

AGENDA

- Okotoks + Foothills Partnership
- Project Key Objectives
- · Historical Context
 - Previous work 2012 2018
 - Feasibility Study 2019
 - Concept Design 2020
- Preliminary Design Summary
- Regulatory Approvals
- Project Schedule
- Next Steps



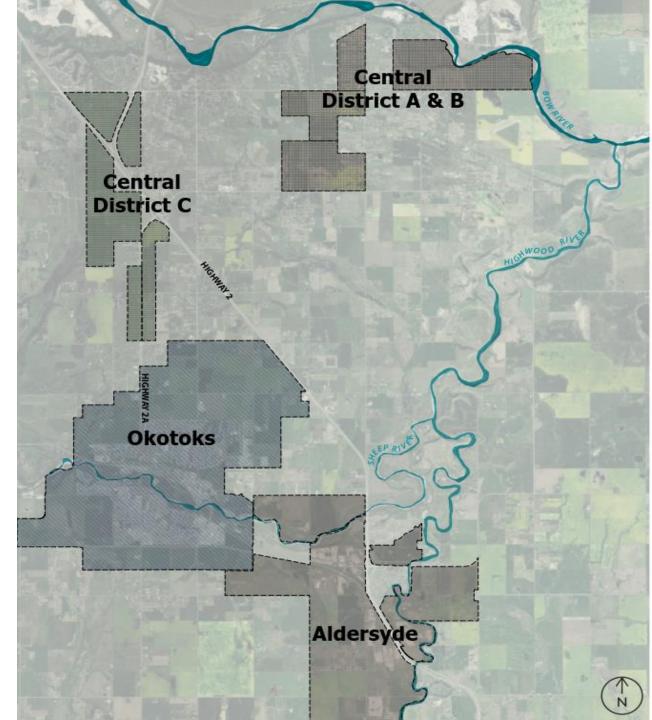
PURPOSE

To **collaborate** regionally in providing safe, clean drinking water at an affordable cost to residents of Okotoks and Foothills County.

MOU executed August 31st 2020:

- Term to December 31st 2021, unless replaced by further agreements
- Joint study to complete design for a water system to divert and convey raw water from the Bow River as generally shown in the figure
- Joint cost sharing for preliminary design work approved. \$1,040,000 Town / \$440,000 Foothills County based upon concept level service area demands

Regional Infrastructure	Town's Share	County's Share
Intake and Intake Pump Station	52%	48%
Pipe A – Intake to Central A&B Storage	52%	48%
Central A&B Raw Pump Station	82%	18%
Pipe B1 – Central A&B Storage to Junction	82%	18%



DELEGATION OF AUTHORITY

Roles and responsibilities are outlined/appointed for Councils, the Intermunicipal Committee (IMC), Technical Advisory Committee (TAC) and Owners Project Management Group (OPMG).

Councils	Intermunicipal Committee (IMC)	Technical Advisory Committee (TAC)	Owner's Project Management Group (OPMG)
Makes the final decision to proceed with any further steps, undertakings, arrangements or other matters.	Act as a forum for communication regarding project status and budget.	Act as a forum for communication, planning, analysis, project management, regulator engagement and similar functions including ensuring that the activities contemplated by the MOU are being carried out as and when required.	Track and monitor project progress on a day to day basis.
Approve budgets, cost sharing agreements and operating plans.		Prepare and recommend budgets and operating plans to IMC for review and endorsement.	Prepare budgets for approval.
Approve governance agreements.		·	Identify TAC decision requirements as communicated by the design consultant and confirm TAC meeting agendas.
	Ensure that the activities contemplated	Approve award of work to consultants for the Project.	Provide background information to consultants, TAC and IMC to make decisions.
		Approve other major supply arrangement as delegated within the MOU.	Manage work within approved budgets.
			Approve and recommend payment for consultant invoices in accordance with approved cost sharing agreements.
			Report on project status to the TAC.
			Submit regulatory approvals and grant applications on behalf of the Partners for this project.
			Recommend approval of consulting and major supply work to the TAC.





HISTORICAL CONTEXT

PREVIOUS OKOTOKS WATER SERVICING OPTIONS



Calgary Regional Partnership (CRP) – Regional Water & Wastewater Master Plan

- Developed scenarios for servicing around Calgary
- Highest scoring alternative:
 - Treated water from Calgary servicing Okotoks, High River and Nanton (\$167MM)
- Alternate option was treated water from Calgary servicing Okotoks only (\$60MM)



Conceptual Water Servicing Review (BSEI)

- Evaluated options for Okotoks only, considering CRP work
 - Treated pipeline from Calgary
 - Raw water from Bow River to WTP in Okotoks
 - Raw water from Highwood River to WTP in Okotoks

PIPELINE FROM CALGARY



Okotoks Council voted for treated pipeline from Calgary to Okotoks

Preliminary budget and 90% funding application to Province



Detailed alignment design work completed. Added additional capacity per Province request



Province mandates Calgary must transfer water licence to provide treated water to Okotoks

Therefore, alternate approach is needed

FEASIBILITY AND CONCEPT OF SUB-REGIONAL SYSTEM



Okotoks and Foothills embark on feasibility of a sub-regional system for Okotoks and south-east Foothills County

<u>Updated Assumptions:</u>

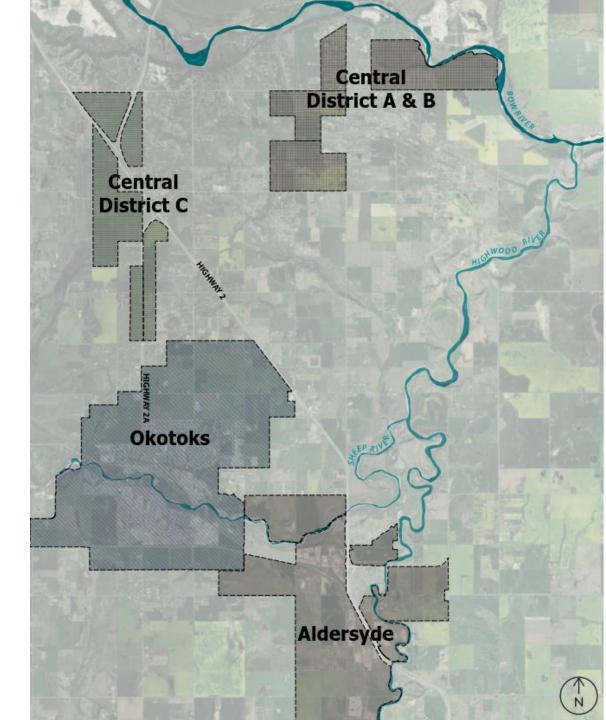
- Licence transfer / regulatory assumptions
- Storage requirements (new)
- Confirm service areas
- Grant opportunity scenarios
- Updated costing



FEASIBILITY STUDY

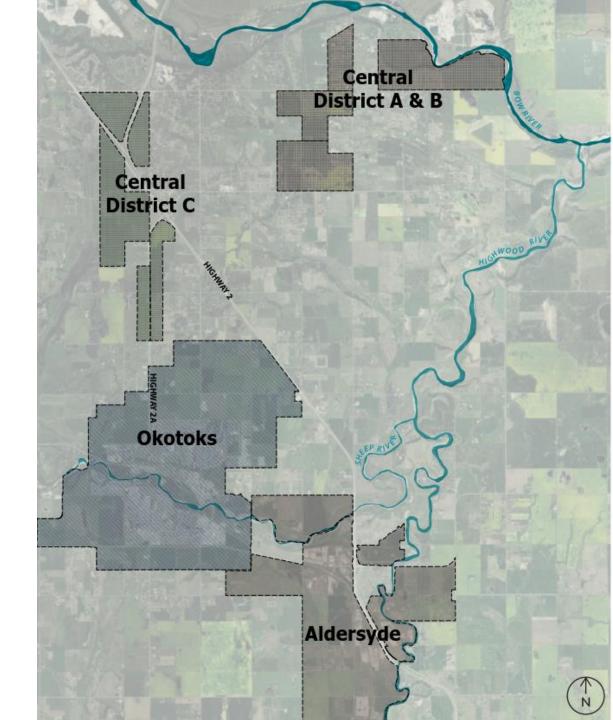
- Developed sub-regional options with Foothills County as Partner to Okotoks
- Service Areas:
 - Okotoks
 - Foothills County
 - Central District A & B
 - Central District C
 - Aldersyde and Highway 2A Corridor (AFICA)

Service Area	25-Year Growth
Okotoks Population	24,500 p
Central District - Zone AB Population	7,500 p
Central District - Zone C Population	2,500 p
Central District - Zone C ICI (ha)	200 ha (494 ac)
Aldersyde Population	5,757 p
Aldersyde ICI (ha)	188 ha (465 ac)



FEASIBILITY STUDY

- Feasibility options developed variations of:
 - 1 large regional WTP (Okotoks or Foothills)
 - Few WTPs to serve different zones
 - Raw watermains to supply WTPs vs. longer treated line from one WTP
- 14+ Alternatives were evaluated, considering:
 - Timing of Okotoks' and Foothills' water needs
 - Maximizing existing infrastructure (Okotoks WTP)
 - Minimizing complexity of operations / agreements
 - Lower net present value costs (capital, operational and borrowing costs)
- These were compared to Calgary pipeline option



CALGARY PIPELINE vs. SUB-REGIONAL SYSTEM

Summary of Key Comparisons

Lower Capital Costs

Lower Debt Requirements

Lower Operating Costs – Cost of Water

Lower 25 Year NPV (Total Cost of Ownership)

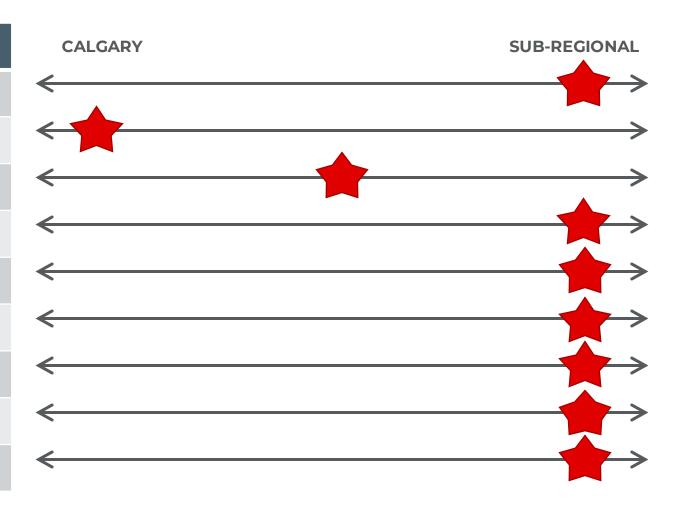
Lower Risk of Approvals and License Transfers

Lower Political Complexity

Lower Risk of Timing Issues

Greater Autonomy - Control

Security of Long-Term Supply

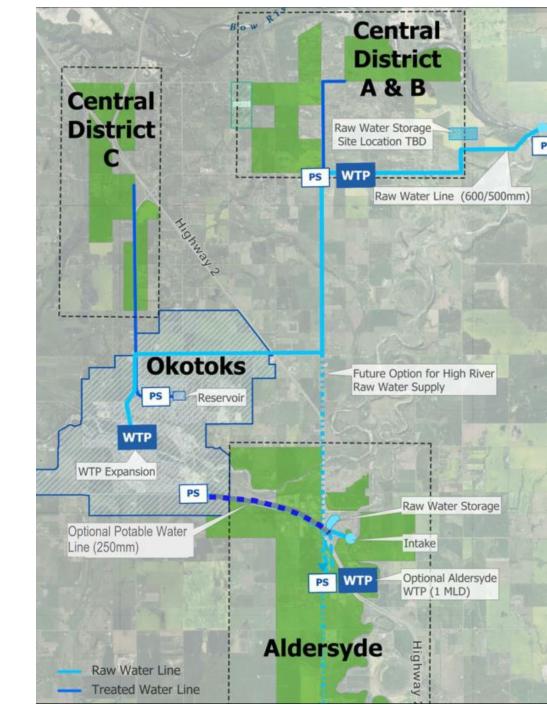


PREFERRED SERVICING CONCEPT

- Regional system was preferred over Calgary pipeline
- Ultimate potential regional system:
 - Bow River water supply:
 - Okotoks WTP immediate
 - Central District WTP (future)
 - Aldersyde WTP (future, if needed)
 - High River (future, if needed)
 - Okotoks WTP supply Central District C
 - Central District WTP supply Central District A&B

This system allowed for water to be brought to **Okotoks immediately**, while allowing for **flexibility in future options**

This figure shows the overall concept that was envisioned but is intended to be refined as needed in the future, by focusing on Okotoks first.



PHASED APPROACH RECOMMENDATION

Recognize that Stage 1 option allows for flexibility of the ultimate solution; Focus on Stage 1 immediately, designing for flexibility.

STAGE 1

Maximize Existing Infrastructure / Immediate Raw Water Supply (CURRENT)

- Build intake at Bow and Highwood confluence
- Purchase land and build raw water storage (need for licence transfer)
- Build raw watermain to Okotoks
 WTP (supply additional ~10,000p)

STAGE 2

Expand Treatment Capacity in Sub-Region (FUTURE)

- Expand Okotoks WTP as needed
- Construct Central District WTP to serve A & B
- Construct treated pipelines from Okotoks to serve Central District C and raw line to Aldersyde if needed
- Flexibility to be refined / optimized in future

CONCEPT DEVELOPMENT OF SUB-REGIONAL





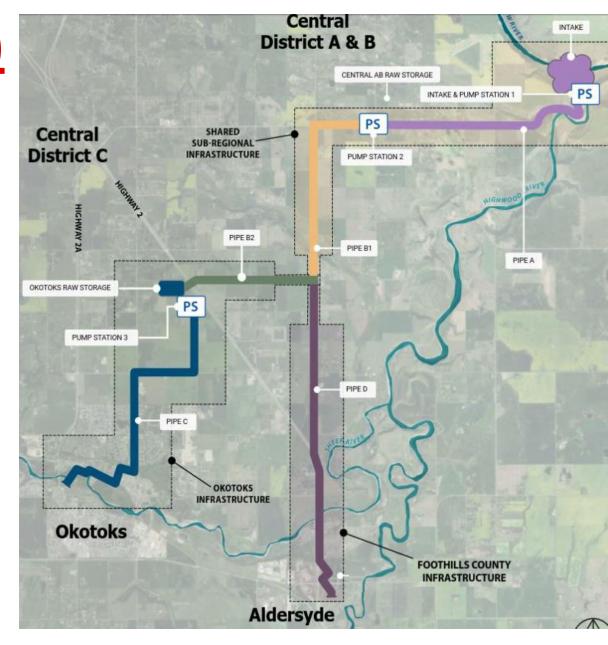
Conceptual Design of Sub-Regional System

- Concept sizing of infrastructure
- Focuses on immediate raw water supply to Okotoks WTP and Aldersyde
- Conceptual locations and alignment
- Cost sharing and funding/financing scenarios
- Approved by both Councils in Fall 2020



INITIAL CONCEPT (2020)

- Although building Stage 1 only; need to design full system to confirm sizing
- Initially, desire to size infrastructure to be as minimal and inexpensive as possible (smallest pipelines possible)
- Shared Infrastructure:
 - Intake & Intake Pump Station (1)
 - Pipeline A (from Intake to Pump Station 2)
 - Pipeline B1 (from Reservoir pump station to Junction)
- Okotoks Infrastructure:
 - Pipeline B2 (from Junction to Reservoir)
 - Okotoks Raw Water Reservoir
 - Okotoks Pump Station (3)
 - Pipeline C (from Reservoir to Okotoks)
- Foothills Infrastructure:
 - Pipeline D (from Junction to Aldersyde)
- Design provided capacity for 26,573 population equivalent (17 years of growth)



RESILIENT DESIGN

Resilient design provides:

- **Supply Resilience:** Provides capacity for the full design-life (25 years in drought conditions) to refill storage due to licence and in-stream objective restrictions during a drought.
- Climate/Disaster Resilience: Allows for additional system capacity in the event of emergency impacting other supply systems.
- Capacity Flexibility: Additional years of capacity if lower rates of growth are experienced than planned.
- **Design Flexibility:** Flexibility to locate reservoir at technically optimum location as upstream & downstream piping sized to same flowrate.
- Operational Flexibility: Allows operational flexibility as capacity is not designed to upper limit of average demands and facilitates management of storage.
- Design provides capacity for 40,426 population equivalent (25 years of growth)

CONCEPT DESIGN SUMMARY

- Two options provided:
 - 17 Year design frame (non-resilient)
 - 25 Year design frame (resilient)
- Class D Capital Cost Estimates
 - Contingency level added 35%
 - -30%/+50% certainty

	No Resiliency	Resiliency Sizing
Okotoks Population Equivalent	16,660	24,500
Foothills County Population Equivalent	9,913	15,926
Total Population Equivalent	26,573	40,426
Total Class D Cost Estimate	\$34.10MM	\$42.35MM
Dollar per person equivalent	\$1,295/p	\$1,048/p
Okotoks Dollar per person equivalent	\$1,478/p	\$1,156/p

Decision: Apply for grant funding for Resilient design. Proceed to Preliminary Design with Resilient sizing.

CONCEPT DEVELOPMENT OF SUB-REGIONAL

SYSTEM



Conceptual Design of Sub-Regional System

Approved by both Councils in Fall 2020

RFP Awarded for Design of Sub-Regional System



Preliminary Design

- Field work: hydrogeological, geotechnical, environmental
- Preliminary designs refine details
- Approvals submitted
- Preliminary designs and costs refined
- Phased approach defined and costed for final design



PRELIMINARY DESIGN BASIS

Service areas re-reviewed to confirm sizing before design

Added raw water supply capacity for Nanton & Cargill:

- Grant Funding: Nanton added to better align with Water for Life strategy and potential increased grant funding
- Cost Sharing: Cargill added to allow for additional cost-sharing in infrastructure
- Nanton improves level of grant funding eligibility to 90%

Decision: Add Nanton and Cargill capacity to design to improve grant funding and share costs with more parties

Increased the system size by 37% to reduce costs for Okotoks by 90%

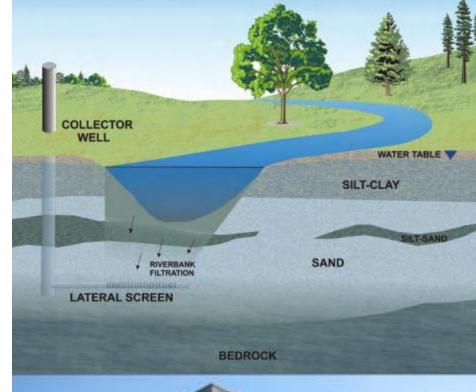
INTAKE + INTAKE PUMP STATION

Hydrogeological investigation completed to determine:

- Confirm feasibility of the proposed location to provide the required flow
- Confirm feasible types of intakes

Decisions:

- Intake to be at confluence of Bow and Highwood Rivers
 - Improves Regulatory Process
 - Improves licence transfer efficiency
 - Eases return flow infrastructure requirements
- Intake type: Ranney Collector well
 - Less impact to environment (no in-river work)
 - Capacity for projected water needs
- Pump station constructed on top of intake:
 - Due to vertical pumps
 - Protects from flooding
 - Reduces land requirements and construction impacts





PIPELINES

Pipeline alignments refined after conceptual design based on:

- Costs (capital & O&M)
 - Pipeline lengths & crossings
 - Pumping costs
 - Land acquisition
- Environmental impacts/approvals
- Landowner impacts/risk
- Minimize traffic impacts

Materials evaluated based on cost and supply issues

Downsizing water line in consideration of future twinning was evaluated for potential cost deferrals:

 Twinning only saves ~\$2.8MM (10%) initially, but reduces initial pipeline capacity by 50%. Therefore, total cost of pipeline overall nearly doubles.

Defer Pipe D to Aldersyde (defers ~\$4.37MM for Foothills)

Decision: Do not twin pipelines; defer pipe to Aldersyde (Pipe D)



RAW WATER RESERVOIR + PUMP STATION

Storage required by Province to mitigate potential drought

Two 290,000 m³ cells + allowance for future third

Requires liner (synthetic or clay) to mitigate seepage

Storage – sized for and owned by Okotoks only

Pump station shared by Partners:

- Required to boost water in pipeline from reservoir location to Okotoks WTP (and Aldersyde in future)
- Includes raw reservoir quality management equipment



PRELIMINARY DESIGN **SUMMARY**

- Preliminary design: Class of estimate based on design refinements and field work completed (lowered contingencies from conceptual)
 - Costs increased from concept by 40%
 - 37% increase in system size
 - COVID-19 market price volatility (pipe and liner) costs)

Class C Capital Cost Estimates:

- Contingency level added 25%
- -20%/+30% certainty

Service Area	Preliminary Design (Class C)
Okotoks Population Equivalent	24,500
Foothills County Population Equivalent	15,926
Cargill Population Equivalent	6,184
Nanton Population Equivalent	4,759
Total Population Equivalent	51,369
Dollar per person equivalent	\$1,195/p
Okotoks Dollar per person equivalent	\$1,325/p

Current Proposed Alignment



PHASE 1

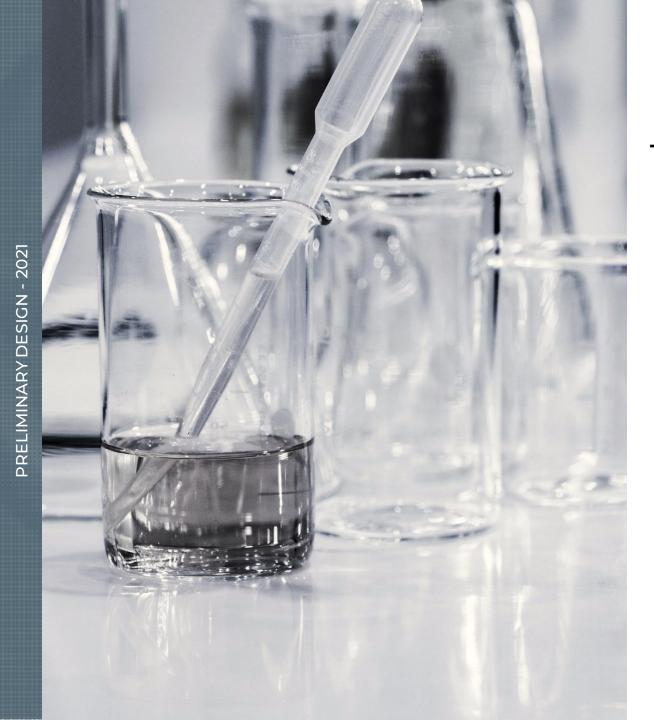
Due to cost increases, timing needs, and to minimize carrying costs, **TAC recommendation to phase** construction to supply raw water to Okotoks first:

- Reasonable as not all infrastructure will be required to be full size for 25+ years
- Okotoks needs water immediately, as was identified at feasibility and concept design

Phase 1:

- Maximize value of the intake (ultimate size, due to regulatory and technical construction challenges)
- Maximize value for pipeline (twinning only provides 10% cost savings)
- Phase pump station buildings and equipment; as minimal pumping required in first 5-10 years
- **Phase** reservoir only 50% required initially
- Phase 1 capital cost estimate \$46,070,000
 - -20%/+30% cost certainty

	Phase 1 Estimate
Total Phase 1 Cost Estimate	\$46,070,000
Pipe D – Aldersyde Feed (deferred)	\$4,370,000



PHASE 1 – NEXT STEPS

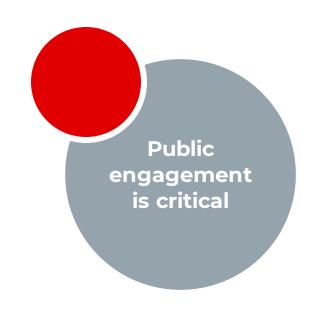
Technical Design Next Steps (2022):

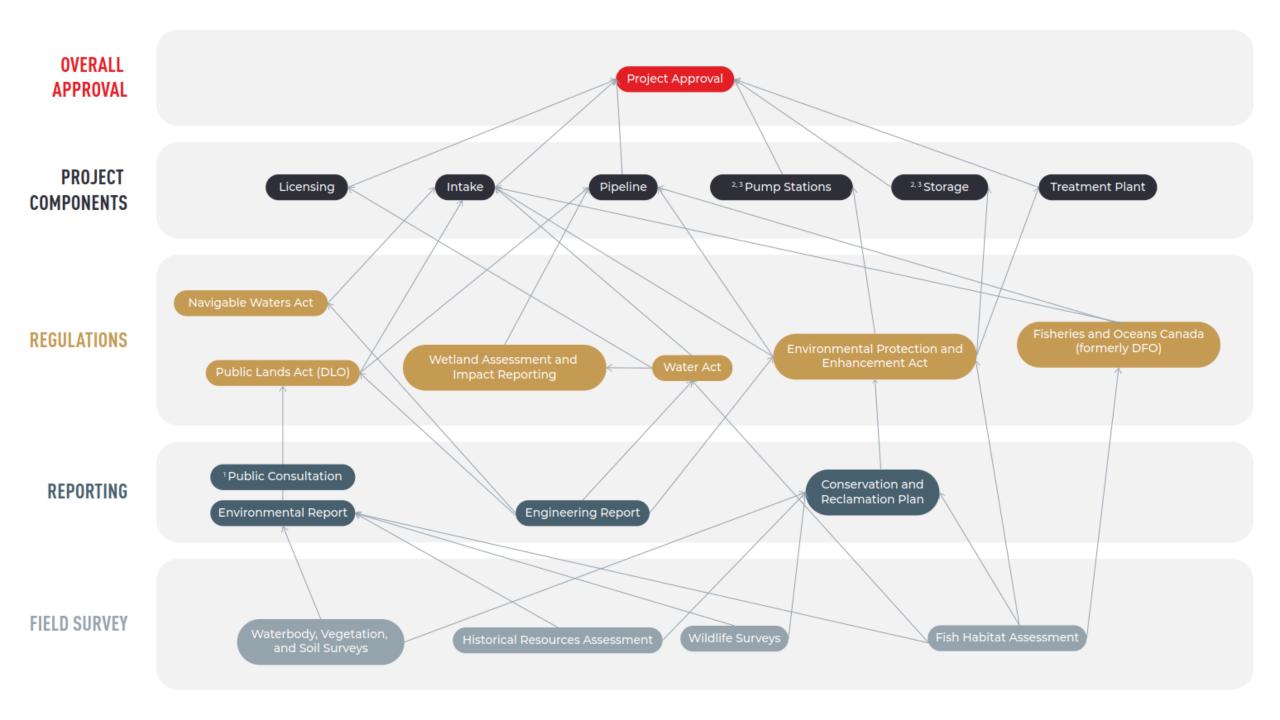
- Design optimization through detailed design to minimize costs
- Further geotechnical / groundwater characterization
- Water quality modelling and operational optimizing of reservoir
- Optimize design of minimal pumping/building infrastructure to minimize initial infrastructure costs
- Develop design with expert contractors to lower construction risks
- Determine project delivery methods and confirm budgets



REQUIREMENTS

- Regulatory approvals are **complex** and **interrelated**, and **take time** (6 12 months each)
- Collaborating with AEP throughout design
- Different approvals for different components
 - Federal
 - Intake Construction (Fisheries and Oceans Canada)
 - Provincial
 - Historical Resources Impacts (Archaeological, Paleontological)
 - Waterworks Approval (Okotoks WTP)
 - Conservation and Reclamation Plan (Pipeline)
 - Water Act for Wetland Compensation (Reservoir)
 - Water Act for Intake Construction
 - Water Act for Licence Transfer
 - Public Lands
 - Aboriginal Consultation Office
 - Public Lands
- Many require landowner consents for:
 - Complete environmental field work to complete applications
 - To accompany applications (wetlands, intake construction)
- All approvals have a public notice period to allow for statements of concern







TECHNICAL

Regulatory Approval Submissions (June 2021 – August 2022)

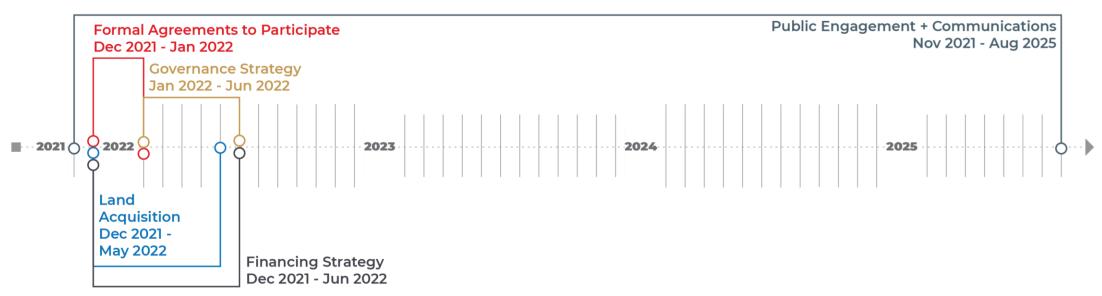
Water Quality Modelling (Spring 2022)

Tender (Fall 2022)

Commissioning (August 2025)

Project Delivery Method Selection (Winter 2021-2022) Field Work Refinements + Detailed Design (Spring-Summer 2022) Construction (Winter 2022 – August 2025)

GOVERNANCE



**Schedule depends on land acquisition, regulatory approvals and financing/governance

