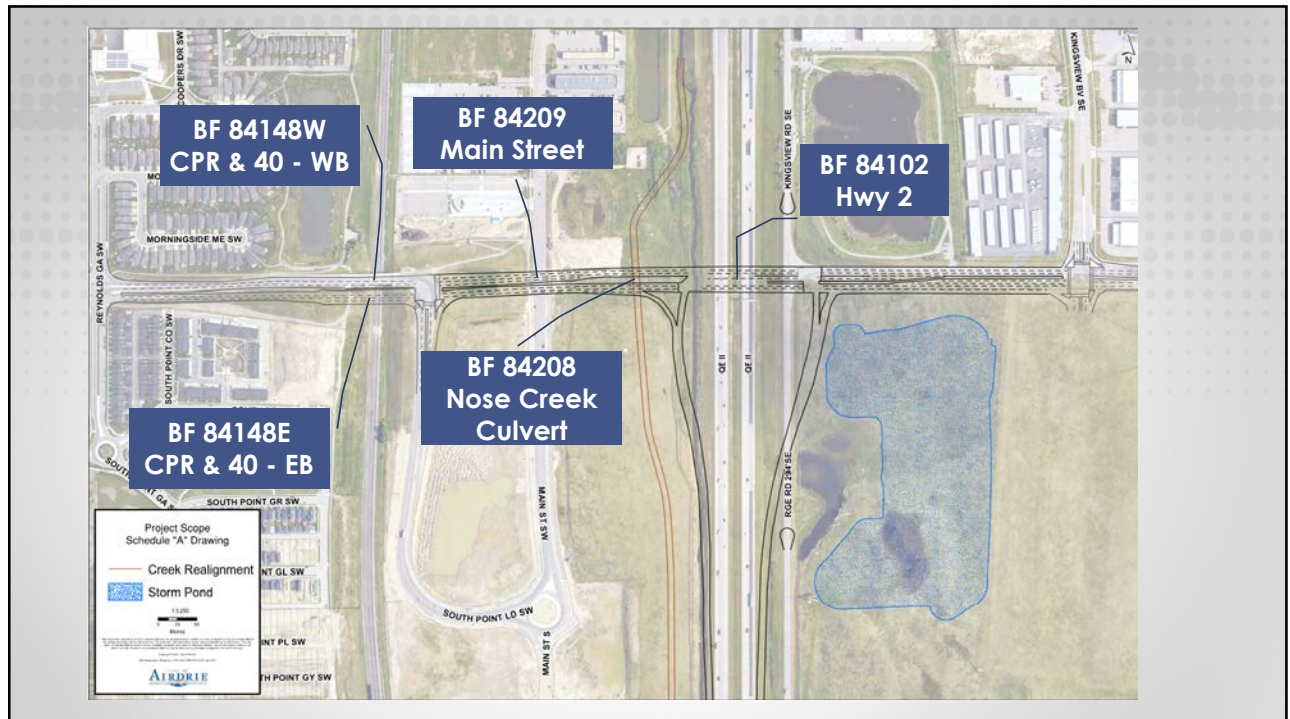
Completion Date: October 2023

General Scope of Work:

- Bridges - 1 rehab; 4 new structures
- Earthworks ~ 500,000 cu m
- Granular Base Course ~ 70,000 tonnes
- Asphalt ~ 32,000 tonnes



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What we will cover:

- Introduction to the Project
 - Done! 2 hours to go
- Brief Project Status
- Some History
- Design and Regulatory Engagement
- Construction (Playing in the Mud)
 - Improvements
 - Current Creek Conditions (Did we win?)



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Our Focus



Pre-project state of Nose Creek was relatively degraded and disturbed
Design Team saw the opportunity to improve the interface

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Project Status

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Heading into the top of the 3rd .. Construction Season:

“Creek”

- Channel Complete
- Water flowing
- Re-Vegetation 95% complete
- Monitoring

“Structures”

- Culverts – 100%
- EB CPR – 90%
- WB CPR – 60%
- Main St – 95%
- Hwy 2 – 60%

“Roads”

- Earth – 90%
- Roads – 50%
- Street Lighting -60%
- Traffic Signals
- Sign Structures



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EllisDon Drone Flight:



October 2022

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Some History

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History within the Project

- Historical Resource Impact Assessment (HRIA) was completed by Archeologists and submitted to the Regulator (More Later)
- Project identified as Precontact period Historic sites within the project foot print
- Able to avoid site designated as moderate to high archeological significance
 - Green dot = Low historical significance
 - Yellow dot = Moderate/High level of historical significance
- The project required a stage 2 for the east side and only a stage 1 for the Nose Creek area.



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Historical – Stage 2 completed



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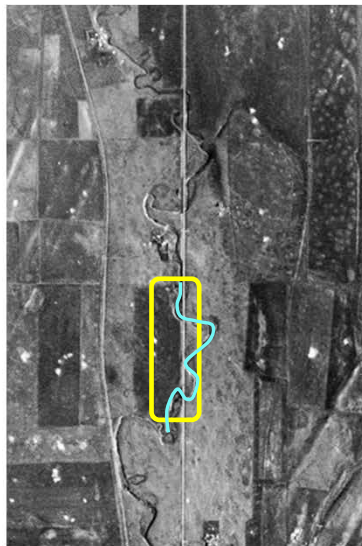
Nose Creek – a meandering history .. Interrupted

1926



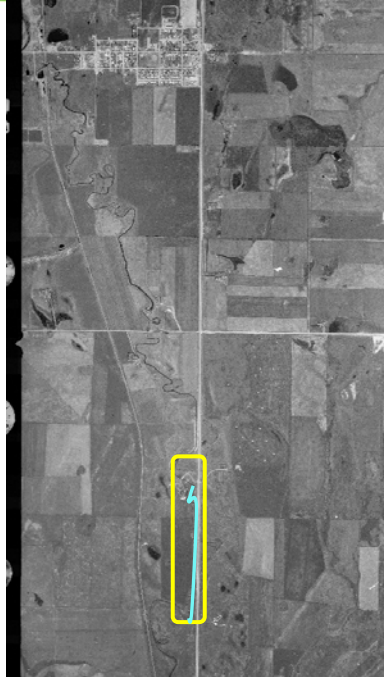
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1950



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1966



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1978



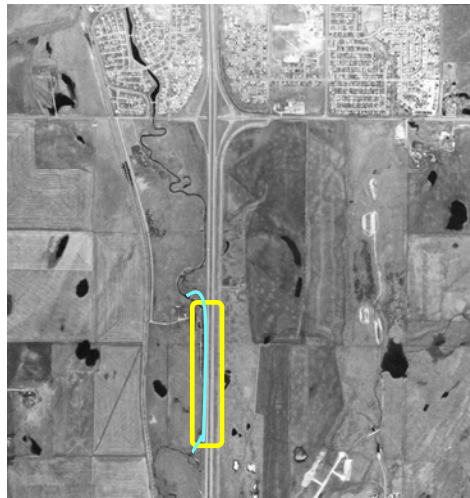
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1981



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1997



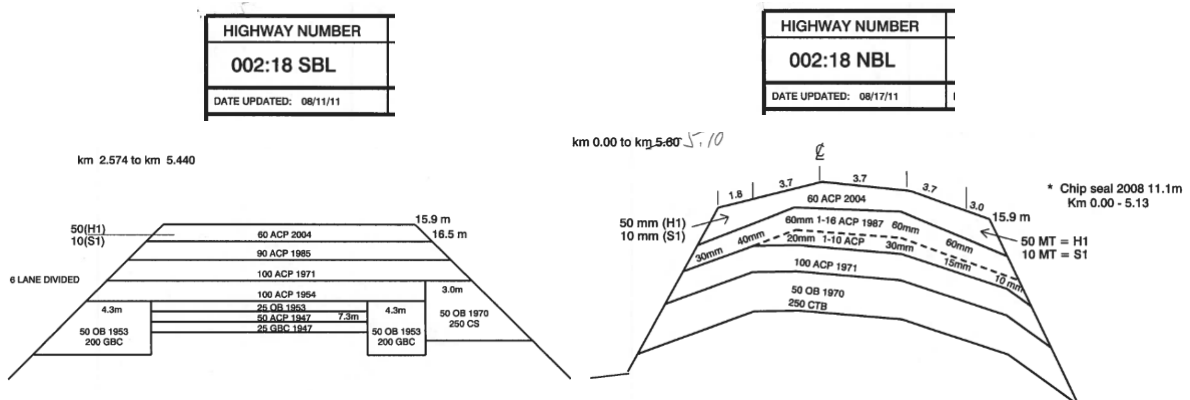
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2008



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Asphalt Structure



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Nose Creek Valley Museum

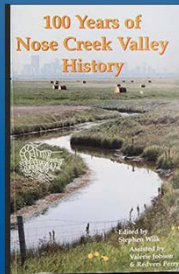
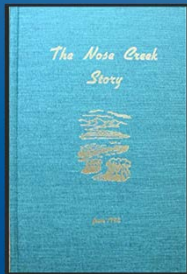


/ Nose Creek Valley Museum

2,000 years of history. 20,000 artefacts. 10 exhibits. One little museum.

Nose Creek Valley Museum represents over 2,000 years of local history, providing an interesting glimpse into the historical aspects of Airdrie, Nose Creek, and surrounding areas.

And 2 books!



The Nose Creek Story
By Nose Creek Historical Society
100 Years of Nose Creek Valley History
By Stephen Wilk

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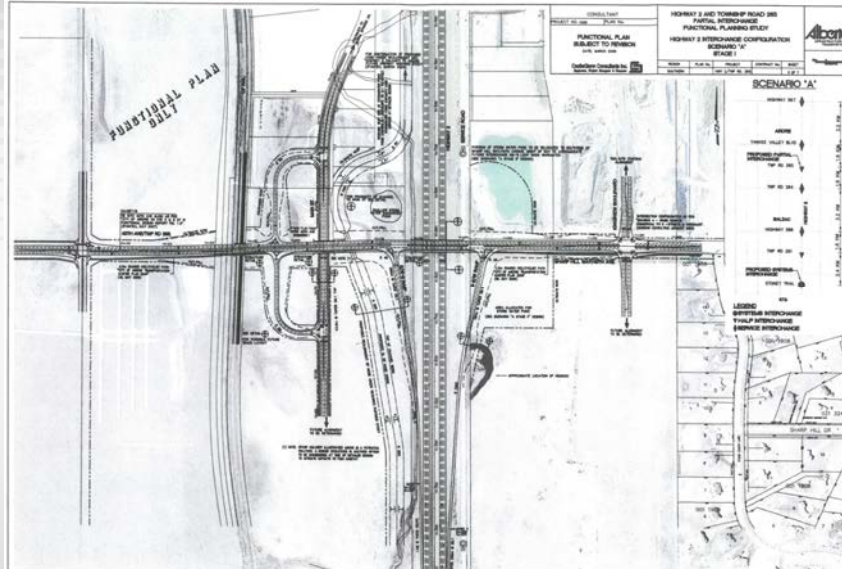
And still is important to the local community



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Functional Planning Study

Completed by Castleglenn Consultants March 2008



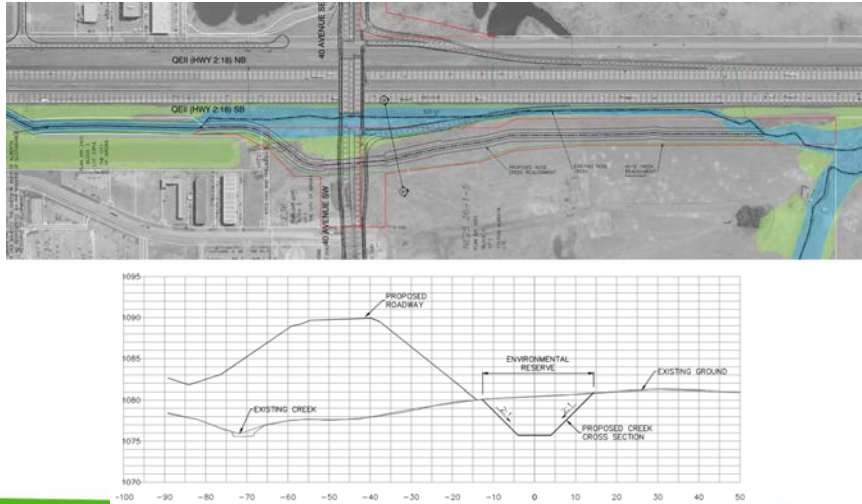
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Design and Regulatory Engagement

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Creek Design Considerations

Small Creek - ~4 to 5m wide channel normal water level
 with a big soul - ~30m wide channel at 1:100 storm



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Project Onsite Environment Concern

As seen previously, the Creek was the SB drainage ditch for Highway 2

Runoff from the highway and no control or mitigation measures should spill occur

Prevalence of weeds and non-native grasses
 Reducing ecological Resilience



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The Regulators ... Mount up!

“Fisheries Act”

Fisheries and Oceans Canada (DFO)

- Re-alignment would result in *serious harm to fish*

“Water Act”

Alberta Environment and Parks (AEP)

- Re-alignment of a permanent watercourse

“Historical Resources Act”

Alberta Culture and Status of Women

- Excavation below ground requiring HRIA

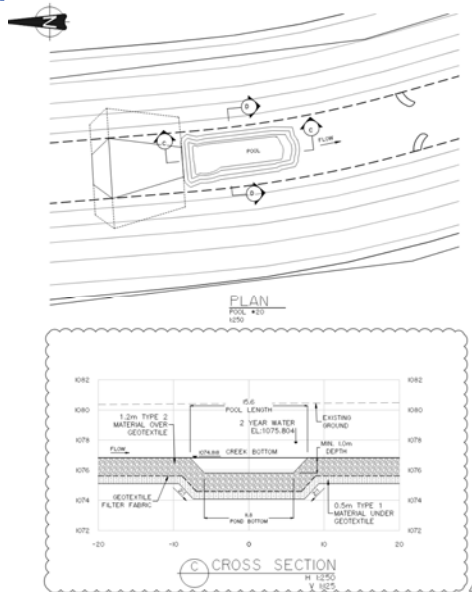


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Key In-stream Offset Features:

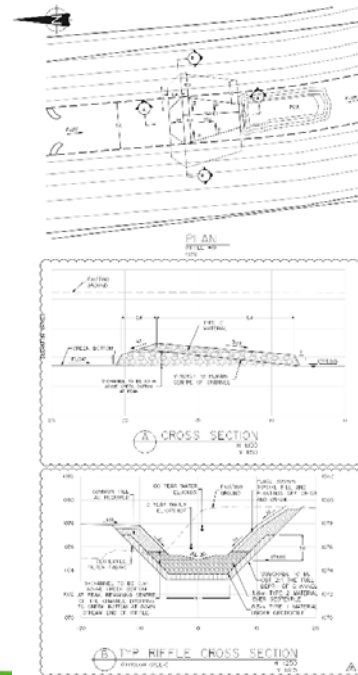
Pool – main habitat feature

AKA Fish hotels



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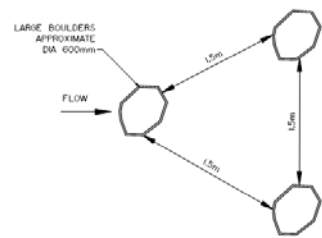
Riffle – Focus flow to the centre AKA Speed bump



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Boulder Clusters – Shade and slow flow area

AKA Rest Stop – or bird perch!

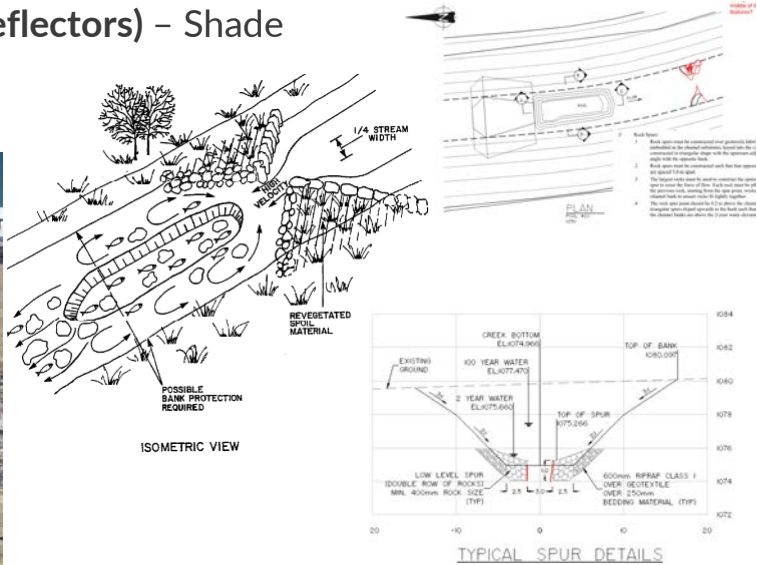


TYPICAL BOULDER CLUSTER DETAIL

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Spurs (Opposing Wing Deflectors) – Shade and slow flow area

AKA Flipper... pin ball anyone?



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Revegetation – Willow and Natural Riparian seed mixes

Shade, bank stabilization, food – Aquatic Life

Habitat, Cover, food – Wildlife



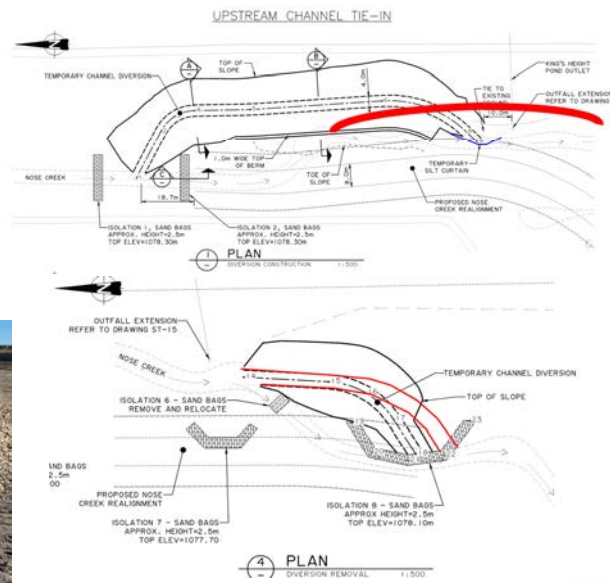
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Contingency Plan - Needing to achieve 80% revegetation survival by Spring 2024



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Temporary Diversions



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Construction... The good stuff!

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Construction



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November 2021 the Creek was opened to its new alignment



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Some General Facts about the Creek

- Length of Channel: 1,004m long
- Volume of Excavation and Rock: 97,051 cubic meters of dirt and rock excavated
- Length of the culverts: 251.2m of culvert constructed (Twin - 125.6m length of channel)
- Area of fabric: 46,040 square meters of geotextile
- Number of Willows planted: 33,000 willows planted



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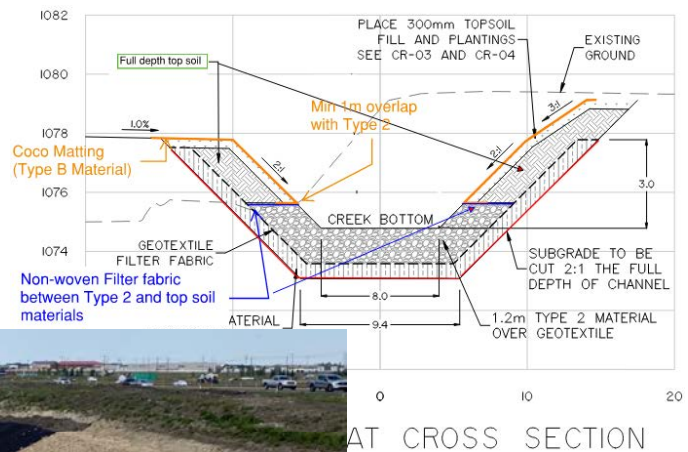
Improvements During Construction To the Heart of the Presentation

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Improvement 1 Cross Section

Multiple Disciplines involved (Multiple consultants) through Regulators

Additional fabric added and depth of topsoil increased



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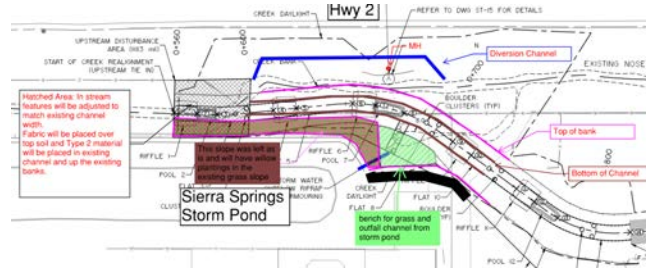
Improvement 2

Tie-in Location and Temporary diversion channel

Focused more on natural transition to the new cross section from the old

Minimized impact and disturbance

Public Safety (Adjacent On-ramp and Storm Pond with Pathway)



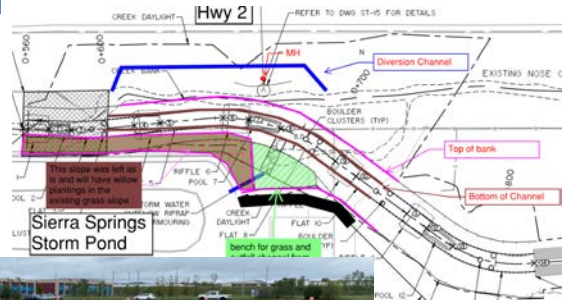
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Improvement 3

Sierra Springs Storm Pond Outfall

Improve tie in and saved some existing riparian vegetation.

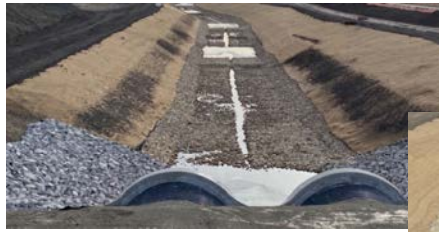
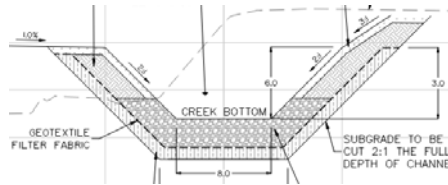
Additional sedimentation area and permanent ESC along bank



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Improvement 4 - Addition of V-notch

Critical - Fish Connectivity!



Days after opening



May 2022

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Channel Fly Through - 2022

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Current Conditions

Life is returning

Wildlife Noted:

- Herons
- American Minks
- Geese
- Ducks
- Schools of fish (pike and other large river fish)
- Coyotes
- Rabbits
- To name a few



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City of Airdrie – 40th Ave and QEII Interchange



Thank you for your attention

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Questions?

Contact Scott Etzel, etzels@ae.ca