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CENTRAL PEACE REGIONAL WATER SUPPLY SYSTEM PHASES 1 & 2

PROJECT OVERVIEW

January 03, 2024

ENGINEERING OVERVIEW

***NOTE*:** Sections that include notable updates are highlighted in bold text.

1. Status of preliminary engineering includes the following:

.1 ***The revised concept for the raw water pumping station wet well 27 m (90 ft) deep excavation shoring support is to incorporate a secant pile wall shoring system. With the extensive bracing requirements for a rectangular secant pile wall shoring configuration, the Geotechnical Engineering recommendation of a circular excavation and secant pile wall configuration has been adopted as the feasible approach. The corresponding circular wet well structure for the pumping station has had impact on the process layout for the previous rectangular design, which has been revised to incorporate the required changes. The previously completed geotechnical report for the river intake and raw water pumping station has been updated based on the detailed further analysis for the wet well excavation stability. The secant pile wall ring on its own shall not be utilized for supporting additional loads within its interior. A separate concrete wet well structure will be cast inside of the secant pile wall shoring ring that will be capable of supporting the intermediate platform slab, and access stairway for the deep wet well chamber. A specialist GeoStructural Subconsultant has been engaged for the design of the secant pile wall shoring support. The secant pile wall shall be designed as a permanent structure to provide the long-term lateral support for the wet well deep excavation. The footprint limit for the river intake cofferdam has been increased in size to allow for the construction of the temporary cofferdam using rock and earth fill material in the event that a sheet pile cofferdam approach may not be constructable. The cost to implement the rock (Class 2 and Class 3 sized rip rap) and earth based cofferdam will be high based on the material cost for the heavy rock required to withstand the River current. Cofferdam costs using rock bags or structural sheet pile material are somewhat lower but still very high in costs for the temporary berm structure. More detailed information is being gathered to refine the preliminary cofferdam cost estimates. The GeoStructural Subconsultant has been engaged to evaluate the sheet pile approach for the cofferdam and they have proposed a sheet pile option that involves a high sheet pile cofferdam around the intake structure location with a lower sheet pile cofferdam causeway that would connect the intake location to the shoreline. At this time this appears to be the most cost-effective option that has been evaluated. Options for alternatives continue to be reviewed. A meeting was held on November 23, 2023 between the Geotechnical Team and a local contractor that has completed some cofferdam work on smaller rivers in the region to obtain preliminary construction input related to the proposed cofferdam component of the river intake works. The local contractor has previously utilized a hybrid cofferdam concept that incorporates a large rock outer berm shell with a clay berm interior and a steel sheet pile interior***

perimeter wall around the construction area. The potential to utilize a similar hybrid approach to the cofferdam in the Peace River is being reviewed. With the River Engineer advising of the requirement for geotechnical erosion protection of the opposite bank of the river during the implementation of the cofferdam, the River Engineer was engaged to provide design services for the opposite bank protection and a draft design for rock trenches to protect the opposite bank gravel bar has been provided by the River Engineer. The regulatory requirements for the opposite bank erosion protection work are being clarified. Options for geotechnical testing of the riverbed have been reviewed by the Geotechnical Team and it appears that test hole drilling from a barge on the River may be the least risk option. The additional regulatory approvals required for the riverbed drilling are being procured by the Geotechnical Team. The application for approval under the Water Act was submitted in December 2023 and a meeting was held with the Department of Fisheries and Oceans (DFO) in December related to the Federal approvals required for the river geotechnical testing. The Geotechnical Team has also contacted the Alberta Environment Fisheries Biologist for their input on the proposed river drilling. A preliminary access road design has been developed for access down the steep riverbank slope into the working area of the proposed cofferdam. To support the access roadway design, additional detailed survey of the riverbank slope was completed in early October 2023.

.2 Support for the regulatory approval applications remains on-going for the Public Lands Act and Water Act Approvals. The most recent meeting between the Project Team and Alberta Environment was held on June 12, 2023 and marked one full year of monthly meetings with the Department to facilitate the approval applications.

.3 ***Corresponding to the updated cost estimates that were recently provided for the overall project, the County requested recommendations on priority tasks for the engineering work to determine next steps for allocation of engineering resources for advancing the project design and obtaining more detailed information to support project cost estimates for budget projections. MPE Engineering provided a recommendation to the County for the engineering tasks next steps and priorities and the County has approved proceeding with the remaining design work for the project.***

2. **Raw Water Pumping Station Land Acquisition:** The transfer of land for the Raw Water Pumping Station subdivision parcel has been fully completed and the Land Title Certificate for the parcel is now in the name of Saddle Hills County. The TransAlta Utility Right of Way agreement for the pipeline portion across their lands has previously been registered at Land Titles.

3. **Municipal Consent for Land Acquisition:** The consents that have been acquired by Saddle Hills County from the other Municipalities include:

- From M.D. of Fairview, to acquire the lands required for the River intake structures within the municipal boundaries of the M.D. of Fairview
- From Birch Hills County, to acquire the lands required for the Raw Water Pumping Station facility within the municipal boundaries of Birch Hills County
- From M.D. of Spirit River, to acquire the lands related to the future Regional Hub Water Treatment Plant site within the municipal boundaries of the M.D.
- From M.D. of Spirit River, to acquire the lands related to the raw water transfer pipeline alignment(s) Utility Right of Ways within the municipal boundaries of the M.D.

A consent from the M.D. may also be required in the event that an expropriation action is taken by Saddle Hills County against potential landowner holdouts along the pipeline alignment.

4. **Regional Hub Water Treatment Plant Site Land:** The field survey was completed at the Water Treatment Plant site by the Environmental Consultant, Fiera Biological Consulting, in late May 2023, and the draft Biophysical Assessment report was received for the site. The Province has determined that the highest value of the wetlands on the site is not higher than C-value compensation classification which is lower in value than the B-value that was initially being considered. There is a treed wetland area located in the north central area of the quarter section that is categorized as C-value. The report's recommendation for this area is to try to retain as much of this portion of the central C-value wetland as possible due to its environmental significance. The majority of the wetland areas identified on the remainder of the quarter section are classified for D-value compensation (lowest compensation category). The corresponding boundaries for the wetlands were previously submitted by the Biologist to the Province to obtain wetland values as well as to the Water Boundaries Unit to see if there are any Crown claims. So far, no response has been received from the Water Boundaries Unit for Crown claims. Geotechnical site drilling on the land parcel was completed in March 2023. The material encountered during the drilling consisted of clay and clay till materials and appeared to be consistent across the parcel. The draft geotechnical report has been completed by the Geotechnical Team, which includes a Dam Safety review for the raw water storage pond berms. The native clay materials are suitable for construction of the proposed water storage ponds without the use of artificial liner materials for the interior pond surfaces. Preliminary concepts for site layout are being explored by the Design Team for optimal arrangement and best use of the available area. Re-routing of the area drainage to pass around the proposed storage ponds appears feasible with the incorporation of drainage ditches that will direct the flow around the perimeter of the ponds.

5. **Public Lands Act Dispositions:** All three of the approved Public Lands Act Dispositions for the river intake, the Crown land occupation of the pipeline, and the crossing of the Dunvegan (Bronco) Creek have now been received from the Province. The overall map of the pipeline alignment identifying all of the wetlands and watercourse crossings will require adjustment and re-submission subject to the pipeline alignment changes that are now being pursued following recent problems with procuring pipeline right of way agreements along the previous route revision.

6. **Pipeline Alignment Land Agreements:** Landowner holdouts have impacted proceeding with previous pipeline route between TWP Road 795A and TWP Road 790. An alternate alignment (third alternate) for the pipeline that is re-routed to avoid holdout properties has been determined and has been actively pursued by Saddle Hills County and the Land Agent. Most of the landowner signoffs for the most recent alignment alternate have been obtained now, and only one title holder remains yet to be signed. The unsigned title holder has been sent a letter with the hope that a formal response can be provided in return. There has not been any response to the letter, but the County offered to reach out directly to the title holder to help with the agreement procurement. A working space agreement has been arranged for the property at the top of the Peace River valley hill for the steel pipe HDD work.

7. **Geotechnical Investigation – Subconsultant:** The Geotechnical Subconsultant for the Peace River valley hill, Thurber Engineering, is providing the geotechnical support for the HDD installation of the steel pipe section of the pipeline alignment that climbs out of the Peace River valley. The finalized Thurber geotechnical report was included as an appendix for the steel pipe HDD contract that was out for tender and recently closed.

8. **Environmental Assessments - Terrestrial:** The draft of the Biophysical Assessment report was completed by the Terrestrial Biologist, Fiera Biological Consulting in July 2023 following the field surveys that were completed at the end of May 2023. Valuation of the wetland compensation costs for the Regional Water Treatment Plant site have been confirmed by the Terrestrial Biologist (in consultation with the Province), with the submission of their Biophysical Assessment draft report. Fiera Biological Consulting presented the draft of their report at a meeting on July 24, 2023. As one of the key takeaways from the draft report, Fiera has recommended to try as much as possible to retain the C-value treed wetland area located in the north central area of the project site due to its environmental significance. Fiera is providing support for any of the supplemental environmental information requests raised by the Water Act Approval application review and Public Lands Act Approval application review for the project. This includes providing the wetland boundaries along the pipeline alignment (and any potentially revised alignment sections) requested by Alberta Environment at a previous meeting. Fiera has also provided any follow up disposition support for the Key Wildlife and Biodiversity Zone along the steel pipe HDD installation route up the Peace River valley hill. Coordination to facilitate winter construction for the steel pipe installation on the hill that respect the hard dates for the Restricted Activity Periods (RAP) will require support from Fiera to negotiate the period for the construction RAP window stipulated by Alberta Environment.

9. **Environmental Assessments - Aquatic:** The Fish and Habitat environmental assessment report completed by the original Aquatic Biologist, Mainstream Aquatics, was the primary supporting documentation for the Provincial Water Act Approval as well as the Federal DFO application. The Principal Biologist for Mainstream Aquatics retired as of July 31, 2022. The new supporting Aquatic Biological Subconsultant for the project for subsequent work is Ridge Environmental Planning Ltd. Ridge Environmental Planning completed a field review in June 2023 of the proposed wastewater outfall discharge location at the Regional Water Treatment Plant location. The Fish and Habitat environmental assessment report for the wastewater outfall at the Regional Water Treatment Plant site was received from Ridge Environmental Planning in August 2023. Further engagement of the Aquatic Biologist will be required in the future to meet the requirements of the response letter received from DFO in July 2023 related to their review of the project approval application. An environmental monitoring scope of services plan has been provided by Ridge Environmental Planning for the aquatic environmental monitoring of the work that will be required by the Regulatory Authorities during the implementation of the cofferdam in the River at the intake location. The services of the Aquatic Biologist would also be required to support the regulatory applications that would be required for the proposed geotechnical drilling within the riverbed necessary for the cofferdam design work.

10. **River Engineering:** The Hydraulic Subconsultant for the River Intake, Northwest Hydraulic Consultants (NHC), continues to provide engineering support related to the intake and pumping station design. The submitted report by the Hydraulic Subconsultant comprises a major document in support of the application package for the Water Act Approval, and NHC has assisted to provide some of the supplemental information that has been requested by Alberta Environment in the follow ups to the original application submission. NHC has also provided the support and hydraulic modeling for the increased size coffer dam footprint in the event of using rock and earth fill materials for the temporary coffer dam for the river intake. From their hydraulic modeling of the cofferdam impact on the River flow, NHC has identified issues with erosion of the gravel bar located on the opposite bank of the River, that will require erosion protection during the implementation period for the cofferdam when the width of the River shall be restricted by the cofferdam. To address this opposite bank erosion issue, NHC has been engaged for the design of an erosion protection system for the opposite bank gravel bar, as well as assist with any required approvals for completing the opposite bank erosion protection work. The draft of the proposed opposite bank erosion protection design concept has been received from NHC which consists of implementing rock trenches across the gravel bar that are perpendicular to the River and filled with large diameter rock (800 mm diameter size). NHC is also assisting with cost estimates for this erosion protection work. NHC has recently provided more specific analysis for the River level information during the summer cofferdam implementation period as well as the ice affected water levels for winter cofferdam impacts. NHC will also be engaged for any River Engineering scope of work that will be required to implement geotechnical testing and drilling within the Peace River.

11. **DFO Approval Application:** ***Acknowledgement response letter was received in July 2023 from the Department of Fisheries and Oceans for the project application to the Department for the River intake proposal. The application for the River intake was previously submitted to the Department of Fisheries and Oceans for approval in March 2022 and was subsequently forwarded by the Department to the Fisheries Protection Program Regulatory Review unit in Winnipeg for site specific review. Follow up meetings to review the Approval application were held with DFO on October 20, 2022, February 21, 2023, and most recently on May 25, 2023. The revised footprint information for the temporary cofferdam around the river intake structure was previously submitted to the Department. The July 14, 2023, DFO letter provides the Department's recommendations for the project to avoid and mitigate the potential for prohibited effects to fish and fish habitat. The project can proceed as long as the DFO recommendations are followed in accordance. Subsequent engagement with DFO occurred in December 2023 related to the additional geotechnical test hole drilling of the river bottom that will now be required in the Peace River for the structural cofferdam alternatives. A meeting was held by the Geotechnical Team with the Department, and the Geotechnical Team were requested to provide additional details on the drilling impacts to the river and aquatic life. The additional information is being gathered for submission.***

12. **Water Act Approval Applications:** ***The Water Act applications for the Approval to Construct for the River Intake systems and the Water Diversion licence for withdrawal of water from the Peace River were previously submitted and are in review by Alberta Environment. Updated draft versions of both the Water Act Approval and the Water Diversion licence were received from Alberta Environment in May 2023 that included some of the final revisions discussed at the previous monthly meeting. The received semi-final draft documents were reviewed at our meeting with the Department in May and are close to being finalized. The Project Team's most recent meeting with Alberta Environment occurred on June 12, 2023. Alberta Environment has been sent a copy of the finalized revised geotechnical report for the raw water pumping station and cofferdam that was requested for the Approval application. The DFO Acknowledgement Letter received in July 2023 for the project has also been forwarded to Alberta Environment as well as the Historical Resources Act Approval that was received in August 2023 from Alberta Culture. The balance of information required for finalization of the Water Act Approval is the final route alignment of the raw water transfer pipeline following signoff from all of the affected landowners along the pipeline route. A Water Act Approval application for the geotechnical test hole drilling in the river was submitted in December 2023 for the additional testing required for the structural cofferdam alternative. The Geotechnical Engineer worked to clarify approval application requirements with the Alberta Environment Water Acts Engineer.***

13. **Historical Resources Act Approval Application:** The Historical Resources Act Approval for the project was received in August 2023 from the Provincial Regulator, Alberta Culture for the River intake facilities and the original raw water transfer pipeline alignment. A further application may be required when the final revision to the pipeline route has been confirmed by the corresponding landowner signoffs. Historical Resources Impact Assessment (HRIA) stipulated by the Province was previously completed by the Archaeological Subconsultant, Circle CRM, for the original pipeline route, and their report submitted to the Provincial Regulator.

14. **Navigable Protection Act Application:** The Notice of Works application for Navigable Waters previously submitted to Transport Canada for the river intake structure was approved (December 06, 2022) for the original temporary coffer dam during the construction and the permanent river intake. Subsequent notification was provided to Transport Canada for the potential increased footprint of the coffer dam to allow for rock and earth fill coffer dam construction, which has now been reviewed and accepted by the Department.

15. **Indigenous Consultations:** The Scott Land Indigenous Consultation group has received an Adequacy Assessment Decision for the previous Consultation submissions. First Nations Consultations were coordinated by Scott Land and Lease's Indigenous Consultation department for the Consultations required by the Public Lands Act Disposition application and the Consultation stipulated by the Federal Grant requirements for the project. For the Water Act Pre-Consultation Assessment, the Aboriginal Consultation Office (ACO) confirmed adequacy and no additional consultations required. Saddle Hills County also received confirmation from the Federal Government in January 2023 that Infrastructure Canada considers the Indigenous consultation requirement for the project to have been met.

16. **Steel Pipe Contract for Peace River Valley Hill:** The HDD Specialist Subconsultant, Blue Fox Engineering, continues to be involved with the steel pipe installation contract as the contract was put out for tender in early June 2023. Blue Fox provided engineering support for the steel pipe HDD tender documents including pre-tender cost estimates, and has provided support for evaluation of tender submissions, and shall provide resident services during construction review. At the tender close on July 18, 2023, four bids were received, and the bid submissions were reviewed in detail by Blue Fox Engineering to ensure that all submissions were evaluated on an equal (apples-to-apples) basis. The bid submission amounts were significantly higher than previous estimates and exceed the cost estimates from the 2018 project grant application amount by far more than double. The recommendation letter from Blue Fox Engineering was completed together with their detailed comparison spreadsheet. Blue Fox Engineering has also provided a proposal to look after the drilling fluid waste management for the wastewater generated by the HDD pipe installation up the valley hill, which is being reviewed. The County has not awarded the contract pending Council direction for review of scope to seek potential cost reductions, however, there is still interest from the bidders to proceed with the work. Factoring into consideration the scheduling window to meet the environmental Restricted Activity Periods along this portion of the pipeline, the time period to proceed with the work for the current upcoming season is close to expiring.

17. **Pre-Qualification of Specialist HDD Contractors:** Previous contemplation to undertake a Request for Qualification process for the specialized HDD installation of the steel pipe section of the Raw Water Supply Line that climbs out of the Peace River valley, was abandoned. There were reservations from the County on whether to proceed with the Pre-Qualification process in the current market with rising construction cost due to concerns over the possibility of limiting bidder competition if some qualified contractors either did not meet the Pre-Qualification requirements, or could be caught in a timing conflict that may inhibit later decision to bid. Pre-Qualification was cancelled.

18. **Electrical Service to the Pumping Station:** The route for servicing of the Raw Water Pumping Station facility shall be from the Village of Rycroft which is the nearest connection point for the required three-phase power supply. The initial ballpark proposal cost quotation for the power servicing received by the County from ATCO was very high in cost. Representatives from the County and MPE met with ATCO in Edmonton on February 01, 2023 to review the potential for decreasing the servicing cost for the Raw Water Pumping Station. The meeting was successful as the County was able to convince ATCO to revisit their servicing cost and provide a substantial discount. The adjusted servicing amount was received from ATCO on March 10, 2023 with an 80% load investment from ATCO as an update on the previous 60% load investment. This has resulted in a cost reduction of approximately $164K to the previous ballpark proposal. The County has initiated commencement of the ATCO design process with acceptance of the preliminary quotation. A more accurate cost estimate should be forthcoming from ATCO following their detailed design reviews. Saddle Hills County has regular monthly meetings scheduled now with ATCO to track progress on the power servicing projects for the County including the service to the River Raw Water Pumping Station. ATCO has undertaken site review of the finalized routing of the power line to the River location. The question of whether fibre optic communication lines could also be installed on the power poles together with the electrical cables was raised by the County and the County remains in discussions with ATCO for potentially proceeding with the fibre work.

19. **Project Budget:** An updated preliminary opinion of probable costs for the project was developed and shared with the County. The estimated costs have increased significantly since the 2018 Pre-Design Report and the County has made a request to the Province for additional grant funding under the Water for Life program to make up the projected cost difference.

NEXT STEPS

20. Complete the preliminary engineering and continue with the detailed design for the project including the drafting of revised plan and profile drawings for the pipeline (following confirmation of landowner signoffs), work with Land Agent and County Staff on procuring the final landowner agreement for pipeline right of ways, continue to hold meetings with Alberta Environment for the project and the approval submissions, proceed with geotechnical test hole drilling of the river bottom for the structural cofferdam alternatives, continue with the river intake and pumping station design, and also wet well installation design, and excavation shoring design with the geotechnical group, incorporate design requirements and corresponding approval requirements for the erosion protection of the opposite bank during implementation of the temporary cofferdam, finalize access roadway design down to the cofferdam at river's edge, develop updated cost estimates for the cofferdam work, continue with Federal and Provincial regulatory approvals, address Regulatory Approvals required for the additional geotechnical drilling investigation work within the riverbed for the structural cofferdam design, evaluate steel pipe HDD contract for potential cost reductions which may include direct discussions with Contractors, provide responses to Public Lands Act and Water Act applications supplemental information requests from Alberta Environment as they are requested, confirm with Archaeological Subconsultant the Historical Resources Assessment Approval for final pipeline route, coordination with ATCO for the power servicing to the Raw Water Pumping Station.

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