

Canadian Parks and Wilderness Society Northern Alberta Chapter:
Final Argument on the Project's potential impacts on the Wood Buffalo National Park

December 11, 2018

CPAWS and their mandate

1. The Canadian Parks and Wilderness Society, or CPAWS, is a national charity dedicated to the protection of Canada's public lands and water, and ensuring that Canada's parks are managed to protect the nature within them. CPAWS Northern Alberta is participating in this environmental assessment process out of concern for the impacts of the project on Wood Buffalo National Park.
2. CPAWS believes this hearing has shown that the Teck Frontier project would have significant adverse environmental impacts on Wood Buffalo National Park that cannot be mitigated. CPAWS has provided evidence in this hearing on the risk that Teck Frontier's tailings pits will create for migratory waterfowl that pass over the project area when migrating to and from Wood Buffalo National Park. In particular, the evidence provided by CPAWS has focused on the risks to the Whooping Crane, a critically endangered species reliant on Wood Buffalo National Park for their long-term survival.
3. CPAWS submitted the following evidence on these points:
The written expert opinion of Dr. John Wilmshurst;
the written opinion and oral evidence of Dr. Colleen Cassady St. Clair;
the letter expressing concerns from Dr. Beilfuss and Dr. Hartup at the International Crane Foundation;
the May 2018 Strategic Environmental Assessment of Wood Buffalo National Park conducted by IEC.

Parks Act

4. Wood Buffalo National Park is governed by *Canada's National Parks Act*, which requires that "the parks shall be maintained and made use of so as to leave them unimpaired for the enjoyment of future generations." and establishes ecological integrity as the first priority for all aspects of park management.

[*CNPA*, S.C. 2000, c.32 sections 4(1) and 8(2), in CPAWS Submission on WBNP (CEAA doc #491) at page 6]

World Heritage Site

5. Wood Buffalo National Park is also a World Heritage Site under *The Convention Concerning the Protection of the World Cultural and Natural Heritage*. Canada applied to have it listed, and the Park was accepted as a UNESCO World Heritage Site in 1983. The recent Strategic Environmental Assessment of the Park found four features with Outstanding Universal Value were in declining condition:
 - The Peace Athabasca Delta,
 - The Park's Great concentration of migratory wildlife
 - The Park's significance as the last remaining place on earth where Wolves and Bison interact in a natural predator- prey dynamic; and
 - The last remaining breeding habitat and nesting site of the endangered Whooping Crane.
6. This project is particularly concerning with respect to the last remaining Whooping Crane nesting site as the Whooping Crane's migratory route between the nesting site and their wintering grounds passes over the proposed location of the project.
7. Due to the critically endangered status of this species, any loss of individuals of this population of Whooping Crane is a threat to the long-term survival of the species, and damages that feature of Outstanding Universal Value of the park regardless of where the Whooping Crane are when they die.
8. The World Heritage Committee, which is the decision making body for the World Heritage Convention, has long held that oil exploitation outside World Heritage Sites should not, under any circumstances, have negative impacts on their features of Outstanding Universal Value.

[CPAWS submission on WBNP (CEAA doc #491), page 7]

9. Since the 1980's, new World Heritage sites have been provided with buffer zones sufficient to protect the values of the site, whenever necessary for their proper conservation. A buffer zone surrounding Wood Buffalo National Park was not put in place when it was listed, most likely because the location and size of the Park made that seem unnecessary at the time. Given the current condition of the Park and the development approaching it, this decision showed a lack of foresight about resource exploitation in Northern Alberta.
10. CPAWS submits that the key valued components for the panel's assessment of the environmental impacts of the project must include the Wood Bison, the Peace Athabasca Delta, the migratory birds that use the Park, and the world's last self-

sustaining population of Whooping Crane.

The current state of Wood Buffalo National Park

11. Wood Buffalo National Park is not in great shape. The Park was established in 1922, and the Park's ecological values have been eroded by continued hydro-electric developments along the Peace River and by oil sands activities along the Athabasca River. As this panel has heard, there is evidence that the Delta is drying up, causing changes in Wood Bison behaviour, negatively impacting the aquatic and terrestrial environment in the Park, and restricting the ability of Indigenous communities to access their traditional territories. The damage is serious enough to put Wood Buffalo National Park's status as a World Heritage Site at risk.
12. Tailings are already a significant problem in the region. Oilsand mine operators have managed these tailings by placing them into big open pits, which now cover a little more than 88km². There are concerns about some existing tailings leaking into groundwater, entering the Athabasca river, and flowing into the Peace Athabasca Delta. These existing problems form the background for the cumulative impacts on the landscape.

Legal Framework

13. The legal framework for the panel's role and decision is described in the submission Pacific Cell submitted on CPAWS behalf.

[CPAWS submission on Greenhouse Gas Emissions, CEAA Registry #691, pages 5-7]

SUMMARY OF THE EVIDENCE

14. Now I'd like to turn to the evidence, to provide an overview of what was established during the hearing.

Teck is unable to quantify the Risk to Waterfowl

15. CPAWS believes the evidence shows that the risk to waterfowl created by Frontier's tailings pits has not been quantified. Even the existing risks created by the tailings pits already on the landscape remains largely unknown.
16. Teck has a lot of confidence in the proposed project. Although Teck accepts that cumulative effects from all oil sand developments might have measurable effects, Teck is confident the Frontier project will have a negligible effect on the migratory birds of Wood Buffalo National Park.

[Day 1, p 77, lines 14 to 21]

17. Teck is confident that the number of birds killed per year by tailings pits is small, relative to 11 million: which they explained is the total number of ducks harvested in North America per year. So they are sure the number of birds killed by tailings pits is a small number, as long as you compare it to an extremely large number. I'm not confident it would be small if you compared it to a relevant number.

[Day 1, p 79, line 6 to p 80, line 24]

18. A more meaningful number to compare it to might be the total number of migratory birds that pass through the region. Teck does not have that number.

[Day 4, p 808, lines 21 to 24]

19. Teck also has no estimate for how many dead birds they expect to pull out of their tailings pits each year. They have relied on the number of recorded fatalities from the combined existing oil sands projects.

[Day 2, p 370 line 4 to p 371 line 24]

20. However, we heard Dr. St. Clair provide several reasons for questioning the reported mortality estimates – the mortality searches were done exclusively by industry personnel, there was substantial variation in how the searches were done, and the visibility of oiled bird corpses that do float may be restricted to just a few meters, and birds do sink – in the 2008 mass landing event a good share of the 1600 water birds were dredged up from the bottom.

[Day 6, p 1226 line 16 to p1227 line 12;

Day 6, p 1219, lines 10-16;

Day 6, p1259 line 10 to p1260 line 17]

21. Even worse, the on-site bird mortality numbers do not reflect the total bird mortalities and health impacts caused by tailings pits. Teck relied on studies Dr. St. Clair had worked on to conclude that the sublethal effects from tailings pits were not significant.

[Day 3, page 501, line 6 to page 504 line 16]

22. Dr. St. Clair explained that this was an unacceptable over-generalization and misrepresentation of the results of that research, which addressed particular types of process-treated water. She emphasized that fresh tailings and bitumen are undoubtedly harmful to birds. The impact on birds that contact tailings, and then fly away, is still largely unknown.

[Day 6, page 1237 line 1 to page 1239 line 20]

23. Teck Frontier is also more than just added oilsand mine - because of the proximity to the PAD and the size of the project, the risks created by Frontier's tailings pits are likely to

be greater than those of previous projects.

[Day 6, page 1253, line 5 – page 1254 line 22 Direct Exam of Dr. St.Clair]

24. CPAWS believes the evidence shows that the scale of impacts this project will have on migratory bird populations is unknown – further, the full impacts of existing oil sands projects on the migratory bird populations in the park is not understood. This panel heard traditional land users describe how bird populations have dropped on the Peace Athabasca Delta, and how toxins have been found in birds and their eggs inside the Delta. In the absence of long-term research on bird populations in the area, this traditional knowledge is the most reliable evidence of the cumulative impacts development has had on Wood Buffalo National Park. The full impacts of the existing tailings pits on migratory birds are not yet understood, and so Teck is unable to determine the added impacts their proposed added tailings pits will have.

[Day 10 p 2085 line 5 to line 21; Council Member J. Bruno of the Athabasca Chipewyan; Day 13, page 2644 line 8 to line 23; Mikisew Cree video]

The Teck Frontier project will increase the risk of Mass Landings caused by adverse weather

25. Next I'd like to discuss mass bird landings into tailings pits, the kind of huge event that brings news headlines and regulatory prosecutions. All of the past mass landings of birds into tailings pits have been associated with adverse weather conditions; heavy fog, strong winds, unseasonable storms, and so on. Deterrents appear to be ineffective during weather that forces sudden landings by flocks of birds.

[Day 2, page 334 line 23 – page 336 line 5; Cross Exam by CPAWS cross of Teck; Day 6, page 1219, lines 10-16; Direct evidence of Dr. Colleen Cassady St. Clair]

26. Teck is not aware of any testing for deterrent effectiveness during adverse weather, and Teck accepts that it is unlikely that additional mitigation measures could be undertaken to address extreme weather events.

[Day 2, page 337 line 22 - page 339 line 12; Day 2, Page 356 lines 8-12; Cross Exam by CPAWS cross of Teck]

27. No new technology or research has decreased the likelihood of mass landings since 2014.

[Day 2, Page 339 line 13- page 340 line 7; CPAWS cross of Teck]

28. Teck accepts that the Frontier project will create an additional risk of mass landings, but Teck considers the risk low.

[Day 2, page 342, line 5 – page 343 line 7; Cross Exam of Teck by CPAWS]

29. The Teck project introduces more tailings onto the landscape, in an area closer to the Peace Athabasca Delta with denser bird migration. In addition, climate change will cause unpredictable changes in precipitation and temperature over the project area – an increased frequency of weather atypical to the region and season is likely – there is a possibility that severe storms could become more frequent in the region.

[Day 2, page 349 lines 13-18]

[Day 2, page 352 line 16 – page 353 line 12]

30. The evidence here shows an unpleasant reality: the mass bird deaths that have attracted so much attention to the oilsands have not been brought under control. The combination of industrial activity, artificial light, bad weather, and migratory bird behaviour is insufficiently understood. All it would take is some bad weather at the wrong time to cause another mass bird death in a tailings pit.

31. Teck, and it seems, the existing oil sands operators have only one solution for the mass landing risk created by storms: cross their fingers and hope no storms pass through the oil sands region at the same time as a flock of migratory birds.

Current Bird Deterrents are ineffective, and unlikely to rapidly improve

32. And now, to back up one step, do bird deterrents perform well under normal weather conditions?

33. Tailings pits have some attractive features for water birds, in addition to their sheer size on the landscape - the warmth of process water keeps the ponds ice-free longer than safe waterbodies, and the open water attracts passing birds. Bird deterrents need to overcome these attractants.

[Day 6, page 1269 line 19 – page 1270 line 3; Cross Exam of Dr. St.Clair by Teck]

34. But the Research into Avian Protection Program found that the efficacy of bird deterrents was limited. Contrary to expectations - tens of thousands of birds land in tailings areas each year, despite the heavy use of deterrents.

[Day 6, Page 1225 line 21 – page 1226 line 4 Direct Exam of Dr. St.Clair]

35. Among the tens of thousands of landings reported by the monitoring program in 2013, were 1,200 individuals belonging to species at risk.

[Day 6, page 1240, lines 15- page 1241, line 5 Direct Exam of Dr. St.Clair]

36. There has been a lack of rigorous testing for bird-deterrents. Newer studies show that habituation is common, and bird deterrents lose efficacy the longer they are in use, and the larger the spatial area the deterrents cover. Recent research has shown that newer

acoustic deterrents, even those loud enough to permanently deafen humans, are ineffective for dispersing some species of water birds.

[Day 6, page 1245 line 23 – page 1248 line 3

Day 6, page 1249 line 18 – page 1252 line 21; Direct of Dr. St. Clair]

37. Research hasn't been done on deterrents for Whooping Cranes specifically – and given their endangered status, it would be difficult for anyone to get approval to run those tests. What we did learn from Environment and Climate Change Canada's satellite telemetry work on cranes was that deterrents were active and working when Whooping Cranes have landed and stayed overnight in tailings areas.

[Day 15, page 3174, line 2 – page 3176, line 6 Direct Evidence of ECCC]

38. The oil sands Bird Technical Team found that drones, a new technology that was hoped to improve on current bird deterrents, has shown poor results, driving many waterbirds into water rather than deterring them from landing or staying in the area. The usefulness of drones for Whooping Cranes is completely unknown.

[Day 16, page 3384, line 18 – page 3385, line 18 Cross exam of ECCC (Wiacek) by Chief J Malcolm (Original Fort McMurray First Nation);

Day 17, page 3662 line 5 – page 3662 line 21 Questions by JRP member Klassen to ECCC (Mr. Wiacek)]

39. Teck has not identified the particular deterrent systems they plan to use – but they have committed to using the best available technology.

[Day 2, Page 339, line 23- page 340, line 7 (Day 2) CPAWS Cross Exam of Teck]

40. Unfortunately, the evidence from this hearing shows that the 'Best available' in this context is not very good.

Teck is Missing Information for an effective Adaptive Management Plan

41. So there are big holes in Teck's waterfowl protection approach – can they rely on their adaptive management plan to patch those holes? Based on the evidence at this hearing, things don't look good on that front either. Teck has not explained how an effectiveness determination for their bird deterrents will be made.

Day 2 Page 384, line 22 – page 385 line 18 CPAWS Cross Exam of Teck]

42. Teck has not set a conceptual threshold for bird deaths or landings that would trigger an adaptive management process. Not even a suggested range or formula to determine a conceptual threshold was provided.

[Day 2, page 359, line 8 – page 362, line 10 Cross Exam of Teck by CPAWS]

43. The Panel specifically asked for measurable thresholds that would trigger mitigation measures under adaptive management in an information request. Teck confirmed to us that those thresholds were never produced.

[Day 2, Page 384 line 22 – page 387, line 18 Cross Exam of Teck by CPAWS]

44. Teck has not identified research programs for adaptive management.

[Day 2, Page 362, line 11- page 363, line 18 Cross Exam of Teck by CPAWS]

45. Teck believes it is too early for them to set adaptive management details.

[Day 2 Page 364, line 18 –line 25 (Day 2) Cross Exam of Teck by CPAWS]

46. What Teck has provided, in short, is not an adaptive management plan at all. Every component of the plan is missing. What has been provided shows that Teck understands what genuine adaptive management would require, but instead of providing that information Teck has left the actual planning to after the panel’s review. This is totally deficient.

47. Teck has offered this panel only “vague assurances” that it would engage in adaptive management in order to deal with the adverse impacts on water birds. The Panel requested specific information on effectiveness determinations and mitigation measures, and Teck refused to provide that information, instead suggesting that it would be provided in the post-approval regulatory stage. However, as noted by the Federal Court in *Taseko Mines*, “acceptance of vague adaptive management schemes would call into question the value of the entire review panel process – if such decisions are left to a later stage, then the review panel process would simply be for the sake of appearances.”

[*Taseko Mines Limited v Canada (Environment)*, 2017 FC 1099 at paras 121-124]

48. Simply put, Teck has failed to provide sufficient information for a review panel to take into account the potential benefits of applying adaptive management, and the Joint Review Panel should consequently disregard its assurances in this respect. The Panel should be clear that vague adaptive management schemes are unacceptable in the Environmental Assessment process.

The Oilsands Bird Monitoring Program is also deficient

49. A related problem is that since the Research on Avian Protection Project ended in 2014, the Oilsands Bird Monitoring Program has been modified so that it now lacks the rigor to provide the information that an oilsand mine operator would need to conduct adaptive management.

50. Teck acknowledges that adaptive management must begin with standardized monitoring that allows for a determination of the effectiveness of different approaches

across time and locations.

[Day 2, page 401, line 9 – page 402, line 15 Cross Exam of Teck by CPAWS]

51. The Oilsands Bird monitoring program changed method and approach after RAPP ended in 2014, and the data is no longer properly comparable to data from earlier years. The monitoring program has cut corners, and reduced the frequency of monitoring and the number of sites monitored, while targeting sites expected to have more birds. These changes damage standardization and compromise effective comparison across time and space, as would be required for adaptive management. Comparing the new data directly with the older data will lead to misleading interpretations. The information has also become difficult to access, and not freely available to the public.

[Day 6, page 1229, line 6 – page 1232, line 14 Direct Exam of Dr. St.Clair;
Day 6, page 1270, line 4-21, Cross exam of Dr. St. Clair by Teck]

52. Adaptive management would require comparable data on bird mortalities created by a rigorous and transparent standardized monitoring program, representative of all kinds of tailings. This is essential to understanding the impacts of tailings and the effectiveness of bird deterrents. The current monitoring program is insufficient to support credible adaptive management.

There is too little data to quantify the risk to Whooping Crane

53. Now I'd like to focus in on the impacts on the endangered Whooping Crane.

54. There are around 500 whooping cranes in the last naturally occurring breeding population, which migrates between Wood Buffalo National Park and Aransas Wildlife Refuge in Texas.

[Day 2, Page 412, line 13 - page 413, line 34 Cross Exam of Teck by CPAWS]

55. The Whooping Crane's use of the oilsands region as stopover habitat is poorly understood. No spring or fall water bird migration surveys were included in Teck's baseline studies, despite those being the migration seasons when Whooping Crane would pass through the region.

[Day 2, Page 418, line 11 – page 420, line 3; Cross Exam of Teck by CPAWS]

56. The new telemetry data from ECCC created during the assessment process showed that Teck's initial assumption about how limited a use Whooping Crane made of the area were wrong. Teck is unable to generate telemetry data on Whooping Crane.

[Day 2, Page 419, line 6 - page 422, line 9; Cross Exam of Teck by CPAWS;
Day 2, page 425, line 24 – page 430, line 8; Cross Exam of Teck by CPAWS]

57. In response to the new information, Teck had to shift their estimated whooping crane mortality risk from low to moderate – I'll return to the use of the terms 'low' and 'moderate'.

[Day 3, page 469, line 8 - line 20; Cross Exam of Teck by CPAWS;
Day 4, page 816, lines 9-21; Cross Exam by J. Malcolm of the Original Fort McMurray First Nation]

58. Environment and Climate Change Canada, who conducted the Whooping Crane satellite monitoring, believes "the Frontier Project could affect the abundance of cranes in the Arkansas-Wood Buffalo population". Their satellite tracking suggests Whooping Cranes make significantly greater use of the area around the Teck Frontier Mine than the area around other oilsands projects.

[Day 15, page 3171, line 5 – page 3173, line 21 Direct Evidence of ECCC]

59. In contrast to Teck, ECCC believes the project represents a high mortality risk for whooping crane and that the proposed mitigation measures are unlikely to substantially reduce or eliminate the risk.

[Day 15, page 3080, like 12 – page 3081, line 7 Opening comments of Environment and Climate Change Canada]

60. What about Whooping Crane that land in tailings areas and fly away? Our understanding of the sublethal impacts of tailings on most bird species is poor, but is even poorer for the Whooping Crane. The Whooping Crane is a long-lived species that has more potential to accumulate toxins. The toxicological studies in this context have generally been based on short-lived species that lack the same potential for contaminants to accumulate.

[Day 6, page 1242, line 5 – page 1243, line 10 Direct Exam of Dr. St.Clair]

61. Teck's materials contemplate "whooping cranes landing in tailings areas and dying as a result" – but how many?

[Day 3, page 448, line 17 – page 450, line 2 Cross Exam of Teck by CPAWS]

62. In our cross-examination, at great lengths, we tried to figure out how many Whooping Crane Teck expects the project will kill. What we found was that Teck tries doesn't have a numeric threshold for 'mortality risk'. Teck only considers it 'low', 'moderate', or 'high'. Mortality risk is something that needed to be quantified. The terms 'low', 'moderate' and 'high', undefined and unrelated to any number or calculation do not quantify risk. They gloss over it.

[Day 3, page 452, lines 1-13

Day 3, page 455 lines 4-7 Cross Exam of Teck by CPAWS]

63. Teck never managed to measure the change in estimated whooping crane mortality rate with numbers. 'Low', 'medium' and 'high' are terms that need context or definition to be useful. What Teck confirmed to us was that those definitions do not exist. Would Teck consider 50 dead Whooping Cranes per year to indicate a 'low', 'medium' or 'high' mortality risk? I don't know – and Teck confirmed nothing on the record would answer that question.

[Day 4 Page 875, lines 3-23 Supplemental Cross of Teck by CPAWS]

64. Mass Sandhill Crane landings (but not mass mortalities) have occurred in tailings areas, and these birds present an attractant to the Whooping Crane, a very similar species of flocking crane.

[Day 6, page 1243, line 16- page 1244, line 18 Direct Exam of Dr. St.Clair]

65. How detectable would Whooping Crane landings or deaths in the oil sands be? ECCC Satellite tracking has shown five Whooping Crane landing at oil sands mines, and none were detected by oil sands workers.

[Day 15, page 3174, lines 5-16 Direct Evidence of ECCC]

66. A juvenile Whooping Crane stayed in a tailings area for 14 hours. Inclement weather was not a factor in the stopover. The juvenile Whooping Crane died several weeks later while migrating through Saskatchewan. Precisely what killed the bird is unknown. In 2018, three unmarked juvenile Whooping Crane disappeared during their migration from Wood Buffalo National Park down to Saskatchewan.

[Day 15, page 3174, line 17 – page 3178, line 5 Direct Evidence of ECCC;

Day 17, page 3662, line 22 – page 3663, line 5 Questions by JRP member Klassen Mr. Wiacek of ECCC]

67. We heard from ECCC that their Whooping Crane researchers believe cumulative mortality and climate change may reverse the population recovery trend for whooping cranes.

[Day 15, page 3179, line 20-25 Direct Evidence of ECCC]

68. The question we needed answered is how many Whooping Crane will contact tailings and what will become of them? The evidence has shown that the number of cranes is not zero, as some migrating families of Whooping Crane do land around tailings, and that there are good reasons to think those crane may not survive their migration.

CONCLUSIONS

69. Moving along to conclusions, while CPAW's participation in this hearing has focused on a few select issues to avoid duplicating the submissions of other participants. CPAWS believes that the evidence provided at this hearing shows that the Teck Frontier project would cause significant environmental impacts to four features of the park that have recognized outstanding universal value; the endangered population of whooping crane, the Peace Athabasca Delta, Migratory Birds, and the Wood Bison.
70. The effects of the project on the hydrology of Wood Buffalo National Park will be significant, and previous Environmental Assessments have failed to foresee and mitigate the impact of projects, which has left the natural habitat of the park degraded and polluted.
71. The effects of the project on the Park's migratory bird population generally, and on the Park's unique population of Whooping crane remain unquantified. The cumulative effects of tailings on water birds is poorly understood, poorly researched, and not reliably monitored. Current oil sands operators are still discovering how many Whooping Crane land in their tailings areas each year, and Teck cannot even estimate how many Whooping Crane will contact the Frontier project's tailings pits.
72. The recent information about the migration of the Whooping Crane was produced by the Government of Canada during this environmental assessment project, and it has shown the risk to be much greater than Teck, and other oil sands operators, had assumed. The project will create risks of serious and irreversible damage that are incompatible with the precautionary principle.
73. In 2013 the panel for the Shell Jackpine project found that "Should a species at risk land in a tailings pond, the Panel finds there to be a significant effect." The Panel noted that there had been, at that time, "no reported incidents of whooping cranes landing in tailings ponds".

[Day 3, page 508, line 2 – page 509, line 20]

74. It is the position of CPAWS that the evidence produced at this hearing shows the Teck Frontier mine will have significant adverse environmental impacts that cannot be mitigated on the Whooping Crane and the overall migratory bird population of Wood Buffalo national Park. No feasible mitigation measures are likely to be effective. As two of the features of the Park that have outstanding universal value, these adverse impacts amount to a significant adverse impact on Wood Buffalo National Park that will further endanger the Park's UNESCO World Heritage Site status.

Regulatory Recommendations

75. CPAWS considers the following regulatory provisions important in order to restrain and monitor the scale of environmental damage on Wood Buffalo National Park:

76. One - A buffer zone of sufficient size to protect all features of Outstanding Universal Value in Wood Buffalo National Park should be created, as ought to have been done when the Park was named a UNESCO World Heritage Site. CPAWS submits that the proposed Ronald Lake Biodiversity Stewardship Area be designated as a protected area under the *Provincial Parks Act* and the Government of Alberta enter a co-management agreement for that area with the Mikisew Cree First Nation. Permanent legal protection is also necessary for all remaining wetlands from the Mineable Oilsands Region up to Wood Buffalo National Park.

[CPAWS WBNP submission, pages 7-8, RMM report p29-30]

77. Two - The Governments of Canada and Alberta must establish permanent, impartial, and transparent scientific monitoring for bird contacts and mortalities on tailings pits, coupled with independent research on the effectiveness of deterrent systems, and the development of new deterrent system standards. Research that should have been completed decades ago has still never been done. Canadians need a reliable estimate about onsite and offsite mortality of water birds, requiring bird surveys conducted regularly through the day and night, clear indicators of the health and sustainability of migratory bird populations, and monitoring of the remaining wetland habitat areas in the oilsand region. Consistent and ongoing GPS monitoring of the Whooping Cranes is necessary to determine the extent of their interactions with oilsands projects.

78. Three - Should the project be approved, before construction can commence, Teck should be required to provide funding for independent research on the efficacy of bird deterrent systems to repair the lack of rigorous testing of deterrent systems. Teck should be required to consult with experts on migratory birds and incorporate the most up to date Bird Monitoring Protocol and the results of the Research on Avian Protection Project.

79. Four The declining flow volumes in the Athabasca River and the drying of the Delta are concerns that require a new approach more aligned with the precautionary principle, as existing projects have already endangered the World Heritage Status of the Park. Teck Frontier, and all future projects, should be required to secure a water release offset equivalent to their withdrawals from the Athabasca River.

80. There is a serious need for improved disease prevention strategies to be put in place for the Ronald Lake Bison Herd, far beyond what has been suggested by Teck. A monitoring program for the Ronald Lake Bison Herd, including data on birth and survival rates is needed. CPAWS recommends that The Government of Canada enter into an agreement under the *Species at Risk Act* Section 11 with the Mikisew Cree First Nation to promote

the recovery of Wood Bison, in particular with respect to the Ronald Lake Bison Herd.