1. INTRODUCTION

1. Mr. Chairman, Panel Members and Panel Staff, we are pleased to present to you today our final argument on behalf of Alberta Transportation with respect to the Springbank Off-stream Reservoir Project, which I will refer to as SR1.

2. Mr. Fitch and I will share the presentation of this final argument and I will start. I have sent a copy of my notes to Ms. Friend to pass onto the Court Reporter and have also sent it to my friends so that the transcript and other evidentiary references can appear in the record without us taking the time to refer to them orally.

3. The outline for this presentation will have me make some introductory comments, to provide context, and then briefly discuss the framework for the Board's review of the Project. Our presentation will then review the issues identified by the Board under the various topic sessions.

4. I would also like to situate these oral remarks within the context of the very large record that exists in this proceeding. In particular, the positions of all the parties, including Alberta Transportation, have already been set out in writing in several documents which form part of the record and have been marked as exhibits.

5. In the case of Alberta Transportation, we filed comprehensive Reply Submissions to the written submissions of interveners who oppose the Project. Alberta Transportation's Reply Submissions consist of three main documents: (1) Exhibit 325, the Reply Submission prepared by Mr. Fitch, Mr. Barbero and me for our client Alberta Transportation; (2) Exhibit 327, Appendices A

through I to our Reply Submissions, which respond to various aspects of the SCLG's evidence; and (3) Exhibit 324, Appendices J through M to our Reply Submissions, which respond to various aspects of the evidence of the Stoney Nakoda Nations.

6. When it is deliberating, the Board should consider that the oral submissions Mr. Fitch and I will be making this morning are supplemental to Alberta Transportation's written Reply Submissions and are intended to take account of the testimony and evidence the Board heard over the past two weeks.

7. The other written materials Alberta Transportation asks the Board to consider part of our submissions are the Opening Statements made by Mr. Hebert and other members of our witness panels in the five topic sessions. For the record, those opening statements are:

   (a) Ex. 341: Opening Statement for Topic 1;

   (b) Ex. 353: Opening Statement for Topic 2;

   (c) Ex. 366: Opening Statement for Topic 3;

   (d) Ex. 374: Opening Statement for Topic 4; and

   (e) Ex. 380: Opening Statement for Topic 5 and Ex. 392: Powerpoint presentation for Topic 5.

8. These opening statements summarize Alberta Transportation's position on the topics found by this Board to be relevant for its public interest determination and we would encourage the Board to review them during its deliberations, in addition to our Reply Submissions and these closing remarks.

9. In this presentation, we will respectfully submit that the evidence clearly supports the conclusion that:

   (a) there is a serious need for this Project to be built as soon as possible;

   (b) that this Project is in the public interest for the people of Alberta;

   (c) that the potential impacts of this Project have been identified and Alberta Transportation has committed to implement numerous mitigation measures such that, with few exceptions, the Project will not cause significant adverse environmental effects.

10. As I have noted, prior to addressing the various topics discussed during the hearing, Alberta Transportation would like to make the following high-level, contextual submissions:

   (a) First, despite this being a public project advanced by a department of the Government of Alberta, it is clear that SR1 has been subjected to a rigorous review by the respective regulators, Indigenous groups, and stakeholders. Mr. Chairman, over the course of the last three years since the EIA was filed, numerous information requests were asked by your Board and other regulators, which Alberta Transportation responded to. Further, we have just completed a two-week hearing in which all aspects of the Project have been subjected to scrutiny and Interveners have been given the opportunity to advocate their positions directly to this Board.

(b) Second, is the issue of alternative projects. This point was addressed at the pre-hearing and the Board provided the parties with the following direction on the issue:

> The Board acknowledges that various parties are advocates for Elbow River basin flood control alternatives to SR1. In particular, McLean Creek has received significant attention by stakeholders and the applicant. The Board's mandate is limited to determining whether the reviewable project, in this case SR1, is in the public interest. While a general understanding of the relative merits associated with project alternatives may contribute some contextual relevance to a determination of the public interest decision on SR1, the NRCB focus must be on the social, economic, and environmental effects associated with the reviewable project. The Board will entertain submissions on how the proponent's consideration of alternatives is relevant to a public interest determination of SR1. However, the Board does not find merit in the expenditure of significant time and resources assessing projects that are not a reviewable project under the NRCBA.

Despite that direction, an alternative project (MC1) was referred to numerous times by certain interveners, in particular the SCLG. We reiterate that there is only one Project under review, only one Project that is being advanced, and only one Project that has been subjected to the regulatory scrutiny which I just referred to. That Project is SR1. For that reason, Alberta Transportation did not engage in any debate during the hearing in response to the comments and conjecture about MC1, for which there is no fulsome record of review before this Board, which review would include hearing from parties who might be opposed to constructing an in-stream dam on the Elbow River in a popular recreation area in Kananaskis County.

11. That said, in his Opening Statement on the first day of the hearing, Mr. Hebert, the Project's Executive Director and Alberta Transportation's lead witness, identified the attributes of SR1 which led to its selection, as follows:

- It is an off-stream dam and less sensitive than an in-stream dam to impacts from sediment or debris;
- It will capture more flood waters due to the location further down-stream;
- It is closer to operation response teams and access roads;
- It has less environmental impact;
- It has less impact on the Elbow River;
- It is less vulnerable to damage during extreme weather, including catastrophic failure during construction;
- It has less impact on social and recreational values;
- It has less impact on commercial/tourism values;
- It has a positive economic impact;
- It is many years closer to being built and functioning than any alternative Project.

[Ex. 349, Transcript, pp. 45 – 46]

12. The Project has received the express support of the City of Calgary, Erlton Community Association, Calgary River Communities Action Group, Flood

Free Calgary (which includes as members Calgary Economic Development, Calgary Chamber of Commerce and the Calgary Stampede) and a number of other local residents.

13. In addition, a number of Indigenous groups and Rocky View County, who raised initial concerns about SR1, did not maintain any objections to the Project advancing.

2. FRAMEWORK FOR THE REVIEW

14. The NRCB is conducting a review of the Project pursuant to its jurisdiction under the *Natural Resources Conservation Board Act* ("Act").

15. The purpose of the Act is to "provide an impartial process to review projects that will or may affect the natural resources of Alberta in order to determine whether, in the Board's opinion, the projects are in the public interest having regard to the social and economic effects of the Projects and the effect of the projects on the environment [Act, Section s. 2].

16. In previous decisions, the Board has confirmed that it does not have a fixed formula for determining whether a reviewable project is in the public interest. Rather, as stated in the Board's recent Cougar Creek decision [NRCB Decision NR 2018-01]:

> The outcome of a Board review is shaped by the nature of the project under review, its location, community support for the project, the project's impact on the natural environment and the project's contribution to public benefits. There is no fixed objective test, but to make the determination, the Board balances the economic, environmental and social interests in the context and time period in which they arise. In the Board's view, for a

> project to be in the public interest, the Board must be convinced that the identified project benefits the region and the province, and is consistent with any applicable Alberta Land Stewardship Act regional plan, without generating unacceptable economic, social or environmental impacts.

17. SR1 is a "reviewable project" under the Act because it is a "water management project" pursuant to Section 4, as defined in Section 1(j) of the Act. Alberta Transportation was required to prepare an Environmental Impact Assessment under the *Environmental Protection and Enhancement Act* ("EPEA").

18. On February 5, 2015 AEP issued final Terms of Reference ("TOR") for the EIA [Ex. 1]. The TOR were comprehensive and included issues such as:

- Dam safety;
- Air quality, climate and noise;
- Hydrogeology;
- Hydrology;
- Surface water quality;
- Aquatic ecology;
- Vegetation;
- Water;
- Wildlife and biodiversity;

- Terrain and soils;
- Land use and management;
- Historic resources;
- Traditional ecological knowledge and land use;
- Public health and safety;
- Socio-economic impacts;
- Mitigation measures; and
- Residual effects.

19. The EIA was submitted to the Board in November 2017 and a revised EIA was resubmitted in March of 2018. As I have already noted, extensive information requests were then submitted to Alberta Transportation, by Alberta Environment and Parks ("AEP"), the Impact Assessment Agency of Canada ("IAAC") and, of course, this Board.

2.1 Other Approvals required for the Project

20. The Project also will require provincial approvals under the *Water Act* and *Public Lands Act*.

21. Alberta Transportation has been working with AEP's *Water Act* approvals team since 2019 on SR1. Alberta Transportation requires the following under the *Water Act*:

- approval to conduct Project activities that effect the aquatic environment under Part 4, Division 1, Section 36(1) of the *Water Act*
- a Temporary Diversion Licence under Part 4, Division 2, Section 62(1) of the *Water Act*
- approval to disturb wetlands under the Alberta Wetlands Policy
- acceptance by AEP's Director of Dam Safety of dam design, consequence rating and emergency management plan to ensure that the Project is designed, constructed, operated and maintained safely.

22. Alberta Transportation has on-going and regular discussions with the *Water Act* approvals team confirm appropriate project design and environmental effects information is being provided, including submitting a *Water Act* application in July 2020, a Wetlands Impact Assessment Report in August 2020, and the Preliminary Design Report [Ex. 159] and associated appendices in December 2020.

23. With regard to the *Public Lands Act*, approvals are needed to support the construction and overall operation of the reservoir by permitting the temporary and permanent work that will take place within the Elbow River and in three tributaries located within the off-stream reservoir area and along the outlet channel.

24. Finally, as you are aware, IAAC has also conducted an environmental assessment of the Project under the *Canadian Environmental Assessment Act, 2012* ("CEAA 2012"). As noted by Mr. Hebert in his opening statement on the first day of the hearing, IAAC has released a draft report which indicates that, taking into account the implementation of key mitigation and follow-up

program measures, the Project is not likely to cause significant adverse effects. The public review period for the IAAC draft report ended April 1, 2021 and the report is now being finalized. When that is done, it will be forwarded to the federal Minister for decision under CEAA 2012.

25. In addition, Alberta Transportation has been working with Fisheries and Oceans Canada (DFO) since 2019. Alberta Transportation is applying for authorization under the federal *Fisheries Act* for undertakings or activities that may result in the harmful alteration, disruption or destruction of fish habitat (HADD) or the death of fish. Alberta Transportation is also applying for authorization under the federal *Species at Risk Act* for potential effects to Bull Trout.

26. Alberta Transportation understands that under section 74 of the *Species at Risk Act*, activities resulting in prohibited effects on listed aquatic species at risk, such as Bull Trout, can be authorized under other federal legislation, including the *Fisheries Act*. Our further understanding is that, if SR1 receives authorization from DFO, the issued *Fisheries Act* Authorization will also serve as a *Species at Risk Act* permit. Alberta Transportation has had and continues to have on-going and regular discussions with DFO to understand the potential fish offsetting requirements for SR1.

3. PROJECT NEED AND JUSTIFICATION

3.1 Project Purpose and Need

27. In the aftermath of the devastating 2013 flood of the Elbow River, the Government of Alberta made flood mitigation on the Elbow River a matter of the highest priority. The proposed Project is the Government's direct

response to the 2013 flood, which resulted in the loss of human life and significant economic and personal costs to members of the public, corporations, municipalities and the Province itself. [Ex. 341, para. 3]

28. As Mr. Hebert said in his opening statement at the commencement of the hearing on March 22, 2021, the sole purpose of SR1 is to deliver the important public benefit of flood mitigation on the Elbow River. [Ex. 341, para. 39] In tandem with the recent upgrades to the Glenmore Reservoir, SR1 will operate to reduce overland flooding below the reservoir to levels that will not result in damage to property.

29. With regard to the need for the Project, at the hearing we heard evidence from Mr. Hebert, the City of Calgary, CRCAG and FFC regarding the extensive social, environmental and economic costs and impacts caused by the 2013 flood. These include:

- five fatalities;
- over $5 billion in damages;
- the displacement of at least 88,000 Calgarians;
- damage to 14,500 homes;
- the flooding of 4,000 businesses; and
- Calgary's downtown core being left inaccessible for days due to power outages, damaged access routes, and public safety risks due to pooled water on roadways and pathways. [Ex. 341, para. 3 and Ex. 229, pp. 4-5]

30. As stated by Mr. Hebert, the 2013 flood was "a terrible event that will always be remembered by those who lived through it". [Ex 341]

31. Mr. Chairman, the need for the Project is beyond question. It has now been almost eight years since the 2013 flood. It is predicted that a flood of some magnitude is expected on the Elbow River every 8-10 years. The Project is needed, and it is needed now.

3.2 Social and Economic Project Costs and Benefits

32. The Project will provide considerable social and economic benefits by substantially reducing the flood hazard on the Elbow River in The City of Calgary and other downstream communities. The Project will reduce the effects of future extreme flood events on infrastructure, properties and people in the City of Calgary and downstream communities.

33. As stated in Table 17-6 of the EIA, it is estimated that $1.5 billion is at risk due to future flooding of the Elbow River of the same magnitude as 2013 without flood protection. [Ex. 56, pdf 12] Put another way, SR1 will result in flood damage avoidance benefits for design flood on the Elbow River of almost $1.5 billion. [Ex. 341, para 39] The resulting economic effects of a disaster of this magnitude are far reaching and have implications for all Albertans. By mitigating the risk of future costly expenses related to flood damages and recovery this Project will benefit all Albertans.

34. David Sol of IBI explained the process by which damages were divided between the Elbow and Bow River. As Mr. Sol said, an object-based model calculated damages for each individual building and they were then able to delineate whether damage to a building was from the Elbow or Bow River.

Based on that analysis, the flooding risk from the Elbow River system alone was calculated at $1.5 billion. [Ex. 349, Transcript, pp. 71-72]

35. Without SR1 there will be severe impacts from unmitigated flooding on local and downstream residents and businesses with the accompanying health and safety risks, public and private expense and personal and social effects. The City of Calgary's evidence at the hearing was clear: the City is unable to mitigate a 2013-sized flood event on the Elbow River on its own. [Exhibit 357, Transcript, pp. 315 and pp. 320-332]

36. The Project will result in a number of short-term and long-term positive economic impacts to Springbank, Rocky View County and Indigenous groups, including employment and business opportunities during Project construction, and the economic benefits of flood protection, both directly to Springbank and Rocky View County, and indirectly due to reduced flood risk in the City of Calgary. The economic benefits of the Project are detailed in Exhibits 38 and 56, the "Employment and Economy" volumes in the EIA.

37. Additionally, during a flood event the Project will either avoid or greatly reduce the generalized economic costs that may be borne by all Albertan taxpayers, such as government expenditures on flood clean-up.

38. Further, while SR1 does not provide a direct storage component for water, we heard evidence that it does improve water security on the Elbow River. In oral evidence, Mr. Wood explained that currently the Glenmore Reservoir is operated in the spring for a certain degree of flood control, through the drawing down of the reservoir in preparation for flood season. However, if no flood water arrives, this could result in water deficits later in the year.

Therefore, by reducing the flood risk on the Elbow River, the Glenmore Reservoir will be able to operate more effectively as a water supply facility. This is another benefit of SR1. [Ex. 349, Transcript pp. 102]

39. In any event, the application before the Board is for a flood mitigation project, to address the critical need for flood mitigation on the Elbow River, not an application for a drought management project. As was noted in the evidence of Mr. Frigo for The City of Calgary, the Elbow River watershed would not warrant an investment in a drought management project. [Ex. 373, Transcript, pp. 1277-1279, and Ex. 385, Transcript, p. 1747-1748]

40. In response to the repeated submissions of the SCLG and others that alternatives such as MC1 would provide greater benefits than SR1, Alberta Transportation reiterates that the wisdom of selecting SR1 over such alternatives is not the issue before this Board. Regardless, Alberta Transportation submits that the evidence supports that SR1 is best suited to provide timely, reliable, and effective flood mitigation on the Elbow River.

41. I will address the Project's costs in a moment, but with respect to social costs (costs of the Project on the local community after construction), Alberta Transportation submits the impacts associated with this Project are temporary and would occur periodically, with some likely only occurring every 100 years. SR1 will not be in continuous or ongoing operation.

42. As indicated in Alberta Transportation's filed materials and confirmed by Dave Brescia in oral evidence, "over the last hundred years of record the project would have only operated ten times, and almost every single one of

those floods would have been at the small size of flood in the sort of one in ten-year size of flood." [Ex. 365, Transcript, pp. 777; see also Ex. 173, pg. 28]

43. In most years, SR1 will not be in use and the land in the reservoir, which will be Crown land, will be available for use by First Nations and the public. This is not a project where there will be new impacts, like emissions or effluent, experienced by the local community 24 hours a day, seven days a week. Instead, after construction is complete there will be limited and mitigated impacts during infrequent flood operations.

44. Alberta Transportation reiterates that if SR1 is not approved there will continue to be serious impacts from unmitigated flooding on local and downstream residents and businesses with the accompanying health and safety risks, public and private expense and personal and social effects. The status quo is not acceptable.

3.2.1 Project Costs

45. In terms of Project costs, we heard in Mr. Hebert's opening statement that the current budget for SR1 in the GOA's capital plan is $432 million. Alberta Transportation submits that SR1 is a sound investment of public resources in necessary and critical infrastructure. This is demonstrated by the substantial positive benefits that SR1 will provide through the mitigation of the impacts of future flooding of the Elbow River on public safety, infrastructure and the lives and livelihoods of downstream residents and property owners.

46. It is also demonstrated by the fact that SR1 will result, in the case of another flood the magnitude of 2013, in avoided damages of $1.5 Billion. SR1 will

more than pay for itself after just one single design flood event. [Ex. 325, para. 27]

47. As noted by Mr. Hebert, the cost estimates for SR1 are being closely monitored to ensure this flood mitigation project can be delivered in a timely and effective manner. Final costs will be based on final design, a competitive construction tender, completion of land acquisition and conditions set by the regulators. [Ex. 341, para. 21]

48. Alberta Transportation submits that there is little value in comparing the current estimated costs of SR1 to the early estimates of other projects which were never advanced to the same degree of engineering, design and stakeholder consultation and engagement. The increases in cost estimates for SR1 are not significant and not unusual based on there having been several design changes made as the Project progressed with additional field work, engineering and design work. This is a normal evolution of an infrastructure project as detailed design provides additional certainty and understanding of the Project construction conditions. [Ex. 325, para. 28]

49. For example, in the 3 ½ years between March 31, 2017 Interim Design Report and the September 25, 2020 Preliminary Design Report, there were notable changes made to the Project which caused changes in the Project's construction cost estimates, including the inclusion of the debris deflection barrier, the relocation of the Low Level Outlet and the addition of rip rap to the diversion channel. [Ex. 325, para. 30]

50. With regard to land acquisition costs, Alberta Transportation prepared a Land Acquisition Program for SR1. [Ex. 327, pdf 4] As noted in the Program,

landowners from whom Alberta Transportation must acquire land are entitled to be fully and fairly compensated as per Alberta's *Expropriation Act.* They are entitled to hire appraisers and legal counsel, at Alberta Transportation's expense, and are entitled to compensation based on the fair market value of their lands and that includes disturbance damages and damages for injurious affection.

51. The evidence is that since negotiations with SR1 landowners began, Alberta Transportation has obtained a substantial number of appraisals, as have landowners with whom Alberta Transportation is negotiating. Through this negotiation process with landowners, Alberta Transportation has gained a better understanding of anticipated land acquisition costs, which have increased from initial estimates. [Ex. 325, para. 31]

52. These changes to Project costs reflect that Alberta Transportation has been responsive to the concerns that have been raised about the Project and has been and remains prepared to address them in its Project plans. [Ex. 325, para. 32]

53. The benefits associated with SR1 are indisputable. It will have a substantial effect on reducing not only the real economic costs but the emotional toll that has affected downstream residents and business. As such, Alberta Transportation submits that the benefits of SR1 clearly and substantially outweigh the costs.

3.3 Alternatives Considered

54. Section 7.1 of the Terms of Reference for the EIA [Ex. 1] required Alberta Transportation to "describe the Project alternatives considered for flood

mitigation." In response, Alberta Transportation went to considerable lengths to consider alternatives to SR1, including carrying out a scoping level environmental assessment and a benefit-cost analysis of an in-stream Project on the Elbow River at the confluence of McLean Creek (MC1). The outcome of Alberta Transportation's alternatives assessment was that SR1 was selected.

55. It is submitted that the decision to select SR1 over other alternatives was justified. The reasons why SR1 was selected were summarized by Mr. Hebert in his opening statement and I have already identified them in my introductory comment.

56. Further, as I also stated in my introductory comments, Alberta Transportation submits that 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. Rather, as noted by the Board in its Prehearing Conference decision, to which I have already referred, the Board's mandate is limited to determining whether the reviewable Project , in this case SR1, is in the public interest.

57. Notwithstanding the Board's clear direction, many interveners spent much of their time, in their written presentations and their testimony, arguing the benefits of MC1 as compared to SR1. They argued that MC1 could provide a suite of other benefits such as recreation, drought management and a water source for firefighting.

58. Indeed, Ms. Hunter's lengthy submissions were largely devoted to arguing MC1 or SR1, and provided some detailed timeline which she described as flawed decision making . In her 139-page written presentation [Ex. 254, App.

D1.A to the SCLG written submissions], Ms. Hunter devoted close to 60 pages discussing what she describes as the "flawed decision-making" that resulted in SR1 being selected and providing a detailed timeline of the events that led to this so-called flawed decision.

59. However, as noted previously the Board is being asked to review SR1 to determine if the Project is in the public interest, not whether MC1 ought to have been chosen. Further, it would be impossible to compare the two Project s at this point given the extensive assessments and work done on SR1 since it was selected.

60. Alberta Transportation submits that the argument that MC1 could provide a suite of other benefits such as recreation, drought management and a water source for firefighting is simply wrong. Similar to SR1, MC1 was not developed with the goal of achieving these objectives. Rather, the conceptual plan for MC1 was focused primarily on flood management. [Ex. 101, pdf 55] The purpose of both SR1 and MC1 is for flood mitigation and not for generating revenue or increased recreational opportunities. As an instream dam, MC1 was designed to have a small pond for sediment management, not a large reservoir for recreational or water management purposes. [Ex. 131, pdf 2515] Consequently, Mr. Chairman, this is not an argument that MC1 would have been better than SR1, it is an argument that some other Project , which was never designed, would be better than SR1.

61. Further, Alberta Transportation submits that it is important to remember that this Project makes up only one component of a larger flood mitigation plan for the Bow River basin. Other components include the upgrade of Glenmore

Reservoir, berms within the City of Calgary, the berms at Bragg Creek and Redwood Meadows, and a potential new flood control structure on the Bow River. Ultimately, all these components will work together to provide significantly enhanced flood protection to communities in the Bow River basin. Moreover, many of these other Projects fall within municipal or First Nations' jurisdiction, not provincial, and Alberta Transportation is not their proponent.

62. Most of those other components are already complete and are not part of the Project that is before the NRCB for approval; only SR1 is. With regard to a new flood control structure on the Bow, it will be reviewed and assessed in other processes, as required. As discussed at the hearing, this will likely include the provincial EIA process. [Ex. 349, Transcript, pp. 97] The Government of Alberta will engage with stakeholders in those processes, as appropriate.

63. As required in the Terms of Reference for the EIA, Alberta Transportation has described—in great detail—the alternatives considered for flood mitigation on the Elbow River. Whether one agrees with the selection of SR1 or not, it cannot seriously be argued that Alberta Transportation did not go to great lengths to assess alternatives and give them serious consideration.

64. Alberta Transportation accepts that the Board's public interest mandate requires it to consider whether alternatives to the Project were adequately assessed. Mr. Chairman, they were.

3.4 Crown Engagement with Public

65. Alberta Transportation submits that its engagement with the public on SR1 was appropriate and meets the Board's expectations concerning public consultation. Through its engagement program, Alberta Transportation explained the social, economic and environmental effects of the Project to potentially affected persons, such as landowners from whom Alberta Transportation must acquire land, and members of the larger Springbank community. Alberta Transportation has made extensive and sincere efforts to resolves the concerns that have been expressed by stakeholders.

66. Beginning in July 2014, Alberta Transportation engaged with directly affected landowners, adjacent landowners, special interest groups, locally elected officials, other stakeholders and the public to provide Project information, including the design and regulatory process, answer questions and listen to feedback. This information has been presented using meetings, open houses, community information sessions, emails, direct mail, maildrops, a Project website, door hangers, a dedicated Project email, phone calls, newsletters, and Project updates.

67. The engagement with members of the SCLG is detailed in Alberta Transportation's Reply Submissions [Ex. 325], starting at para. 40, and in the consultation chronology I have already referred to [Ex. 327]. I will not repeat all that evidence now but will bring to the Board's attention certain points from it.

68. First, while members of the SCLG complained that landowners were not consulted early enough, we heard evidence that as early as July 18, 2014

representatives from AT and AENV met with a number of local landowners, including several who are now members of the SCLG or Interveners. [Ex. 325, para. 40]

69. At this meeting, the landowners were advised that SR1 had been selected for detailed engineering and design. Alberta Transportation confirmed that as of that date both MC1 and the Calgary Tunnel options were moving forward for continued study. With regard to MC1, that included advancement of the conceptual design, a scoping-level environmental assessment and a Benefit-Cost Analysis. [Ex. 139, pdf 537]

70. On March 3, 2015, representatives from Alberta Transportation and Alberta Environment again met with local landowners, including several current members of the SCLG. The purpose of the meeting was for Alberta Transportation to provide an update on SR1 and the continued review of MC1, including the Benefit-Cost Analysis. Alberta Transportation advised that the next step involved the carrying out of the EIA. Later that month, Alberta Transportation held two Open Houses and provided the Don't Damn Springbank group with a table near the entrance at each.

71. In May 2016, two more Open Houses held.

72. On October 26, 2016, Alberta Transportation 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.

73. In 2017 and 2018, 6 more open houses were held 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 Alberta Transportation representatives met with several persons who are now members of the SCLG, including Dr. Klepacki, Karen Massey, Karin Hunter and Mary Robinson.

74. A total of four Project Updates have been issued to stakeholders since the summer of 2019, each of which has invited anyone with questions or comments about the Project to contact Alberta Transportation. And as of the date of the Board's Prehearing Conference, a total of 12 Open Houses and two community information sessions have been held at locations in and near the local community.

75. We heard in Mr. Hebert's opening statement that he has personally spoken with numerous landowners in the Project area and whenever requested has met them to better understand their concerns. As also stated by Mr. Hebert, Alberta Transportation will continue to engage with stakeholders after approval of the Project, if it is granted by this Board.

76. Alberta Transportation has committed to appointing a community liaison officer to specifically address any issues which may arise during construction of the Project and its operations.

77. Finally, as I will discuss in more detail in a moment, during 2019 and 2020, Mr. Hebert was in regular communication with Ms. Hunter, in her capacity as the President of the Springbank Community Association, by email and telephone, to provide Project updates and respond to questions and concerns.

78. Mr. Chairman, it is submitted that the mere fact that some stakeholders have unresolved concerns does not mean that Alberta Transportation's engagement and consultation on SR1 was not adequate. Alberta Transportation engaged with local stakeholders, including the members of the SCLG in good faith. Unfortunately, it is sometimes just not possible to resolve all concerns.

79. Alberta Transportation carefully reviewed the Landowner Statements submitted as part of the SCLG's evidence. [Ex. 250] Many of those statements contained complaints about Alberta Transportation's engagement with stakeholders who are now members of the SCLG. As a result, Alberta Transportation prepared a chronology of engagement with members of the SCLG which was included in our Reply Submissions. [Ex. 327, pdf 9]

80. It is noteworthy, in our submission, that none of the members of the SCLG who testified at the hearing seriously took issue with the accuracy of that chronology. Therefore, Alberta Transportation submits that the Board may rely on it as providing an accurate picture of the engagement that occurred with SCLG members.

81. One SCLG witness who did comment on the chronology was Karin Hunter, who testified about the entries in the chronology which detail numerous email communications from Mr. Hebert. Specifically, Ms. Hunter testified that she did "not consider emails to be consultation". [Ex. 368, Transcript, pp. 971]

82. In fact, in several of these emails, Mr. Hebert offered to meet with Ms. Hunter, as President of the Springbank Community Association. In cross-examination, Ms. Hunter was asked whether, in view of her testimony that emails do not constitute consultation, she considers the proponent offering to

meet to be consultation. In response, Ms. Hunter acknowledged Mr. Hebert's various offers to meet with her and stated that she appreciated his "willingness to reach out" and that Mr. Hebert's "intent was good". [Ex. 368, Transcript, pp. 987]

83. Notably, Ms. Hunter also confirmed that she did not take Mr. Hebert up on any of his offers to meet. [Ex. 368, Transcript, pp. 984 - 985]

84. Without further prompting, Ms. Hunter then told the Board why she did not take Mr. Hebert on any of his offers to meet:

> I just think there's been -- there's been a case of misguided expectations potentially on both sides. And honestly, our philosophy, and now I'm going to just speak as my Springbank Community Association role. Our priority has always been hit those regulatory deadlines. It has not been engage with Alberta Transportation because fundamentally, we don't agree this is the right Project .
>
> And so for us to spend time one on one with Matthew Hebert and even the Project team to understand, what's the point? [Ex. 368, Transcript, pp. 986/lns. 9-19]

85. Clearly, Ms. Hunter's position on SR1—and that of the SCLG—was fixed and no amount of consultation or engagement by Alberta Transportation would have changed anything. Ms. Hunter's testimony that "hitting" the regulatory deadlines was her priority is telling; it explains why her presentations, both written and oral, are in the nature of advocacy and argument, not evidence.

86. Mr. Chairman, it is sometimes said that consultation is a "two-way street". A proponent such as Alberta Transportation is required to provide interested

parties with both information about its proposed Project and opportunities to ask questions and express concerns. If it receives questions and concerns about its Project , it is obligated to respond to them, in good faith. Alberta Transportation fulfilled those obligations. But a proponent cannot force someone to like its Project and it cannot force someone to engage with it.

87. That said, Mr. Chairman, as you know Alberta Transportation has committed to appointing a Community Liaison (a representative from Alberta Transportation during construction and from AEP during operations) who will serve as point of ongoing contact with stakeholders. The Community Liaison will primarily communicate through the local representation for Indigenous groups, community associations, local businesses, government administration and local government officials. [Ex. 216]. Complaints received during Project construction will be directed by the Community Liaison to the construction contractor. (Round 1 CEAA, Package 3 IR3-46).

4. CROWN CONSULTATION AND LAND USE

88. In this part of our argument, I will begin by discussing Alberta Transportation's consultation with Indigenous Peoples generally, and then move to addressing the intervention of the Stoney Nakoda Nations specifically. I will also comment on potential Project impacts on historical resources and summarize commitments made by Alberta Transportation in relation to Indigenous peoples. Finally, following that, I will briefly address the concerns raised by non-Indigenous interveners about future land use in the Project area.

4.1 Crown Consultation with Indigenous Peoples – General

89. Alberta Transportation has taken its obligation to consult with, and where necessary, accommodate First Nations very seriously, and has engaged with Indigenous communities. Alberta Transportation's *Indigenous Engagement Program* for the SR1 Project reflects its efforts to conduct a meaningful and responsive engagement program based on respect and transparency. The *Indigenous Engagement Program* designed by Alberta Transportation followed Federal and Provincial guidelines, took direction from the Government of Alberta's Aboriginal Consultation Office (ACO) and the Impact Assessment Agency of Canada (IAAC) and strove to respect each Indigenous group's specific protocols.

90. As you have heard from Mr. Hebert, Alberta Transportation was directed to consult with five Treaty 7 First Nations by the ACO and engaged with another eight Indigenous groups identified by IAAC.

91. Alberta Transportation recognizes that the NRCB must also satisfy itself as to the adequacy of consultation and accommodation based on all of the evidence before it. In this regard, Alberta Transportation 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 as part of Alberta Transportation's Application before the Board.

92. Alberta Transportation started early consultation with the Treaty 7 First Nations in August, 2014 as directed by the ACO. Alberta Transportation requires a positive consultation adequacy decision from the ACO prior to issuance of *Water Act* or *Public Lands Act* approvals for the Project and to

support the February 3, 2021 EIA completeness decision from Alberta Environment and Parks. ACO monitors Alberta Transportation's Treaty 7 consultation activities and receives bi-monthly consultation updates for review and comment.

93. Once Alberta Transportation informs the ACO that it is closing consultation on the Project and submits a consultation adequacy decision request, the ACO will conduct a consultation adequacy assessment to confirm that the fulfillment of the delegated procedural aspects of consultation have been carried out in compliance with Alberta's Policies and Guidelines. The ACO's consultation adequacy decision will include any recommendations it has, and is made available to the Alberta Environment and Parks Directors responsible for the *Water Acts* and *Public Lands Act* applications to inform their decision making. Alberta Transportation is required to close consultation as a prerequisite to the issuance of approvals under the *Water Act* and the *Public Lands Act*.

94. Based on the March 3, 2021 letter from the ACO to the NRCB (Exhibit 308) it is our understanding that "the ACO does not provide a recommendation or advice to the NRCB. The ACO has no formal role in NRCB processes, including regarding any consultation that the NRCB may engage with a First Nation." However, "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."

95. Alberta Transportation submits that through the engagement process and follow-up, it has been able to successfully respond to many of the concerns raised by Indigenous groups and believes this is reflected in the fact that only one First Nation has chosen to intervene in the hearings before the Board.

96. Alberta Transportation described its process that upon receiving traditional use studies from each Indigenous group, Alberta Transportation prepared written responses that provided meaningful responses to the comments and concerns and that identified proposed mitigation to avoid or reduce Project effects. Alberta Transportation then offered to meet with those Indigenous groups to review the written response and obtain their feedback.

97. In response to the feedback received from Indigenous groups, Alberta Transportation then made significant Project modifications, such as the fish passage measures and fish rescue program, improved wildlife passage, and the addition of the debris deflector.

98. As you have heard, one of the most significant changes to the Project in response to First Nations concerns was the development of an Updated Draft Guiding Principles and Direction for Future Land Use document. This document provides guidance for the future land uses of the Project area for Alberta Environment and Parks, as the future operator of the Project and it will be responsible for developing the final Land Use Plan once the Project is completed.

99. The Project is predominately situated on private land that has been used for ranching and agriculture since the late 1800s. Alberta Transportation submits that the Project may enhance opportunities for First Nations to exercise treaty

rights and traditional uses compared to existing conditions where access is contingent on consent of the landowner. The Project creates a novel situation where it acquires private land and converts it to Crown land to allow future use by First Nations and stakeholders. This includes the practice of treaty rights and traditional uses among a number of secondary uses to actual flood mitigation activities.

100. The draft Guiding Principles calls for additional engagement to ensure all interested parties have an opportunity to express any concerns or interests they have in its finalization which would occur after all Project approvals are obtained (this engagement is outside of the formal consultation process). It is the intention that the final Land Use Plan will be developed with meaningful consideration of input received from First Nations and other users. The Government of Alberta is interested in using an iterative and collaborative approach in the development of the Land Use Plan. This process is ongoing, and the final Land Use Plan is contingent on further input from First Nations and stakeholders.

101. Alberta Transportation anticipates that land use issues pertaining to First Nations can be reasonably addressed through the First Nations Land Use Advisory Committee which has been proposed.

102. In addition, you have heard that Alberta Transportation has also committed to meaningful Indigenous participation in the construction of SR1 if it is approved through training, employment and contracting opportunities. To support that commitment, Alberta Transportation developed a draft *Indigenous Participation Plan* and shared it with Indigenous groups in

November 2019. Since that time, it has advanced the draft and met with Indigenous groups, hosting a business readiness workshop and has obtained information on businesses and contractors that could participate in construction opportunities.

103. When the Board is considering the adequacy of consultation, it might be helpful to reflect on some of the comments of Dr. Buchanan who has extensive experience in ethnographic and historical research pertaining to Indigenous peoples in Canada as well as the consideration of Indigenous knowledge in environmental assessments, when he commented on his observations on consultation.

104. Dr. Buchanan noted that the record demonstrated that Alberta Transportation conducted robust and meaningful consultation as he reviewed the thousands of entries which reflect meetings, workshops, site visits, correspondence, funding for traditional use studies and ongoing Project updates. Relevant Project information was shared in a timely manner and in an accessible format. Alberta Transportation met with individual Indigenous groups in an earnest effort to obtain perspectives on the Project effects, specific concerns and recommendations for mitigation.

105. Dr. Buchanan noted that Alberta Transportation undertook exceptional measures in sharing the draft Traditional Land and Resource Use (TLRU) effects assessments to Indigenous groups prior to them being filed in the March 2018 EIA and in offering to hold workshops with Indigenous groups to obtain their input on proposed mitigation measures and discuss how Project specific concerns had been addressed in the EIA.

106. Alberta Transportation submits that all of these efforts reflect meaningful attempts to ensure that there has been adequate consultation and engagement.

107. Further, as you have heard from Mr. Hebert, those commitments do not end with this Hearing as there is continued engagement proposed going forward.

4.2 Stoney Nakoda Nations

108. Alberta Transportation closely reviewed the written submissions and evidence provided by the Stoney Nakoda Nations (SNN). It notes that the SNN did not take any issue with the fulsome consultation record as it pertained to them and the extracts from that Record of Consultation which were included in Appendix "J" to Alberta Transportation's reply submissions [Ex. 324, pdf. 4]. In fact, much of the cross-examination of Alberta Transportation appeared to instead focus on potential flood mitigation Project s on the Bow River.

109. Alberta Transportation notes that the EIA reasonably identified treaty rights and traditional uses in the Project Development Area (PDA), including those of SNN. [IAAC Round 1, Package 2, IR2-01-73; Volume 3A, Section 14.1.3.1]

110. Alberta Transportation provided numerous opportunities for the 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, providing the draft TLRU assessment and subsequently holding two separate Workshops with SNN to obtain their perspectives on assessment methodology, and proposed mitigation, Project-specific concerns, and how the Project may affect the exercise of s. 35 rights and correspondence

specifically requesting feedback on the exercise of treaty rights and traditional uses.

111. Alberta Transportation notes that the submissions of the SNN to this Board demonstrate that the SNN understands that the NRCB and IAAC review processes are intended to fulfill the Provincial and Federal Crown's duty to consult. In this regard, the March 3, 2021 letter from the ACO to the NRCB [Ex. 308] states that "Alberta may rely on the consultation that occurred in the NRCB's process to assist in meeting any duty to consult owed by Alberta."

112. Further, the SNN have had considerable opportunities for participation and consultation. As noted earlier the SNN has received participant funding to participate in the NRCB Hearings and have provided several witnesses to provide oral Indigenous knowledge testimony.

113. Alberta Transportation submits that the information about traditional use by the SNN provided in their Interim Traditional Land Use Assessment (TLUA) report serves to confirm the assumptions made in the EIA about the nature and extent of SNNs traditional use of the PDA.

114. Alberta Transportation was concerned to hear of the comments by the Elders of their experience during the site visits which were conducted in October and November of 2016. They indicated they were not given unrestricted access to the lands, nor could they attend on their own as they indicated is often the case for these types of assessments.

115. Alberta Transportation notes that it was recognized that the circumstances surrounding those visits was unique and that they involved private land rather

than the more typical situation of the Elders conducting the visits on Crown land. Access Agreements were required from private landowners which could include restrictions on times and locations. It is unfortunate that the SNN did not bring their concerns to the attention of Alberta Transportation sooner, rather than on the eve of this Hearing, as it would have sought to address them earlier. However, Alberta Transportation has stated that it is committed to follow-up with representatives of the SNN to facilitate further site visits that could take place in the most open and respectful manner as possible.

116. Alberta Transportation noted and welcomed the expression of interest from the SNN that they would seek to complete their final TLUA and that Elders such as Henry Holloway would be interested in attending the site visits. [Ex. 368, Transcript, pp. 890-896]

117. Bill Snow, the Consultation Manager for the SNN noted that the Interim TLUA [Ex. 310] prepared by the SNN "concluded 13 recommendations that focused mainly on mitigations for archaeology, wildlife, and cultural monitoring" [Ex. 368, Transcript, pp. 882].

118. Alberta Transportation welcomes the receipt of the SNN's final TLUA and is prepared to provide additional support to the SNN to complete that report, including facilitating additional site visits, sharing Project information and proposed mitigation measures, and the provision of additional funding if required.

119. Alberta Transportation notes that there are funds remaining from the budget approved by Alberta Transportation for the original site visits and TLUA Report, since 2016. Should additional funding be required, Alberta

Transportation welcomes the submission of a budget for review. Alberta Transportation would then propose meetings with the SNN to plan and complete all aspects of the work by the end of the Summer of 2021.

120. Alberta Transportation further committed that upon receipt of the final TLUA it will review that final report and provide a written response to the SNN. That response will consider the concerns and potential Project effects identified by the SNN, noting whether those potential effects have been assessed in the EIA, and identify proposed mitigations that may serve to reduce or avoid Project effects, or whether modified mitigation measures may be necessary. Alberta Transportation further committed to meeting with the SNN to receive feedback on the written response and incorporate that feedback.

121. Alberta Transportation is also committed to arranging site visits with the SNN and representatives of Alberta Culture, Multiculturalism and Status of Women (ACMSW) to review the specific cultural and traditional sites identified by the SNN to gain input onto the nature and importance of those sites and how they may be impacted by the Project and identify from the SNN perspective, appropriate measures to record, mitigate or commemorate those sites.

122. Alberta Transportation noted that the SNN were invited to observe archaeological mitigation work undertaken last year and will invite the SNN to observe future archaeological mitigation work that will be undertaken this summer.

123. Alberta Transportation noted the comments and observations of Dr. Berry, the SNN's witness on archaeology and concurs with Dr. Berry that the HRIA has not been completed. Alberta Transportation explained that this is typical for

a Project at this stage of the Regulatory process and in fact, reflects the procedures of the *Historical Resources Act*. Additional field work is required by ACMSW and Alberta Transportation intends to complete this work in 2021. As is required by the *Historical Resources Act*, Alberta Transportation will obtain all necessary approvals from ACMSW prior to construction.

124. In response to Dr. Berry's comments that the EIA was not inclusive of SNN perspectives and protocols on land management, Alberta Transportation notes that it is required to conduct work pursuant to the guidance and requirements issued by ACMSW. The mitigation measures and definition of significance provided by Alberta Transportation is in compliance with the regulatory requirements and the *Historical Resources Act*.

125. Finally, in response to Dr. Berry's statement that, "the unlawful destruction of cultural heritage is viewed as a crime against humanity in the international courts", Alberta Transportation notes that its work conducted on the site was in accordance with its permit conditions and that it has reported its findings to ACMSW in accordance with the *Historical Resources Act*.

126. With respect to the submissions by Ms. Vanderjagt with respect to the SNN submission to the NRCB [Ex. 288] it is obliged to note that that report appears to have been prepared without consideration of the information in the Record of Consultation and the Specific Concerns and Response Table. Further, Ms.Vanderjagt appeared to rely on other reports such as the Nova Gas Transmission Ltd. Reports which were prepared by others and concerns Project s in the Grande Prairie and Edson areas.

127. Ms. Vanderjagt acknowledged that the maps tendered with the submission to the NRCB in Exhibit 288 pertaining to hunting and vegetation did not appear to be supported by site specific information and were extracted from other Project s. Accordingly, Alberta Transportation submits that this report is of limited value to the NRCB in this review.

4.3 Historical Resources

128. Alberta Transportation completed a Historical Resources Impact Assessment (HRIA) for the Project and no burials have been identified in the PDA. Should burials be found in the future, Alberta Transportation will follow the Provincial Regulations in responding to them and is prepared to contact and inform the SNN of the potential to affect gravesites and archaeological sites.

129. Alberta Transportation notes that the SNN were invited to observe the archaeological work that took place in the Fall of 2020 and as it has indicated, it welcomes a proposal from the SNN to participate further in any HRIA assessment. [Ex. 325, para 258]

4.4 Commitments

130. Alberta Transportation specifically set out a number of its commitments to the SNN in its opening statement which it believes will largely address the recommendations made by the SNN in their Interim TLUA. These are set out both in Alberta Transportation's reply document. [Ex. 325, para 258; see also Ex. 353]

131. In addition to the commitments made to the SNN, Alberta Transportation is also committed to the creation of the First Nation Land Use Advisory

Committee to assist in completing the Land Use Plan for the Project, particularly as it relates to the exercise of Treaty rights in the PDA.

132. Further, as noted in its response to Louis Bull Tribe, Alberta Transportation recognized Louis Bull's request for a post-construction site visit and confirms its commitment to provide opportunities to conduct site visits for the Project area during construction and another opportunity post-construction to observe the proposed mitigation measures and provide feedback [Ex. 324, pdf 52-55].

133. Alberta Transportation is also committed to provide opportunities for Indigenous Elders to conduct field visits prior to construction to identify priority areas for the harvest of traditional plants as well as to allow for harvesting of medicinal and culturally significant traditional use plants prior to clearing.

134. Alberta Transportation is also committed to continuing to provide Louis Bull Tribe and the other engaged Indigenous groups with opportunities to provide input on mitigation plans for the Project including the draft vegetation and wetland mitigation and monitoring plan. Alberta Transportation will welcome further input and feedback from First Nations including recommendations on specific seed mix for draft vegetation plans.

135. Alberta Transportation is committed to have the First Nations Land Use Advisory Committee meet on a regular basis to ensure the continued inclusion of participating First Nations and land use planning for the Project area. It is anticipated that the format, structure and mandate for this Advisory Committee will be defined in a formal Terms of Reference to be developed with participating First Nations.

136. As we will refer to in the Topic 5 discussion, Alberta Transportation notes that it has had extensive discussions with the SNN on the issue of wildlife passage. Alberta Transportation has been alert to this concern and has shared with the SNN over a number of occasions that wildlife movement is improved over the PDA with the removal of the extensive barbwire fencing and the fence around the perimeter of the Project area will be wildlife friendly. Further, the enhancement to the underpass under Highway 22 should facilitate uninterrupted wildlife movement.

137. Alberta Transportation has encouraged First Nations to be involved in reviewing the draft monitoring and mitigation plans and the results of those plans, including providing the draft monitoring plans, offering funding to review the plans and hosting group meetings to discuss the plans, and Alberta Transportation welcomes continued input. These draft plans include:

(a) the wildlife mitigation and monitoring plan;

(b) the groundwater monitoring plan;

(c) the surface water monitoring plan;

(d) the vegetation and wetland mitigation, monitoring and revegetation plan;

(e) the fish rescue and fish health monitoring and mitigation programs; and

(f) the air quality management plan.

4.5 Future Land Uses – Concerns expressed by Non-Indigenous Interveners

138. The SCLG and Mr. Wagner also commented on future land use and, in particular, the updated draft Guiding Principles and Directions for Future Land Use which Alberta Transportation prepared at the request of IAAC [Ex. 216]. Questions were raised about hunting and firearms use, access, parking and the continued use of the Project area for grazing. The main concern expressed was that there remains uncertainty and a lack of clarity about future land uses.

139. In response, Mr. Chairman, Alberta Transportation emphasizes that the draft Guiding Principles and Directions are just that: a draft and not final. As the document itself states, "If the Project is approved and the land is acquired by the Crown, Alberta Environment and Parks (AEP) will continue to engage with First Nations and stakeholders in the development of a final Land Use Plan (LUP) based on these principles." [Ex. 216, pdf 6] This was reiterated by Mr. Hebert throughout the hearing.

140. The questions and concerns raised by interveners about future land use can and will be addressed through the ongoing engagement that will be carried out by Alberta Transportation and AEP. To be clear, however, there will be no unfettered or illegal hunting in the Project area, as suggested by Mr. Wagner and Ms. Robinson.

5. SR1 DESIGN, SAFETY AND RISK

5.1 Introduction

141. SR1 is an off-stream reservoir that is designed to mitigate flood damages on the Elbow River. As an off-stream reservoir, it takes advantage of local

topography, namely the low, broad Unnamed Creek valley that runs roughly parallel to the Elbow River near Highway 22. This means the Elbow River valley will not be permanently dammed and its flow will not be altered unless SR1 needs to operate. This reduces, or eliminates, all the significant adverse environmental effects that are associated with an instream dam. Because it is off stream, SR1 can be operated such that it is not subjected to all the flow that occurs on the Elbow River and this provides a very important feature of risk management in operation.

142. SR1 will not operate every year. It will only operate when flows in the Elbow River exceed 160 m^3/s and if forecasts warrant. Based on historic records SR1 would likely operate only once every 8-10 years. When SR1 needs to operate, the operator (AEP) will divert excess flood water from the Elbow River into the off-stream reservoir. This will be done by incrementally raising the gates of the Service Spillway and opening the gates of the Diversion Inlet. The water will flow down the Diversion Channel into the reservoir where it will be impounded until it can be released back into the river when conditions allow.

143. As noted by Mr. Menninger, the design of SR1 is an elegant solution to the problem of providing flood mitigation on the Elbow River. [Ex 368, Transcript, pp 1025-1026]

5.2 Project description (including operating plan, flood water management, and reservoir capacity)

144. As is documented in the EIA and SIR responses, SR1 will consist of three basic components: (1) the Diversion Structure; (2) the Diversion Channel; and

(3) the dam and reservoir. Within these three basic components are several sub-components:

(1) The Diversion Structure

145. The Diversion Structure consists of the Service Spillway, the Diversion Inlet, the Debris Deflection Barrier, the Floodplain Berm and the Auxiliary Spillway.

146. The Service Spillway is a double-gated structure located in the Elbow River channel. When in operation, the gates of the Service Spillway will be incrementally raised to control the water surface elevations in the river, and ultimately the amount of flow that goes into the Diversion Channel.

147. The Service Spillway will work in conjunction with Diversion Inlet, a double-gated structure constructed on the river left bank. When in operation, the gates of Diversion Inlet will be raised, allowing water directed by the Service Spillway gates to enter the Diversion Channel. The Debris Deflection Barrier will be located in the river channel in front of the Diversion Inlet, to (as the name suggests) help block debris from entering the Diversion Channel and promote debris passage downstream.

148. The Floodplain Berm will be located adjacent to the right bank of the river, in the floodway. The Floodplain Berm will act to constrain the Elbow River and direct flow to the Service Spillway and Diversion Inlet.

149. The Auxiliary Spillway is a safety feature built into the end of the Floodplain Berm, adjacent to the Service Spillway. Should water elevations in front of the Service Spillway and Diversion Inlet get too high, some of the water will

flow over the Auxiliary Spillway to prevent water circumventing the diversion structure.

(2) Diversion Channel

150. The Diversion Channel conveys flood waters from the Diversion Inlet to the reservoir. The Diversion Channel is designed to carry a maximum flow rate of 600 m3/s. This flow rate includes a safety margin of 25% over 480 m3/s, which is the flow rate required to meet the design goal of reducing flows below the Glenmore Reservoir to under 160 m3/s during a design flood event.

151. At a point approximately 1300 m from where the Diversion Channel enters the reservoir, the Emergency Spillway will be located on the east side of the Diversion Channel. As its name suggests, the Emergency Spillway would not be used during normal operations; it would only operate when the reservoir is full and the Diversion Inlet gates fail to close. It would allow water to flow out of the reservoir and back toward the Elbow River.

(3) The Dam and Reservoir

152. The SR1 Storage Dam is an earthen structure, approximately 30 m tall at its highest point, and approximately 3.3 km in length. For most of its length, the dam will be considerably smaller than 30 m tall.

153. The Dam will impound floodwater in the reservoir, which is designed with an active storage volume of approximately 77.8 million m^3. The storage volume includes a 10% margin of safety over the 70 million m^3 of storage that is required to achieve the Project's design goal.

154. The flood water that is stored in the reservoir will be released through the Low Level Outlet Works, at the bottom of the dam, from where it will run along

the course of the Unnamed Creek and back to the Elbow River. The maximum flow rate through the LLOW is 27 m^3/s. In a design flood, the LLOW will be able to drain the reservoir in approximately 40 days.

5.3 Operating Plan

155. The operating plan for SR1 is also clearly documented in the EIA. It bears repeating that SR1 will not operate in most years. This is what is referred to in the EIA as "dry operation". Dry operation of SR1 will consist mainly of routine maintenance.

156. Flood operations will begin when flow rates in the Elbow River reach 160 m^3/s. The operating plan is that flow through the Service Spillway will be maintained at 160 m^3/s while flow rates in the river are between 160 – 760 m^3/s, with the excess flow (up to 600 m3/s) directed through the Diversion Inlet. When inflows in the Elbow River exceed 760 m^3/s, SR1 will be operated such that the excess flow will be allowed to continue downstream through the Service Spillway, (by lowering the gates) so as to maintain a constant diversion rate of 600 m^3/s until the reservoir is full.

157. Alberta Transportation reiterates that the operating plan for SR1 is simple and straightforward; and by controlling the amount of floodwater that enters reservoir, the risk associated with dam operations is reduced considerably.

5.4 Flooding downstream of SR1 and upstream of Glenmore Reservoir

158. It is well documented in the EIA that the design basis for SR1 is the reduction of flow rates below the Glenmore Reservoir, to 160 m3/s. This will afford protection to properties below the reservoir, based on the City of Calgary's

information that damage from overland flooding occurs at flow rates of approximately 170 m3/s.

159. Mr. Chairman, during the hearing the SCLG referred at length to the flood protection provided by SR1 for properties downstream of the diversion structure but upstream of the Glenmore Reservoir. The assertion made is that SR1 provides "unequal" flood protection, because there will be residual flooding upstream of Glenmore Reservoir. Alberta Transportation strongly rejects this assertion.

160. The design flood for SR1 is 1,240 m3/s. In a design flood, SR1 would operate to divert up to 600 m3/s, meaning that 640 m3/s of flow would remain in the Elbow River. There is general agreement that a flow rate of 640 m3/s on the Elbow River is roughly equivalent to a 1:50 year flood. As stated by Mr. Hebert, Mr. Wood and Mr. Menninger many times, Alberta Transportation's position is that SR1 will provide a substantial reduction of flood risk to all downstream properties, whether above or below the Glenmore Reservoir.

161. Mr. Dowsett prepared a report which advances the argument that SR1 does not provide adequate protection to properties upstream of the Glenmore Reservoir. In Alberta Transportation's submission, very little—if any—weight should be given to Mr. Dowsett's evidence. First he was a member of the SCLG, then he was not. First he submitted a powerpoint presentation, then it was withdrawn. And while Mr. Dowsett had a long and successful career in the field of hazard and risk assessment, it all related to pipelines and wells and other oil and gas facilities. As he acknowledged, Mr. Dowsett has no background in dam safety or in assessing the hazards of overland flooding.

162. Nevertheless, Alberta Transportation accepts that Mr. Dowsett's evidence was well-intentioned and we will briefly address now his argument, adopted by the SCLG, that SR1 does not give "equal" flood protection to properties upstream of Glenmore Reservoir. In my cross-examination of Mr. Dowsett, I referred to the Land Use Bylaw of Rocky View County, which I had provided to the Board and Mr. Secord as an aid-to-cross-examination. The aid-to-cross was not entered into evidence, but the Land Use Bylaw is a legal authority and I'm going to refer to it now.

[https://www.rockyview.ca/Portals/0/Files/Government/Bylaws/RVC-Land-Use-Bylaw.pdf]

163. Part 5 of the LUB sets out "General Regulations" applicable to all development within the County. Within Part 5 is a section titled "Parcels and Setbacks". Within that subsection, sections 195-203 deal with development within "Flood Hazard Areas" and "Flood Fringe Areas" [LUB, pg. 32, pdf 37]. In Part 8 of the LUB, the following definitions are set out:

> "*Flood Hazard Area*" means the area of land bordering a water course or water body that would be affected by a design flood and includes the flood fringe, floodway, and may include areas of overland flow, as determined by the Province of Alberta.

164. It is a matter of record that Alberta has determined that the Flood Hazard Area is the 1:100 year flood area. Returning to the definitions in the LUB:

> "*Floodway*" means the portion of the flood hazard area where flows are deepest, fastest, and most destructive, as determined by the Province of Alberta. The floodway typically includes the main channel of a watercourse and a portion of the adjacent overbank area.

> "*Flood Fringe*" means the portion of the flood hazard area outside of the floodway, as determined by the Province of Alberta. Water in the flood fringe is generally shallower and flows slower than in the floodway.

165. With those definitions in mind, Alberta Transportation notes the following key sections of the Land Use Bylaw:

- Sec. 195 provides that all development in a Flood Hazard Area is discretionary; i.e., there are no "permitted uses";
- Sec. 196 provides that no development is allowed in a Floodway, except for maintenance or repairs of existing development;
- Sec. 200 provides additional development restrictions to properties along the Elbow River, including that no development shall take place in the floodway; and
- Secs. 201-203 provide that in a flood fringe area, development may be approved if—in effect—it is flood-proofed (e.g., the first floor of all buildings must be located at or above the 1:100 year flood level plus 0.5 m freeboard).

166. These provisions of the Rocky View County Land Use Bylaw are important, Alberta Transportation submits, because they show us that SR1 will limit residual flooding upstream of Glenmore Reservoir to those areas where, according to the LUB, development is not supposed to occur; or, if there is development, it is supposed to be flood-proofed.

167. To be clear, Mr. Chairman, Alberta Transportation acknowledges and confirms that the design basis for SR1 was to ensure flow rates <u>below</u> the

Glenmore Reservoir do not exceed 170 m3/s. That said, Alberta Transportation also submits that by reducing downstream flows during any major flood by up to 600 m^3/s, SR1 provides a substantial reduction of flood risk above the Glenmore Reservoir. If SR1 were on the landscape in 2013 it could have cut the flows through this reach by nearly half.

5.5 Dam safety and Risk management

168. As noted by Mr. Hebert, the design of SR1 to protect public safety is of the highest priority for Alberta Transportation. The SR1 storage dam has been designated as an "extreme consequence" facility. While this sounds ominous, in fact what it means is that the dam must be designed to the highest level of safety because of its location in proximity to local population centres.

169. The designer of record for SR1 is Mr. John Menninger of Stantec. Mr. Menninger was supported by a team of licensed professional engineers with expertise in geotechnical, hydrotechnical and structural engineering while preparing the design of SR1. The design of SR1 was also subjected to an experienced independent Review Board that has been retained by Alberta Transportation to provide another set of eyes on the design. Finally, the design of SR1 will ultimately have to be approved by AEP's Director of Dam Safety.

170. The Board heard extensively from Mr. Menninger during Topic Session 3, as well as Topic Session 1. AT submits that Mr. Menninger was a highly credible witness and the Board can have a high degree of confidence in his evidence and, by extension, in the design of SR1. Mr. Menninger was cross-examined for several hours by able counsel, Mr. Secord, on the issues of

design and risk. AT submits Mr. Menninger's evidence was clear and entirely unimpeached by cross-examination.

171. Mr. Secord's cross-examination was largely based on evidence and input from the engineering consultant retained by the SCLG, Austin Engineering. Austin prepared a report which was filed in this Proceeding as Exhibit 256. Importantly, Austin does not say in its report that SR1 has been designed such that it cannot operate safely. Instead, Austin provided 24 recommendations to improve safety. As part of AT's Reply Submissions, Stantec provided a detailed response to Austin's report and each of those 24 recommendations. Stantec's response is Exhibit 327 at pdf 25.

172. Before discussing the evidence, Alberta Transportation notes that it does not take issue with the qualifications of the two witnesses from Austin, Mr. Austin and Ms. Keyes. However, Alberta Transportation also notes that that their experience is primarily in BC, not Alberta. In the case of Mr. Austin, his experience is in BC and he has never gone through the dam permitting process in Alberta. He also fairly acknowledged that the first time he reviewed the Alberta Dam and Canal Safety Directive in detail was when he prepared their report for the SCLG.

173. One thing Mr. Austin did confirm is that he knows that in Alberta it is the Director of Dam Safety in Alberta Environment and Parks who is responsible for dam safety, not the NRCB. AT submits, therefore, that to the extent this Board believes any of Austin's recommendations may have merit, your job is to bring the recommendation to the Director of Dam Safety's attention, in your report, who can then consider what, if anything, to do about it.

174. When Mr. Austin and Ms. Keyes testified, they acknowledged that many of Stantec's responses adequately addressed the concerns and recommendations in the Austin report. The panel will recall hearing Mr. Austin list off all the recommendations which he considered had been appropriately addressed by Stantec in its response. That led me to ask which concerns and issues remained in dispute, and Mr. Austin said "I think there's two areas that we are still in a little bit of disagreement here". Those areas are:

1) Design of the emergency spillway; and

2) Potential for a second Low Level Outlet.

175. I will address those two issues next.

1) Design of the emergency spillway

176. With regard to design of the emergency spillway, Ms. Keyes expressed the concern that the maximum discharge capacity, of 360 m3/s, is less than the maximum inflow rate into the reservoir of 600 m3/s. In the Austin report, she asserted that this does not meet the requirements of Canadian Dam Association Dam Safety Guidelines, which she characterized as requiring that the spillway of a dam must be able to discharge the Instream Design Flood (IDF) while maintaining minimum freeboard.

177. In fact, as pointed out by Stantec in its response to the Austin report, what the CDA Dam Safety Guidelines actually require is that the spillway of a dam must be able to discharge the IDF, while maintaining the minimum freeboard, *taking into account the routing effect of the reservoir*. As further noted by Stantec in its response, it did just that. Specifically, Stantec stated:

> "The design of the SR1 Emergency Spillway meets these criteria … without relying on closure of the Diversion Inlet gates. There is no requirement to pass the design flow or peak flow into a reservoir without consideration of routing effects of the reservoir."[Ex. 327, pdf 26]

178. Stantec concluded:

> "As presented, the Emergency Spillway and reservoir can safely pass the Probable Maximum Flood without relying on the Diversion Inlet gates closing and while maintaining adequate freeboard. This meets the CDA Design Guidelines and industry standard of practice." [Ex. 327, pdf 28]

179. Notwithstanding this response, in her testimony Ms. Keyes stated she was still concerned about the design of the emergency spillway because, in her view, the routing analysis should begin with the IDF entering the reservoir when it is already at Full Supply Level, whereas Stantec's routing analysis did not begin with the reservoir already full. [Ex. 379, Transcript, pp. 1311]

180. With due respect to Ms. Keyes, her position does not make sense and the evidence of Mr. Menninger on this point should be preferred. The scenario she posits is the following:

- A full reservoir, which is a condition that has a recurrence interval of approximately once every 200 years;
- A Probable Maximum Flood occurring right after the 1:200 year event;
- An error in operations that opens the gates to the channel notwithstanding that the reservoir is already full; and

- A failure of the gates to close, without intervention, for the three plus days of PMF inflow.

181. It is one thing to be conservative. It is another to be wholly unrealistic. With respect, Ms. Keyes' position is unrealistic. Mr. Austin acknowledged this in his testimony, when he stated:

> **"**Now, I agree that the loss of diversion control is a low probability"; [Ex. 379, Transcript, pp. 1379/ln. 18]

and

> **"**Now, I agree that this is an off-stream reservoir and that you could defend the potential for it to be empty." [Ex. 379, Transcript, pp. 1380/ln. 7]

182. Alberta Transportation is confident that its routing analysis for the design of the emergency spillway is appropriately conservative. We also note that both the Austin report and Stantec's response to it have been forwarded by Alberta Transportation to the AEP Dam Safety office. Mr. Chairman, the Board can rest assured that the Director of Dam Safety will not allow the Project to proceed unless he or she is satisfied that the design of the Emergency Spillway is appropriate.

2) Low Level Outlet

183. Austin also advocated for a second LLOW on the dam, to provide additional drainage capacity in the event of the need for "rapid dewatering" of the reservoir in response to a dam safety incident. Stantec reviewed this recommendation and responded to it in its technical memorandum filed as part of Alberta Transportation's Reply Submissions [Ex. 327, pdf 25]. As noted by Stantec, the LLOW design capacity was selected based on industry

standards for evacuation times for a reservoir and Austin provided no basis increased capacity.

184. In his testimony, Mr. Austin said that Austin "accepts this response" but noted that a second outlet structure would result in a significant reduction of risk and still recommended that "consideration" be given to a second outlet "during final design". [Ex. 379, Transcript, pp. 1321/ln. 1]

185. In his cross-examination of Mr. Menninger, Mr. Secord suggested that without a second outlet, Alberta Transportation did not have any "contingencies" to deal with the need for a rapid dewatering of the reservoir in the event of a dam safety incident. [Ex. 379, Transcript, pp. 1054]

186. Mr. Menninger responded by reiterating that the design of the LLOW was based on industry standards and guidelines which take into account the risk of a dam safety incident. Further, Mr. Menninger stated that Stantec selected the highest rating to use the most conservative value and that included looking at downstream consequences. Also, Mr. Menninger testified that the most likely dam safety incidents that might occur would be mitigated by other interventions, not "rapid dewatering" of the reservoir. When Mr. Secord asked what dam safety incidents might require rapid dewatering, Mr. Menninger responded that he could not offer any hypothetical scenario where such a response would be required. [Ex. 379, Transcript, pp. 1054]

187. Mr. Chairman, Alberta Transportation submits that the SCLG, through the evidence of its consultant Austin Engineering, have adduced no compelling evidence that a second LLOW is reasonably required to address dam safety. The evidence of Stantec and Mr. Menninger should be preferred on this point.

And, again, this is a matter that falls within the purview of the Director of Dam Safety.

188. Beyond these two issues—design of the emergency spillway and the LLOW—no intervener or expert advanced any evidence that the design of SR1 is anything other than safe and robust. While Ms. Hunter suggested that SR1 somehow constitutes a "radical innovation" in dam engineering, this claim is not supported by the SCLG's own expert, Austin Engineering.

5.6 Public safety, including emergency response

189. Alberta Transportation submits that the evidence is clear that the operator of the Project, AEP, will be required under Alberta's dam safety rules to have a robust and effective Emergency Management Plan for SR1. The only intervener to question this was the SCLG, in the reports of Austin Engineering [Ex. 256] and Mr. Dowsett. [Ex 259]

190. Dealing first with Austin, they made four recommendations dealing with the preparation of a Safety management plan (recommendation 21), Emergency plans and response (recommendation 22), Dam break inundation mapping (recommendation 23) and Operation, maintenance and surveillance documentation (recommendation 24). Stantec responded to these recommendations in its technical memo forming part of Alberta Transportation's Reply Submissions. [Ex. 327, pdf 25] In his testimony, Mr. Austin stated that Austin accepted those responses.

191. Further, while Austin has considerable experience in dam safety, and several of their recommendations are sound advice, detailed review of dam commissioning, operations and maintenance manuals, emergency response and safety management are within the scope of the Dam Safety review under

the *Water Act* and the Alberta Dam and Canal Safety Directive. While important considerations, they are not within the scope of review that is in front of this Board.

192. With regard to Mr. Dowsett, section 3 of his report dealt with emergency management. That section is found on pages 11 – 12 of his report. At the top of page 11, Mr. Dowsett stated that he reviewed the 2003 AEP Guideline for Emergency Preparedness for Flood Emergencies and, given the size of the Project and its proximity to Springbank, "we find it a little light". Mr. Dowsett then suggested that the Guideline might not constitute "best practices" for emergency response.

193. Alberta Transportation responded to Mr. Dowsett's report by having Stantec prepare a Technical Memorandum. [Ex. 327, pdf 37] In that memorandum, Stantec noted that the 2003 AEP Guideline had been superseded by the 2018 Alberta Dam and Canal Safety Directive.

194. The panel will recall that in his testimony Mr. Dowsett stated that he reviewed the 2018 Safety Directive and determined that "the directive is comprehensive and does represent best practice". He then stated, as a result, that pages 11 and 12 of his report are "redundant" and do not accurately represent his testimony. In other words, Mr. Dowsett withdrew his concern about the emergency management planning regime that will apply to SR1.

195. Accordingly, Alberta Transportation submits that no intervener has presented evidence which challenges that the emergency planning regime for this Project will be anything less than "best practice". And at least one participant, Mr. Dowsett, now agrees that regime <u>is</u> best practice.

196. So what is that process? As explained in Exhibit 327, the Alberta Dam and Canal Safety Directive, which has the legal force of a regulation made under the Water Act (because it is incorporated in the Water (Ministerial) Regulation) stipulates that SR1 requires an Emergency Management Plan (EMP). That EMP is comprised of:

> 1) An Emergency Preparedness Plan (EPP) that identifies potential emergency situations related to the safety of the dam; procedures to manage emergency situations in the event of a failure; key personnel and their responsibilities; key stakeholder group and notification protocols.
>
> 2) Am Emergency Response Plan (ERP) that is an internal document used by dam operators to direct their activities at the site when dealing with a potentially emergent situation.
>
> 3) A Flood Action Plan (FAP) that provides instruction to operations during period of flood.

197. The EPP, ERP and FAP have not yet been prepared for SR1. The preparation of these documents is the responsibility of the operator (AEP) and the timing of preparation does not occur until construction procurement is complete and the Project is closer to its commissioning phase. This is because the plans require information on equipment models, construction records and other details of the facility that are not known at this time. AEP will begin preparation of the EPP, ERP and FAP following regulatory approval of SR1 and in parallel with the construction process.

198. Finally, the Dam and Canal Safety Directive includes review of these plans by the Director as part of the *Water Act* approval process and the components of the plan are required to be reviewed periodically; high consequence dams such as SR1 must be reviewed more often than lower consequence dams. For

an extreme consequence structure like the SR1 dam, a review will take place every give years.

199. In summary, Mr. Chairman, SR1 will have an emergency management plan appropriate to its classification as an extreme consequence facility. There is no evidence in the record to suggest otherwise.

5.7 Sensitivity of Project design, operation, and safety elements to changes or variability in climate parameters

200. Some witnesses for the SCLG argued that the design of SR1 does not take account of climate change, with the suggestion being that in the future floods will be larger and therefore SR1 is undersized. Alberta Transportation rejects this suggestion and submits that the design of SR1 recognizes the potential for climate change to impact the size and frequency of future floods. In this regard, we note the following.

201. First, notwithstanding that the Alberta standard for flood risk is the 1:100 year flood, the Project was increased in scale from a 1:100 year design to the 2013 Design Flood (slightly more than 1:200 years) at the outset of the planning process. This was done in recognition of the fact that the 2013 flood is now the "flood of record" on the Elbow River.

202. The SCLG suggested that the design of SR1 should have included a consideration of three large historic floods on the Bow River. But the evidence about flooding on the Bow is anecdotal and there is no such evidence that the Elbow River flooded to the same extent in those years. SR1 has been designed to the flood of record and whether there was major flooding on the Elbow River during the pre-record period or not is speculation and does not constitute information that is suitable for use as a design basis.

203. As for the statistical frequency of the 2013 event, a recent flood hazard report done by Golder Associates for AEP [Ex. 275] did incorporate these historic events into their flood frequency estimates and the incorporation of this information did not result in a substantive change to the estimate of the 1:200 year flood magnitude [Ex. 225]. The 2013 event is still estimated to have a return period of approximately 1:200 years.

204. The 2013 flood was a massive flood event, estimated to be slightly greater than a 1:200 year flood in both peak and volume. The design of SR1 incorporates a factor of safety both the diversion rate (25%) and reservoir volume (10%) above what is needed to achieve its 2013 flood design basis. These factors of safety help mitigate the risk of larger floods in the future.

205. Indeed, a climate change assessment that uses climate change affected IDF curves under RCP 8.5 (the so-called "business as usual" scenario, which predicts likely outcomes if society does not make concerted efforts to cut GHG emissions) was prepared by Alberta Transportation in response to requests by federal regulators [Ex. 131]. That assessment confirmed that projections of climate change impacts up until 2050 resulted in a 12% increase in the 200-year flood, well within the 25% factor of safety that was added over the design basis.

206. Finally, Alberta Transportation notes that the benefits of SR1 for flood damage reduction are based on current flood risk. If floods do become more frequent, the benefits of SR1 will also increase.

6. WATER

6.1 Introduction

207. Mr. Chairman, you will recall Mr. Brescia testifying about the comprehensive consideration given by Alberta Transportation to all aspects of Project-related water concerns. These considerations commenced with preparation of the EIA and carried forward through extensive SIRs and the rest of the regulatory process. You will also recall Mr. Brescia concluding that this is "work that continues" [Ex. 379, Transcript, pp. 1434/ln. 21]

208. As this proceeding has amply demonstrated, the environmental assessment process is a complex and involved one. It addresses both Project-related and cumulative environmental effects and follows a standardized framework for each valued component.

209. As you will also recall, the evidence of Mr. Hebert was that Alberta Transportation's environmental assessment included engagement with stakeholders and Indigenous groups. Indeed, such engagement was key to the development of many of the mitigation and monitoring plans that have been proposed for the Project. These include: a commitment to establish a community liaison to ensure that impacts experienced by the community can be raised with Alberta Transportation or AEP during construction and throughout the entire life of the Project; and commitments to dedicated and long term monitoring, as I will discuss in greater detail in a few moments. [Ex. 379, Transcript, pp. 1433]

210. I will now address in turn each of the key water issues associated with the Project . As you know, these are: hydrology, surface water quality, fish and fish habitat, and hydrogeology. Alberta Transportation submits that the work

carried out by our subject matter experts in each of these key areas has resulted in a full and careful consideration of the Project's expected impacts. These are, in the final analysis, impacts that are well understood, temporary, and will be mitigated and monitored for.

6.2 Hydrology

211. Mr. Chair, you will recall that Dr. David Luzi spoke to issues of hydrology, including the movement of water at the surface, water quantity, geomorphology and sediment transport. Dr. Luzi also commented on the issue of climate change.

212. The evidence in this proceeding is that the Project will have no impacts to the hydrological regime when the Project is not in operation, and that the flow rates and flow volume in the Elbow River will not be significantly impacted by the Project . [Ex. 379, Transcript, pp. 1436]

213. During flood operations, there will be reduced flow rates and volumes downstream. There will also be changes to suspended sediment transport, with sediment being removed from the river, transported to the reservoir and deposited. Given the changes in flow associated with operations, there will also be some minor changes to the Elbow River channel between the outlet and the Glenmore Reservoir over the long term. [Ex. 379, Transcript pp. 1436]

214. As I have already noted, the SCLG cross-examined on the impacts of climate change, in an effort to show that the Project is under designed for future flood events. The evidence was disputed by Alberta Transportation's witnesses, who not only applied their considerable professional expertise to refute this suggestion but also pointed to current research which calls into question the

generalizations made by the SCLG's expert, Dr. Fennell, on the implications of climate change on the Project. [Ex. 379, Transcript, pp. 1458]

215. Alberta Transportation witnesses also disputed the value of using "paleo" records, in the form of tree rings, as a predicative measure of future peak flows. While noting that tree ring data is interesting, Dr. Luzi testified that at this time such data is not relevant to estimating peak flow events as it does not allow for sufficiently accurate extrapolation and application to prospective flood occurrences. Additionally, the validity of the use of such paleo information is uncertain given future climate change scenarios. [Ex. 379, Transcript, pp. 1461]

216. A similar line of reasoning applies to the assertion by the SCLG that floods which pre-date the historical record of 1908 should have been included in Alberta Transportations assessment of the Project and design. As I have already mentioned in my comments on Topic 3, simply applying flood events on the Bow to the Elbow basin is highly uncertain. Moreover, the records that do exist call into question whether this method is valid; one need only look at the 1932 flood event on the Elbow which did not register in the Bow. What the SCLG, and Dr. Klepacki in particular, do not appreciate is that to take this approach introduces further levels of uncertainty and removes precision from the data and detailed engineering work that is needed with a Project like SR1. [Ex. 349, Transcript, pp. 64; see also Ex. 379, Transcript, pp. 1481]

217. The SCLG also suggested that changes in climate will result in greater occurrences of severe weather conditions – manifested in alternating periods of drought and record flood events. Again, Dr. Luzi was unequivocal in his views that such assertions cannot be made with certainty, and moreover that

research he has looked at suggests the opposite – peak flows associated with climate change are not expected to increase to levels beyond the design flood at Calgary or the Project portions of the Elbow River. [Ex. 379, Transcript, pp. 1476]

218. As was noted by Dr. Luzi, the impacts of climate change on future events is not fully understood. Current research, which the SCLG witness Dr. Klepacki and Dr. Fennell were not aware of, suggests that in the Project area climate change will not result in increased flood events or extreme variability. [Ex. 379, Transcript, pp. 1478; see also Ex. 395, Transcript, pp. 1937]

219. Simply put, the SCLG's arguments on climate change and its implications for the Project are, at best, speculative. There is no credible evidence supporting the assertion that SR1 has been under-designed. Structures like SR1 cannot be designed on the basis of uncertain and anecdotal data.

6.3 Surface water quality

220. Turning to surface water quality, Alberta Transportation undertook an assessment of the Project's impacts to various water parameters, including temperature, oxygen, and total suspended sediment, or TSS.

221. Alberta Transportation's uncontroverted evidence is that changes to water quality, if realized, are manageable and will be monitored for. With regard to TSS, Alberta Transportation notes that Project operation would only occur when TSS is already high owing to the presence of a flood event. The Project would not change or alter this fact. Nevertheless, help mitigate any concerns about TSS concentrations, Alberta Transportation intends to release water as early as practically possible. [Ex. 379, Transcript, pp. 1437]

222. Mr. Jobson was asked about the risk associated with nutrient loads in waters released from the reservoir potentially giving rise to algal blooms. In response, he explained the reasons why an algal bloom is not expected to occur. These include the fact that such events typically only occur in permanent instream dams and structures which hold water for far greater periods of time than SR1 would. [Ex. 379, Transcript, pp. 1520 and pp. 1521]

223. On the issue of water quality, Calalta Waterworks Ltd. raised a concern with respect to potential impacts to its water intake system as a result of SR1 releasing water from the reservoir after a major flood event. Yet under cross-examination Mr. Williams frankly acknowledged he has no evidence to support this concern. Further, Mr. Williams acknowledged that Calalta's system was not impacted by the 2013 flood as it is set well back from the river. [Ex. 365, Transcript, pp. 648 and pp. 665-667]. Accordingly, there appears to be no need to address this issue further, based on the planned releases from SR1 after a flood. Nevertheless, Alberta Transportation remains prepared to discuss this concern with CalAlta.

224. Calalta also has raised a concern with respect to the possible financial impacts under its Franchise Agreement as result of a portion of the Project overlapping with its franchise area, which was identified in Exhibit 372. Yet Mr. Williams acknowledged that despite being in operation for some 40 years, it has not served any lands in the vicinity of the SR1 Project area. Rather, Calalta's customers are at the far east of the franchise area. Further, Calalta provided no evidence which supports that it is probable there would be future development within the SR1 Project area at any time within the term of the franchise agreement. Moreover, there are numerous provisions in the Franchise Agreement itself which may address the issues of future impact.

225. In sum, given the uncertainty and the lack of evidence supporting this claim, Alberta Transportation submits that it would not be appropriate for the panel to impose on an approval conditions with respect to Calalta's water franchise. Again, however, Alberta Transportation remains open to discussing this issue further with Calalta.

6.4 Aquatics

226. As an off-stream dam and reservoir, SR1 will have less impact on fish and fish habitat than a traditional in-stream dam. This is one of the many environmental benefits of the Project.

227. Alberta Transportation undertook a substantial amount of work to understand and assess potential Project impacts on fish and aquatic ecology. The results of this work are contained in the EIA and many SIR responses. Specifically, Alberta Transportation would refer the Board to Exhibit 47 (Vol. 3B of the EIA, on Aquatic Ecology), Exhibit 93 (Round 1 provincial SIRs on water); Exhibits 138, 140 and 141-149 (Round 2 provincial SIRs); and Exhibit 157 (Round 3 SIR from AEP).

228. In the Round 2 provincial SIR responses alone, the following reports can be found:

- Fish passage scenarios for all fish species and life stages of the Elbow River fish community;
- Fish habitat suitability index analysis;
- Modelling of habitat change through the use of a bedload model;

- Draft Fish rescue and fish health monitoring and mitigation programs;
- Spawning suitability assessments and redd surveys from Elbow Falls to Discovery Ridge;
- Elbow River habitat mapping from Redwood Meadows to Discovery Ridge; and

229. Exhibit 157 is the December 2020 Fish Population Assessment.

230. A significant finding of the Fish Population Assessment was confirmation that the vast majority of Bull Trout (a species at risk) in the Elbow River are located upstream of SR1. Bull trout were predominantly caught 20 km upstream of SR1, between the confluence of McLean Creek and Elbow Falls. This can be clearly seen in Exhibit 327, at pdf 69, a figure included with Alberta Transportation's Reply Submissions. This figure shows that in the 2020 population survey:

- no Bull Trout were captured downstream of SR1;
- two were captured adjacent to the SR1 reservoir; and
- over 180 were captured upstream of SR1; of note, over 150 of these were captured between Elbow Falls and McLean Creek, where MC1 would be located.

231. The SCLG retained Mr. Allan Locke, a respected fisheries biologist who worked with Alberta Environment and Parks for many years, to conduct a technical review of the scientific and technical data, assumptions and methods

used by the Proponent in their environmental assessment to evaluate impacts to fish and fish habit. In his report, Mr. Locke made the following comments:

- "The level of effort conducted by the Proponent adequately addresses much of the inherent uncertainty in understanding the impact to fish and fish habitat." [Ex. 266, pdf 3]

- His review "determined the Proponent describes in sufficient detail the methods and analyses undertaken to assess the impact to fish and fish habitat." [Ex. 266, pdf 4]

- "Overall, the level of effort conducted for this Project adequately addresses much of the inherent uncertainty in the field of aquatic ecology. The reports also appropriately acknowledge the uncertainty typical for these types of studies." [Ex. 266, pdf 4]

- "The EIA report, and specifically the request for Supplemental Information Reports are thorough and address required fish, fish habitat and aquatic ecosystem technical data collection and analysis for Project s of this nature." [Ex. 266, pdf 5-6]

- With respect to fish passage at the diversion structure: "The proposed structures are effective at providing passage for fish and are far superior to a classic fishway" and the analysis presented by Alberta Transportation "is very thorough". [Ex. 266, pdf 7-8]

- With regard to the draft Fish Rescue Plan, Mr. Locke characterized it as a "reasonable plan outline" containing "good steps" in moving toward a final plan. [Ex. 266, pdf 11-13]

232. Notwithstanding Mr. Locke's overall favourable comments on Alberta Transportation's efforts, he did make recommendations for further analysis and investigation of alternative designs, to further reduce Project impacts to fish and fish habitat. On behalf of Alberta Transportation, Stantec reviewed Mr. Locke's report and recommendations and prepared a Technical Memo in response. [Ex. 327, pdf 52] Mr. Locke reviewed Stantec's response and testified: "The response to my report by the proponent is well taken, and I appreciate the clarification." [Ex. 385, Transcript, pp. 1824]

233. Much as occurred with Austin Engineering on design, safety and risk, by the time we got to the hearing there was little left in dispute between Alberta Transportation and the SCLG on fish. Mr. Locke testified that his two outstanding concerns are:

(a) That Alberta Transportation should demonstrate that "everything that can be done" is done to keep fish from becoming entrained; and

(b) The impact on fish of the release of water from the reservoir back into the Elbow River.

[Ex. 395, Transcript, pp. 1907]

234. Mr. Chairman, Alberta Transportation shares Mr. Locke's concern that everything that can reasonably be done to prevent fish entrainment should be done. As stated in our Reply Submission, means to prevent entrainment will be identified through discussions with DFO. As well, Alberta Transportation is open to consideration of other suggestions, such as Mr. Locke's that a sound device be installed to deter fish from entering the diversion channel.

235. With regard to the impact on fish of the release of water from the reservoir back into the river, Alberta Transportation appreciates Mr. Locke's comments about the use of Environmental Flow science to determine impacts on the river of different release flow rates from the reservoir. However, as Mr. Locke acknowledged in cross-examination, his criterion of no more than a 10% increase in the instantaneous flow in the Elbow River is a late-release scenario. In fact, it is a very late-release scenario. Mr. Locke said he would not be surprised if it resulted in water being retained in the reservoir until December, assuming a flood occurs during spring flood season. [Ex. 395, Transcript, pp. 1909-1910]

236. Mr. Locke also acknowledged that DFO is strongly in favour of an early release scenario. As noted by DFO in the preamble to an SIR:

> "Federal authorities and Indigenous groups have raised many concerns regarding holding the water in the reservoir for an extended period of time, including potential effects from releasing dirty floodwaters back into the clear/low-flow river water, the effects to the fish entrained in the reservoir, and the effects of the settling of sediment on vegetation in the reservoir. Fisheries and Oceans Canada noted that the objective should be to return turbid water back to the system as quickly as possible while a turbid high flow scenario still exists in the river." [Ex. 218, pdf 19]

237. Alberta Transportation submits that while Mr. Locke's suggestion related to release scenarios was well-intentioned, the "early release" and "late release" scenarios provide appropriate book-ends for the assessment. Further, it seems clear that the early release scenario is favoured by DFO, for the reasons just stated.

238. In sum, there is little disagreement between the experts on fish. The evidence is clear that Alberta Transportation's assessment of fish and fish habitat, and potential Project effects on fish and fish habitat, was robust. Further, that assessment demonstrates that the Project, with appropriate mitigations and offsetting in place, will not result in significant adverse effects to fish and fish habitat.

6.5 Hydrogeology

239. It is no understatement to say that the SCLG focused the bulk of their cross examination in Topic 4 on the issue of Hydrogeology. Alberta Transportation submits that the evidence of Mr. Dan Yoshisaka was not impeached notwithstanding Mr. Secord's sustained cross-examination, and should be preferred over that of Dr. Fennell who, on multiple occasions, stepped into the role of an advocate against the Project and into several areas in which he did not have expertise, in support of an alternative (MC1) for which he did not conduct an independent analysis.

240. The hydrogeological portion of the EIA involved examining the potential changes to ground water quality and quantity that may be associated with the Project. Through use of an extensive borehole drilling and well testing program, data was obtained and a numerical model created to predict the implications of both dry and flood operations and other factors on groundwater levels, flow regime, and water quality. The model showed that any effects on ground water would be rare, reversable upon release of water from the reservoir, and would not extend beyond the Project development area at any magnitude that would be material.

241. In addition to the SCLG, the SNN sought to raise the issue of hydrogeology by way of a short memo from PGL dated February 26, 2021, and the direct evidence of Ms. Leslie Beckmann. But on cross-examination, Ms. Beckmann readily acknowledged that she was not technically competent to opine on the issue of hydrogeology. Moreover, the SNN have not raised any issue with or countered the comprehensive response that Alberta Transportation provided in its Reply submission to each and every concern or comment raised by the SNN. [Ex. 324, pdf. 13].

242. Returning to Dr. Fennell, cross examination revealed that he, and by extension SCLG counsel, had been operating under a misunderstanding as to the location of certain hydrogeologic units and therefore asked questions in cross examination that did not have proper factual foundation. In particular, Mr. Secord's line of questioning on what was later shown to be erroneously perceived discrepancies between the observed local geology and its representation within the model, was based on this misunderstanding. It was shown that the argument that the model was changing over time with assignment of lower hydraulic conductivity values was inaccurate and that the model had indeed been designed using conservative assumptions.

243. Dr. Fennell's report and testimony can be contrasted with the extensive work done by Stantec, under the direction Dan Yoshisaka, to obtain a clear and comprehensive understanding of the subsurface. As noted in evidence, Stantec reviewed 2000 borehole records and drilled an additional 150 boreholes at site. This mass of data was then used in the modelling exercise. [Ex. 379, Transcript, pp. 1534-1535]

244. The SCLG also tried, unsuccessfully, to argue for the presence of surficial sand in the PDA. Mr. Yoshisaka dispelled this notion, by noting (repeatedly) that in fact his model did account for sand.

245. The SCLG sought to dispute the accuracy of the Stantec model vis-à-vis surficial sand on the basis of a region-wide, and dated, academic paper. The paper was clearly at odds with the reality of the Project site, as demonstrated by the drilling program. Further, the very text on which Dr. Fennell relied to support his theory of the presence of a surficial sand in fact indicates that the sand is located below the glacial till. In short, Dr. Fennell relied on a paper from the 1980s while disputing the results of an in depth and detailed drilling program undertaken by Stantec.

246. Regarding the issue of model bias, which refers to the presence of differences between modelled and observed values, Mr. Yoshisaka disputed the claim that Stantec's model displayed "systemic bias". Mr. Yoshisaka pointed to the table in his report [Ex. 110, pdf 127] which plotted the so called "residuals". The absence of residuals far above, or below, the zero line serves to establish the absence of systemic bias. This was further evidenced by the table and line showing "Perfect Fit" [Ex. 110, Figure 4-14], again confirming that observed and modelled values tracked. [Ex. 379, pp. 1566]

247. Mr. Yoshisaka's evidence was supported by that of Mr. Dan Back, who provided comment on issues of geotechnical performance of the soil formations at site. Mr. Back noted, as did Mr. Yoshisaka, that two separate models were prepared – one for impacts to groundwater and one for geotechnical purposes. This is an important distinction, as it appeared based

on evidence given under cross-examination that Dr. Fennell confused the two. It was also established in cross-examination that Dr. Fennell is not a geotechnical engineer, a point he readily admitted. [Ex. 379, Transcript, pp. 1572]

248. Further, during his cross-examination Mr. Secord sought to raise concerns regarding the presence of swelling clays, so called montmorillonite, suggesting that there would be impacts to these clays in periods of prolonged drought. In response, Mr. Back noted that he and his team undertook a number of sophisticated laboratory tests under various conditions to determine how these clays would perform under load. This also involved interactions with the independent technical Review Board engaged by Alberta Transportation. [Ex. 379, Transcript, pp. 1577]

249. Mr. Back testified that upon reaching a solid understanding of the way in which the clays would respond under multiple conditions, his team was able to compute and understand at what point shear slip could occur. This information was then used in the design process. In short, once the point at which a sheer slip could occur was determined, factors of safety were applied and a design put together which, in the words of Mr. Back, will "***make sure that we never get close to that value***". [Ex. 379, Transcript, pp. 1580]

250. There was also some discussion about seepage of water from the reservoir. Alberta Transportation's position remains that seepage will be in the approximate amount of 426 m3 per day out of the reservoir. This is based on an assessment of the "K" value or conductivity factor assigned to the underlying layers. [Ex. 379, Transcript, pp. 1590]

251. Dr. Fennell's counter narrative - that seepage would be in the range of 100,000 m3 per day – is not credible. First, as Mr. Yoshisaka described, a sensitivity was applied in the model which assumed that the permeability of some of the units making up the underlying hydraulic conductive conditions was greater than measured value by a factor of 1000. The results, while indicating some further propagation, show that this would be limited to the local assessment area. [Ex. 379, Transcript, pp. 1591]

252. Second, Dr. Fennell's back of the envelope math was predicated on the geometric mean of the clay and tills which underlie the reservoir. As was demonstrated on cross-examination, it appears Dr. Fennell was confused as to the location of these materials relative to the location of the reservoir and therefore his rough calculations, which show a 234 times greater amount of seepage, are highly suspect. [Ex. 385, Transcript, pp. 1872]

253. Lastly, the SCLG suggested that there is a risk of ground water contamination associated with flood water migration to the subsurface. In response, Mr. Yoshisaka noted that the groundwater flow model also assessed the potential for migration of contaminants. In assessing the areas that might be impacted, the model used conservative assumptions. For example, it assumed contaminants would move as fast as groundwater; this is generally not the case. Contaminants typically move slower than groundwater. Consequently, the modelling tends to overestimate the rate at which contaminants migrate to the subsurface.

254. Further, even with this over-estimation the modelling predicted that any contaminant would not extend beyond the Project area in a material way, in

part owing to the relatively short time during which water, and therefore flow to subsurface, would be held in the reservoir. The flow would be reversed once the water is drained, generally in a matter of weeks. Further, Alberta Transportation has committed to monitoring area wells. [Ex. 379, Transcript, pp. 1597]

255. With regards to implications for water wells of local residents, an issued raised by Mr. Secord in relation to his client Ms. Robinson, and Brian Copithorne, the evidence and approach of Alberta Transportation remains unchallenged. Modelling of the groundwater regime has allowed Alberta Transportation to gain a sound understanding of the flow regime, water levels, distribution of wells, and presence of springs. [Ex. 379, Transcript, pp. 1613]

256. This in turn allows for an understanding of pathways and effects and the creation of a program to monitor for those effects. As Mr. Yoshisaka concluded, “should the monitoring suggest that there’s changes a foot that we need to apply further mitigation to, then we’ll be able to react in kind and put those measures in place”. [Ex. 379, Transcript, pp. 1614]

257. Alberta Transportation has provided a draft Groundwater Monitoring Plan to evaluate potential impacts during construction, dry operations, flood operations and post-flood operations, which is described in Exhibit 111. The draft Groundwater Monitoring Plan includes both quantity and quality monitoring and will follow a robust, three-tiered approach.

258. Tier 1 monitoring wells will be located adjacent to Project infrastructure, like the dam, diversion inlet and diversion channel. Tier 2 monitoring wells will be within or very near the wetted perimeter of the reservoir. Tier 3 monitoring

wells will be situated between the Project and potential receptors, such as landowners, to provide early detection of potential effects on groundwater that may be propagating outward from the Local Assessment Area [Ex. 111, pdf 36]. The Tier 3 monitoring wells will be primarily made up of landowner's domestic water wells. [Alberta Transportation's Response to Undertaking 34]

259. The Groundwater Monitoring Plan also includes a groundwater response plan describing the actions that would be taken should monitoring results suggest that Project-related effects on groundwater quantity or quality are occurring [Ex. 111, pdf 45]. Alberta Transportation is confident this monitoring plan and the proposed response actions will appropriately manage groundwater quality and quantity related to the Project.

260. In summary Mr. Chairman, Alberta Transportation's subject matter experts responsible for hydrogeology, hydrology, surface water quality and aquatic ecology have each considered in great detail the Project 's impacts and are confident that the impacts are well understood, temporary or can be monitored.

7. AIR QUALITY, HUMAN HEALTH, AND TERRESTRIAL

7.1 Introduction

261. As with water, Alberta Transportation's assessments of air quality, human health, vegetation and impacts to wildlife and biodiversity were conducted using accepted environmental assessment processes to address both Project related and cumulative environmental effects and followed a standardized framework for each valued component.

262. Alberta Transportation is confident that the work undertaken has resulted in a complete and detailed assessment of these issues.

263. Moreover, Alberta Transportation has made commitments in various areas to ensure that potential concerns or impacts are monitored for and mitigated. I will be discussing these commitments in greater detail as we discuss the respective areas covered in Topic 5.

7.2 Air and Human Health

264. Mr. Chairman, concerns have been expressed by Interveners regarding the potential for fugitive dust emissions from sediment deposited in the reservoir following flood operations. Alberta Transportation understands these concerns, but believes it is important to place them in proper context.

265. The fact is, following the completion of construction SR1 will operate only infrequently. Further, the duration of fugitive dust emissions after flood operations will be short. Finally, as testified by Mr. Hebert in his opening statement on this topic, Alberta Transportation will act quickly and proactively to implement proven mitigation measures for dust control.

266. In short, these are: (1) low frequency events; (2) short duration events; and (3) events that will be mitigated. Suggestions that the Project will create dust storms and "blast zones" are, frankly, hyperbole, and are not supported by the evidence.

267. You will recall that Alberta Transportation's expert in the area of air quality, Mr. Reid Person, provided an opening statement and PowerPoint presentation [Ex. 392], which set out the fundamental principles underlying the assessment

of air quality. In that same presentation, Mr. Person called into question some of the assumptions and the approach taken by Dr. Brian Zelt on behalf of the SCLG. [Ex. 395, Transcript, pp. 2052]

268. As discussed in the Reply Submission of Alberta Transportation [Ex. 327, pdf 70], Alberta Transportation acknowledges that its modelling shows the potential for exceedances at receptors outside the PDA.

269. However, the mere existence of predicted exceedances is not the end of the story. As was discussed during Mr. Person's direct evidence, consideration must be had for model uncertainty, model conservatism, and for predicted area, frequency, location and adaptive mitigations to place the exceedances in their proper context. Alberta Transportation has done that. The SCLG and its expert Dr. Zelt, on the other hand, have not.

270. While experts may disagree on the finer points of a model, they must also take care to be reasonable in their conclusions and in the presentation of those conclusions. Dr. Zelt was neither; instead, he chose to, in essence, add layer upon layer of the most conservative assumptions such that his predictions are not representative of anticipated events and only serve to needlessly alarm.

271. For example, Dr. Zelt presents an alarmist view of the potential for a "dust storm like" event predicated on the basis of there being no mitigations applied at SR1. But Mr. Chairman, there will be no unmitigated events. To the contrary, there will be mitigation in all events. The sediment management plan is to begin mitigation starting immediately after reservoir drainage. Alberta Transportation, on behalf of AEP, has committed to this.

272. Other differences in approach are seen in the comparison chart at slide 10 of Mr. Person's PowerPoint which set out, in stark terms, the implications of Dr. Zelt's use of *non-guideline assumptions* in his model. The resulting over-predictions, at times in the range of 600% are, we submit, inappropriate and completely devoid of reality. [Ex. 392]

273. Dr. Zelt ignored hydrological model estimates of sediment area and composition provided by Alberta Transportation in a response to an SIR. Instead, despite readily admitting to having no expertise in this area, he adopted his own unconventional sediment assumptions on the basis of a paper he found online. [Ex. 406, Transcript, pp. 2454]

274. Dr. Zelt was also rather cavalier in his evidence on the use and effectiveness of tackifiers, a strong dust mitigation tool. When asked by Panel Member Ceroici, Alberta Transportation lead vegetation ecologist Nick de Carlo testified that tackifier efficacy was in the range of 3 to 18 months post-application, subject to environmental factors, and that re-application was an option. [Ex. 406, Transcript, pp. 2314]

275. Dr. Zelt, who has no expertise in the area, disagreed with Mr. de Carlo on the strength of a "phone call" he had with a local supplier. Neither the particulars of the call nor any analysis or actual consideration of this issue was included in his report. [Ex. 406, Transcript, pp. 2455 and pp. 2456]

276. Moreover, Dr. Zelt acknowledged under cross-examination that he was not familiar with the discussion in the EIA pertaining to tackifier application on the basis of a weight per hectare formula, depending upon the environmental conditions present. Perhaps had Dr. Zelt read that part of the EIA he would

not have had to resort to making a phone call to learn about tackifiers. [Ex. 406, Transcript, pp. 2456]

277. In short, the evidence of Alberta Transportation must be favoured over that of Dr. Zelt.

278. Mr. Chair, the fact is that Alberta Transportation has set forth, in its opening statement for Topic 5 and elsewhere, a detailed approach to the management of sediment and to the monitoring of fugitive dust. It is a process that will start immediately upon draw down and will carry forward for as long as needed.

279. Further, no party other than Alberta Transportation led evidence regarding the implications to human health associated with dust.

280. Mr. Chair, you will recall that Ms. Noble of Stantec spoke to this issue. Ms. Noble holds a Masters of Engineering, with specific training in toxicology and has lengthy experience in conducting human health risk assessment. Her conclusions, which were based in part on the modelling by Mr. Person, were that in certain circumstances, and as modelled, the potential for exceedance of air quality standards existed. However, Ms. Noble also explained that an exceedance of an air quality standard or objective in and of itself does not necessarily give rise to a human health concern. [Ex. 395, Transcript, pp. 2068]

281. Again, any modelled exceedance would be a rare event, occurring infrequently, and would be short in duration. As we know, operation of the Project is itself an infrequent occurrence. So too are the metrological events

and conditions that could give rise to air-quality exceedances as seen in the modelling. [Ex. 395, Transcript, pp. 2068]

282. Further, with the application of proven and effective dust control methods, air quality exceedances in the modelling can be proactively and effectively mitigated.

283. Mr. Chairman, you will recall that in her questions to Alberta Transportation's Topic 5 panel, Ms. Vance asked whether individuals in the vicinity of the Project would know whether they were being exposed to PM 2.5. In response, Mr. Person testified that the air quality assessment done for the Project was of fugitive dust as a whole. Consequently, one would expect that any PM 2.5 would be entrained with other, larger particles. These larger particles would be noticeable and therefore act as an indication of the possible presence of PM 2.5. [Ex. 406, Transcript, pp. 2291]

284. Further, proposed monitoring is to be located between the Project and any near-by residents, such that dust levels of concern would be detected prior to reaching the nearest residences.

285. Sir, what we are left with is a set of considerations - duration, frequency and adaptive mitigations – that, when added to a robust monitoring plan, led Ms. Noble, and we submit should lead this Board, to a position of confidence that potential effects to human health from fugitive dust emissions will not be not significant.

286. Finally on the subject of air quality, Calalta Amusements Ltd. intervened in these proceedings to raise issues with air quality. Calalta requested that an air

quality monitoring station be located on Calalta lands and that Calalta receive the monitoring results. Alberta Transportation has agreed to this. Further, if the data from this station indicate exceedances of applicable air quality objectives, Alberta Transportation will undertake appropriate mitigation. We submit, therefore, that Calalta's request has been adequately addressed.

7.3 Terrain and soils

287. Turning to the issue of soil, Dr. Whitson of Stantec testified at the hearing with respect to his analysis of the implications of the Project, and specifically sedimentation, on soil.

288. Dr. Whitson's uncontroverted evidence was that while the Project will have impacts to existing soil conditions, these impacts will not result in the sterilization of the soil's productive capabilities.

289. Dr. Whitson also commented in his testimony on the change in textural distribution that was identified with the revised sediment modelling. The revised sediment modelling indicated greater presence of silt and clay particles and a reduction in the sand that had been originally modelled. Silt and clay particles, from a soils perspective, have higher water storage capacity than sand. To quote from Dr. Whiston's evidence:

> Now, one of the things that got me excited about the revised sediment modelling is that there's a lot of that area that is now dominated by silt particles and clay particles, which, from a soils perspective, is a really nice new story. It's not all uniformly sandy, low water storage capacity.
>
> And, in fact, when you calculate land capability now, for the individual soil types that I expect to be identified under that sediment plume, we've got some soil types now that

> essentially have land capability ratings of just Class 4. [Ex. 395, Transcript, pp. 2128]

7.4 Vegetation

290. Alberta Transportation's lead vegetation ecologist, Mr. Nick de Carlo, gave evidence regarding the expected re-vegetation post-flood, and the efforts that can be undertaken to ensure, assist or facilitate re-vegetation. He also addressed the issue of weeds, a concern raised by the SCLG.

291. As set out in Alberta Transportation's Reply Submission, and discussed by Mr. Hebert in his opening remarks, Alberta Transportation has made a number of commitments regarding weed management and associated activities, including a commitment to development of a comprehensive weed management plan [Ex. 380, para 24]. This will include the use of preemptive measures and that such a plan should include input from experienced ecologists. [Exhibit 326, para 205]

292. With respect to the SCLG's weed expert Dr. Osko, it is clear from his direct evidence that he was somewhat confused as to the nature of the Project's operations. For example, he was asked by Ms. Vance about his recommendation to implement a filtration system on the low level outlet to filter out weed seeds and whether he was aware of a system that would both remove weed seeds and allow fish to pass:

> No, I think in -- no, I don't know of such a thing. I think that would be a tradeoff decision that would have to be made. But as Ms. Okoye mentioned yesterday, the **bulk of the dam's operations would be during non-flood conditions,** so a possible tradeoff would be to have a filtration system that's operable during those times, and

> that would be removed -- I mean, **you would have some lead time knowing that a flood is coming, so you'd have time to remove the filter if that is necessary**.
>
> [Ex. 406, Transcript, pp. 2388]

293. Sir as you know, SR1 is a dry dam, meaning that it does not have operations outside of flood events. With respect, Dr. Osko's suggestion makes no sense.

294. In fact, as set out in the response to Undertaking 44, a weed filtration system on the low level outlet is not feasible. There are various technical and design matters that impact the ability to place a filtration system at this location, either during dry or flood operations. In the context of draw down post flood, as Ms. Vance clearly understood, it is important that entrained fish be able to exit the reservoir unobstructed; a weed seed filtration system would make that impossible.

7.5 Wildlife and biodiversity

295. Regarding wildlife and biodiversity, Alberta Transportation's expert, Mr. Eliot Terry, addressed questions on the issue of habitat loss in SR1. As Mr. Terry stated in his evidence, operation of the Project is not expected to have significant impacts in terms of habitat loss, and this conclusion is unchanged even with the new sediment calculations and modelling.

296. The SNN raised the issue of an overpass for elk. Alberta Transportation has provided a response by way of undertaking but wishes to emphasize the following. Alberta Transportation reviewed this issue with the SNN a number of times in meetings at which Mr. Eliot attended and made presentations. As stated by Mr. Eliot in those presentations, such a structure is not necessary in

light of the fact that the Project will allow animals to transit the Project area and cross Highway 22.

297. To further address this concern, the Project design has been modified to better facilitate wildlife movement, including span dimensions of 10 m height and 24 m width associated with the bridge over Highway 22 to allow easy movement underneath by animals, including elk, and the inclusion of a vegetated bottom of the diversion channel (that is the riprap will be covered with soil to make it easier to traverse). [Ex. 395, Transcript, pp. 2045]

298. The Hwy 22 overpass issue is also addressed in Round 1, CEAA Package 2, IR 2-15, and CEAA Conformity IR2-15. It is also referenced in Conformity IR2-11. See Table 11-2 entitled "Indigenous Group Views Related to Potential Project Effects on Wildlife of Cultural Importance and Alberta Transportation's Response".

7.6 Environmental Considerations

299. The SCLG presented evidence from Mr. Cliff Wallis, on biodiversity issues. In his report [Ex. 271], Mr. Wallis provided a unique perspective with particular attention paid to impacts on native grasslands and wetlands.

300. Mr. Wallis highlighted the concerns associated with developments in environmentally sensitive areas, which he acknowledged encompasses much of the lands west of Calgary and south of Highway 1. Mr. Wallis also acknowledged that residential development and commercial developments, as well as Projects such as SR1, all impact this landscape.

301. Further, Mr. Wallis testified about the consequences of undertaking flood mitigation Projects. He testified about the ecological benefits of flooding to the ecosystem, in particular to those riparian areas which rely on periodic high water to flourish. In effect, Mr. Wallis argued against flood mitigation Projects, because of their environmental impacts.

302. While Alberta Transportation understands these concerns, we submit that the need for flood mitigation is too important and some environmental impacts must be accepted to achieve this critical need. Alberta Transportation also reiterates that the selection of an off-stream structure like SR1 will result in fewer of the environmental impacts on the Elbow River which Mr. Wallis is concerned about than an instream dam would.

303. Further, the design of SR1 addresses Mr. Wallis's recommendation that larger flood events should be allowed to pass, unlike an instream dam. Flows below 160 m^3/and above 760 m^3/s will continue to flow unaltered in the Elbow River, thereby providing some of the ecological benefits Mr. Wallis spoke about.

304. Finally, Alberta Transportation notes that the design of SR1 also meets Mr. Wallis's second recommendation of not removing sediment from the off-stream storage reservoir, subject to limited circumstances where it may need to be redistributed to facilitate surface drainage and maintain reservoir function [Ex. 325, paras. 169-197].

8. CONCLUSION

305. Mr. Chairman and Board members, Alberta Transportation submits that it has demonstrated, through its EIA, its SIR responses and all the evidence prepared for and given at the public hearing, that approval of the Springbank Off-

Stream Reservoir Project is in the public interest, having regard to its social, economic and environmental effects. Therefore, we respectfully request that the Board recommend that the Lieutenant Governor in Council issue an approval of the Project, subject to appropriate conditions.

306. With regard to what those conditions might be, Alberta Transportation notes that it has made numerous commitments through the course of the NRCB's review of the Project and we acknowledge that it may be appropriate for the Board to make the fulfillment of some of these commitments conditions of a Project approval. Key commitments include the development of a land use plan for the project, as well as seven environmental monitoring plans, plus a commitment to the development of an additional seven plans prior to construction. These plans will be developed considering input from federal and provincial regulators as well as Indigenous groups and stakeholders.

307. Alberta Transportation is committed to regular and transparent communications with directly impacted and adjacent landowners and residents of the Springbank community. This includes numerous commitments to work with adjacent landowners on topics of concern such as land use, air quality, water wells, shelterbelts, traffic, historical resources, and project operations, among others. To facilitate communication Alberta Transportation will appoint a Community Liaison (a representative from Alberta Transportation during construction and from AEP during operations) who will serve as point of contact with stakeholders; they will primarily communicate through the local representation for Indigenous groups, community associations, local businesses, and local government officials.

308. Finally, Alberta Transportation will continue to work with SNN to ensure it can continue to participate, not only in the monitoring and identification of areas of cultural significance, but also as a participant in the construction of the project as part of the broader Indigenous Participation Plan.

309. Before I conclude, I would like on behalf of Alberta Transportation to thank the Board, Board staff, the court reporters and the technical support staff for their extraordinary efforts in presenting a remarkably smooth and efficient virtual hearing. More importantly, the hearing was well-run, fair and conducted with an appropriately civil tone. For that we would also like to thank the other participants, including in particular our friends Mr. Secord and Ms. Okoye, Mr. Rae and Ms. Louden, Mr. Cusano and Mr. Bruni, Mr. Mercer, Ms. Senek and Ms Munkittrick, and Mr. Kennedy and Ms. Vance.

310. Thank you.

ALL OF WHICH IS RESPECTFULLY SUBMITTED at the City of Calgary, in the Province of Alberta, this 6th day of April, 2021.

MCLENNAN ROSS LLP

Original signed

Per:_____
Gavin S. Fitch, Q.C.
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Original signed

Per:_____
Ronald M. Kruhlak, Q.C.
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SPRINGBANK OFF-STREAM RESERVOIR PROJECT

CLOSING ARGUMENT OF ALBERTA TRANSPORTATION

APRIL 6, 2021

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