

NATURAL RESOURCES CONSERVATION BOARD

**IN THE MATTER OF THE *NATURAL RESOURCES CONSERVATION
BOARD ACT*, RSA 2000, c. N-3**

**IN THE MATTER OF NRCB APPLICATION NO. 1701 BY
ALBERTA TRANSPORTATION**

SPRINGBANK OFF-STREAM RESERVOIR PROJECT

**REPLY SUBMISSIONS OF ALBERTA TRANSPORTATION TO THE
INTERVENERS AND HEARING PARTICIPANTS WHO ARE OPPOSED
TO THE SPRINGBANK OFF-STREAM RESERVOIR PROJECT (“SR1”)**

Gavin S. Fitch, Q.C. and Ronald M. Kruhlak, Q.C.
McLennan Ross LLP
Counsel for Alberta Transportation
Suite 1900, Eau Claire Tower
600 3rd Avenue SW
Calgary, Alberta T2P 0G5
Tel: (403) 303-9120
Fax: (403) 303-1668
File: 162612

TABLE OF CONTENTS

| | | |
|------|--------------------------------------------------------------------------------------------|----|
| I. | INTRODUCTION | 1 |
| II. | ALBERTA TRANSPORTATION’S RESPONSE TO CONCERNS MOST COMMONLY RAISED BY INTERVENERS | 1 |
| | SR1 provides a substantial public benefit of flood mitigation..... | 2 |
| | Alternatives to SR1 | 2 |
| | Concerns of Landowners within the SR1 Project Area | 4 |
| | Consultation | 5 |
| | Impacts from SR1 will be limited in duration | 6 |
| | Project Costs | 7 |
| III. | SUBMISSIONS OF THE SR1 CONCERNED LANDOWNERS GROUP | 9 |
| 1. | Introduction..... | 9 |
| 2. | Landowners’ Statements (Appendix C)..... | 9 |
| | (a) Consultation | 10 |
| | (b) Environmental Impacts | 13 |
| | (c) Safety concerns | 14 |
| | (d) Land and land use impacts..... | 15 |
| | (e) MC1 is a better alternative than SR1 | 16 |
| 3. | Karin Hunter’s Submissions (Appendix D1)..... | 16 |
| 4. | Austin Engineering Report (Appendix F)..... | 19 |
| 5. | Ian Dowsett Submissions (Appendix I) | 20 |
| 6. | Dr. Jon Fennell Report (Appendix J)..... | 22 |
| | (a) Hydrogeology modelling | 22 |
| | (b) Groundwater Modelling..... | 25 |
| | (c) Geochemical Reactions..... | 27 |
| | (d) Climate Change..... | 28 |
| 7. | Dave Klepacki Submissions (Appendix L)..... | 30 |
| 8. | Allan Locke Report (Appendix N) | 35 |
| | (a) Fish passage at the Diversion Structure | 35 |
| | (b) Fish entrainment into the Diversion Channel | 36 |

| | | | |
|-----|-----|----------------------------------------------------------------------------|----|
| | (c) | Fish exclusion methods..... | 36 |
| | (d) | Release of water back to the Elbow River | 37 |
| | (e) | Pre-Project baseline data..... | 38 |
| | (f) | Post-Project monitoring | 39 |
| | (g) | Bull trout..... | 39 |
| 9. | | Brian Zelt Report (Appendix Q)..... | 40 |
| 10. | | Cliff Wallis Report (Appendix S)..... | 43 |
| | (a) | Landscapes of Conservation Significance | 46 |
| | (b) | South Saskatchewan Regional Plan Context | 47 |
| | (c) | Alberta Wetland Policy..... | 47 |
| | (d) | Floods and Riparian Vegetation..... | 48 |
| | (e) | Cumulative Effects..... | 50 |
| | (f) | Wallis Report Recommendations | 51 |
| 11. | | Dr. Terry Osko Report (Appendix U)..... | 51 |
| IV. | | SCOTT WAGNER | 55 |
| | (a) | Project Need and Justification (Social and economic cost)..... | 55 |
| | (b) | Project Need and Justification (Crown engagement with the public)..... | 56 |
| | (c) | Design Safety and Risk (Risk management) | 56 |
| | (d) | Design, Safety and Risk (Public safety including emergency response) | 56 |
| | (e) | Air Quality, Human Health and Terrestrial (Wildlife and biodiversity)..... | 57 |
| V. | | STONEY NAKODA NATIONS..... | 57 |
| | (a) | Project Concerns | 57 |
| | (b) | AT Response to SNN Submission | 58 |
| | (c) | Treaty Rights in Alberta..... | 59 |
| | (d) | Cumulative Effects..... | 64 |
| | (e) | Consultation | 64 |
| | (f) | Environmental Impact Assessment..... | 65 |
| | (g) | PGL Environmental Consultants | 66 |
| | (h) | Interim Traditional Land Use Assessment Report, February 2021 | 66 |

| | | |
|-------|-------------------------------------------------------------------------------------|----|
| VI. | CALALTA | 70 |
| | (a) Air Quality | 70 |
| | (b) Water Sediment..... | 71 |
| | (c) Franchise..... | 72 |
| VII. | FLOOD AND WATER MANAGEMENT COUNCIL/DAVID AND NOELLE READ | 72 |
| | (a) SR1 Capacity and Back-to-back floods | 72 |
| | (b) Project costs and Government of Alberta spending..... | 72 |
| | (c) Dam safety | 73 |
| | (d) Stantec sign-off sheet disclaimer | 73 |
| VIII. | CHARLES HANSEN | 74 |
| IX. | CALGARY RIVER VALLEYS | 76 |
| | (a) Cumulative impacts on broader South Saskatchewan River Basin (SSRB) | 76 |
| | (b) Risk of Future Flood Damage..... | 76 |
| | (c) Impacts on the Natural Functionality of the Elbow River and its Valley | 76 |
| X. | LOUIS BULL TRIBE..... | 77 |
| XI. | CONCLUSION..... | 77 |

TABLE OF DOCUMENTS

| | |
|----------------------------------------------------------------------------------------------------|--------------|
| AT's Land Acquisition Program for SR1 | TAB A |
| Current map of all the land acquired to date by AT | TAB B |
| Full chronology of meetings with members of the SCLG | TAB C |
| Technical memorandum prepared by Stantec correcting errata in Acoustic Environment Assessment..... | TAB D |
| Technical memorandum prepared by Stantec in response to the Austin Engineering Report | TAB E |
| Technical memorandum prepared by Stantec in response to Ian Dowsett Report | TAB F |
| Technical memorandum in response to Dr. Jon Fennell Report..... | TAB G |
| Technical memorandum prepared by Stantec in response to Allan Locke's Report | TAB H |
| Technical memorandum prepared by Stantec in response to Brian Zelt Report..... | TAB I |
| Detailed review of specific Consultation events and descriptions of Record of Consultation | TAB J |
| AT detailed responses to each issue raised by Stoney Consultation..... | TAB K |
| AT response to PGL Environmental Consultants Memo..... | TAB L |
| AT letter dated March 4, 2021 responding to LBT's February 26, 2021 letter to IAAC | TAB M |

I. INTRODUCTION

1. These are the written submissions of Alberta Transportation (“**AT**”) prepared in response to submissions and evidence filed by Interveners and hearing participants who are opposed to the Springbank Off-Stream Reservoir Project (“**SR1**”). Specifically, AT responds herein to the written submissions or evidence filed by:

- The SR1 Concerned Landowners Group (“**SCLG**”);
- Scott Wagner;
- Stoney Nakoda Nation (“**SNN**”);
- Calalta Amusements Ltd. and Calalta Waterworks Ltd. (“**Calalta**”);
- Flood and Water Management Council (“**FWMC**”);
- Charles Hansen (“**Hansen**”);
- Calgary River Valleys (“**CRV**”);
- Louis Bull Tribe (“**LBT**”).

2. AT notes that Ermineskin Cree Nation and the Blood Tribe/Kainai First Nation have withdrawn their objections to the Project. AT therefore provides no response to their November 20, 2020 submissions to the Board or any other documents previously filed with the Board by either party.

II. ALBERTA TRANSPORTATION’S RESPONSE TO CONCERNS MOST COMMONLY RAISED BY INTERVENERS

3. Before responding to each of these parties, AT will provide an overview of its responses to certain concerns and issues that have been raised most often by more than one party.

SR1 provides a substantial public benefit of flood mitigation

4. Several interveners argue that the Government of Alberta should have selected a different project or SR1 should have been designed differently to provide greater flood protection than proposed. AT submits that it is important, at the outset, to emphasize that SR1 will provide considerable public benefits by substantially reducing the flood hazard on the Elbow River to Calgary and other downstream communities.
5. At its simplest, SR1 is a project that will be able to divert up to 600 cubic metres per second (m³/s) from the Elbow River during flood events. That magnitude of flow is equivalent to the 2013 Elbow River flood or approximately a 1:200-year flood, plus a safety factor of 25%. While it is still possible that downstream communities will be impacted in future large-scale flood events, it cannot be disputed that SR1 will significantly mitigate the downstream consequences of all future flood events on the Elbow River.
6. In addition, AT notes that were SR1 designed to afford protection greater than for a 1:200 year flood, it would be a larger project with a bigger footprint, more impacts and greater cost. AT believes that the SR1 as designed strikes an appropriate balance between affording flood protection to downstream communities and minimizing impacts on the local community.

Alternatives to SR1

7. AT has heard a number of stakeholders claim that SR1 is not the right project and that it should have selected a different project, such as the McLean Creek option (“MC1”). AT appreciates that there are strongly held views on this point but must remind the Board that the only reviewable project before this Board is SR1, not MC1 and not any of the other alternatives that were considered by AT or have been promoted by others (such as the Micro-Watershed Impounding concept or the Tri-River Joint Reservoir concept).
8. SR1 was initially selected through a review process which considered several alternatives. The initial decision to select SR1 was made in 2014 and subsequently re-confirmed by two different governments, in 2015 and again in 2019. Since then, the Government of Alberta has included funding for the Project in its provincial budgets. In short, the selection of SR1

has been made and the government's decision to select SR1 over other alternatives is not a matter before the Board. This was confirmed by the Board in its Prehearing Conference Decision.¹

9. Further, this Project is part of a larger flood mitigation plan for the Bow River basin and forms but one component of that plan. Other components include a potential new flood control structure on the Bow River (a matter of concern to SNN), the upgrade of Glenmore Reservoir, berms within the City of Calgary and the berms at Bragg Creek and Redwood Meadows. Ultimately, all these components will work together to provide significantly enhanced flood protection to communities in the Bow River basin. However, those other components are not part of the project that is before the NRCB for approval; only SR1 is. Those other components will be reviewed and assessed in other processes, as required. The Government of Alberta will engage with stakeholders in those processes, as appropriate.
10. With respect to MC1 specifically, it was assessed as a potentially viable option. However, that assessment showed that it would result in a significant number of adverse effects. These include adverse effects on land use and management, fish and fish habitat, and wetlands and vegetation.
11. To summarize, SR1 was selected over MC1 because it:
 - is off-stream and less sensitive to impacts from sediment or debris;
 - will capture more flood waters due to its location further downstream;
 - is closer to operation response teams and access roads;
 - has less environmental impact;
 - has less impact on the Elbow River;
 - is less vulnerable to damage during extreme weather, including catastrophic failure during construction;
 - has less impact on social/recreational values;
 - has less impact on commercial/tourism values;

¹ Exhibit 156.

- has a positive economic impact; and
 - has shorter construction timelines and is years closer to being built than any other alternative.
12. SR1 was able to be designed as an off-stream storage project because of local topography. The Unnamed creek basin on the north side of the Elbow River near Highway 22 provides the unique topographic opportunity for an off-stream storage reservoir that can fill by gravity drainage from a diversion on the river and return that water back to the Elbow River once the risk of flooding has passed. There is no other feature with these same characteristics in the Elbow Valley. This is a unique advantage of SR1 that no other alternative had.
13. Finally, various Interveners have suggested that MC1 could provide a suite of other benefits such as recreation, drought management and a water source for firefighting. In response, AT submits that, like SR1, MC1 was not developed with the goal of achieving these other objectives. Specifically, its initial design and associated cost estimates did not include the provision of any of those benefits. A much larger and costlier structure at McLean Creek, with additional adverse environmental effects, would be required to deliver them.
14. With regard to the contention that MC1 could provide the benefit of drought management, AT notes that the City of Calgary, in “One Calgary One Water: A framework for Calgary’s water secure future”, which discusses the need for a Drought Management Plan, advocates for a reservoir upstream on the Bow River, not the Elbow River, as a component of drought management for the Calgary region.²

Concerns of Landowners within the SR1 Project Area

15. Many local landowners, including some members of the SCLG and Mr. Wagner, are concerned that AT has elected to pursue a project that is located on private land that, in many cases, has been ranched by the same families for over 100 years. They point to the fact that one of the alternatives considered by AT, MC1, would be located on public land.

² One Calgary One Water: A framework for Calgary’s water secure future (January 2020) https://www.calgary.ca/content/dam/www/uep/water/documents/water-documents/Water_Security_Report_2020.pdf

16. AT understands that some local landowners are upset at the prospect of losing lands that have been in their families for generations. It recognizes that SR1 impacts the lives of a number of people. Unfortunately, public works projects which require the acquisition of private land do give rise to these type of impacts.
17. This is why AT committed to engage respectfully with local landowners from whom it requires land for SR1. In early 2018, AT prepared the Land Acquisition Program (“LAP”) for SR1. A copy of the LAP is attached hereto as Appendix “A”. The purpose of the LAP was two-fold: (i) to be transparent with landowners about the process AT will follow to acquire their lands; and (ii) to treat landowners fairly.
18. Pursuant to the LAP, AT has been able to successfully and voluntarily acquire some 1,024 acres of land within and adjacent to the Project area, representing approximately 25% of total Project land requirements. Attached as Appendix “B” is a map showing the lands acquired to date by AT. In addition, AT is in the process of finalizing agreements to acquire land from another three SR1 landowners and is in active negotiations with several others. AT remains committed to acquiring all of the lands required for SR1 by voluntary acquisition, if possible.

Consultation

19. In the aftermath of the 2013 flood, the Government of Alberta made selecting a flood mitigation project for the Elbow River a matter of the highest priority. For that AT makes no apologies. In early 2014 the Southern Alberta Flood Recovery Task Force identified SR1 as one of the options for this project, based on a technical feasibility study conducted by AMEC Environment and Infrastructure (“AMEC”). In the summer of 2014 SR1 was selected by the Government to advance to detailed engineering and design (this will be discussed further below).
20. As part of the process leading up to the selection of SR1, consultations were held with Rocky View County and, in the summer of 2014, the Government met with some local landowners, several of whom are now members of the SCLG.

21. AT acknowledges that not all landowners whose lands will be required for the project were consulted before SR1 was identified. In part, this was because the project was so conceptual at that early stage that the precise amount of lands required were not known with certainty (for example, at that time the Project was conceived as a 1:100 year flood design, not 1:200 year). However, AT acknowledges that this caused upset in the local community.
22. Since then, AT has offered and been prepared to meet with stakeholders where there is a mutual interest in doing so. A total of four Project Updates have been issued to stakeholders since the summer of 2019,³ each of which has invited anyone with questions or comments about the Project to contact AT. Twelve Open Houses and two community information sessions have been held at locations in and near the local community.⁴ AT continues to be receptive to addressing issues raised by stakeholders to ensure that the impacts of this Project are minimized where possible and is prepared to adopt recommendations where it determines that they may contribute to a better project.
23. AT will discuss consultation with local landowners in greater detail below, as part of its response to the written submissions of the SCLG. AT will also discuss consultation with SNN below, in Part VI of these response submissions.

Impacts from SR1 will be limited in duration

24. Unlike the vast majority of projects, public or private, SR1 will not be in continuous or ongoing operation. Rather, by design it will only operate when flows in the Elbow River reach a certain threshold. Based on the statistical projection on flood returns, it is expected to only operate once every seven years. For greater context, according to historical records it is estimated that SR1 would only have operated 10 times over the previous 100 years had it existed. In most years, SR1 will not be in use and in fact the land in the reservoir, which will be Crown land, will be available for use by First Nations and the public.

³ June 2019, May 2020, October 2020 and March 2021.

⁴ Open Houses: January 27 and 28, 2015; March 10 and March 17, 2015; May 10 and 11, 2016; August 16, 17, 22 and 29, 2017; May 22 and 24, 2018. Information Sessions: September 24 and October 8, 2020.

25. Further, the duration of time during which SR1 will be operating at any given time will be very limited. For more common floods, such as the 1:10 year event, the reservoir is expected to only contain water for as little as two days, in the early release scenario. In a 1:100 year flood the reservoir would contain water for 25.3 days and if another 2013 flood occurred (>1:200 year flood) the reservoir would have water in for 39.2 days (in the early release scenarios).⁵
26. In other words, SR1 is not a project that will be in operation every day for 24 hours a day but rather will provide effective flood mitigation when needed, which fortunately is not very often. Accordingly, many of the impacts of concern cited by stakeholders will be limited and temporary in nature.

Project Costs

27. The current budgeted cost of SR1 in the Government of Alberta's capital plan is \$432 Million. AT submits that SR1 is a sound investment of public resources having regard to the substantial positive benefits that it will provide by mitigating the impacts of future floods on public safety, infrastructure and the lives and livelihoods of downstream residents and property owners. Based on the estimated costs of the 2013 flood,⁶ SR1 will more than pay for itself after a single design flood.
28. However, some Interveners have criticized the cost of SR1, arguing that while cost was one reason why SR1 was selected over alternatives such as MC1, the cost has escalated such that SR1 no longer holds a cost advantage over MC1. AT rejects this criticism. The current estimated cost of SR1 is for a project that has advanced to a detailed level of design and engineering and been refined in response to a substantial amount of engagement with stakeholders. By contrast, the historic cost estimates for MC1 were for a project which never advanced beyond the conceptual stage. This is an apples to oranges comparison.

⁵ Table 3-4 in IAAC Round 2 SIR Response, Appendix 1-1.

⁶ Exhibit 230, City of Calgary Submission, Exhibit A, pdf 1.

29. AT acknowledges that original cost estimates for SR1 were lower than current estimates but emphasizes that those original estimates were preliminary or conceptual in nature. As engineering and design work has been refined, additional field information collected and potential impacts identified/defined, the estimated costs of SR1 have increased. This is an expected evolution associated with any project development process. Further, AT submits that the cost increases that have occurred are not significant, as some Interveners suggest.
30. For example, in the three and a half years between the March 31, 2017 Interim Design Report (“**Interim Report**”) and the September 25, 2020 Preliminary Design Report (“**PDR**”),⁷ the following notable changes were made to the Project which increased costs:
- The debris deflection barrier was added to the Project design to respond to stakeholder concerns regarding the accumulation of debris in the reservoir area;
 - The interim design did not address fish passage because an assessment of Project effects was ongoing; in the PDR a series of three rock v-weirs downstream of the service spillway were added, to form plunge pools that will act as a refuse for migrating fish;
 - Additional riprap was added to the diversion channel to mitigate erosion; and
 - The low level outlet works were relocated.
31. With regard to land costs, AT’s preliminary estimate was arrived before AT had entered into any actual acquisition negotiations with SR1 landowners. Since those negotiations began, AT has obtained a substantial number of appraisals as have the landowners with whom AT is negotiating. As a result, AT now has a much better understanding of anticipated land acquisition costs.

⁷ Exhibit 159.

32. As demonstrated above, the increases in the cost estimates for SR1 are based on iterative changes to the Project design, something that happens in all major projects. It is also based on AT having gained better information about land costs through negotiations with landowners. AT strenuously rejects any assertion that the increases that have occurred, which are expected for a major project of this nature, are the result of poor project management. In fact, they reflect that AT has been responsive to the concerns that have been raised about the project and is prepared to reflect them in its project plans.

III. SUBMISSIONS OF THE SR1 CONCERNED LANDOWNERS GROUP

1. Introduction

33. The SCLG has filed a substantial written submission, consisting of numerous statements from landowners, several expert reports and other (in some cases very large) supporting documents. The SCLG submission numbers in the thousands of pages and it would be impossible to respond to all of the concerns and issues raised therein. Instead, AT has tried to identify recurring concerns and major themes in the SCLG's submission and provide responses to them. Where the SCLG has raised specific technical issues, in particular in its expert reports, AT asked Stantec to review those issues and, in some cases, prepare technical memoranda in response. Those technical memoranda are attached as appendices to this document.
34. AT appreciates that the members of the SCLG feel strongly about this Project and the size and complexity of their written submission reflects that. The NRCB's hearing process provides an open and public forum for reviewing projects like SR1 and AT welcomes the opportunity to continue its engagement with the SCLG at the hearing.

2. Landowners' Statements (Appendix C)

35. Appendix C to the SCLG's written submissions is made up of:

- 33 individual submissions from members of the SCLG in opposition to SR 1;⁸ and
 - A table titled “SR1 Landowner Concerns” which includes 93 additional expressions of concern from members of the SCLG.⁹
36. Of the 33 individual submissions, 11 landowners attached prior submissions they made to CEAA or IAAC ranging in date from 2016 to 2020.¹⁰ In some cases, these previously filed submissions constitute their statement submitted to the NRCB. In other cases, they are attached to a statement prepared specifically for the NRCB.
37. AT has reviewed all the submissions and expressions of concern contained in Appendix C. As noted above, it would be impossible to respond to each and every one of them. Instead, AT reviewed the statements to identify common concerns and issues. Based on that review, AT will address below the following frequently stated concerns: (a) consultation; (b) environmental impacts; (c) safety concerns; (d) land and land use impacts; and (e) alternatives re MC 1.
- (a) Consultation**
38. AT has read in several of the Landowners’ Statements that AT did not consult with them early enough and often enough. In particular, several say that AT did not consult with them prior to selecting SR1. Mary Robinson says she found out about the selection of SR1 on the evening television news. In response, AT submits as follows.
39. As noted above, the genesis of SR1 was the devastating flood of 2013, which resulted in the Government of Alberta making flood mitigation in Southern Alberta a matter of urgent priority. A number of options were reviewed, including a tunnel from the Glenmore Reservoir to the Bow River, a diversion of water into Priddis Creek, MC1 and SR1. While the selection of SR1 as the preferred option was based primarily on technical and

⁸ Exhibit 248.

⁹ Exhibit 250 at p. 235-245

¹⁰ Tracey Feist; George Kapocsi and Eniko Kapocsi-Kiss; Janet Hawes; Janice Gauthier; Kristin and Bill Wallace; Marsha Wagner; Phil Copithorne; Brian and Susan Copithorne; Brian Hunter; Christina Curkovic; and Dr. Karen Massey.

environmental considerations, the Government did consult with local governments and communities about it.

40. In particular, on July 18, 2014 representatives from AT and Alberta Environment met with a number of local landowners, including several who are now members of the SCLG or Interveners:

- Phil Copithorne
- Susan Copithorne
- Brian Copithorne
- Marsha Wagner
- Scott Wagner
- Mary Robinson
- Janet Hawes
- Michele Luider

41. At this meeting, the landowners were advised that SR1 had been selected for detailed engineering and design. AT acknowledges that many of the landowners at the meeting expressed the opinion that this meant that a decision to proceed with SR1 had already been made and that it was a “done deal”. However, in response AT confirmed that as of that date both MC1 and the Calgary Tunnel options were moving forward for continued study. While the Calgary Tunnel option was soon dropped, MC1 did continue to receive extensive study, including advancement of the conceptual design, a scoping-level environmental assessment and a Benefit-Cost Analysis.

42. By the fall of 2014 a group of local landowners, including several of the current members of the SCLG, formed a group called “Don’t Damn Springbank” (“**DDS**”). As its name suggested, DDS was strongly opposed to SR1. On October 7, 2014 a representative from Alberta Environment attended a presentation given to Rocky View County by DDS representative Scott Wagner, to gain an understanding of DDS’s concerns.

43. On March 3, 2015, representatives from AT and Alberta Environment again met with local landowners, including several current members of the SCLG:

- Susan Copithorne
- Brian Copithorne

- Mary Robinson
- Janet Hawes
- Marsha Wagner
- Scott Wagner
- Phil Copithorne
- Michele Luider
- Lee Drewry
- Diana Drewry
- Claudia Weigelsberger

44. The purpose of the meeting was for AT to provide an update on SR1 and the continued review of MC1, including the Benefit-Cost Analysis. AT advised that the next step involved the carrying out of the EIA. Later that month, AT held two Open Houses and provided DDS with a table near the entrance at each.
45. In May 2016, two Open Houses held. On October 26, 2016, AT representatives met with Mary Robinson for a walking tour on her property during which Mrs. Robinson provided a history of her ranch and pointed out archaeological sites.
46. In 2017 and 2018, more Open Houses were held¹¹ and a technical briefing for landowners on the federal environmental assessment of SR1 was held (on November 1 and November 8, 2017) at the McDougall Centre in Calgary. Towards the end of 2018, on November 30, 2018, senior AT representatives met with several persons who are now members of the SCLG: David Klepacki, Karen Massey, Karin Hunter and Mary Robinson.
47. During 2019 and 2020, Matthew Hebert of AT was in regular communication with Karin Hunter, in her capacity as President of the Springbank Community Association, by email and telephone, to provide Project updates and respond to questions and concerns. A full chronology of meetings with members of the SCLG is attached hereto as Appendix “C”.
48. It is obvious that AT was not able to satisfactorily resolve all the concerns expressed by members of the SCLG. Unfortunately, this is often the case with large projects like SR1, where the impacts of the project tend to be experienced locally while the benefits are

¹¹ On August 16, 17, 22 and 29, 2017 and May 22 and 24, 2018.

distributed more widely. However, the mere fact that some stakeholders have unresolved concerns does not mean that AT's engagement and consultation on SR1 was not adequate.

49. AT submits that it has engaged with local stakeholders, including the members of the SCLG, in good faith. Further, AT will continue to engage with stakeholders as the Project progresses, including through the Community Liaison which AT has committed to have in place starting during construction.
50. Finally, AT notes that in addition to the engagement referred to above and in Appendix "C", it has been engaged in ongoing, confidential discussions with all landowners whose lands are required for the SR1 Project, including members of the SCLG. During the period March 2015 to July 2016 AT had several meetings with SR1 landowners and/or their legal counsel to discuss obtaining access to their lands to conduct field work. The first SR1 Project lands were acquired by AT in 2016, additional lands were acquired in 2019 and 2020, AT is in the process of finalizing additional acquisitions right now, and other negotiations are ongoing.

(b) Environmental Impacts

51. The Landowners' Statements in Appendix C to the SCLG's submissions include many concerns expressed about environmental impacts, including effects on water, air, wildlife, fish, human health, etc. AT prepared a comprehensive EIA for SR1 and provided substantial additional information relative to specific environmental effects in its responses to the several rounds of Supplemental Information Requests ("SIR") from the NRCB, AEP and IAAC.
52. AT's response to concerns about environmental impacts are, for the most part, set forth below in its responses to the expert reports filed by the SCLG. However, AT will here address one area where the SCLG did not file expert evidence: noise.
53. Unlike many projects, noise is only expected to be a potential concern during construction. An Acoustic Environment Assessment ("AEA") was prepared as part of the EIA for SR1.¹² The AEA concluded that, without mitigation, exceedances of Health Canada limits may

¹² Exhibit 25.

occur. Accordingly, AT will implement measures, standard to large construction projects like SR1, to mitigate noise from the project during construction. AT will also carry out monitoring during construction to ensure that exceedances do not occur and, if they do, additional mitigation measures can be implemented.

54. Since preparing the AEA, Stantec has identified some errata that are corrected in the technical memorandum attached hereto as Appendix “D”. The errata are that in Scenario 4 (construction activities greater than one year in duration) exceedances of Health Canada’s “percent highly annoyed” (%HA) threshold of 6.5% will occur at four additional receptors. These errata do not change the conclusions of the AEA and the additional exceedances will be reduced to acceptable levels through mitigation measures implemented as part of AT’s noise management plan for the Project.
55. AT also notes that it has committed to have a Community Liaison in place during construction. If there are concerns about noise, these can be communicated to the Community Liaison for follow-up by AT.

(c) Safety concerns

56. Many of the Landowner Statements express concerns about issues such as dam safety, risk of malfunction, potential failures and emergency preparedness and response. AT addresses most of these concerns below, in its response to the Austin Engineering report and the submissions of Ian Dowsett.
57. However, there are a few points that AT will address here. The first is the commonly expressed opinion in the Landowner Statements that SR1 is “untested” and a “novel” project. Karin Hunter goes so far, in her submission to IAAC on its draft report,¹³ to characterize SR1 as a “radical innovation”. With respect, AT submits that these characterizations are not valid.
58. All the component structures of SR1 (the diversion structure, the diversion channel, the dam and reservoir) are commonly built and operated, in Alberta and around the world. The only

¹³ Exhibit 199.

thing that is “novel” about SR1—in Alberta—is the combination of all of these components in a single project. That does not, however, make SR1 a new or untested concept or an inherently or unusually risky project. As has been pointed out by AT previously, off-stream storage of water is used throughout Alberta and dry dam flood projects exist elsewhere in the world, including the Miami Conservancy system of five dry dams in Ohio, and have operated safely for decades.

59. Some SCLG members also raise a concern about the risk that pipelines located under the SR1 Project area will leak or rupture. To be clear, existing pipelines that run through the SR1 Project area and that would be at risk as a result of the Project will be relocated. AT is finalizing now agreements with the pipeline operators to allow this work to proceed. The relocations will have to be approved by regulatory agencies such as the Alberta Energy Regulator and the Canadian Energy Regulator and will be carried out by the pipeline operators, or their contractors, who have extensive experience moving pipelines. AT submits this concern is unfounded.

(d) Land and land use impacts

60. SR1 is unique in one respect: it will result in privately-owned land being converted, through acquisition, into Crown land. Further, because it is a dry reservoir, the primary use of the Project area for flood mitigation will not occur often.
61. Therefore, early in the development of the Project, AT realized it would have to develop a plan for the future use of the Project area when it is not being used for its primary function of flood mitigation. In October 2020, as part of its response to a Round 2 SIR from IAAC,¹⁴ AT filed with IAAC and the NRCB its “Updated Draft Guiding Principles and Direction for Future Land Use” (the “**Land Use Principles**”). The Land Use Principles set forth AT’s current vision for future land use in the Project area. This includes use of the Project Area by First Nations for the exercise of Treaty rights such as hunting.

¹⁴ Exhibit 216, pdf page 19.

62. Some of the Landowner Statements express safety concerns about the prospect of hunting taking place in the Project area, near their lands. In response, AT acknowledges and understands this concern but believes that it can be adequately addressed during development of the final land use plan for SR1. In addition, any hunting that does occur in the Project area will have to comply with existing safety rules and regulations, including the observation of setbacks from residences and roadways for the discharge of firearms. AT notes, as well, that hunting by First Nations already takes place within the Project area, according to information provide by some landowners and First Nations.

(e) MC1 is a better alternative than SR1

63. Perhaps the most repeated arguments in the Landowners' Statements is that MC1 is a better alternative than SR1 and should have been selected. AT has responded to this argument above.

3. Karin Hunter's Submissions (Appendix D1)

64. AT understands that Karin Hunter is the current President of the Springbank Community Association and a member of the SCLG. Ms. Hunter's submission to the NRCB consists of a six-page document titled "SR1 Scope Escalation" which argues that SR1 costs have increased 2.5x since 2014¹⁵ and a 139-page presentation structured to address the five topic sessions at the hearing.¹⁶

65. AT has carefully reviewed Ms. Hunter's two submissions. With respect to the first, dealing with cost, AT has already addressed above (in Part II) the issue of project costs. To reiterate, AT submits there is nothing unusual about the fact that costs have increased as the Project has advanced through more detailed design and engineering and advanced engagement with stakeholders. Nor are the cost increases significant.

¹⁵ Exhibit 253.

¹⁶ Exhibit 254.

66. To arrive at her conclusion that costs have increased 2.5x, Ms. Hunter compares the current cost estimates to an estimate prepared by AMEC in 2014, of \$209 Million. AT submits that this is not a valid comparison. The 2014 AMEC cost estimate was extremely conceptual and based on a design flood of 1:100 years—a different project from SR1, which is designed to provide protection to the flood of record, 2013 (>1:200 years).
67. Ms. Hunter also argues that an assessment of the costs of SR1 should include the payment made to the Tsuut'ina Nation (\$32 Million). In response, AT notes that while the grant of \$32 Million to Tsuut'ina Nation is for flood mitigation, restoration and prevention (including the berms at Redwood Meadows), this work is a different project than SR1. The same is true for the Government of Alberta funding the construction of berms at Bragg Creek.
68. With respect to Rocky View County, AT submits that it negotiated an agreement with the County as part of its obligation to engage with and attempt to address the concerns of the local municipality. The costs relating to this agreement have been factored into the project's current land acquisition estimates.
69. Finally, Ms. Hunter also criticizes the increase in the SR1 land acquisition budget. In response, AT notes that Ms. Hunter states that the land budget has increased from \$60 Million to \$140 Million. This is not correct, the original estimated land costs for SR1 were \$80 Million, not \$60 Million.
70. More importantly, AT is committed to fairly compensating landowners whose lands are required for the Project. Indeed, AT is legally obligated to do so. As noted above, to be transparent about its approach to land acquisition AT prepared the LAP, which has been provided to all landowners within the SR1 Project area. As noted above, consistent with the LAP, AT has had appraisals conducted on many parcels within the Project area and now has a much better understanding of land costs in the Springbank area. Finally, to the extent that AT is able to offset land acquisition costs by re-selling excess lands, it will do so.

71. With respect to her second submission (Appendix D1.A), AT again notes that most of the concerns raised by Ms. Hunter have been addressed above (alternatives, costs, etc.) but offers the following responses to certain of the assertions made therein:

- Ms. Hunter states that the environmental impact of SR1 “is far more substantial than originally predicted”.¹⁷ AT rejects this characterization. There have been no substantial changes to AT’s understanding of the environmental effects of the Project since the EIA was originally prepared in late 2017.
- Ms. Hunter states that sedimentation of the SR1 reservoir was not understood in 2014.¹⁸ In response, AT states that while its understanding of sediment deposition patterns improved based on modelling done during the Round 2 SIRs, there has been no material change to the mitigation measures for managing sediment impacts, which AT is confident will be effective.
- Ms. Hunter argues that SR1 creates unequal outcomes for downstream communities and that full benefits are only provided to residents downstream of the Glenmore Reservoir, while residents upstream of the reservoir will still be subject to flooding in the design flood scenario. In response, AT states that it is not possible for every downstream property owner to be protected to an equal extent. The fact is that the extent of the flooding downstream of SR1 will be substantially reduced by the Project. See AT’s response to Ian Dowsett’s report below.
- Ms. Hunter argues that the selection of SR1 was the result of “flawed decision making”.¹⁹ AT rejects this characterization and reiterates that the decision to select SR1 over other alternatives was justified. Moreover, the decision (and the process by which that decision was made) is not within the scope of this hearing and not relevant.

¹⁷ Exhibit 254, pdf page 6.

¹⁸ *Ibid.*

¹⁹ *Ibid.*, pdf pages 12-26.

- Similar to the last point, Ms. Hunter provides a “timeline” for SR1²⁰ for the apparent purpose of arguing that SR1 should not have been selected by the Government of Alberta. AT has already responded to this argument: the selection of SR1, and the process by which that selection was made, is not relevant in this proceeding.
- Ms. Hunter raises a number of questions about future land use in the Project area.²¹ In response, AT notes that the land use plan for the Project area has not yet been finalized and will be the subject of further and ongoing consultation consistent with the draft land use principles for the Project. The members of the SCLG will have an opportunity to participate in that consultation and provide input into the land use plan.
- One of the questions raises by Ms. Hunter pertains to Kamp Kiwanis. AT notes that Kamp Kiwanis has not intervened in opposition to the Project. Further, AT wishes to be clear with the NRCB that it is engaged in ongoing and respectful discussions with Kamp Kiwanis.

4. Austin Engineering Report (Appendix F)

72. AT asked Stantec to review the report prepared for SCLG by Austin Engineering (the “**Austin Report**”). Attached as Appendix “E” is a technical memorandum prepared by Stantec in response to the Austin Report.
73. For the reasons set forth in Appendix “E”, AT rejects the assertion in the Austin Report that the SR1 design does not meet all CDA Dam Safety Guidelines requirements. AT submits that the Austin Report misinterprets the Dam Safety Guidelines with respect to the design of the emergency spillway and the required safety factor against slope failure.
74. AT’s response to the summary of recommendations made in the Austin Report is also contained in Appendix “E”. AT has carefully reviewed those recommendations and concludes that no revisions to the design of SR1 are required. Notwithstanding, AT is

²⁰ *Ibid*, pdf pages 62-105.

²¹ *Ibid*, pdf pages 106-121.

providing the Austin Report, and Stantec's response to it, to the AEP Dam Safety team that is reviewing the SR1 design, for their information and consideration.

5. Ian Dowsett Submissions (Appendix I)

75. AT understands that Ian Dowsett is a resident in the greater Springbank area and a member of the SCLG. AT also understands that Mr. Dowsett is now retired but was formerly a professional in the fields of hazard and risk assessment and emergency response planning. SCLG included in its written submissions a document prepared by Mr. Dowsett titled "Review of Safety, Hazards and Risks Associated with the Commissioning and Operation of the SR1 Off-Stream Embankment Dam".
76. AT submits that the Board cannot accept Mr. Dowsett's report as an expert opinion report because Mr. Dowsett fails to meet all the criteria established by the Supreme Court of Canada in the *White Burgess* case²² for being an expert witness. Specifically, as a member of the SCLG with a vested interest in the outcome of the Board's review, Mr. Dowsett does not have the independence or objectivity required of an expert witness.
77. It is an accepted principle in law that the evidence of an expert witness must be impartial and the expert owes a duty to the court or tribunal to give fair, objective and non-partisan opinion evidence.²³ Impartiality requires the expert's opinion to reflect an objective assessment of the questions at hand, whereas independence requires that the expert's opinion be the product of the expert's independent judgment, uninfluenced by who has retained him or her or the outcome of the proceeding. An expert's opinion must be unbiased in the sense that it does not unfairly favour one party's position over another.
78. In *White Burgess*, the Supreme Court of Canada set out a test for assessing when expert evidence should be deemed inadmissible because of a lack of independence and impartiality and when such concerns should be addressed by the weight given to the evidence. Expert

²² *White Burgess Langille Inman v. Abbott and Haliburton Co.*, 2015 SCC 23 ["*White Burgess*"]
<https://www.canlii.org/en/ca/scc/doc/2015/2015scc23/2015scc23.pdf>

²³ *Ibid* at para 10.

evidence will be inadmissible if the proposed expert is unable or unwilling to discharge his or her duty to provide a fair, objective and non-partisan opinion.²⁴

79. In assessing this threshold requirement, a court will consider both the circumstances of the proposed expert and the substance of the proposed evidence. The existence of some interest or relationship does not automatically render the evidence of the proposed expert inadmissible. Instead, it is the nature and extent of the interest or connection with the proceeding or a party thereto which matter. A court should be concerned where “an expert who, in his or her proposed evidence or otherwise, assumes the role of an advocate for a party is clearly unwilling and/or unable to carry out the primary duty to the court.”²⁵ If the evidence is admitted, residual concerns about an expert’s independence or impartiality should be reflected in the weight given to the expert opinion.²⁶
80. AT submits that as a member of the SCLG, a party actively participating in this proceeding, Mr. Dowsett has a direct interest in the outcome of the proceeding and is clearly advocating for a particular outcome (denial of the Project by the Board). Therefore, the Board can only give to Mr. Dowsett’s evidence the weight it would give to a lay witness.
81. That said, while he is not independent and objective in this matter, AT does not take issue with Mr. Dowsett’s expertise and qualifications in the areas of risk and emergency response. For that reason, AT had Stantec review Mr. Dowsett’s report. Stantec has prepared a technical memorandum in response, which is attached hereto as Appendix “F”.
82. As stated in Appendix “F”, while residents upstream of the Glenmore Reservoir will still be subject to flood risk, SR1 provides a considerable reduction in flood risk to all downstream properties, including those upstream of Glenmore Reservoir.

²⁴ *Ibid* at para 46.

²⁵ *Ibid* at para 49.

²⁶ *Ibid* at paras 45 and 49

83. With regard to emergency response, in accordance with the *Dam and Canal Safety Directive*²⁷ issued under the *Water Act*²⁸, SR1 will have an Emergency Management Plan (“EMP”) that will consist of an Emergency Preparedness Plan, an Emergency Response Plan and a Flood Action Plan. These plans will be reviewed and will have to be approved by the Director of Dam Safety for the Province of Alberta.
84. The EMP will be prepared by AEP, as the operator of SR1, and will have to be in place and approved prior to any diversion of water into SR1. Preparation of the EMP will include engagement with key stakeholders including the City of Calgary, Rocky View County and any other stakeholders who will have roles or responsibilities under the EMP. An EMP for a dam with an extreme consequence classification must be reviewed and updated every five years.
85. Alberta Transportation (and AEP) take safety extremely seriously. It is in nobody’s interest, and certainly not AT’s or AEP’s interest, to put in place anything less than a rigorous and robust emergency management plan for SR1.

6. Dr. Jon Fennell Report (Appendix J)

86. AT and Stantec have reviewed the materials submitted by Dr. Jon Fennell on behalf of the SCLG. Dr. Fennell has canvassed a broad range of diverse topics. However, upon review AT is of the opinion Dr. Fennell’s principal conclusion – that Stantec’s analysis of hydrogeological, water quality and climate change issues are not representative – is simply not borne out. As set out in the attached technical memorandum found at Appendix “G”, and for the reasons which follow, AT disputes the majority of Dr. Fennell’s conclusions.

(a) Hydrogeology modelling

87. Dr. Fennell challenges the hydrogeology modelling and resulting conclusions put forward by Stantec. Specifically, he challenges:

²⁷ Environment and Parks. *Dam and Canal Safety Directive* (2018). < <https://open.alberta.ca/dataset/93b2b2ded-f107-48e3-9eda-28acf2951822/resource/d01922c3-9464-4a6f-b2ca-4fbefa510864/download/directivedamcanalsafety-dec11-2018.pdf>>

²⁸ *Water Act*, RSA 2000, c W-3 <https://www.qp.alberta.ca/documents/Acts/w03.pdf>

- (i) The determination of hydraulic conductivity of the upper unconsolidated deposits.
- (ii) The input of model values that do not represent soils which are fractured.
- (iii) The implications of subsurface mineral interactions which he alleges could have geotechnical consequences.

88. Regarding hydraulic conductivity, Dr. Fennell challenges the amount of leakage that is predicted from the reservoir to the subsurface; in essence, how much of the water held in the reservoir will enter the subsurface. Dr. Fennell questions the Stantec borehole drilling program on the grounds that only three boreholes were drilled into the overlying surficial deposits (page 6). From this Dr. Fennell argues that Stantec's use of a conductivity value in the modelling reflective of clay deposits, which are not significantly fractured, is wrong. In Dr. Fennell's view the subsurface soil is likely fractured.
89. Dr. Fennell relies upon a paper (Moran 1986; see page 5) that has no data from the Project area at all. The Moran paper was a regional scale study of the greater Calgary area. The particular cross-sections cited on page 5 of the Fennell report are derived from a small number of boreholes spread out over many kilometers, none of which are in the Project area. Further, and as is set out in the attached Appendix "G", reliance on the Moran paper introduces non-representative conditions, such as surficial gravel and fluvial channel sands, which are not found in the Project area.
90. AT also notes that efforts to test additional boreholes in proximity to the three referenced by Dr. Fennell were unsuccessful. These boreholes resulted in either no water or so little standing water as to be unhelpful. However, from a qualitative standpoint and as is discussed in Appendix "G", this fact serves to further validate the use of the conductivity factor(s) selected. This is because the "dry wells" demonstrate even less hydraulic conductivity than is suggested by the three boreholes that were drilled and for which corresponding values were used to constrain the model.

91. It is also noteworthy that as part of its sensitivity analysis, Stantec modelled the effect on groundwater levels (one of SCLG's principal concerns) with conductivity levels one thousand times greater than anything observed in the field. The results showed that effects to groundwater levels in this scenario did not extend beyond the Local Assessment Area ("LAA") in any magnitude that would be problematic.²⁹
92. Further, even if water from the Project were to enter the subsurface, groundwater flow direction in the underlying bedrock is generally southward away from the Project area and SCLG members. Consequently, any water would be expected to migrate and discharge into the Elbow River Valley and not interfere with area domestic water wells or use.³⁰
93. Lastly, Dr. Fennell claims that the mineralogy of the underlying deposits poses a geochemical risk to the dam structure under load. Specifically, he extrapolates from the Moran paper to say that certain interactions between the swelling clay subsurface and water can cause the clay to "lose cohesion" and create a "shear slip plain" under load (page 7). With respect, Dr. Fennell is not a geotechnical engineer and his assertion is flawed for the following reasons:
- (i) The concern expressed that a geochemical reaction will result in loss of shear strength is not a common problem normally observed with soil-groundwater interaction with the exception of heavily contaminated groundwater, which is not expected here. The potential for loss of cohesive strength due to elevated pore pressures were extensively evaluated and accounted for in the dam design.
 - (ii) Further, there is such limited conductivity between surface and subsurface, and retention time is so minimal, that sufficient water and time for chemical reactions as complained of is implausible.

²⁹ Exhibit 157, pdf pages 7 and 9.

³⁰ Exhibit 110, pdf page 148.

(b) Groundwater Modelling

94. Dr. Fennell also questions the efficacy of the groundwater model used by Stantec to simulate how the Project could impact groundwater levels and flow conditions in the surficial and bedrock deposits. Dr. Fennell challenges:
- (i) The hydraulic conductivity used to represent the layer beneath the Project; specifically, Dr. Fennell asserts that a value for fractured till should be used in the model, with such a value one order of magnitude higher than what is currently used.
 - (ii) The conclusions Stantec reached on the issues of hydraulic heads (i.e. potential of the project to push water through the surficial deposits down to bedrock). Dr. Fennell claims that Stantec has underestimated these effects.
 - (iii) The seepage rate of water and its effect on groundwater quality; and model calibration results and sensitivity simulations.
95. Regarding the selection of conductivity values, Dr. Fennell asserts Stantec has selected a value that is not representative of values properly associated with fractured till, as reported by others. The papers cited by Dr. Fennell in this regard are for locations outside of the local area of the Project. Moreover Dr. Fennell appears to have selected the highest values where ranges were offered. Lastly, his views are at odds with the actual measured values that Stantec was able to identify at site.
96. Dr. Fennell also challenges the conclusions that Stantec reached on the issue of hydraulic heads. Specifically, Dr. Fennell claims that Stantec has underestimated the effects of water held in the reservoir on the vertical hydraulic gradient, which in turn will permit water to be pushed through the surficial deposits down to the bedrock.
97. Dr. Fennell is correct in stating that increases in hydraulic head will serve to increase the vertical gradient and effectively push water through the surficial deposits down to bedrock. However, Dr. Fennell's analysis fails to account for the fact that average gradient increases

across the entire reservoir, as opposed to just at the low level outlet, are far less owing to the decreasing depths of water that are anticipated as one moves outward from the centre of the reservoir. This is important context.

98. Further, the rate of downward groundwater movement is limited by the permeability of the underlying materials. Given the low permeability that is seen at the project site, the increased gradient pressure is unlikely to result in significant quantities of water being driven downwards.
99. Dr. Fennell goes on to assert that Stantec's modeling has underestimated seepage rates out of the reservoir. The inference Dr. Fennell suggests should be drawn is that by not properly estimating these rates Stantec does not understand the potential implications to groundwater quality. Dr. Fennell asserts that the water in the reservoir will either be contaminated upon its entry into the reservoir or become contaminated by virtue of being stored in the reservoir, and that such contaminated water will migrate downwards and spread outwards from the project area.
100. While there is potential for effects to underlying groundwater quality, AT asserts that the effects will be limited. They will be limited in their spatial extent, infrequent in their occurrence, short in duration, reversible and they will not be significant. The simple reality is that groundwater is not anticipated to be contaminated, nor is groundwater anticipated to be pushed downwards through the surficial deposits at rates that cannot be managed. However, even if all of these unlikely events occurred the effects on groundwater would be ascertained through proposed groundwater monitoring programs and mitigation measures implemented.
101. Moreover, it bears repeating that groundwater flow directions in the underlying bedrock are generally directed towards the southeast portion of the Project area. Therefore, even if there was a contamination of groundwater, which is highly unlikely, such groundwater would flow into and discharge into the Elbow River, the original source of the water in the reservoir. Therefore, it remains unlikely that there are opportunities for impacts to groundwater users in the downgradient direction of the reservoir.

102. Dr. Fennell also takes issue with the calibration and sensitivity simulations used for the model. With respect, Dr. Fennell's arguments on these issues are not easy to follow. It would appear that Dr. Fennell is of the view that the model calibration residuals demonstrate a systemic bias. AT rejects this assertion. While there are some places where the residuals are greater in magnitude than others, the context and in particular the total topography across the model domain, running from approximately 200m at its highest to lowest points, is relevant. When this context is considered in light of the calibration residuals, it is clear there is no systemic bias. The calibration residuals are not materially skewed above or below the line of perfect fit.
103. Similarly, Dr. Fennell takes issues with the sensitivity simulations. These simulations were conducted to assess the robustness of the model and to examine "what if" scenarios where parameters in the model are changed to values that are completely unrepresentative of a measured or calibrated value. In short, they are an exercise to examine worst case scenarios not reasonably supported by the underlying data. Again, Dr. Fennell's submissions in this regard remain unclear.

(c) Geochemical Reactions

104. Dr. Fennell raises the potential for geochemical reactions arising from oxygenated floodwater interacting with present minerals in the upper clays/tills. Upon review these concerns are not borne out by the facts.
105. First, Dr. Fennell compares shallow groundwater quality in the upper clays/till with underlying bedrock water quality and asserts that they are similar. From this he concludes that hydraulic communication between the two units must be occurring. Stantec's analysis suggests this is only true in some areas and not in others. As stated in the EIA, bedrock water quality is slightly fresher (with a lower TDS) than groundwater in the upper clays/tills. This means that the water in the bedrock has a quicker transit time in the subsurface than the overlying clay tills and indicates that different flow systems are present.

106. In support of the claim that there may be geochemical reactions, Dr. Fennell has provided several Eh-pH tables/diagrams to indicate the conditions under which some form of minerals are stable. Dr. Fennell argues that the addition of oxygenated water subsurface will cause changes to geochemical conditions allowing those minerals to become mobile and enter local groundwater.
107. It is difficult to follow this logic. On the one hand, Dr. Fennell notes that oxidizing conditions are already occurring and already leading to release of metals. But on the other he tries to argue that inclusion of oxygenated floodwater will exacerbate the situation, even though there are no other mineral forms above the current ones shown within these diagrams. Simply put, adding more oxygenated water would not change what is already going on.
108. Further, as stated above, the modelling clearly indicates that even if there were changes to water quality these would be detected and mitigation measures installed. And as has been stated repeatedly, the direction of flow underground is such that any water is anticipated to move to and be discharged into the Elbow River, from which it was diverted, and will not intersect with existing groundwater facilities.

(d) Climate Change

109. Dr. Fennell asserts that use of the 2013 design flood for SR1 has “serious limitations” and could result in an underdesigned flood mitigation system or an “operational approach that does not achieve the intended goals”. In short, Dr. Fennell claims historic flood events and future climate risk both suggest the possibility of larger and more frequent floods on the Elbow. In Dr. Fennell’s view, SR1 should be designed to accommodate these larger flood events.
110. While Dr. Fennell argues that there may have been larger floods on the Elbow River prior to the record, he acknowledges that “the larger flow events recorded in the neighboring Bow River have not been documented for this River” (the Elbow River). Dr. Fennell relies on tree ring analysis regarding historic flow conditions in the larger South Saskatchewan watershed spanning back hundreds of years to support the claim that the 2013 flood was not

the flood of record and that SR1 should be larger.³¹ Alberta Transportation notes this methodology has known limitations and is not, in fact, representative of discrete flood events within the Elbow River watershed. Moreover, the general predictive value of such information, if any, is highly suspect in light of climate change considerations.

111. On the issue of climate change, Dr. Fennell points to *General Circulation Models* to suggest the likelihood of increases to precipitation levels in the Elbow River watershed by the end of the century. Alberta Transportation notes Dr. Fennell's comment that this is the 'worst-case scenario'. While the frequency and magnitude of floods may change in the future, the projection presented is speculative and based only on use of RCP scenario 8.5 which simulates no reductions in carbon emissions from current trends. Canada and many countries around the globe have committed to reducing carbon emissions, putting the use of reasonableness of using the RCP 8.5 as a potential scenario into question.
112. However, in IAAC Conformity 3-01 Stantec utilized RCP 8.5 in an assessment of the impacts of climate change on flood frequency. Unlike Dr Fennel's assessment ,which looked at trends in total precipitation, Stantec's assessment looked at changes to event-based precipitation through the use of climate change impacts to intensity-duration-frequency curves. The resulting changes in precipitation were run through a hydrologic model to estimate potential impacts on flood frequency from climate change. The results showed the potential for a 12% increase in the magnitude of a 200-year flood event. Stantec included a 25% increase in the maximum diversion rate of SR1 as a factor of safety. The factor of safety included in the design is more than double that which would be required for increases in peak flow magnitude due to climate change simulations using RCP 8.5.
113. In sum, Alberta Transportation does not dispute that climate change may alter future meteorological and hydrologic conditions in the Elbow River and has considered same.

³¹ Tree rings are indicative of annual changes in moisture and not reflective of specific flood events that could happen within that year. While the Elbow River is a tributary of the South Saskatchewan River, the information presented is not specific to the Elbow River and the basin scale upon which the results are based leave interpretation as to where in the South Saskatchewan Watershed the water was generated. The graphs and their interpretation do not provide any useful metrics to determine flood event based peak flows or volumes on the Elbow River and is not specific enough for use in design. The information merely presents a speculative argument that there could have been floods larger than the 2013 event prior to the record.

Alberta Transportation disagrees with Dr. Fennell that climate change can be predicted with sufficient accuracy and certainty to be used as the basis for design of SR1. Alberta Transportation's position is that there are contrasting opinions on the effects of climate change on discrete flood events on the Elbow River.

114. Lastly, Dr. Fennell states that "there is also a complete lack of consideration for drought conditions". This is incorrect. The Government of Alberta did review the potential for 'wet dams' in their assessment of Flood Mitigation Measures from the Bow River, Elbow River and Oldman River Basins (AMEC 2014). The wet dam upstream of Glenmore scored lower than the dry reservoir as noted in the multi-criteria decision-making process in Appendix B of that document. AT also notes that drought mitigation does not necessarily need to be in the form of water storage.
115. SR1 improves water security at Glenmore in any given year. It does this by allowing the City of Calgary to allocate the more of the available storage in the reservoir to water supply in the spring. This means that the City will no longer need to draw down the Glenmore Reservoir to the lower levels they have been operating at in the spring, and thereby incurring risk that river flows don't materialize to fill it back up for supply. By reducing the flood risk the City's water supply is more secure.

7. Dave Klepacki Submissions (Appendix L)

116. Dr. David Klepacki is a member of the SCLG. At paragraph 41 of the SCLG's submission he is described as having, "technical expertise in aquatics, flood frequency, and with a special knowledge of the flood conditions in Elbow River and Bragg Creek". In his materials, Dr. Klepacki asserts that AT has "inadequately assessed" the impact of the project on wildlife critical habitat. He also makes claims regarding Elbow River flood flow rates, recurrence intervals, and erosion/riverbed integrity associated with the Low-Level outlet.
117. With respect, Dr. Klepacki is not qualified to make these assertions. Despite the SCLG claim that he has "technical expertise", Dr. Klepacki is not a wildlife biologist, hydrologist or engineer. Nor is he independent and impartial in this matter given his membership in the

SCLG. As stated above in relation to Mr. Dowsett, Dr. Klepacki therefore fails to meet the requirements for qualification as an expert witness. Consequently, the Board should give very little weight to the conclusions that Dr. Klepacki seeks to put forward. Despite the foregoing, AT makes the following comments in response to the materials submitted.

118. AT disputes Dr. Klepacki's assertion that the Stantec field observations and assessment fail to accurately account for the wildlife in the area. AT also disputes the assertion that the Project will destroy elk winter habitat and spring calving grounds as well as disrupt movement of elk herds and the carnivores that rely upon them (i.e., grizzly bear) to such an extent that the survival of the Jumpingpound elk herd would be jeopardized.
119. With respect, Dr. Klepacki puts forward no scientific basis for his views but rather provides anecdotal evidence of what both he and area residents have observed, coupled with intermittent photo evidence of animal sightings from 2016 onwards.
120. It is important to note that AT had Stantec undertake a detailed and thorough assessment of potential effects of the Project on wildlife using a habitat-based approach as well as information collected during baseline wildlife surveys, which followed provincial protocols, where applicable. Both elk and grizzly bear were chosen as key wildlife indicators, which were used to focus the wildlife assessment that reflected both landowner and Indigenous group concerns.
121. Dr. Klepacki's assertion that Stantec reported few observations of elk is not correct. For more wide-ranging species such as elk and grizzly bear, Stantec completed a remote camera survey to determine presence and relative abundance of medium and large-sized mammals (e.g., ungulates, bears) in the LAA. The remote camera program was completed over 329 days, which resulted in over 3000 camera-days of survey effort. Elk were detected at 8 of 10 cameras (80%) and were the second most frequently detected species (number of detections per 100-camera days) after white-tailed deer. The frequency of elk detections indicate elk are

relatively abundant in the LAA and is consistent with Dr. Klepacki's view and other landowners that elk commonly occur in the LAA.³²

122. Overall, the remote camera program identified nine mammal species in the LAA, including white-tailed deer, elk, mule deer, coyote, red fox (Elbow River), black bear (Elbow River), grizzly bear (Elbow River), cougar (Elbow River), and moose (east and west of Hwy 22 and Elbow River).³³ As such, AT agrees with Dr. Klepacki's statement that many of these wildlife species use habitats along the Elbow River.
123. Regarding impacts to the elk herd and grizzly bear, AT assessed the potential effects of the Project on both species and does not agree the Project will result in the extirpation of local elk herds or grizzly bear. There is other suitable habitat available in the Regional Assessment Area ("RAA") for animals that might be temporarily displaced during construction and wildlife are predicted to use habitats in the LAA during dry operations (i.e., once construction activities cease and associated noise and human disturbance decrease).
124. Moreover, as part of the Wildlife Mitigation and Monitoring Plan ("WMMP"), the proposed remote camera monitoring program will be undertaken to determine the effectiveness of mitigation measures (e.g., vegetated bottom and side slopes) designed to reduce the potential effects of the diversion channel on wildlife movement. It is important to remember that flooding of the off-stream reservoir will occur relatively infrequently under the 1:100 year and design flood scenarios and a 1:10 year flood would affect a relatively small area. As such, feeding and calving areas for elk are expected to be available in the Project Development Area ("PDA") during dry operations. As part of the WMMP, post-flood habitat assessments will be completed to determine the potential effect of flood waters and sediment deposition on wildlife habitat including elk, and where necessary areas will be revegetated in accordance with the Vegetation and Wetland Mitigation, Monitoring and Revegetation Plan.

³² Exhibit 70, pdf pages 64, 84 and 86.

³³ *Ibid* at pdf 64.

125. Dr. Klepacki also asserts that Stantec's assessment of flood frequency vis-a-vis the Project is flawed because it failed to include historic flood events. Dr. Klepacki extrapolates his position to also claim that, as a result, the Project is subject to "significant risk" of being under-designed for large flood events in the future.
126. As Dr. Klepacki rightly points, out there are no measurements of the flow rate for the 1879, 1897 and 1902 events which he points to as being missing from the Stantec analysis. Rather flow rates for these events have been estimated using high water marks on a CP Rail Bridge over the Bow River not the Elbow River. Despite this, Dr. Klepacki makes reference to the Golder Associates Ltd. hydrological study,³⁴ as demonstrative of how the historic flood events could be used to predict flood frequency.
127. The Golder study used a technique associated with ungauged basins to transpose the estimates made from observations on the Bow River to the Elbow River watersheds in order to assess their impact on flood frequency. The methodology that Golder employed is set out in their report at page 44. It is a method that by its very nature compounds uncertainty and necessarily involves significant assumptions and reasonableness qualifications.
128. AT disagrees that adding to a dataset large flood events based on speculative data (i.e. photos from over 100 years ago or historic high water marks on the Bow River) is appropriate in relation to this Project.
129. While AT does not deny that there may have been larger floods on the Elbow River which occurred prior to the implementation of hydrometric record-keeping, there is simply no recorded data or credible estimates as to their magnitude that would justify deviations from the Project's design base of limiting flows downstream of Glenmore Reservoir to no more than 170 m³ per second during the 2013 flood or equivalent.
130. Moreover, and as set out above in response to Dr. Fennell, Stantec has applied a 25% factor of safety on the diversion capacity (maximum diversion increased to 600 m³/s) and a 10%

³⁴ Exhibit 265.

factor of safety on the reservoir volume. In response to IAAC Conformity Review IR 3-01 it was demonstrated that this factor of safety was appropriate for climate change using methods prescribed for flood risk assessments in British Columbia.

131. Lastly, Dr Klepacki states his concern about the effects the “low level outlet” flow will have on the unprotected banks and channel of the unnamed creek and the Elbow River downstream from the confluence of the outlet flow with the Elbow River. This concern is misplaced. The mean annual flood of the river in this reach is 70.9 m³/s. The river experiences flow rates in excess of the sum of the mean monthly flow rates and the maximum low level outlet release capacity annually, without negative impact to the channel form or aquatic ecosystems. In short, the Project will be no more significant to the Elbow River downstream vis-à-vis unprotected banks than the current river is.

132. Further, modelling done by AT, as set out in NRCB Round 2 IR -23³⁵ and Appendix 23-1³⁶, assessed the impact to the bedload in the Elbow River from the operation of SR1 using a 2-dimensional hydrodynamic model that simulated the scour and re-deposition both with and without the project in place. In NRCB Round 2 IR-65³⁷ modeling was done to simulate the impacts of releases from the low-level outlet. The modeling is described further in Appendix 15-1³⁸ of that submission. The model included provision for the resuspension of bed materials and the results do not suggest that there would be notable issues with bedload movement from scour and re-suspension within the Elbow River channel from the low release.

133. Despite this, Dr. Klepacki has made recommendations for mitigation against erosion within the Unnamed creek and the Elbow River floodplain. AT would like to draw the Board’s attention to the Introduction to NRCB Round 2 IR,³⁹ which indicates changes to the project

³⁵ Exhibit 138.

³⁶ Exhibit 140.

³⁷ Exhibit 138.

³⁸ Exhibit 140.

³⁹ Exhibit 138.

since the 2017 EIA submission. These include erosion protection in the unnamed creek. The erosion protection is in the form of rock check structures that were designed to mitigate the risks from erosion of the unnamed creek while aiming to preserve the general characteristics of the unnamed creek valley.

8. Allan Locke Report (Appendix N)

134. AT had Stantec review the report prepared for the SCLG by Mr. Allan Locke on the topic of the potential Project impacts on fish and fish habitat. Stantec has prepared a technical memorandum responding to Mr. Locke's report, which is attached hereto as Appendix "H".
135. To begin, AT wishes to acknowledge the reasonableness and even-handedness with which Mr. Locke conducted his review of SR1. AT will be providing Mr. Locke's report, and Stantec's response to it, to DFO for their information and consideration.
136. AT has carefully reviewed the recommendations made by Mr. Locke and has organized its responses into the following issues/concerns:
- a) Fish passage at the Diversion Structure
 - b) Fish entrainment into the Diversion Channel
 - c) Fish exclusion methods
 - d) Release of water back into the Elbow River
 - e) Pre-Project baseline data
 - f) Post-Project monitoring
 - g) Bull trout
- (a) Fish passage at the Diversion Structure**
137. Mr. Locke suggests that AT needs to demonstrate that the diversion structure is not a limiting factor to fish passage during low flow periods. In response, AT submits that it has

demonstrated that fish passage will be maintained during non-flood and post-flood operations for all species and sizes where passage is currently possible under existing conditions. AT will monitor fish passage and implement mitigation if necessary. The mitigation could include the addition of more cobbles, gravels and sands in the v-weir steps to limit seepage to maintain flow at the surface.

(b) Fish entrainment into the Diversion Channel

138. Mr. Locke recommends that AT should calculate the proportion of the resident Elbow River fish population that may be entrained during a flood event using the entrainment assumption of 80% contained in the EIA.
139. In response, AT believes it is important to clarify that the entrainment assumptions presented in the EIA (Volume 3B, Section 8.2.4.1; 80% entrainment) and Round 2 AEP IR 74 (Exhibit 138; 1% entrainment) reflect different scales and context; there is not necessarily a contradiction between the two percentages. The assumption of 80% entrainment is relative to a localized area near the diversion structure: *“fish that are upstream and near the diversion structure or being swept downstream during flooding”*; whereas the assumption of 1% entrainment applies to the Elbow River population or the LAA (70 km river length) during a design flood. It is expected that a relatively higher proportion of fish will be entrained near the diversion inlet, but that the entrainment rate declines as increasingly distant reaches of the river are included in the analysis.

(c) Fish exclusion methods

140. Mr. Locke recommends that AT “be prepared to do all that can be reasonably done to keep impact to fish low”. He suggests as an example the use of a sound device to move fish away from the diversion structure when the gates are open. In response, AT states that it is receptive to the installation of a sound device and is prepared to discuss other possible mitigation options with AEP, DFO and other interested stakeholders.

141. Mr. Locke also suggests the use of a “stop-log” facility to isolate the gates so fish can be rescued and put back into the river before the gates are opened. In response, AT agrees with the value of temporary measures in isolating the gates for maintenance. While stop-logs are not proposed for gate isolation, the isolation plan for maintenance includes provisions for the use of temporary measures such as bulk bags and sandbags to isolate the gates individually.
142. Mr. Locke recommends that AT consider installing a fish return system in the diversion channel for those times when the flows that are diverted are relatively small. In response, AT does not believe that a fish return system on the diversion channel is feasible because of the characteristics of flow in the diversion channel during both high-rate diversions and low-rate diversions. However, AT is receptive to investigating the feasibility of installing a low flow channel and fish trap in the form of a depression in the diversion channel bottom where fish could accumulate and can be more easily rescued in post-flood operations.

(d) Release of water back to the Elbow River

143. Mr. Locke recommends that additional modelling be carried out to examine other possible release scenarios (i.e., in addition to the early and late release scenarios already modelled by AT). In response, AT submits that monitoring and implementing adaptive management, if necessary, is a more useful approach than undertaking additional modelling. The monitoring data collected during operations can be used to potentially update the models with the observed data, if required, to assess project performance and provide feedback to strategies for future operational events.
144. Mr. Locke also suggests that having the ability to withdraw water from anywhere in the water column could improve the quality of the water being drained from the reservoir through the low level outlet. In response, AT does not believe that such an approach, while innovative, is warranted. Waterbody stratification is a function of water density; conditions in the reservoir are expected to prevent thermal stratification from occurring. Fine suspended sediments remaining in the water column during the weeks following reservoir filling and wind generated turbulence are expected to prevent stable thermal layers from forming. Water remaining in the reservoir long enough to stabilize and form thermal layering will be

prevented from doing so because reservoir drawdown will result in water levels too shallow to stratify.

145. Mr. Locke also recommends that AT undertake additional modelling of the Environmental Flow criterion with respect to the timing of the release of flood waters from the reservoir. In response, AT does not believe further modelling is warranted. The range of scenarios modelled were designed to assess the range of potential release scenarios that could be achieved operationally and having regard to expected environmental concerns. The early and late release scenarios have accounted for many of the concerns Mr. Locke has raised. Reducing the release rates beyond those that have been currently modelled (i.e. beyond the late release scenario) will result in additional effects related to many of the water quality concerns Mr. Locke has identified, as well as potentially effecting egg incubation periods for species that have spawned in the fall.

(e) Pre-Project baseline data

146. Mr. Locke recommends that AT collect additional pre-Project fish presence and fish population data. In response, AT submits that collection of additional data is not necessary. AT undertook a fish presence and fish population study within the boundaries of the LAA (i.e., Glenmore Reservoir to Elbow Falls) in August 2020. In addition, redd surveys were completed in November 2019 and October 2020. Construction is scheduled to begin as early as fall 2021 pending project approvals; therefore, information collected through these programs is current and reflective of pre-construction baseline conditions. AT is of the opinion that collecting more data is not warranted and will not commit to replicating or supplementing these efforts.
147. In addition, a habitat mapping program of the entire extent of the Elbow River between Glenmore Reservoir and Elbow Falls was undertaken in 2019 and 2020. Habitat suitability index (HSI) modelling was subsequently completed for key indicator species at all life stages using the habitat data collected through this program. The intent of this program was to collect baseline data that could support the effects assessment, as well as fulfill pre-construction baseline survey requirements with habitat information for all life stages.

(f) Post-Project monitoring

148. Mr. Locke recommends that AT monitor fish passage at the diversion structure, to demonstrate that fish are free to move through the structure for any non-flood flow event. In response, AT is committed to monitoring conditions for fish passage (e.g., flow, velocity, depth) using an acoustic doppler current profiler (ADCP, or equivalent) and comparing these conditions to the expected swim performance data that formed the basis of design. This approach provides a non-invasive method of assessing fish passage conditions.
149. With respect to the suggestion that monitoring should aim to demonstrate that “*fish are free to move through the structure for any non-flood event flow, and any flow throughout the year*”, Alberta Transportation can commit to implement monitoring efforts at different times of year to evaluate passage at high and low flows. Fish passage monitoring commitments will be finalized through consultation with DFO for the *Fisheries Act* Authorization.
150. Mr. Locke also recommends that AT monitor the effectiveness of the fish rescue program for SR1, in particular to ensure that human safety is protected during rescue operations. AT assures the Board that it is committed to preparing a comprehensive safety plan to accompany the monitoring commitments for this Project. Further, AT confirms that its draft monitoring plans for SR1 will be developed in collaboration with relevant provincial and federal agencies.

(g) Bull trout

151. While he acknowledges that the Project will not likely cause significant adverse effects on fish and fish habitat generally, Mr. Locke suggests it is possible the adverse effects of the Project on bull trout could be significant. With respect, AT does not agree. AT acknowledges that the Project has the potential to affect bull trout or its critical habitat. However, the likelihood that the project will have an impact on bull trout population is low, given what is known of their current distribution. Current bull trout density in the Elbow River watershed is very low for adults and their distribution is predominantly located upstream of the project.

152. While some historical data reported the presence of bull trout downstream of the Project in the fall, more recent field data suggests that bull trout occurrences downstream of the PDA are likely low. Bull trout are predominantly present in the upper reaches of the LAA (i.e., upstream of the Project), as noted by Mr. Locke and as is evident from the 2020 bull trout capture results. The frequency of operation is expected to be irregular and therefore some cohorts of bull trout will not be affected by flood operation. Mr. Locke identifies that the risk to bull trout may be higher than suggested in the EIA if two flood events occur within a 10-year period. AT acknowledges this possible risk but believes this risk is low due to the irregular frequency of operation and current population distribution of bull trout.
153. Finally, AT notes that the Government of Canada will provide guidance on offsetting requirements or the potential need for additional mitigation to meet the requirements of Section 79(2) of the *Species at Risk Act*⁴⁰ to avoid or lessen Project effects, including effects to bull trout and its critical habitat for a SARA-compliant Fisheries Act authorization.

9. Brian Zelt Report (Appendix Q)

154. AT asked Stantec to review the report prepared by Dr. Zelt on the issue of fugitive dust emissions and predicted particulate matter concentrations. The report identified errata and critiqued several aspects of the methodology used, and assumptions made, by Stantec in the original air modelling. Dr. Zelt's report also provides alternative dispersion modelling of a worst-case scenario. For the reasons set out below and in the attached technical memorandum, Appendix "P", AT strongly disputes the Zelt report and its conclusions.
155. In general terms, the fundamental conclusions reached by Stantec and set out in the EIA are unchanged. Given the low recurrence rate for flood events that could result in substantial sediment deposition, the proposed mitigation measures of revegetation and tackifiers, and AT's commitments to monitoring and adaptively managing dust as required, it is expected that fugitive dust emissions would not have significant adverse effects on ambient air quality.

⁴⁰ *Species at Risk Act*, SC 2002, c 29 [**"SARA"**] <https://laws.justice.gc.ca/PDF/S-15.3.pdf>

156. AT does acknowledge that there was an error in the initial air modelling that was completed. This calculation error was related to estimated PM_{2.5} emissions. As a result of correcting this error, PM_{2.5} emission rates and dispersion model results have been updated and are included in Appendix “I”.
157. With regard to use of meteorological data, Dr. Zelt’s criticism is not properly levelled at AT. Rather, Dr. Zelt is effectively critiquing the requirements of AEP with regards to the dataset to be used in air quality model.
158. Specifically, the methodological requirements of AEP with regards to Air Quality Model Guidance direct the use of the AEP MM5 dataset in the absence of 1) a site-specific dataset derived from observations from a location within the Project boundary using at least one-year of data, which data must be at least 90% valid; or 2) observational measurements from a nearby station (like the Springbank Airport) combined with the MM5 data (i.e. a blended dataset) for the years 2002 to 2006. Again, the observational data must be 90% valid.
159. In terms of 1) described above, the Springbank Airport data is not ‘on site’ and cannot be used exclusively. With respect to 2), over the years 2002 to 2006, the Springbank Airport does not have 90% valid observations. Thus, the airport fails both tests for use.
160. Dr. Zelt also challenges the selection of friction velocity factors. Dr. Zelt argues that a higher surface roughness value should be used due to “large macro scale terrain features such as vegetation, hills and slopes and that this increased roughness length value will result in increased friction velocity and increased particulate emissions.” These suggestions are inconsistent with the literature and with the application of the roughness length value in the context of the micro scale (as opposed to macro scale) processes that initiate and control dust emission flux.
161. Dr. Zelt uses a threshold friction velocity that is inconsistent with the assumed surface roughness values for both sediment and vegetated areas. Surface roughness and threshold friction velocity values are not independent variables. Sediment surfaces with a larger surface roughness length, such as the values selected by Dr. Zelt, have been demonstrated to require

a higher friction velocity (i.e., more wind energy) to initiate dust emissions. Dr. Zelt selected an incompatible threshold friction velocity relative to his selected roughness length values which overestimates dust emissions.

162. Dr. Zelt raises the issue of sediment area as it is represented in the modelling. Dr. Zelt challenges the assumptions used in the modelling that he says did not give much weight to the risk of emissions arising from areas of sediment depth of 10 cm or less. In his opinion, such depths could result in emissions.
163. Stantec conducted revised hydrological and sediment transport modelling as part of an SIR response. This modelling indicated an increase in estimates of sediment area associated with certain flood events. However, AT notes that Dr. Zelt assumes vegetation will occur in areas of sediment deposition less than 10 cm, and that this would achieve 98% dust control, a figure well established in the literature. This assumption, of 98% control for areas with sediment deposition under 10 cm, is not dissimilar from the conclusions used in the Stantec modelling that risk of wind erosion in sediment depths of less than 10 cm was minimal. While the approach may differ, the conclusion is the same as between Dr. Zelt and Stantec.
164. Dr. Zelt's criticism of the sediment particle size distribution is not correct as the data he selected and assumptions he used are not appropriate for SR1. Most concerning is the fact that Dr. Zelt ignores the particle size distribution predictions in the hydrology section of the EIA and related SIRs. Rather, Dr. Zelt presents particle size distributions from suspended sediment measured in a water sample from the Glenmore Reservoir. On this basis Dr. Zelt employs a "fine silt" soil classification for his modelling which in turn results in much higher predicted concentrations of PM_{2.5} to the TSP ratio.
165. The selection of suspended sediment measured in the Glenmore Reservoir is inappropriate as SR1 will be filled with flowing waters from the Elbow River which are biased towards larger particles, as compared to suspended sediment in the Glenmore Reservoir where water velocities are very low and larger particles have settled to the bottom of the reservoir. In short, the assumptions adopted by Dr. Zelt overestimate the quantity of fine sediment and consequently increase the estimates of fugitive dust emissions.

166. Stantec conducted new modelling of the risk for fugitive dust to illustrate the model's prediction sensitivity to uncertainty with hydrological model predictions - specifically the predicted sediment area and sediment size characterization. AT directed the new modelling in part to ensure that matters raised by Dr. Zelt, while unlikely to arise, could be understood and consideration of mitigations prepared in advance of the hearing. The results and conclusions regarding the new modelling are discussed in detail in the attached Appendix "I".
167. AT acknowledges that in certain of the newly modelled cases, exceedances of the guidelines for exposure to PM_{2.5} are identified. While there is considerable uncertainty associated with the model predictions, AT has committed to fugitive dust mitigation combined with ambient air quality monitoring and adaptive management strategies to achieve and maintain high levels of fugitive dust control required to minimize health risk to acceptable levels.
168. Specifically, AT has committed to construction and post-flood air quality monitoring which will allow AT to fully assess the actual air quality implications in both scenarios. Should exceedances be found, Alberta Transportation will institute a process of adaptive management and mitigation to ensure issues are addressed. These will include, but not be limited to: further application of tackifier, watering, additional cover crops or seeding to encourage vegetation growth, and the implementation of physical devices (i.e., screening or shelter belts). If there are concerns about air quality, these can be communicated to the Community Liaison for prompt investigation and follow-up.

10. Cliff Wallis Report (Appendix S)

169. AT asked Stantec to review the report prepared by Mr. Cliff Wallis, which review forms the basis for the following comments.
170. The Wallis Report expresses concerns regarding the environmental impacts associated with the Project, including effects to native grassland and wetlands. Specifically, Mr. Wallis expresses concerns with the following:

- the location of the Project within one or more landscapes of conservation significance;
- lack of adherence to guidance in the South Saskatchewan Regional Plan (“SSRP”);⁴¹
- impacts to riparian environments; and
- lack of adherence to Alberta’s Wetland Policy⁴².

171. Mr. Wallis expresses concern that the Project is located in one or more landscapes of conservation significance (High Value Landscape, Environmentally Significant Areas (“ESA”), Areas of High Wildlife Sensitivity, Key Wildlife and Biodiversity Area, High Sensitivity Watershed). As noted by Mr. Wallis, however, the entire Elbow River and adjacent uplands have been identified as constituting a landscape of conservation significance.

172. In response, AT emphasizes that the purpose of the Project is to provide mitigation from flooding on the Elbow River and therefore it will interact with the Elbow River Valley and associated landscapes of conservation significance. This is unavoidable. Further, AT notes that ESAs are intended to be used as an information tool to support Project planning and infrastructure siting decisions. While ESAs are valuable from a planning perspective, they are not regulatory requirements nor intended to restrict development.

173. AT submits the Project location did not ignore the presence of valued biophysical components of the ESAs (i.e. native grassland and wetlands). The surface location of the Project was primarily driven by the unique topographical features it offered that allowed an off-stream reservoir that can be filled by gravity. The Project avoided valued biophysical components of the ESAs to the greatest extent possible. Further, the Project incorporates

⁴¹ Environment and Parks. (2018). *South Saskatchewan regional plan 2014-2024: amended May 2018* <https://open.alberta.ca/dataset/13ccde6d-34c9-45e4-8c67-6a251225ad33/resource/e643d015-3e53-4950-99e6-beb49c71b368/download/south-saskatchewan-regional-plan-2014-2024-may-2018.pdf>

⁴² Environment and Sustainable Resource Development. (2013). *Alberta Wetland Policy* <https://open.alberta.ca/dataset/5250f98b-2e1e-43e7-947f-62c14747e3b3/resource/43677a60-3503-4509-acfd-6918e8b8ec0a/download/6249018-2013-alberta-wetland-policy-2013-09.pdf>

mitigation measures to reduce effects to the biophysical features contributing to the landscapes of conservation significance and associated function. AT has committed to revegetation plans to reduce effects to native grassland and wetlands and will implement adaptive management to reduce uncertainty in mitigation effectiveness.

174. Mr. Wallis expresses concern regarding the impact of the Project on wetlands and states the Project contravenes Alberta's Wetland Policy. In response, AT submits the Project is guided by Alberta's Wetland Policy and its environment specifications and requirements, as well as the *Alberta Wetland Mitigation Directive*⁴³. The Wetland Policy recognizes that although wetland avoidance is preferred, effects to wetlands can be addressed through other approved approaches such as minimization and replacement. AT has collaborated with AEP regarding the steps taken to avoid, minimize and reclaim wetland impacts to the extent they occur. Further, if the Project is approved, AT will have to obtain additional authorizations from AEP, prior to construction and operations, such as *Water Act* approvals, which will require additional assessments of wetlands.
175. With respect to the SSRP, AT respectfully disagrees with Mr. Wallis that the Project contravenes the SSRP. The SSRP is a legislative instrument pursuant to section 13 of the *Alberta Land Stewardship Act*⁴⁴. It makes specific reference to the need for flood mitigation and notes that certain projects were under consideration. Acting in accordance with the SSRP requires that the Board's decision be consistent with the vision, the strategic directions, and the areas identified in the SSRP as being binding and enforceable.
176. The SSRP is clear that the sections on "Introduction, Implementation Plan and Strategic Plan", as well as the Glossary of Terms and Appendices, are policy statements that are informational, not binding, and requiring of consideration by decision makers in their decision-making process.

⁴³ Environment and Parks. *Alberta Wetland Mitigation Directive* (June 1, 2018) <https://open.alberta.ca/dataset/2e6ebc5f-3172-4920-9cd5-0c472a22f0e8/resource/62b9a6ce-1d5a-4bc8-832e-c818e3e65410/download/alberta-wetland-mitigation-directive-201812.pdf>

⁴⁴ *Alberta Land Stewardship Act*, RSA 2009, c A-26.8 <https://www.qp.alberta.ca/documents/Acts/A26P8.pdf>

177. The portions of the SSRP cited by Mr. Wallis fall within the informational and non-binding “Implementation Plan” and “Strategic Plan” section of the SSRP. Similar to ESAs, these sections of the SSRP are valuable from a planning perspective but they are not regulatory requirements nor intended to restrict development. As already noted, AT has committed to a number of mitigation measures to reduce effects on valued biophysical components such as using minimum disturbance techniques and complying with the Alberta Wetland Policy.

(a) Landscapes of Conservation Significance

178. With respect to the Project’s location in a landscape of conservation significance (e.g., High Value Landscape, Environmentally Significant Areas, areas of high wildlife sensitivity, Key Wildlife and Biodiversity Zone (KWBZ), high sensitivity watershed), as Mr. Wallis notes, all or most of the Elbow River valley and adjacent uplands bear one or more of the designations. Because the purpose of the Project is to provide protection from flooding on the Elbow River, the Project will unavoidably interact with the Elbow River valley and the associated landscapes of conservation significance.

179. As illustrated in Figure 6 of Mr. Wallis’ report, High Value Landscapes occupy the entire landscape west of Calgary south of Highway 1 and contributing factors such as intact native grassland and ESAs are common (Figure 5 and Figure 8).

180. Although important for provincial planning and conservation, the information sources presented in Mr. Wallis’ report are based on a regional coarse-scale and the features identified do not necessarily reflect site-specific conditions and distribution in the Project Development Area (PDA). The project location did not ignore the presence of valued biophysical components (e.g., native grassland and wetlands); rather, topography was the driving factor for the selected location. The Unnamed creek basin provides the unique topographic opportunity for an off-stream storage reservoir that can fill by gravity drainage from a diversion on the river. There is no other feature with these same characteristics in the Elbow Valley. As such, full avoidance of valued biophysical components was not possible. AT is not aware of any priority grassland areas targeted for conservation near the Project or intersected by the PDA.

181. The project incorporates mitigation measures to reduce effects to the biophysical features contributing to the landscapes of conservation significance (e.g., native grasslands and wetlands) and associated functions (e.g., wildlife habitat and movement). AT has committed to revegetation plans to reduce effects to native grassland and wetlands and will implement adaptively management to reduce uncertainty in mitigation effectiveness. Where possible, construction activities will be avoided or reduced during the recommended provincial Restricted Activity Period.⁴⁵

(b) South Saskatchewan Regional Plan Context

182. AT acknowledges the SSRP's focus on sustainability and conservation, as well as non-renewable resource production and the value of intact native grassland. However, the SSRP recognizes a need for balance of economic, social and biological objectives. A key outcome identified in the plan is the efficient use of land to reduce disturbance and maintain non-renewable resources. Although the Project does not completely avoid native grassland, including areas identified as intact in the SSRP (Map 15, Government of Alberta [2018]), the Project area mainly intersects anthropogenically modified land.⁴⁶

183. As discussed above, complete avoidance of native grassland could not be achieved due to the extent of native grassland areas in the Elbow River watershed. Native areas disturbed by Project construction and operations will be reclaimed. Reclaimed native grassland areas will likely have reduced function and diversity compared to existing areas but will remain dominated by native plants and provide wildlife habitat.

(c) Alberta Wetland Policy

184. AT disagrees with the assertion that the Project contravenes the *Wetland Policy*. The *Wetland Policy* recognizes a need to balance economic, social and biological values. Although wetland avoidance is the primary and preferred response for proposed projects, minimization and replacement are approved approaches for addressing effects to wetlands. The Project

⁴⁵ Exhibit 32, pdf page 47.

⁴⁶ Exhibit 31, pdf page 23.

therefore follows the Wetland Policy and AT is working with AEP to provide needed wetland replacement following the Policy and the *Alberta Wetland Mitigation Directive* (Government of Alberta 2017) for effects to wetlands from construction and operations. A *Water Act* application has been submitted for Project construction. A *Water Act* application will be provided for Project operations following discussions with AEP.

(d) Floods and Riparian Vegetation

185. AT agrees with Mr. Wallis's statement that:

“floods are essential to maintain long-term riparian function” (Alberta Water Council 2013)”

186. However, AT notes that the purpose of the Project is to reduce the effects of downstream flooding. While SR1's operations mitigate some of the risk from flooding of the Elbow River, it still allows much of the hydrologic processes that drive stream and riparian function to occur. The dry, off-stream nature of the storage reservoir and SR1's sole purpose of reducing flood risk distinguishes its impacts from those of in-stream dams and reservoirs, which substantially alter natural flow regimes and result in adverse effects on aquatic and riparian habitats.

187. SR1 operates when floods are greater than 160 m³/s. This flow rate is:

- in excess of the mean annual flood (70.9 m³/s), which is sometimes used as an unbiased estimate of bankfull flow;
- bankfull flow is generally accepted as the channel forming flow that moves gravels around and provides some necessary erosion of the banks; and,
- roughly equivalent to a 1:7-year flood that will inundate the riparian areas of the floodplain while not inundating the upper terraces where development is present.

188. AT notes that since 2013 the flows on the Elbow River have not exceeded 160 m³/s. If SR1 were on the landscape immediately after that event, it would not have operated for the last

seven years and all of the Elbow River's channel and riparian processes would have continued un-altered since 2013.

189. Mr. Wallis' quote of the US Army Corp of Engineers potential impacts of dry dams is accurate and Alberta Transportation notes the last sentence of the quote:

“The extent of these effects within a given system undoubtedly depends upon the change in magnitude of the peak flow conditions.”

190. SR1 will allow flood flow rates to exceed 160 m³/s during very large and rare flood events like that which occurred in 2013. If another 2013 event (> 200-year event) were to occur, SR1 would allow the flow that exceeds its diversion capacity to pass downstream. This would allow flooding of some of the upper terraces and deepen the flooding of the floodplain. Avulsions, scour and head-cutting that are important characteristics of less frequent riparian flooding can still occur in the floodplain. This will, however, occur much less frequently and at much lower magnitude than at present because the operation of SR1 would take up to 600 m³/s off the peak flow rate of any flood over 160 m³/s.

191. Mr. Wallis emphasizes several quotes from AT SIR to AEP re SIR2 Response,⁴⁷ in bold font and certain of these warrant clarification and emphasis by AT:

“With the reduction of peak flows, the geomorphology of Elbow River between the Project and the Glenmore Dam will be simplified because the creation of new side channels or the activation of abandoned channels within the floodplain will be reduced.”

192. This is correct and is a consequence of the Project's impact on hydrology. As described above, the Project reduces flood risk while allowing some of the ecological benefits of flooding to occur. SR1's location limits the greatest impacts on hydrology of the Elbow River to the reach between the diversion structure at Highway 22 and Glenmore Reservoir. Alternatives located further upstream would have impacts that extend over a longer length of the Elbow River.

⁴⁷ Exhibit 138.

The “discharge was not chosen to maintain river processes and does not represent a geomorphic or ecological threshold”.

193. This is correct. The discharge of 160 m³/s was selected to coincide with the maximum discharge rate of the low-level outlet of the Glenmore Reservoir. In addition, it is AT’s opinion that the proposed operation regime of SR1 is one that balances its impacts on the aquatic and riparian ecosystems with the objectives of reducing flood risk.

“Changes to ecological function associated with limiting flows in Elbow River to 160 m³/s cannot be mitigated.”

194. This is correct and is a consequence of the project’s objective to reduce flood risk. The location of the Project helps limit this impact. Within the RAA downstream of the Project, the ecological and geomorphic process in the Elbow River have already been subjected to substantial change, primarily through the creation of Glenmore Reservoir. The hydrologic impacts to the Elbow River and its riparian areas are limited to roughly 27 km between the diversion structure and Glenmore Reservoir. This is in comparison to the approximately 75 km of mainstem watercourse upstream of the diversion structure. The further upstream the storage is placed the greater the length of impacted watercourse there would be.

(e) Cumulative Effects

195. AT does not agree with the statement by Mr. Wallis that cumulative effects are not adequately addressed due to a perceived lack of consideration for natural community modification in the Foothills Parkland Natural Subregion. The quantification of existing conditions in the PDA, LAA and RAA accounts for past and current disturbance within those assessment boundaries and identifies disturbed and anthropogenically modified areas.
196. The Project area is predominately comprised of anthropogenically modified land (54.7%); however, areas of natural land cover do occur within the PDA⁴⁸ (29.1% native upland with 18.0% native grassland). The RAA, a 15 km buffer around the PDA, was selected as the area to assess cumulative effects. The RAA is representative of the plant species and cover types

⁴⁸ *Ibid.*

observed in the Project area (includes a portion of the Foothills Parkland Natural Subregion) and land use patterns are likely similar to the overall subregion. A different boundary, such as a watershed or the subregion, would not increase the accuracy of the assessment predictions and would dilute the magnitude of effects.

(f) Wallis Report Recommendations

197. Mr. Wallis makes two key recommendations in his report:

1. “If the project is approved, immediate sediment removal following floods should not be a condition of approval.”

198. AT does not propose to remove sediment from the off-stream storage reservoir, however there are a limited set of circumstances where sediment might need to be redistributed within the reservoir area to facilitate surface drainage and maintain reservoir function.

2. “If the project is approved, consideration should be given for allowing larger flood events to pass.”

199. AT notes that SR1’s operation plan allows for flows in excess of the diversion capacity of 600 m³/s to pass downstream.

11. Dr. Terry Osko Report (Appendix U)

200. AT asked Stantec to review the report prepared by Circle T Consulting Inc., under the direction of Dr. Osko. AT’s response to Dr. Osko’s report, below, is based on that review.

201. Dr. Osko’s principal conclusions are: (1) the Project creates an elevated risk of weeds encroaching onto surrounding lands, and (2) AT has not fully developed a weed management approach to address this. Dr. Osko’s report sets forth a number of recommendations and design/operation changes in relation to the issue of weeds.

202. AT agrees that the risk of weeds and need for a robust management approach are important considerations. However, AT does not fully accept a number of Dr. Osko’s assumptions or recommendations. AT addresses these matters in the following section, along with comments

on which recommendations AT is willing to consider implementing should the Project advance and those it is not.

203. First, AT notes that Dr. Osko undertook no baseline study of the Project area, choosing instead to rely upon anecdotal evidence from members of the SCLG and, seemingly, his own personal experience. Had Dr. Osko conducted a baseline assessment he would have known the Project area is already subject to the presence of weeds; agricultural use of surrounding lands suggests observed weed species are present elsewhere in the LAA and RAA.⁴⁹ Although native grasslands and other native cover types of potential conservation value are present in the lands surrounding the Project area, the Project is in an agricultural region and areas of native cover types are likely currently subject to weed dispersal.⁵⁰ Weed dispersal would continue in the absence of the Project.
204. Second, Dr. Osko uses the discussion of weed control measures found in the EIA⁵¹ as the basis of his assertion that AT has not fully considered the issue. With respect, Dr. Osko fails to account for the context of the EIA and the level of detail that goes into such a document. The EIA sets out standard practices at a level of detail that is commensurate with an environmental impact assessment. Refinement and further development of the exact approaches to be taken were not evaluated beyond consideration of the potential effects.
205. Notwithstanding these criticisms, AT agrees that a robust and comprehensive weed management plan is needed for the Project and has considered the recommendations of Dr. Osko in this regard. At a high level, AT takes the position that any such plan should be developed following a comprehensive review of current scientific literature and applicable techniques, particularly preemptive measures that promote desired vegetation establishment and discourage weed establishment. This may include tools or data sets such as the Alberta Invasive Species Council Early Detection Distribution Maps tool and Alberta weed spot application. These tools may be used to track baseline weed species and identify locations.

⁴⁹ Exhibit 31, pdf page 36-37.

⁵⁰ *Ibid*, pdf page 26.

⁵¹ *Ibid*.

This will be valuable information for year to year monitoring and subsequent floods. AT also takes the position that such a plan should include input from experienced ecologists.

206. With regard to the specific recommendations advanced by Dr. Osko, AT is willing to implement the following:

- (i) AT is prepared to ensure that weed control will, at a minimum, meet the *Alberta Weed Control Act Regulations*⁵² and Rocky View County requirements, including for the destruction of prohibited noxious weeds and the control of noxious weeds within the PDA;
- (ii) During construction phases, Project areas will be proactively assessed for potential weed establishment and action taken as needed, such as applying a seed mix or protective covering such as geotextile or tarps, may be placed on topsoil piles to prevent weed germination;
- (iii) In addition to the commitment to restrict construction activities to the approved footprint⁵³, AT will determine vehicle travel routes prior to construction and monitor for weed presence for the duration of construction and post-construction until revegetation targets are achieved. AT will not be hauling soil across the Elbow River;
- (iv) In an effort to reduce weed dispersal, mitigation measures such as vehicle cleaning stations will be used to limit the potential for the introduction of new weeds to the PDA during construction and post-flood operations;
- (v) AT is willing to participate in a local or regional weed management initiative but is not prepared to fund or lead such an initiative at this time; and
- (vi) AT notes that it is and will continue to develop ecologically based revegetation plans for the Project. Specifically, the *Draft Vegetation and*

⁵² *Alberta Weed Control Act Regulations*, AR 19/2010 < https://www.qp.alberta.ca/documents/Regs/2010_019.pdf >

⁵³ Exhibit 31, pdf pages 41-42.

*Wetland Mitigation, Monitoring and Revegetation Plan*⁵⁴ was developed using standard mitigation practices and ecological recommendations. The Plan is being refined and will be finalized following discussions with interested Indigenous groups and stakeholders, and release of Project approval conditions. However, AT anticipates that cover crops will be used in addition to or in combination with AT custom native and agronomic seed mixes. Cover crops will provide cover and help outcompete weeds thereby reducing potential for weed establishment.

207. Dr. Osko also made a number of proposed Project design and operation recommendations. AT has also reviewed these and can make the following comments regarding same:

- (i) As no soil is being hauled across the Elbow River, and construction traffic routes will be determined prior to construction with vehicles inspected and cleaned (as per the above), AT does not believe it is appropriate to develop a containment system to prevent soil-borne weeds seeds from being introduced into the Elbow River during construction.
- (ii) Installation of a filtration system on the low-level outlet to filter weed seeds from the released water and sediment is not feasible from a design point of view and likely not necessary. AT does not accept that released water, the source of which is the Elbow River, will be an additional source of weed seed distribution when returned to the Elbow River. Released water will likely contain weed seeds when diverted. Many of the weeds observed in the PDA during baseline Project surveys are also capable of wind and animal dispersal and likely currently present downstream of the PDA. Further, the implementation of a filtration system small enough to address weed seeds would have serious adverse effects to the mobility of fish seeking to exit the reservoir on release.

⁵⁴ Exhibit 202.

208. AT is confident that these measures will succeed ensuring that no significant impacts either during construction or post-flood operations arise. AT acknowledges the helpful input of Dr. Osko and members of the SCLG in this regard.

IV. SCOTT WAGNER

209. Mr. Scott Wagner has filed separate written submissions with respect to the following five hearing topics: (a) project need and justification (social and economic cost);⁵⁵ (b) project need and justification (Crown engagement with the public);⁵⁶ (c) design, safety and risk (risk management);⁵⁷ (d) design, safety and risk (public safety, including emergency response);⁵⁸ and (e) air quality, human health and terrestrial (wildlife and biodiversity).⁵⁹

210. AT notes that Mr. Wagner's wife, Marsha Wagner, is a member of SCLG and Mr. Wagner's concerns are similar in many respects to those of the SCLG, which AT has responded to above. However, Mr. Wagner has raised some specific points which AT will respond to below.

(a) *Project Need and Justification (Social and economic cost)*

211. Mr. Wagner refers to AT having purchased land from other SR1 landowners (the Robinsons) and characterizes this as AT following a strategy of "pitting neighbour against neighbour".⁶⁰ AT respectfully disagrees with this characterization. It is a fact that AT is required to acquire land from several different landowners within the SR1 Project area. As stated in the SR1 Land Acquisition Program, AT's preference is to acquire land voluntarily. Such transactions require a willing seller and a willing buyer. Where SR1 landowners have indicated to AT a willingness to negotiate, AT has entered into negotiations with them and, in some cases,

⁵⁵ Exhibit 242.

⁵⁶ Exhibit 243.

⁵⁷ Exhibit 244.

⁵⁸ Exhibit 245.

⁵⁹ Exhibit 246.

⁶⁰ Exhibit 242.

come to agreement. As indicated above, AT currently is involved in active discussions with several SR1 landowners.

(b) *Project Need and Justification (Crown engagement with the public)*

212. As indicated above in its response to the SCLG's submissions on consultation, AT believes it has engaged with local landowners, including the Wagners.
213. Mr. Wagner identifies certain personal issues in respect of which he says AT has failed to communicate with him. The issues are the potential impact of SR1 on: the Wagners' well water; the water table under their property; the "swelling clay" on which their house is built; and the proximity of the "water line" from a design flood to their house.⁶¹
214. In response, AT can advise the Board that on October 29, 2020 it provided the Wagners, through their legal counsel, with specific information on these and other issues. The information was provided in the context of land acquisition negotiations and AT therefore does not consider itself at liberty to discuss it any further, without the Wagners' consent.

(c) *Design Safety and Risk (Risk management)*

215. Mr. Wagner identifies a specific issue related to archaeological test-dig work conducted on his property by AT's contractor Stantec.⁶² AT has reviewed this issue and acknowledges that, owing to a miscommunication, it did not follow up with Mr. Wagner as intended. Since reviewing Mr. Wagner's submission AT has discussed this matter with him and has proposed a resolution which Mr. Wagner is considering.

(d) *Design, Safety and Risk (Public safety including emergency response)*

216. Mr. Wagner expresses concern with respect to rifle hunting in the SR1 Project area. AT has responded to this concern above in the section on the SCLG.

⁶¹ Exhibit 243, pdf page 2.

⁶² Exhibit 245.

(e) *Air Quality, Human Health and Terrestrial (Wildlife and biodiversity)*

217. AT acknowledges that the SR1 Project LAA contains areas of high suitability wildlife habitat. The question of potential Project impacts on wildlife habit is extensively addressed by AT in the EIA and many SIR responses. It is also addressed above in AT's response to the Wallis Report. With the application of mitigation and environmental protection measures, residual environmental effects on wildlife are predicted to be not significant.

V. STONEY NAKODA NATIONS

218. AT recognizes and acknowledges that the Project is located in the traditional territory of the Treaty 7 First Nations, including Stoney Nakoda Nations ("SNN"). AT also recognizes that SNN was unable to participate in the Prehearing Conference because of challenges in their communities arising from the Covid-19 pandemic. AT welcomes the participation of SNN in the hearing and looks forward to continuing its constructive engagement with SNN at the hearing and after.

(a) Project Concerns

219. The SNN provided a submission through their Legal Counsel, Rae & Company, which includes the following documents:
- a. Historical documents including publications from 1977 and 1983;
 - b. Interim Memo – Technical Review of Hydrology and Aquatic Ecosystems, PGL Environmental Consultants, dated February 25, 2021;
 - c. Stoney Consultation Memo, dated February 26, 2021, reviewing issues with the Environmental Impact Statement, March 2018;
 - d. Six Rights Impact Assessment Reports for two NOVA Gas Transmission Ltd. projects (three reports per project): the Edson Mainline Expansion Project and the 2021 System Expansion Project;

- e. Copies of previous correspondence to the Canadian Energy Regulator and an Extract of Proceedings from the National Energy Board, and case law;
 - f. A Review of the SR1 Report and Potential Conditions under the *Canadian Environmental Assessment Act*, Stoney Tribal Administration, February 26, 2021;
 - g. Interim Traditional Land Use Assessment Report, (October 20-November 4, 2016) prepared by Stoney Consultation, February 2021.
220. The written submission prepared by SNN's Legal Counsel seeks the relief that this Application be denied. AT submits this request is not supported by the evidence and not reasonable.
221. Stoney Consultation prepared the February 2021 Interim Traditional Land Use Assessment Report ("TLUA") which provides a series of 11 recommendations that identify and describe the concerns of the SNN with respect to the Project. AT appreciates this identification of concerns and advises that many of them have been addressed through the course of the SIR Process and further commitments made by AT. AT would be prepared to review its responses to each of those recommendations with the SNN to ensure its concerns can be reasonably addressed.

(b) AT Response to SNN Submission

222. The collection of documents submitted in the SNN submission includes a wide array of comments on topics such as treaty rights, rights assessment, and legal interpretations. As will be discussed below, AT, on behalf of the Government of Alberta ("**Alberta**"), does not accede to many of these comments, assessments and interpretations.
223. The SNN assert that their aboriginal title to water was never surrendered pursuant to Treaty 7. Alberta disputes this position and states that (1) water rights are vested in the Crown pursuant to valid provincial legislation and the Natural Resources Transfer Agreement which forms part of the *Constitution Act, 1930*, and (2) SNN's claim to an unextinguished aboriginal title to water is contested and is being defended by Alberta in an ongoing Court

action. Alberta further respectfully submits that the NRCB should decline any invitation to comment on these matters as they are ongoing before the Courts at this time.

224. AT will specifically address the SNN issues with respect to consultation and the EIA. As a general overview, AT has engaged in consultation with the SNN over the last six years with respect to this Project. Further, in the EIA AT made best efforts to identify the traditional uses based on the best information it had and AT has responded to concerns and issues in a reasonable timeframe when they have been raised by the SNN.

225. AT provides the following specific areas of response to the issues raised by the SNN.

(c) Treaty Rights in Alberta

226. Section 35(1) of the *Constitution* recognizes and affirms the existing aboriginal and treaty rights of Canada's aboriginal peoples.⁶³ In Alberta, First Nations possess treaty rights.⁶⁴ These rights, as modified by the *Natural Resources Transfer Agreement*,⁶⁵ include the treaty right to hunt, fish, and trap for food on all unoccupied Crown lands in Alberta, and any other lands in Alberta to which they have a right of access for such purposes.⁶⁶ Aboriginal and treaty rights are not absolute, and do not automatically trump other societal interests.⁶⁷

227. First Nation signatories to Alberta's historical treaties surrendered and gave up any claims to aboriginal rights or title that may have existed in exchange for the benefits of treaty.⁶⁸

⁶³ *Constitution Act, 1982*, being Schedule B to the *Canada Act 1982* (UK), 1982, c11 ["*Constitution*"].

⁶⁴ *Constitution Act, 1930*, Schedule 2 RSA 1985, App II, No 26; *R v Badger*, [1996] 1 SCR 771 at 47-49 ["*Badger*"] <<https://www.canlii.org/en/ca/scc/doc/1996/1996canlii236/1996canlii236.html?resultIndex=1>> ; *Mikisew Cree First Nation v Canada (Minister of Canadian Heritage)*, 2005 SCC 69 at 2 ["*Mikisew*"] <<https://www.canlii.org/en/ca/scc/doc/2005/2005scc69/2005scc69.pdf>>; *R v Lefthand*, 2007 ABCA 206 at 53, leave to appeal to SCC refused, 2008 CarswellAlta 195 ["*Lefthand*"] <<https://www.canlii.org/en/ab/abca/doc/2007/2007abca206/2007abca206.pdf>>.

⁶⁵ *Alberta Natural Resources Act*, SC 1930, c. 3 <<https://laws-lois.justice.gc.ca/PDF/A-10.6.pdf>>

⁶⁶ *Badger* at 47-49, 59, 66; *Mikisew* at 30; *Cold Lake First Nations v Alberta (Tourism, Parks and Recreation)*, 2013 ABCA 443 at 17, leave to appeal to SCC refused, 2014 CarswellAlta 787 <<https://www.canlii.org/en/ab/abca/doc/2013/2013abca443/2013abca443.pdf>>.

⁶⁷ *Mikisew* at 58; *Lefthand* at 17.

⁶⁸ *Mikisew* at 2; *Lefthand* at 53; *Grassy Narrows First Nation v Ontario (Natural Resources) (Grassy Narrows)*, 2014 SCC 48 at 2, 10 <<https://www.canlii.org/en/ca/scc/doc/2014/2014scc48/2014scc48.pdf>> ; *West Moberly First Nations v British Columbia (Energy and Mines)*, 2011 BCCA 247 at 11-12 ["*West Moberly*"] <<https://www.canlii.org/en/bc/bcca/doc/2011/2011bcc247/2011bcc247.pdf>>

According to the terms of Treaty 7, the Crown has the right to take up lands for settlement, mining, trading, or other purposes, thereby transferring them from the inventory of lands upon which First Nations can hunt, fish, and trap for food, and placed in the inventory of lands where they cannot.⁶⁹

228. The SNN submission includes six separate ‘Section 35 Rights Assessment Reports’⁷⁰. These reports appear to have been originally submitted as evidence in the NEB review of the NGTL Edson Mainline Expansion Project application and the 2021 NGTL System Expansion Project application. AT has reviewed these reports and notes that the projects for which these reports were prepared—the construction and operation of pipeline loops—are of a markedly different scope and purpose from SR1. As well, both the NGTL Edson Mainline Expansion Project application and the 2021 NGTL System Expansion Project are a considerable distance from SR1 and none of the specific sites, locations or areas where SNN exercise their treaty rights or traditional uses intersect the SR1 PDA or occur within the RAA.
229. The SNN Section 35 Rights assessments identify SNN valued components of lands, harvesting, and sacred and cultural places. Assessment of each of these valued components considers effects to access through changes in Crown land dispositions, changes in harvesting as represented by hunting practices, and changes to sacred and cultural places (including qualitative experience and preferred conditions). The traditional use activities associated with each of the defined SNN valued components (hunting, trapping, fishing, gathering, use of trails, camping sites, cultural and spiritual areas) are consistent with what was assessed in the SR1 Project EIA, in which current use is defined as including hunting, trapping, fishing, plant gathering, use of trails and travelways, habitation areas, and cultural and spiritual sites.⁷¹

⁶⁹ *Badger* at 40; *Mikisew* at 24, 30-31, 42-44, 55-56; *Lefthand* at 77, 80, 99; *Beckman v Little Salmon/Carmacks First Nation*, 2010 SCC 53 at 4, 11, 13 [“*Beckman*”] <<https://www.canlii.org/en/ca/scc/doc/2010/2010scc53/2010scc53.pdf>>

⁷⁰ Exhibits 292; 294, 296, 298-300.

⁷¹ Exhibit 35, pdf page 42: SR1 EIA, Volume 3A, Section 14.2.3.1.

230. Moreover, the information about traditional use by SNN provided in the Section 35 Rights assessments serves to confirm the assumptions made in the EIA about the nature and extent of SNN current use in the PDA. No new pathways or potential effects to SNN treaty rights or traditional uses have been identified that have not already been considered in the EIA. No new traditional practices, activities, areas, locations or resources were identified that would lead AT to change conclusions of the EIA or warrant additional mitigation measures. That said, AT is willing to discuss with SNN any concerns relating to proposed mitigation measures in this regard and include their feedback as plans are finalized.
231. SR1 is of a different scope and nature than the NGTL projects and the potential effects are of a different character, not least because that the conversion of private land to Crown land will allow for future use by First Nations and stakeholders. It is therefore anticipated that the Project will enhance opportunities for First Nations to exercise treaty rights and traditional uses compared to existing conditions where there is no access without landowner permission. As stated in the response to the TLUA at the end of this submission, AT anticipates that it should be largely able to address SNN concerns through the Land Use Plan and the First Nations Land Use Advisory Committee.
232. In correspondence to the NRCB dated February 26, 2021, and in the Section 35 Rights Assessment Reports for the 2021 NGTL System Expansion Project and the NGTL Edson Expansion Project, SNN cites *Clyde River (Hamlet) v. Petroleum Geo-Services Inc.*⁷² and implies that the assessment of SNN's rights and interests in the SR1 EIA is deficient for the reasons given in the *Clyde River* decision.
233. A review of the assessment of traditional land and resource use ("TLRU") in Volume 3A, Section 14, as well as responses to IAAC SIRs, demonstrates that AT is in compliance with the requirements for meaningful consultation and accommodation contemplated by the Supreme Court of Canada in the *Clyde River* decision.

⁷² *Clyde River (Hamlet) v. Petroleum Geo-Services Inc.*, 2017 SCC 40 ["*Clyde River*"]
<https://www.canlii.org/en/ca/scc/doc/2017/2017scc40/2017scc40.pdf>

234. First, the source of SNN rights and traditional uses was clearly elaborated in Volume 3A, Section 14.1.3.1, and AT's understanding of the scope of Treaty Rights was elaborated in response to IAAC Round 1, Package 2, IR 2-01.⁷³ The assessment conducted in Volume 3A, Section 14 flowed directly from the acknowledged ability of Indigenous groups, including SNN, to exercise treaty rights and traditional uses in the PDA.
235. Further, AT has provided numerous opportunities for SNN to share input and perspectives on potential effects on their treaty rights and traditional uses, including providing funding to conduct a Traditional Use Study, facilitating field visits, providing draft TLRU Effects Assessments to SNN for review and comment prior to filing, holding two separate TLRU workshops with SNN to obtain their perspectives on assessment methodology, proposed mitigation, Project-specific concerns and how the Project may affect the exercise of section 35 rights, and correspondence specifically requesting feedback on exercise of treaty rights and traditional uses.
236. Second, the SNN submissions to this Board clearly demonstrate that SNN understands that the NRCB and IAAC review processes are intended to fulfill the provincial and federal Crown's duty to consult.⁷⁴
237. Finally, SNN have had considerable opportunities for participation and consultation. SNN has received participant funding to participate in the NRCB hearings and have signaled their intent to have several witnesses appear to provide oral Indigenous knowledge testimony. Further, the Record of Consultation logs and the Specific Concerns and Response Table ("SRCT") demonstrate AT has maintained consistent and ongoing consultation with SNN and has replied meaningfully to their questions and requests throughout this process.

⁷³ Exhibit 131, pdf page 20.

⁷⁴ In this regard, Exhibit #308 is a March 3, 2021 letter from the Aboriginal Consultation Office ("ACO") to the NRCB which states: "In general, the ACO and Alberta ministries may rely on the NRCB process, including but not limited to the Decision Report, to satisfy any duty to consult that may be owed by the Crown regarding potential adverse impacts to the exercise of rights to which section 35 of the *Constitution Act, 1982* pertains, and of traditional uses, as defined in Alberta's First Nations consultation policy and guidelines."

238. AT notes that it approved approximately \$50,000 for site visits/TUS in 2016, for which SNN invoiced approximately \$40,000, which was paid by AT. SNN did not respond to further invitations from AT to submit a budget for further site visits/studies, as SNN had requested.
239. As part of its engagement program, AT has made significant Project modifications in response to feedback received from Indigenous groups, most notably development of the *Updated Draft Guiding Principles and Direction for Future Land Use* and proposed First Nations Land Use Advisory Committee.
240. Moreover, the SNN submissions make no reference to the companion SCC decision *Chippewas of the Thames First Nation v. Enbridge Pipelines Inc.*⁷⁵ This decision is typically read in combination with *Clyde River* to fully clarify the SCC statements on Crown consultation.
241. In *Chippewas*, the SCC found that, unlike the Inuit of *Clyde River*, the Chippewas of the Thames First Nation was afforded sufficient opportunity to participate through participant funding, an oral hearing, and the opportunity to make information requests to the proponent and to make submissions to the NEB. Further, the Court found that the asserted rights of Chippewas of the Thames First Nation were acknowledged and adequately assessed. Finally, the Court found that the NEB imposed specific conditions to minimize the risks and respond directly to Chippewas of the Thames First Nation concerns. As is evident, there are clear parallels between the consultation that has occurred with the SNN and the consultation that occurred in “Chippewas”.
242. With respect to SNN’s assertions regarding SR1, AT submits that its consultation efforts as well as the NRCB hearing process satisfy the first two points and, with respect to the third, it is anticipated that the NRCB will determine if conditions to accommodate impacts to SNN rights and interests are required following the hearings.

⁷⁵ *Chippewas of the Thames First Nation v. Enbridge Pipelines Inc.*, 2017 SCC 41 [“Chippewas”]
<<https://www.canlii.org/en/ca/scc/doc/2017/2017scc41/2017scc41.pdf>>

(d) Cumulative Effects

243. The SCC confirmed in *Chippewas* that although the cumulative effects of an ongoing project and historical context may inform the scope of the duty to consult, the duty to consult is not triggered by historical impacts and is not the vehicle to address historical grievances.⁷⁶

244. The SCC referred to its decision in *Carrier Sekani*, and stated:

... this Court explained that the Crown is required to consult on “adverse impacts flowing from the specific Crown proposal at issue — not [on] larger adverse impacts of the project of which it is a part. The subject of the consultation is the impact on the claimed rights of the *current* decision under consideration” (*Carrier Sekani*, at para. 53 (emphasis in original)).⁷⁷

245. Accordingly, with respect to the duty to consult with the SNN in respect of SR1, it is sufficient that “accommodations”, if any are required, will be to mitigate impacts of the Project itself.

(e) Consultation

246. Alberta’s consultation policy and guidelines regarding First Nations⁷⁸ contemplate consultation about potential adverse impacts on treaty rights and traditional uses of a proposed Crown decision. The policy and guidelines are the Government of Alberta’s response to the principles in the case law that continues to be applicable in Alberta.

⁷⁶ *Ibid* at paras 41-42.

⁷⁷ *Ibid* at para 41. In *Upper Nicola Indian Band v British Columbia (Minister of Environment) (Upper Nicola)*, 2011 BCSC 388 at 156, the Court held that the duty to consult does not apply to the larger historic impacts of previous works or the ongoing existing impacts arising from previous decisions, for which there are other remedies < <https://www.canlii.org/en/bc/bcsc/doc/2011/2011bcsc388/2011bcsc388.pdf>>

⁷⁸ *The Government of Alberta’s Policy on Consultation with First Nations on Land and Natural Resource Management*, (2013) < <https://open.alberta.ca/dataset/801cf837-4364-4ff2-b2f9-a37bd949bd83/resource/8fa6a92a-3523-457a-b3b0-1e72f3cb79b8/download/ir-policy-consultation-first-nations-land-resources-2013-amended-2020.pdf>>; and *the Government of Alberta’s Guidelines on Consultation with First Nations on Land and Natural Resource Management*, (July 28, 2014) < <https://open.alberta.ca/dataset/f1eb5282-5784-45f7-a35a-f03bf206de0e/resource/263300f3-5ca9-4477-98d4-d30d505aa694/download/3775118-2014-guidelines-consultation-first-nations-land-natural-resource-management.pdf>> .

247. The duty to consult does not provide Indigenous groups with a veto over final Crown decisions.⁷⁹
248. AT submits that it has undertaken a fulsome consultation effort which is fully documented in the Record of Consultation logs submitted as Exhibits 153 and 320 to the NRCB in AT's application.
249. In specific reference to some of the concerns raised with respect to consultation, and in particular, issues raised with respect to the field work for the TLUA, AT submits that those concerns are not substantiated in the Record of Consultation logs. In Appendix "J", AT sets out a more detailed review of specific consultation events and descriptions, from the Record of Consultation.
250. AT is obliged to respond to comments in the SNN materials which suggest that the elders were not treated with appropriate respect by representatives facilitating the field work. AT notes that the references to these concerns in the SNN's submission is the first time this issue has been brought to the attention of AT. AT deeply respects the elders, recognizes the importance of the elders' participation, and is not aware of any misconduct on the part of its representatives, nor has this issue been identified by any other First Nation which undertook field work. At is prepared to discuss this matter further with SNN, should it wish to do so.

(f) Environmental Impact Assessment

251. In response to questions and concerns raised in reviewing the EIA, AT provided detailed responses to each question and concern raised by Stoney Consultation in relation to its review of the EIA. These responses are set out in Appendix "K".
252. As a general statement, AT submits that it has already responded to the questions and concerns that Stoney Consultation has raised through the course of the environmental assessment process for SR1.

⁷⁹ *Chippewas* at 59.

(g) PGL Environmental Consultants

253. Included in the SNN submission is an interim memo written by PGL Environmental Resources dated February 25, 2021 which raises several questions with respect to the EIA sections on Hydrology and Aquatic Ecology. In this memo, SNN has raised a number of questions for which PGL's Subcontract, Boreal Water Resources Ltd., provides their assessment and further comments.
254. AT has responded to each of the issues raised in the PGL Environmental Consultants memo and has set these out in Appendix "L" to this Submission.

(h) Interim Traditional Land Use Assessment Report, February 2021

255. AT received the Stoney Consultation TLUA on March 4, 2021 and as such was not in a position to prepare a detailed response (as was done for reports received from other First Nations) identifying how and where SNN's concerns were considered and responded to and what mitigation measures have been proposed to address the concerns.
256. AT notes that the TLUA does not identify any resources, activities, practices, pathways or potential effects that have not already been considered in the EIA. It largely serves to confirm assumptions in the EIA that the SNN could access the PDA by permission of landowners to exercise treaty rights and traditional uses. The types of activities and uses defined by SNN as components of "sacred natural areas" appear to align with the traditional activities, practices, sites, areas and resources assessed under as Current Use in Section 14 of the EIA.
257. The TLUA at page 11 appears to refer to the Project as being on Crown Land; however, it should be noted that the area is predominately private land.
258. In reviewing the recommendations identified by the SNN at the end of their TLUA, AT advises that it has, or is prepared to, commit to many of the recommendations and provides the following responses:

- a. It is recommended that AT provide the funding support needed to conduct a meeting(s) with Stoney Consultation, Elders and Knowledge to discuss the proposed recommendations and to complete and finalize the Stoney Nakoda TLUA field work required for the proposed Project.

Response: AT is prepared to review a budget and approve, if reasonable, the financial resources required to complete and finalize the Stoney Nakoda TLUA field work.

- b. It is recommended that AT contact and inform Stoney Nakoda on activities that have the potential to impact archaeological, historical, and grave sites, or landforms that have the potential to contain archaeological sites, historical sites, grave sites or human remains. Activities such as road construction, excavation, movement, or disturbance of soils, and land clearing are all examples of activities that may adversely affect these deposits.

Response: AT notes that an HRIA was completed for the Project and no burials have been identified in the PDA. Should burials be found in the future, AT will be required to follow provincial regulations in dealing with them. AT is prepared to contact and inform the SNN of the potential to affect gravesites and archaeological sites. AT notes that SNN was invited to observe the archeological work that took place in fall of 2020.

- c. It is recommended that AT install and provide capacity support for cultural monitoring during all construction activities and throughout archaeological and historical investigations and mitigations undertaken for the proposed Project; and to implement a mitigation plan for any newly identified sites during construction.

Response: AT is prepared to review a proposal from SNN to provide cultural monitoring and, if reasonable, approve and work with the SNN to develop a suitable mitigation plan.

- d. It is recommended that AT work with the Stoney Nakoda to develop procedures related to chance finds of cultural, archaeological, and historical material to ensure that archaeological sites and/or cultural resources are documented and protected in a manner that respects Stoney Nakoda cultural protocols.

Response: AT has adopted procedures consistent with the Historical Resources Act to address archaeological sites and/or cultural resources.

- e. It is recommended that the Stoney Nakoda have access to all the information regarding previously recorded archaeological and historical sites in the Project area, as well as the findings of the Historical Resources Impact Assessments (“HRIA”) undertaken for the proposed Project. This is so the Stoney Nakoda can conduct site visits, undertake the required ceremonies at archaeological and historical sites, and trace historical movement throughout their traditional territory.

Response: Alberta Culture, Multiculturalism and Status of Women (“CMSW”) is responsible for this type of information. AT would be pleased to refer SNN to CMSW.

- f. It is recommended that AT protect all animal migration routes, as well as install and provide capacity support for the development of a detailed program that clearly communicates and monitors any impact the Project will have on the migration routes, ranges, and habitats of culturally significant species to the Stoney Nakoda.

Response: The Draft Wildlife Mitigation and Monitoring Plan (provided to the SNN on May 6, 2020) addresses this and includes a remote camera program.

- g. It is recommended that AT install the appropriate wildlife overpasses within and near to the Project area that will facilitate the movement of culturally significant animals across the major highways, including Highway 22 and Highway 8.

Response: As has been previously communicated by AT,⁸⁰ it is not appropriate to install the requested wildlife overpasses and AT is not prepared to do so. The underpass under Highway 22 and other mitigation measures will allow for adequate wildlife movement.

- h. It is recommended that AT install and provide capacity support for the Stoney Nakoda to conduct cultural monitoring at pre-defined intervals within the Project area during and after ground disturbance, and flood events to assess impacts to game, fish, plant, and wildlife habitat and plant foods such as roots and berries.

Response: AT has addressed this issue in its Monitoring Program and further in its Indigenous Participation Program.

- i. It is recommended that AT provide continued and unimpeded access to the Project area for hunting, fishing, plant collecting and harvesting, travel, ceremony, camping and traditional land use.

Response: AT has already committed to maintain access to identified current use sites (located outside of the designated construction and project site limits) during construction and operations. At the completion of the Project's construction, AT will inform Indigenous Groups about land access opportunities as contemplated in the draft Land Use principles.

- j. It is recommended that AT provide continued and unimpeded access to all Stoney Nakoda spiritual and ceremonial areas.

Response: See response to (i) above.

⁸⁰ Exhibit 131, pdf 489: AT SIR to AEP re SIR 2 response questions 1 and 27.

- k. The TLUA fieldwork was conducted in advance of the formal objection to the Project. It is recommended that the proposed Springbank Off-Stream Reservoir Project not proceed, as per the May 6th, 2019 “Letter of Objection.”

Response: AT does not accept the recommendation that the Project is not warranted to proceed, having regard to its responses to all of SNN’s stated issues and concerns.

259. In the maps attached to the TLUA, the SNN indicate that all archeological and historical site areas should be avoided by construction and operation of the proposed Project. The SNN recommends monitoring, participation within the HRIA Mitigation and Excavation Programs and the appropriate ceremonies and protocols are undertaken prior to and during archeological site migration.
260. AT advises that it is committed to facilitating ceremonies as has been requested.

VI. CALALTA

261. Calalta filed a written submission in which it identifies three general areas of concern. AT will address each of these concerns below but wishes to be clear that it has been engaging with Calalta in an attempt to resolve the concerns and will continue to do so.
262. The first concern relates to dust impacts to its Calaway Park operation from the construction or operation of the Project. Second, Calalta is concerned about impacts to its water intake system from waters being released from the Project reservoir. Third, Calalta is concerned about possible financial impacts to Calalta Waterworks Ltd. based on the development restriction created by the Project area which is within Calalta’s current franchise area to supply potential future water users.

(a) Air Quality

263. The Air Quality Management Plan proposed air quality monitoring during construction and the possibility of monitoring during some post-flood scenarios involving substantial deposition of sediment within the reservoir.

264. AT is prepared to install an air quality monitoring station on Calalta's property for the entire period of construction for the purpose of monitoring PM2.5 concentrations, which is the particle size most directly linked to the potential for health risk. The station will actively monitor during the period each year that Calaway Park is open to the public during construction and it agrees to share the air quality monitoring results from the station.
265. In the event there are any exceedance of air quality objectives, AT will investigate the cause of those exceedances and if they are deemed to be associated with project construction activities, will undertake appropriate mitigation actions. AT will report project-related exceedances to both Calalta and the regulators to ensure that any non-compliant events are remedied as quickly as possible.
266. AT will conduct ambient monitoring after a flood event to monitor potential effects associated with windblown sediment. Monitoring for TSP and PM2.5 at a location near the east PDA boundary will be conducted for 16 months after a flood event (i.e., from the flood event to the end of the fall season in the following year) to facilitate the timely application of additional mitigation measures for fugitive dust, if excessive TSP or PM2.5 levels be measured. Whether it is necessary to employ monitoring longer than 16 months will be determined in consultation with stakeholders and regulatory agencies. Anticipated parameters to monitor fugitive dust from post-flood operations are: TSP, continuous; PM2.5, continuous; and meteorology for wind speed, wind direction, and temperature.

(b) Water Sediment

267. Calalta has raised potential concerns with discharges of water from the low level outlet releasing sediment and adversely affecting its water intake system on the Elbow River.
268. AT submits that any such impacts to Calalta's waterworks system are remote and unlikely. However, if it can be established that there is a reduction in the water well capacity as the direct result of the release of water from SR1, such that Calalta is unable to meet the Provincial Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems, AT is prepared to provide reasonable assistance.

(c) Franchise

269. AT has reviewed the limited information presented by Calalta in support of this concern. AT is prepared to review this issue with Calalta in the future but respectfully submits that the alleged financial impact of the Project on Calalta is a private commercial issue that is not relevant to the NRCB's public interest review.

VII. FLOOD AND WATER MANAGEMENT COUNCIL/DAVID AND NOELLE READ

270. The FWMC (including David and Noelle Read) has filed with the Board four different documents,⁸¹ one of which is a request that the Board reconsider its decision in the Prehearing Conference decision to not grant standing to FWMC. AT notes that this is the second request by FWMC that the Board reconsider its standing decision, the first having been already dismissed.⁸² AT will confine itself to responding to the three submissions FWMC has filed for the Board's consideration at the hearing. AT has identified the following main themes in the submissions filed by FWMC and will respond to each.

(a) SR1 Capacity and Back-to-back floods

271. The FWMC states that, for various reasons, SR1's storage capacity is too small. In response, AT notes that SR1's capacity accommodates a design flood based on the largest flood on record for the Elbow River, which is the 2013 flood with a return period estimated at over 1:200 years. This meets and exceeds the Provincial Flood Hazard Identification Program design flood standard of a 1:100 year flood. There is also a factor of safety in both the design of the reservoir volume (10%) and the maximum diversion rate (25%) to account for unknowns at the time of design.

(b) Project costs and Government of Alberta spending

272. Like other Interveners opposed to the Project, the FWMC criticizes project costs. AT has already addressed the issue of costs in Part II above.

⁸¹ Exhibits 220, 278, 279 and 281.

⁸² Exhibit 314

(c) Dam safety

273. The FWMC expresses concerns with aspects of the project design related to dam safety and states that the consequences of a dam failure on the City of Calgary would be a “catastrophic event” that outweighs the benefits of SR1. The safety of SR1 is of utmost importance to AT. As an extreme hazard structure, the off-stream storage dam has been designed to the highest standards set forth in the Alberta Dam and Canal Safety Directive and Canadian Dam Association Dam Safety Guidelines for structures with this consequence rating.
274. In addition, SR1 will undergo regular inspections/investigations/monitoring, Dam Safety Reviews, and annual performance reviews to confirm the safety and operational readiness of the facility. As noted above in response to Mr. Dowsett’s report, Alberta Transportation will also work with AEP to develop an Emergency Management Plan based on standards outlined in the Alberta Dam and Canal Safety Directive.

(d) Stantec sign-off sheet disclaimer

275. The FWMC states that the sign-off sheet disclaimer on the 2020 Preliminary Design Report⁸³, makes it unclear who is responsible for the safety of SR1. In response, the disclaimer is standard for these types of reports and clarifies the contractual relationship between the design consultant and the owner of the work product. These disclaimers do not absolve the design consultant from liabilities associated with the project.
276. AT will be the owner of the SR1 dam during construction and any operations during construction. As outlined in section 29 of the *Water (Ministerial) Regulation*⁸⁴, the owner of a dam shall ensure that, at all times, the dam is and remains designed, constructed, operated, maintained, decommissioned, closed and abandoned in a manner that effects or maintains the safety of the dam. This includes ensuring the dam is designed by qualified professionals and constructed in accordance with the accepted design and the Alberta Dam and Canal

⁸³ Exhibit 159.

⁸⁴ *Water (Ministerial) Regulation*, AR 205/98

https://www.qp.alberta.ca/1266.cfm?page=1998_205.cfm&leg_type=Regs&isbncln=9780779822522&display=html

Safety Directive. Following completion of construction, ownership of the facility will be transferred from AT to AEP, at which time AEP will become the owner and assume responsibility for the safety of SR1.

277. The FWMC submission questions the decision-making and alternatives analysis conducted leading to the selection of SR1 as the preferred project for flood mitigation on the Elbow River. As noted above, the process by which SR1 was selected as the preferred option is not relevant in this proceeding. AT has responded above to criticisms of the decision to select SR1 over other alternatives.

VIII. CHARLES HANSEN

278. Charles Hansen has not been granted standing by the Board in this proceeding but was provided the opportunity file a written submission in advance of the hearing. Mr. Hansen has filed a submission.⁸⁵ AT has reviewed Mr. Hansen's submission and offers the following comments in response.
279. Mr. Hansen questions the decision-making and alternatives analysis conducted leading to the selection of SR1 as the preferred project for flood mitigation on the Elbow River. AT has already addressed this issue above.
280. Mr. Hansen's submission also includes a discussion on the geomorphological river channel changes that occurred in the Elbow River during the 2013 flood. Mr. Hansen expresses the concern that if SR1 is the only flood mitigation project built on the Elbow River, future floods could result in similar changes upstream of SR1.
281. Geomorphic processes are natural to river systems and suppressing these processes are seen by some experts as a negative consequence. One of the benefits of SR1's off-stream design is that Elbow River channel morphology downstream of SR1 will maintain its baseline nature because the project does not operate until flows in the Elbow River exceed 160 m³/s which is approximately a 1:7-year flood. This flow rate exceeds bankfull capacity which is the flow

⁸⁵ Exhibit 222.

rate that is primarily responsible for maintaining channel shape (e.g., has the energy to form channel unit, gravel bars and maintain pool depths) (Round 1 CEAA IR3-09).

282. Mr. Hansen suggests septic or sewer systems upstream of SR1 and Glenmore Reservoir may be damaged during a flood, mixing wastewater with floodwaters. The risk of septic and sewer systems from upstream parks, Bragg Creek, Redwood Meadows and areas within the Elbow River floodplain contaminating water in the reservoir is dependent on the magnitude of a flood. However, it is anticipated that larger flood scenarios (greater than 1:100 year floods) will have volume and flow rates substantial enough to dilute any sewage released into the environment. For comparison, there were no known impacts from sewage contaminating the Glenmore Reservoir in the 2013 flood.
283. Mr. Hansen also posits a linkage between wastewater and COVID-19 and suggests this should be a consideration for SR1. The COVID-19 pandemic is an evolving public health issue and Alberta Transportation will follow any guidance provided by Alberta Health regarding COVID-19 and wastewater. To date, no such guidance is available.
284. Mr. Hansen suggests that SR1 has been improperly designed, since it is designed to allow a flow of 160 m³/s downstream which Mr. Hansen says would result in overland flooding in the City of Calgary. This is based on a City of Calgary webpage that states Elbow River flows of 120 m³/s and 150 m³/s potentially results in some overland flooding.⁸⁶
285. In response, AT notes that the 170 m³/s flow rate was selected as the design basis for SR1 because it is the rate at which property damage from overland flooding begins to occur within Calgary. Stantec designed SR1 to operate when flows in the Elbow River exceed 160 m³/s because this flow rate coincides with the maximum release rate of Glenmore Dam's low level outlet. AT further notes that the City of Calgary is fully supportive of SR1 and views the operational rule of diverting when flows exceed 160 m³/s to be a safe and acceptable flow target.⁸⁷

⁸⁶ <https://www.calgary.ca/uep/water/flood-info/types-of-flooding-in-calgary/understanding-river-flow-rates.html>

⁸⁷ Exhibit 229, pdf 7.

286. Finally, like the FWMC. Mr. Hansen argues that the Stantec sign-off sheet disclaimer is somehow problematic. AT has responded to this argument above.

IX. CALGARY RIVER VALLEYS

287. AT notes that Calgary River Valleys (“CRV”) did not participate in the Prehearing Conference and has not been granted standing by the Board to participate in the hearing. Therefore, AT questions whether the Board should have any regard at all to CRV’s written submission. Nevertheless, AT provides the following brief response to that submission.

(a) *Cumulative impacts on broader South Saskatchewan River Basin (SSRB)*

288. CRV expresses the concern that there have been no studies conducted of the cumulative effects of damming and “training” of the Bow, Elbow, Red Deer and Oldman rivers in the SSRB. AT submits that many of CRV’s concerns are beyond the scope of the regulatory process for SR1. Further, one of the advantages of SR1 is that the project does not permanently impound water and only operates during floods greater than the 1:7 return period flood.

(b) *Risk of Future Flood Damage*

289. CRV expresses the concern that flood mitigation projects like SR1 may have the effect of condoning/encouraging future new development in the floodplains downstream of the project. This concern is the responsibility of municipal/provincial planning authorities and not SR1. CRV also points out that flood events greater than the 2013 flood will result in flooding of the City of Calgary. SR1 does not protect against all possible future flood events. No single project could, without having significant impacts and costs.

(c) *Impacts on the Natural Functionality of the Elbow River and its Valley*

290. CRV questions whether precipitation that falls on the SR1 site will be able to infiltrate to groundwater as it would today. In response, AT submits that it will, because SR1’s design leaves the reservoir bottom in its natural state (except where dam and diversion channel components are being constructed), so groundwater infiltration will be the same post-construction as pre-construction. After a flood, the sediment left behind will still allow water

(c) *Impacts on the Natural Functionality of the Elbow River and its Valley*

290. CRV questions whether precipitation that falls on the SR1 site will be able to infiltrate to groundwater as it would today. In response, AT submits that it will, because SR1's design leaves the reservoir bottom in its natural state (except where dam and diversion channel components are being constructed), so groundwater infiltration will be the same post-construction as pre-construction. After a flood, the sediment left behind will still allow water to infiltrate into groundwater but it may be at a different rate than pre-construction. There is no permanent impoundment of water so, overall, the precipitation/groundwater cycle will be unaffected by the project in the long-term.

X. LOUIS BULL TRIBE

291. AT has reviewed the February 26, 2021 letter sent by Louis Bull Tribe to the Impact Assessment Agency of Canada in respect of the SR1 Project. AT has responded to LBT's concerns in a letter of March 4, 2021, attached hereto as Appendix "M".

XI. CONCLUSION

292. Alberta Transportation believes that it has addressed the concerns raised by Interveners in their various written submissions and welcomes the opportunity to discuss its application and the SR1 Project at the upcoming hearing.

ALL OF WHICH IS RESPECTFULLY SUBMITTED at the City of Calgary, in the Province of Alberta, this 12th day of March, 2021.

MCLENNAN ROSS LLP

Per: 

Gavin S. Fitch, Q.C.
Counsel for Alberta Transportation

Per: 

Ronald M. Kruhlak, Q.C.
Counsel for Alberta Transportation