Wood Buffalo National Park
World Heritage Site
Action Plan

Draft for Stakeholder and Public Review
November 16th, 2018

Contents

Figures and Tables

List of Acronyms

ACFN: Athabasca Chipewyan First Nation

AEP: Alberta Environment and Parks

AER: Alberta Energy Regulator

ANI: Aboriginal Navigation Index

ARFN: Athabasca Region First Nations

BSA: Biodiversity Stewardship Area

CBM: Community Based Monitoring

CEAA: Canadian Environmental Assessment Agency / Canadian Environmental Assessment Act

CMC: Cooperative Management Committee

ECCC: Environment and Climate Change Canada

EFH: Environmental Flows and Hydrology

EI: ecological integrity

EPEA: Environmental Protection and Enhancement Act

FPTI: Federal-Provincial-Territorial-Indigenous

IAS: invasive alien species

IGO: Indigenous Government Organization

IKRP: Indigenous Knowledge Research Process

ITA: Imminent Threat Assessment

IUCN: International Union for the Conservation of Nature

LARP: Lower Athabasca Regional Plan

LRRCN: Little Red River Cree Nation

MCFN: Mikisew Cree First Nation

MOU: Memorandum of Understanding

MRBB: Mackenzie River Basin Board

NRBS: Northern River Basins Study

NREI: Northern Rivers Ecosystem Initiative

NWTMN: Northwest Territories Métis Nation

OSM: Oil Sands Monitoring Program

OUV: Outstanding Universal Value

PAD: Peace-Athabasca Delta

PADEMP: Peace-Athabasca Delta Ecological Monitoring Program

PCA: Parks Canada Agency

RLBH: Ronald Lake Bison Herd

RLBHTT: Ronald Lake Bison Herd Technical Team

RMM: Reactive Monitoring Mission

SEA: Strategic Environmental Assessment

SMART: Specific-Measurable-Achievable-Realistic-Time bound

SWQMF: Surface Water Quantity Management Framework

TMF: Tailings Management Framework

WBNP: Wood Buffalo National Park / Wood Buffalo National Park World Heritage Site

WHC: World Heritage Centre

Executive Summary

Wood Buffalo National Park World Heritage Site (WBNP) is Canada's largest national park encompassing 4.5 million hectares (an area larger than Switzerland) of forest, wetland and grassland complexes. Established in 1922 to protect the last remaining herds of wood bison, the park protects the largest free-roaming, self-regulating wood bison herd in the world, the nesting ground of the last remaining native flock of endangered whooping crane, the biologically rich Peace-Athabasca Delta, extensive salt plains unique in Canada, and some of the finest examples of gypsum karst topography in North America. The presence of this rare and superlative natural phenomena were the key reasons for the park's inscription as Canada's eighth UNESCO World Heritage Site in 1983 under the auspices of the World Heritage Convention. The criteria for which the site has been inscribed, and the specifics of the Outstanding Universal Value of WBNP recognize the importance of the site's significance for:

> *(vii) "great concentrations of migratory wildlife are of world importance and the rare and superlative natural phenomena include a large inland delta, salt plains and gypsum karst that are equally internationally significant"*
>
> *(ix) "the most ecologically complete and largest example of the entire Great Plains-Boreal grassland ecosystem of North America, the only place where the predator-prey relationship between wolves and wood bison has continued, unbroken, over time"*
>
> *(x) "the only breeding habitat in the world for the whooping crane, an endangered species brought back from the brink of extinction through careful management of the small number of breeding pairs in the park. The park's size (4.5 million ha), complete ecosystems and protection are essential for in-situ conservation of the whooping crane."*

Wood Buffalo National Park is also within the traditional territories of First Nations and Métis people who have occupied and used the lands, waters and resources of WBNP for generations and continue to do so, and who rely on the natural and cultural heritage of WBNP to sustain their livelihoods, way of life and culture.

Though renowned for its size, remoteness, and the absence of industrial resource extraction activities within its boundaries, the Wood National Park World Heritage Site, like other World Heritage Sites globally, is vulnerable to the impacts of external development outside its boundaries. The Peace and Athabasca river sub-basins and Lake Athabasca drain an area of about 600,000 square kilometers of northern British Columbia, Alberta and Saskatchewan and meet in the park at the Peace Athabasca Delta. Upstream and adjacent developments with the potential to impact the OUV of the site include flow regulation, oil sands development, pulp and paper production, forestry, agriculture and municipal development. In addition to these external pressures, are influences on the site from a changing climate in which average annual temperatures are increasing leading to earlier spring thaw and later fall freeze-up and a shorter duration of seasonal ice-cover. These warmer temperatures influenced the amount and timing of spring runoff and peak river flows. Cumulative impacts of a changing climate and development pressures is causing ecological change on a landscape scale within the Peace Athabasca Delta, and these

environmental changes, including concerns about cumulative effects, are part of the lived experience of Indigenous land-users who have generations of knowledge about conditions in the Peace Athabasca Delta.

In response to Decision 41 COM 7B.2 of the World Heritage Committee, the Government of Canada has led a collaborative effort with Government of Alberta, Government of British Columbia and the Government of Northwest Territories and Indigenous partners to develop this Action Plan to ensure the on-going protection and maintenance of the OUV of Wood Buffalo National Park World Heritage Site.

This Action Plan focuses on the specific actions required to understand and protect those elements of WBNP that contribute to its OUV. In doing so, the Action Plan builds upon and enhances efforts by a range of government partners, Indigenous governments, and stakeholders and also identifies new collaborative actions and strategies. The scope of work of the Action Plan is broad, encompassing areas under the jurisdictional authorities of the Government of Canada, the Government of Alberta, the Government of British Columbia, the Government of the Northwest Territories, and the stewardship responsibilities of Indigenous governments.

The Action Plan is organized around a series of thematic areas which correspond the recommendations of the Reactive Monitoring Mission report. Specific actions are outlined under each thematic area to support broad goals that will ensure the continued maintenance of the Outstanding Universal Values of the site. A summary of these thematic areas, with corresponding goals and specific actions is provided in the summary tables on pages 9 to 15.

This Action Plan represents a commitment by the Government of Canada and its provincial, territorial government partners to advance actions that will ensure the on-going protection and maintenance of the Outstanding Universal Value of the Wood Buffalo National Park World Heritage Site. The successful implementation of this Action Plan will be achieved through collective efforts of all those with jurisdictional responsibilities, with the support of Indigenous partners for whom the Wood Buffalo National Park World Heritage Site is home, and of other stakeholders.

Theme: Strengthening Indigenous Partnerships with WBNP (1 ,12, 13,14)	Key Issues / Challenges	Relevant Programs/Legislation	Outcomes	Actions	Timeline
The establishment and management of Wood Buffalo National Park has had a negative impact on local Indigenous peoples. Transitioning to a genuine partnership with local Indigenous partners[1] will result in a more positive future but requires that reconciliation efforts continue based on mutual recognition and respect. Parks Canada is working through the Cooperative Management Committee and bi-laterally with its Indigenous partners to ensure a meaningful role in decision-making related to park management. Together with acknowledgement of past wrongs, these measures represent steps in the ongoing process of reconciliation.	Impacts of park establishment and management on Indigenous peoples. Need for reconciliation with Indigenous partners. Need for more effective and meaningful involvement of Indigenous partners in site management. Need for additional management capacity at the site. Recognition of Aboriginal and Treaty rights.	Promising Pathways Wood Buffalo National Park Management Plan Section 35 of the Constitution Act	Improved relationships between WBNP and its Indigenous partners result in improved, cooperative management of the park that meets the interests of all parties.	• Cooperative Management Committee will identify core areas of immediate interest regarding the management of the site, and adjust CMC process as required to effectively address these areas of interest. • Cooperative Management Committee will develop and adopt policy amendments that meet interests of all parties, in particular related to staffing of Indigenous persons and a contracting policy to ensure that opportunities for Indigenous persons are enhanced. • Continue engagement through bilateral processes between specific First Nations and Métis groups where these have been established. • Increase capacity for park management and staffing in Fort Chipewyan, to respond to the pressures facing the Peace Athabasca Delta. • Develop and implement a training program for Wood Buffalo National Park staff focused on skills and improved awareness required given the evolving relationship with Indigenous communities.	**2018-2019** **2018-2019** **2018 +** **2018-2019** **2019-2020**

[1] Indigenous partners refers to the following 11 Indigenous governments that are closely associated with Wood Buffalo National Park: Athabasca Chipewyan First Nation, Deninu'Kue First Nation, Fort Chipewyan Métis Local 125, Fort Smith Métis Council, Fort Resolution Métis Council, Hay River Métis Council, Katl'odeeche First Nation, Little Red River Cree Nation, Mikisew Cree First Nation, Salt River First Nation, Smith's Landing First Nation.

Theme: Environmental Assessment (4, 5, 8, 9)	Key Issues / Challenges	Relevant Programs/Legislation	Outcomes	Actions	Timeline
The OUV of WBNP may be impacted by project specific and cumulative effects of development external to the park. Actions related to this theme focus on inclusion and consideration of project and cumulative effects on the OUV of the park, and on the development of updated cumulative effects assessment guidance and improved cumulative effects assessment methodology and management.	Identification and assessment of cumulative and project effects on OUV. Identification and assessment of cumulative and project effects on Indigenous use and Aboriginal and Treaty rights. Need for standardized methodology / direction for assessing cumulative effects on OUV.	*Canadian Environmental Assessment Act* *Mackenzie Valley Resource Management Act* *Lower Athabasca Regional Plan* *Surface Water Quantity Management Framework (SWQMF)* Treaty 8 WBNP Strategic Environmental Assessment.	The Outstanding Universal Value of WBNP is considered in environmental assessments where potential specific or cumulative impacts may occur on the OUV of WBNP, in particular in the Peace Athabasca Delta. Continue work on further advancing the Aboriginal Navigation Index and addressing navigation, and further developing ecological indicators as committed to under the Surface Water Quantity Management Framework.	• Amend Guidelines for the Preparation of the Environmental Impact Statement for Amisk to consider potential effects of the project on the OUV of WBNP, including the PAD. • Amend the Joint Review Panel Agreement for Teck Frontier to mandate the Panel to consider and report on the potential environmental and cumulative effects of the project on the OUV of the World Heritage Site, including the PAD. • Evaluate the potential effects of the Frontier Project on the OUV of the WBNP and provide assessment to the JRP for its consideration in the environmental assessment. • Develop and submit to the Teck Frontier Joint Review Panel a joint methodology for the assessment of potential impacts of the Teck Frontier project on the exercise of Aboriginal and Treaty rights. • Conduct a SEA on the potential of all developments to impact the Outstanding Universal Value of the Wood Buffalo National Park World Heritage Site, and submit to the World Heritage Centre. • Submit the SEA to the Joint Review Panel for the Teck Frontier Oil Sands Mine Project for its consideration. • Ensure that all current and future environmental assessment reviews conducted pursuant to federal legislation consider the specific and cumulative impacts on the OUV of WBNP and are aligned with the IUCN World Heritage Advice Note on Environmental Assessment and World Heritage, to the extent possible. • Complete review of federal environmental assessment legislation and regulatory processes, and propose changes. • Refine the SWQMF's Aboriginal Navigation Index in cooperation with ARFN, other Indigenous peoples and other stakeholders. • Develop and implement ecological indicators and thresholds to evaluate and respond to changes in the aquatic ecosystem (e.g. fish integrity indices).	**2019-2020** **Completed 2018** **2018-2019 +** **Completed 2018** **Completed 2018** **Completed 2018** **2018-2019 +** **Completed 2018** **TBD** **TBD**

Theme: Conservation Area Connectivity (10, 11)	Key Issues / Challenges	Relevant Programs/Legislation	Outcomes	Actions	Timeline
Wood Buffalo National Park is a large protected area, and while its size does confer a level of protection some elements of OUV are still vulnerable to impacts of external development. Establishment of an interconnected network of conservation areas adjacent to the park that protect key areas for conservation purposes would enhance protection of the site's OUV. Actions to advance the establishment of protected and conserved areas adjacent to the park would occur through provincial and territorial land-use planning processes and through the joint federal-provincial-territorial Pathway to Canada Target 1 initiative.	Some key boundary areas are taken up by development leases. Jurisdictional / FN and Métis support required for conversion of land tenure to conservation area status. Maximizing conservation outcomes requires systematic evaluation, establishment and coordinated management of conservation areas.	Lower Athabasca Regional Plan Lower Peace Land-Use Plan Peace River Integrated Watershed Management Plan *Alberta Land Stewardship Act* *Alberta Parks Act* *Alberta Forest Act* *Species at Risk Act (SARA)* Pathway to Canada Target 1 Healthy Lands, Healthy People: Government of Northwest Territories: Priorities for Advancement of Conservation Network Planning – 2016 -2021 NWT Land-use planning processes.	Improved connectivity for wildlife and supporting processes. Increased ecological integrity and resiliency of the Outstanding Universal Values of Wood Buffalo National Park World Heritage Site Strengthened relationships with Indigenous partners through respectful application of Science-based and Indigenous Knowledge to conservation planning and management.	**Within individual jurisdictions, establish buffer zones around WBNP through the establishment of adjacent protected and conserved areas:** • Formal establishment of new conservation areas under the Lower Athabasca Regional Plan, adjacent to WBNP, to increase functional connectivity for OUVs within the region. • Promote the development of cooperative management arrangements with Indigenous communities to support Aboriginal rights and cultural values for the five new and expanded wildland provincial parks under the Lower Athabasca Regional Plan. • Advance (through discussions with Indigenous communities and various stakeholders) the proposal for development of a Biodiversity Stewardship Area immediately south of WBNP. • Integrate an Indigenous Guardian Program to support Indigenous stewardship of new conservation areas under the Lower Athabasca Land Use Plan. • Advance conservation priorities under "*Healthy Lands, Healthy People: Government of Northwest Territories: Priorities for Advancement of Conservation Network Planning – 2016 - 2021*". • Enhance communication and explore opportunities for closer collaboration particularly under the Pathway to Canada Target 1 initiative. • In association with the Pathway to Canada Target 1 support efforts to establish new tools for conservation[2] that contribute to conservation area connectivity in the WBNP region. • Advance regional land use planning processes in areas surrounding WBNP. **Determine the ecological functional needs of the OUV of WBNP WHS as they relate to conservation area connectivity.** • Consolidate Indigenous and scientific information on the habitat and dispersal requirements for key species, including Woodland Caribou and Wood Bison through extensive literature review and community-based workshops. • Acquire existing data related to species occurrence and remote sensing for spatial analysis and mapping. • Identify and confirm information gaps through a follow up multi-partner workshop and identify plans to fill these gaps. • Conduct analysis of assembled data and apply habitat and movement information acquired during workshops to develop a series of species-specific,	**Completed 2018** **Ongoing** **Ongoing** **2019-2020 +** **TBD** **2018-2019** **2018-2019 +** **Ongoing** **2018-2019** **2018-2019** **2019** **2019-2020**

[2] New tools for conservation refer to recently developed pan-Canadian standards for protected areas, other effective conservation measures, and Indigenous protected and conserved areas. For more information see: http://www.scics.ca/en/product-produit/news-release-canadas-natural-legacy/

				landscape scale, habitat suitability maps with corresponding movement cost surfaces. • Peer review and gather feedback on spatial models. Peer review will include follow up workshops to identify accuracy, strengths and weaknesses of resulting maps. • Generate a series of map packages for subsequent communications and planning purposes that describe the results of the modelling process and highlight habitat and movement needs for key species throughout the WBNP region. **Identify potential gaps necessary for the maintenance of OUV that can guide future conservation planning and/or management.** • Conduct workshop on spatial priorities for conservation including objectives for a gap analysis on areas in and adjacent to WBNP. • Undertake landscape gap analysis and spatial conservation prioritization exercise using current methods and tools (i.e., Marxan). • Produce maps and communication products that provide results of gap analysis and present design options for contributing to a regional network of protected and conserved areas, including a buffer zone adjacent to WBNP.	**2019-2020** **2019-2020** **2020** **2020** **2020**
Theme: Tailings Ponds Risk Management (6)	**Key Issues / Challenges**	**Relevant Programs/Legislation**	**Outcomes**	**Actions**	**Timeline**
The water used during oil sands mining is managed and stored in tailings ponds. In 2013, almost a billion cubic metres of fluid tailings were stored in ponds with a net cumulative footprint of 220 km^2. Fluid tailings pose a potential risk to the PAD through seepage into the Athabasca River, and through the potential for dam failure. The Tailings Management Framework for the Mineable Athabasca Oil Sands provides direction to manage fluid tailings volumes in order to manage and decrease environmental risk presented by fluid tailings ponds.	Cumulative tailings pond footprint. Seepage into Athabasca River. Need to reduce environmental risk.	Tailings Management Framework *Directive 085: Fluid Tailings Management for Oil Sands Mining Projects* *The Conservation and Reclamation Regulation (under EPEA)* *Oil Sands Conservation Act* *The Alberta Water Act* and *the Environmental Protection and Enhancement Act (EPEA)*	Tailings ponds are constructed, managed and maintained to limit impacts to the Athabasca River, and new and legacy tailings volumes are reclaimed in a timely manner, so that the risk of tailings ponds to the PAD is minimized.	• Implement the Tailings Management Framework. • Evaluate tailings pond emission monitoring to inform a risk assessment of contaminant exposure as needed. • Conduct ambient environmental monitoring to inform a risk assessment on changes to environmental condition as needed. • Establish Oil Sands Process Affected Water Science Team to provide credible scientific information to inform government and regulatory bodies on process water treatment and release. Create additional Science Teams as needed to support implementation of the Tailings Management Framework. • Provide regulatory oversight to ensure tailings dams are safe and managed appropriately by operators. • Minimize fluid tailings accumulation by ensuring that fluid tailings are treated and reclaimed progressively during the life of a project and all fluid tailings associated with a project are ready to reclaim within 10 years of end of the mine life of that project. • Establish project-specific target, triggers and limit for new fluid tailings. • Develop plans to reduce legacy tailing volumes to a ready-to-reclaim state by end of mine life.	**Ongoing** **Ongoing** **Ongoing** **Team established – work ongoing** **Ongoing** **Ongoing** **Ongoing** **Ongoing**

		Dam Safety Regulatory Framework (*Alberta Water Act*, the Water Regulation, Ministerial Orders, and provincial dam safety guidelines).		• Tailings ponds are designed, constructed, operated, maintained, and decommissioned safely.	**Ongoing**
Theme: Environmental Flows and Hydrology (3, 7)	**Key Issues / Challenges**	**Relevant Programs/Legislation**	**Outcomes**	**Actions**	**Timeline**
The Peace-Athabasca Delta is a flood dependent ecosystem. The seasonal and inter-annual flood-drawdown cycle maintains productive lake, near-shore and wetland habitats and associated biodiversity, and shapes the broader deltaic landscape through disturbance processes such as channelization, sedimentation transport and deposition, and erosion. The resulting productive and dynamic delta supports local Indigenous peoples' way of life and their ability to exercise Aboriginal and treaty rights. The hydrology of the Delta is a complex function of climate, water use and land use upstream of the Delta, and the landscape of lakes, channels, levees, and relative elevations within the Delta. Actions taken to meet water level objectives in the delta include evaluating options for upstream water use (flow regulation and water withdrawals) and in-delta water management structures (weirs, etc.), while taking into account climate and deltaic landscape patterns / processes which are outside of our control. These actions will be supported by flow assessments and modelling, and will be initiated within an adaptive management framework to allow	Peace River flow regulation Athabasca River water use Climate impacts Complicated hydro-ecological system PAD system's inherently variability Jurisdictional / governance complexity	Joint Task Force on Peace River Ice. Mackenzie River Basin Transboundary Waters Master Agreement Alberta-NWT Transboundary Water Management Agreement Water for Life Strategy (Alberta) Northern Voices, Northern Waters: The NWT Water Stewardship Strategy Lower Athabasca River Surface Water Quantity Management Framework Long term hydrometric network monitoring program *Canada National Parks Act* *Canadian Environmental Assessment Act*	**Ecological and Hydrological Integrity** - Water quantity improvements, including variability, are optimized to restore and sustain ecological functioning and integrity of the PAD to support the OUV. **Practice of Aboriginal rights** - Water quantity improvements in are optimized to sustain the exercise of Aboriginal and Treaty Rights by enabling safe navigation, supporting healthy and abundant traditional resources and maintaining Indigenous ways of life in the PAD. **Informed Decision-Making** - Improved baseline data/knowledge and comprehensive environmental flows assessments inform decision-making related to the ecological and hydrological integrity of the PAD.	**Partnerships in Governance:** Establish renewed and effective partnerships through a cross-jurisdictional governance team to guide and inform management actions toward achieving the desired hydrology-based outcomes for the PAD. **Setting Objectives:** Identify and describe the areas and conditions where changes to water quantity would support the achievement of the Outcomes for Ecological and Hydrological Integrity & Practice of Aboriginal rights. **Measuring Progress:** Set SMART (Specific, Measurable, Achievable, Relevant, and Time-bound) water quantity targets and indicators toward achieving objectives. **Monitoring Progress to inform Adaptive Management:** Establish a monitoring regime that tracks the trend of indicators over time and that evaluates the effectiveness of management actions, building on existing monitoring programs where possible. **Action toward Outcomes:** • Establish protocols for, and identify circumstances under which, a strategic release of water from the Williston Reservoir behind the W.A.C. Bennett dam could enhance an ice-jam flood event within WBNP to encourage flooding of the PAD, including its perched basins, while minimizing unwanted upstream and downstream risks. • Enhance spring flooding using artificial ice damming within the PAD. • Enhance monitoring and improve the assessment of current and future water quantity conditions in the Peace and Athabasca River Basins. • Identify, modify and, if necessary, produce environmental flow assessment models that incorporate state-of-the art understanding of localized effects of the past, ongoing and projected climate changes, to inform future and ongoing management actions that could impact WBNP. • Strategically-place short- and/or long-term water management control structure(s) within the PAD to create a local hydrological regime that	**2018 -2020** **2018 & 2019 (for early actions) 2019 -2022 (for all actions)** **2019-2023** **2019 +** **2018-2021 +** **2018-2020 +** **2018-2022 +** **2018-2025 +** **2019-2024 + (small scale, temp)**

refinement of objectives and of the strategies to achieve them.		*BC Environmental Assessment Act* *Alberta Water Act* *Environmental Protection and Enhancement Act (EPEA)* *Canada Water Act* *Navigation Protection Act* *Fisheries Act* *Canadian Environmental Protection Act* *Mackenzie Valley Resource Management Act*		• supports the ecological functioning and Indigenous use in identified target areas. • Identify and assess the risks of alternative management options to provide recommendations toward achieving desired flows and water levels. **Information Sharing:** Establish a Knowledge Hub to make Peace-Athabasca Delta information and data from Science-based and Indigenous Knowledge sources more easily accessible.	**2021-2024 + (longer term)** **2019-2024 +** **2019-2020 +**
Theme: Monitoring and Science (2, 9, 17)	**Key Issues / Challenges**	**Relevant Programs/Legislation**	**Outcomes**	**Actions**	**Timeline**
Ensuring the protection of the site's OUV into the future requires an appropriate level of ongoing investment in research and monitoring. Given the transboundary nature of threats to the OUV identified through the SEA, the PAD is the primary area of concern requiring coordination of existing and new investments, and is the focus of this theme. Nevertheless, investments in research and monitoring will be required to advance actions related to other themes. While a broad range of research and monitoring has been and is currently being conducted in the PAD, integration of these efforts (together with additional required efforts) into a PAD focused, cumulative effects research and monitoring program is required. To effectively result in ongoing protection of	Lack of an integrated cumulative effects monitoring program for the PAD that informs decision making. Poor coordination of research and monitoring activities. Poor communication of research and monitoring results. Lack of integration of Science-based and Indigenous Knowledge	MCFN/ ACFN Community-Based Monitoring Programs. WBNP Ecological Integrity Monitoring Program Peace-Athabasca Delta Ecological Monitoring Program Oil Sands Monitoring Program	An Integrated PAD Research and Monitoring program (using both WS and IK), supported by a community based research and monitoring hub, is implemented to detect cumulative effects on the PAD and to generate information that informs land-use management and regulatory decision making.	• Coordinate PAD Research and Monitoring Workshop(s) and develop integrated PAD Research and Monitoring Program. • Implement Integrated PAD Research and Monitoring Program. • Initiate annual PAD Symposium to share findings of PAD-related science and monitoring work underway by various organizations. • Undertake Wetland Classification of the PAD and of WBNP to support ecological assessments of the PAD and other wetlands within WBNP. • Complete high resolution digital terrain imagery coverage of the PAD. • Advance the concept of a PAD monitoring hub to support better integration of Science-based and Indigenous knowledge of the PAD. • Develop periodic State of the PAD reports • Expand invasive species monitoring and management to the Salt Plains as part of on-going vegetation monitoring in WBNP WHS.	**2018-2020** **2020 +** **2018-2019** **2018-2019** **2019-2020** **2019-2020** **TBD** **2019-2019 +**

the site's OUV, this program would be complemented by a knowledge hub that allows sharing of research and monitoring results and that mobilizes knowledge to inform stakeholders and influence decision making.					
Theme: Wildlife / Habitat Conservation (15, 16)	**Key Issues / Challenges**	**Relevant Programs/Legislation**	**Outcomes**	**Actions**	**Timeline**
Wood bison and whooping cranes are the two most prominent species at risk at WBNP. Recovery plans are in place to guide actions necessary to move both species toward recovery objectives and down listing. For wood bison, the establishment and maintenance of disease-free herds is a key objective, and therefore measures related to assessing and addressing threats to the disease-free Ronald Lake Bison Herd, and related to disease management of bison herds within WBNP are needed. The whooping crane population continues along its path to recovery. The availability and use of whooping crane nesting habitat is important to understand as the population grows, to better inform management actions such as critical habitat protection. As the population migrates over the oil sands region on its way to and from the nesting grounds, identifying landing and stop over sites in that area will help to quantify and manage risk to the species.	Impacts of development on wildlife (and their supporting habitat) that range into the park. Impacts of development specifically on the Ronald Lake Bison Herd and habitat. Bison disease management. Identification and protection of critical habitat for whooping crane. Landing and stopover sites near tailings ponds in the oil sands region.	*Recovery Strategy for the Wood Bison (*Bison bison athabascae*) in Canada* *Recovery Strategy for the Whooping Crane (*Grus americana*) in Canada* *Species at Risk Act* *Wildlife Act* (Alberta)	Support the recovery of wood bison and whooping crane within and beyond WBNP through the implementation of recovery actions and species management.	• Complete the Recovery Strategy for Wood Bison. • Undertake an Imminent Threat Assessment for Ronald Lake and Wabasca Wood Bison Herds. • Launch a collaborative multi-stakeholder bison disease management planning group to examine options and coordinate activities aimed at eliminating the risk of bovine brucellosis and tuberculosis transmission. • Develop one or more Action Plans for Wood Bison. • Begin work to identify critical habitat for Wood Bison. • Continue to monitor the nesting area of the Whooping Crane within WBNP and its wider ecosystem. • Conduct high resolution remote sensing to assess the extent and use of Whooping Crane breeding habitat. • Update critical habitat identification for Whooping Crane. • Identify landing and stopover sites used by Whooping Cranes within the oil sands region during migration.	**Completed 2018** **2018** **TBD** **2022** **2018** **2018 +** **2018 -2019** **2022** **2019**

1.0 Introduction

1.1 Wood Buffalo National Park World Heritage Site

Wood Buffalo National Park World Heritage Site (WBNP) is a special place. Straddling the boundary between the province of Alberta and the Northwest Territories, the park encompasses 4.5 million hectares (an area larger than Switzerland) of forest, wetland and grassland, including the majority of the Peace-Athabasca Delta (PAD) (Figure 1). Established in 1922 to protect the last remaining herds of wood bison, it is Canada's largest national park and includes the traditional territories of First Nations and Métis peoples of the region.

Today, the park protects the largest free-roaming, self-regulating wood bison herd in the world, the nesting ground of the last remaining native flock of endangered whooping crane, the biologically rich Peace-Athabasca Delta, extensive salt plains unique in Canada, and some of the finest examples of gypsum karst topography in North America.

This presence of rare and superlative natural phenomena led to the park's inscription as Canada's eighth UNESCO World Heritage Site in 1983, based on the following World Heritage criteria that contribute to its Outstanding Universal Value (OUV):

> Criterion (vii): The great concentrations of migratory wildlife are of world importance and the rare and superlative natural phenomena include a large inland delta, salt plains and gypsum karst that are equally internationally significant.
>
> Criterion (ix): Wood Buffalo National Park is the most ecologically complete and largest example of the entire Great Plains-Boreal grassland ecosystem of North America, the only place where the predator-prey relationship between wolves and wood bison has continued, unbroken, over time.
>
> Criterion (x): Wood Buffalo National Park contains the only breeding habitat in the world for the whooping crane, an endangered species brought back from the brink of extinction through careful management of the small number of breeding pairs in the park. The park's size (4.5 million ha), complete ecosystems and protection are essential for in-situ conservation of the whooping crane.

The PAD and the whooping crane nesting area (another large wetland area in the park) have also been declared Wetlands of International Importance under the *Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention)*.

1.2 Pressures

Though renowned for its size, remoteness, and the absence of industrial resource extraction activities within its boundaries, WBNP is vulnerable to the impacts of external development given its location within the Mackenzie River Basin (Figure 1). The Peace and Athabasca river sub-basins and Lake Athabasca drain an area of about 600,000 square kilometers of northern British Columbia, Alberta and Saskatchewan and meet in the park at the PAD. Upstream and adjacent developments with the potential to impact the OUV of the site include flow regulation, oil sands development, pulp and paper production, forestry, agriculture and municipal development. Superimposed upon these activities are the impacts of a changing climate. Over the last 50 years in the basin, the average annual temperature in this area has increased by 2°C and the average winter temperature has increased by 4°C. The number of extremely warm days has increased while the number of extremely cold days has decreased. Spring thaw happens earlier and fall freeze-up happens later. The ice-covered season is shorter. Warmer temperatures have also shifted the amount and timing of spring runoff and of peak river flows. For these reasons, assessments of the PAD have concluded that it is "a clear example where cumulative effects have generated ecological change on a landscape scale"[3]. These environmental changes and concerns about cumulative effects are supported by the lived experience of Indigenous land-users who have generations of knowledge about conditions in the PAD[4].

[3] Mackenzie River Basin Board (MRBB). 2012. The Mackenzie River Basin Board's 2012 Issues Report: Oil sands development, hydroelectric development and climate change in the Mackenzie River Basin. Mackenzie River Basin Board Secretariat, Yellowknife, NWT. 11pp.

[4] Independent Environmental Consultants (IEC). 2018. Strategic Environmental Assessment of potential cumulative impacts of all developments on the World Heritage Values of Wood Buffalo National Park, Markham, ON.

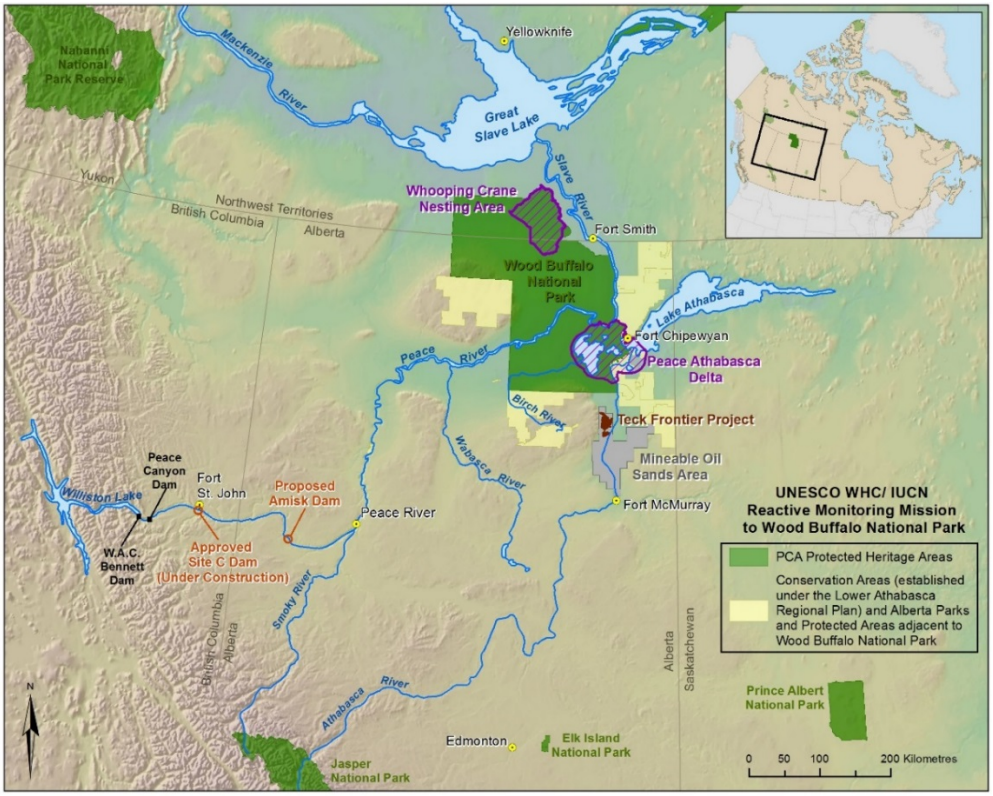

Figure 1: Wood Buffalo National Park regional context

1.3 Origins of the Action Plan

In December 2014, the Mikisew Cree First Nation (MCFN) petitioned the World Heritage Committee (the Committee) to have WBNP WHS added to the "List of World Heritage In Danger" (Figure 2). Their concerns focused on ascertained and potential dangers to the property from existing and planned hydroelectric and oil sands development projects, climate change and inadequacies in the management frameworks for the property that could compromise the integrity of the property's OUV.

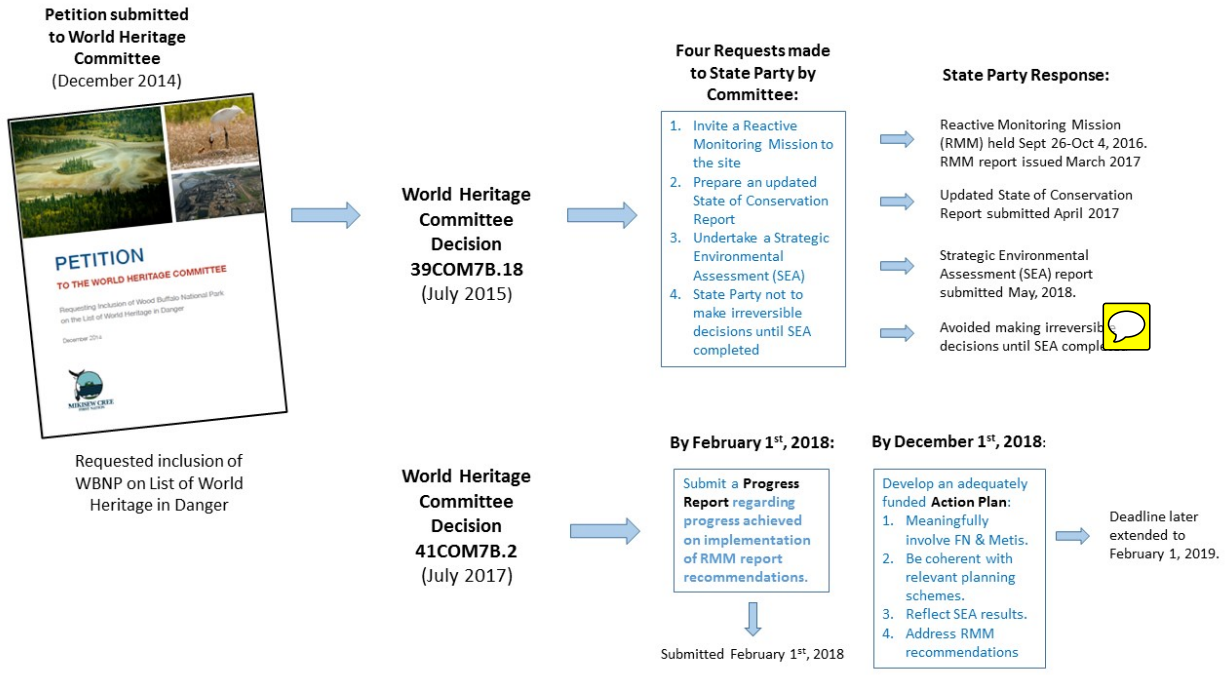

Figure 2: World Heritage Committee decisions flowing from Mikisew Cree First Nation petition.

In July 2015, the Committee issued a decision requesting that Canada invite a World Heritage Centre (WHC)/International Union for Conservation of Nature (IUCN) Reactive Monitoring Mission (RMM) to WBNP "to review the impact of the developments on the property, to evaluate its state of conservation, and to exchange in more depth with the State Party [Canada], petitioning First Nation, and other stakeholders as appropriate." The Committee also requested that Canada undertake a Strategic Environmental Assessment (SEA) to assess the potential cumulative impacts of all developments on the OUV of the property, including hydroelectric dams, oil sands development, and mining (World Heritage Committee Decision 39 Com 7B.18, 2015).

The Government of Canada welcomed the RMM and worked closely with the WHC, the IUCN, and Indigenous partners (including the MCFN) to plan the visit. Representatives of the WHC and the IUCN met with federal, provincial and territorial governments; Indigenous communities; industry; academics and environmental non-government organizations in late September and early October, 2016. The RMM report[5] (released March 10, 2017) concluded that the PAD, "widely recognized as the particularly valuable and vulnerable heart of the park", is being impacted by external developments and climate change and that these impacts are not being adequately addressed through existing management frameworks and collaborative efforts. Three overarching concerns were also identified:

[5] UNESCO. (2017). Reactive Monitoring Mission (RMM) to Wood Buffalo National Park, Canada. Mission Report January 2017. UNESCO World Heritage Centre - WHC International Union for Conservation of Nature - IUCN, 25 September - 4 October 2016

1) longstanding and unresolved conflicts and tensions between Indigenous people and governmental and private sector actors which call for a coherent management response in line with the legal framework and unambiguous political commitments to reconciliation;
2) governance deficiencies, including but not limited to water management across jurisdictions, impact assessment (including cumulative effects assessment) and environmental monitoring; and
3) the effects of observable and anticipated climate change affecting the property's high-latitude ecosystems.

The RMM report recommended that Canada "be given one opportunity…to immediately develop a structured and adequately funded Action Plan" guided by 17 recommendations (Appendix A). In response, Canada submitted a State of Conservation Report to the WHC on March 30, 2017, acknowledging the RMM report and committing to the development of the SEA and Action Plan in collaboration with provincial and territorial governments, Indigenous communities, industry and stakeholders.

The World Heritage Committee subsequently adopted a decision at their July 2017 Committee meeting requesting that Canada submit to the WHC, by February 2018, a report on the progress achieved with its implementation of the RMM recommendations, and to submit by **1 December 2018**, an updated report on the state of conservation of the property and an Action Plan, for examination by the Committee at its 43rd session in 2019 (World Heritage Committee Decision 41 Com 7B.2, 2017). In September 2018, the World Heritage Committee extended the deadline for Canada to submit the Action Plan to February 1, 2019 as a result of a request initiated by an Indigenous partner of WBNP.

2.0 About the Action Plan

2.1 Purpose

This Action Plan is a commitment by the Government of Canada to the on-going protection and stewardship of WBNP. The Action Plan outlines specific priorities and actions, to be undertaken by a range of responsible jurisdictional authorities, to ensure the maintenance of WBNP's OUV.

This Action Plan responds to the World Heritage Committee's 2017 decision which requested that Canada develop an Action Plan informed by the recommendations of the IUCN/World Heritage Centre RMM report (Appendix A).

The development of this Action Plan has been informed by the findings and recommendations of the Strategic Environmental Assessment of WBNP WHS (2018) which assessed the cumulative impacts of developments on the OUV (Appendix B).

The initiatives identified in this Action Plan will only be successful through ongoing collaboration with relevant jurisdictional governmental authorities and key partners, including the Indigenous governments representing the several Indigenous peoples of the area, who have deep cultural, ecological and spiritual connections to the land.

2.2 Scope

This Action Plan focuses on the actions required to understand and protect those elements of WBNP that contribute to its OUV. As WBNP is the homeland of local First Nations and Métis peoples, this Action Plan has been developed with a view to the cultural significance of the site and supports actions that will contribute to the ability of Indigenous peoples to continue to exercise Aboriginal and treaty rights within the WBNP. The Action Plan builds upon and enhances efforts by a range of government partners, Indigenous governments, and stakeholders. It identifies new collaborative actions and strategies where these are required. The scope of work of the Action Plan is broad, encompassing areas under the jurisdictional authorities of the Government of Canada, the Government of Alberta, the Government of British Columbia, the Government of the Northwest Territories, and the stewardship responsibilities of Indigenous governments. The plan includes actions to strengthen relationships with Indigenous peoples in the management of the site, specifically through cooperative management processes, actions to facilitate inter-jurisdictional collaboration across a range of thematic areas, and actions to create effective mechanisms required to implement the actions outlined within it.

This Action Plan does not address all aspects of the management of Wood Buffalo National Park as it is necessarily focused on actions that aim to ensure the protection of the Outstanding Universal Values of the World Heritage Site. There are other park management priorities that are not directly related to the Outstanding Universal Value of the site that will continue to be addressed by the Parks Canada Agency in collaboration with its partners. The integration of the actions outlined in this Action Plan with broader park management processes will be required, and will support the continued evolution of park management priorities into the future. Upcoming reviews of the Wood Buffalo National Park management plan (anticipated in coming years) will provide opportunities to ensure that the actions described in this Action Plan lend support to on-going park management priorities and future areas of focus.

2.3 Timeframe

This plan includes actions to be implemented in the near term (early implementation) and over the longer term that will support the protection of the site's OUV. While there are a range of related planning processes with regular reporting timelines from initiatives outlined in this plan, and while these will be led by respective jurisdictional authorities, progress in implementation of the Action Plan will be reported on in line with the World Heritage Committee's requested timelines.

2.4 Structure

The major sections of the plan are:

- Section 3.0 - Indigenous Ways of Life: a reflection of the lived experiences of Indigenous peoples regarding the state of WBNP and the factors impacting it, including development pressures beyond the boundaries of the site, climate change and the site's management and regulatory context.

- Section 4 – WBNP Management Context: a summary of the jurisdictional context, applicable legislation, role of Indigenous governments and need for reconciliation, related collaborative efforts, and international obligations.
- Section 5 – Strategic Environmental Assessment (SEA): a brief overview of the SEA, including a summary of the desired outcomes for the site's world heritage values and key findings of the assessment which informed this Action Plan.
- Section 6 – Action Plan: the actions that will be taken to protect the OUV of WBNP.
- Section 7 – Implementation, Reporting and Review: a summary of the collaboration and governance required to implement the Action Plan and of reporting and review of the Action Plan.

2.5 Developing the Action Plan

The Government of Canada has led the collaborative effort to develop this Action Plan with the governments of Alberta, British Columbia, and the Northwest Territories, in partnership with Indigenous partners. A public review comment to seek input from stakeholders was held in the fall of 2018.

In 2017, a Federal-Provincial-Territorial Coordinating Committee was established to facilitate the jurisdictional collaboration required to develop the Action Plan. This committee organised the work to address the RMM recommendations under seven corresponding thematic areas around which the Action Plan is designed.

Because the scope of the Action Plan requires commitments and actions by a range of governments with jurisdictional authority both within WBNP and beyond it, existing federal, provincial and territorial-led planning processes are used to advance actions where this is appropriate. Where necessary, new processes have been, or will be initiated, where required. This included the establishment of working groups with federal, provincial, territorial, and Indigenous government representatives.

The Action Plan has been informed by:

- The knowledge, guidance and perspectives of Indigenous government leadership and Indigenous Knowledge holders;
- The knowledge, guidance and perspectives of the government representatives on the Federal-Provincial-Territorial Coordinating Committee;
- The wealth of knowledge generated through previous studies and assessments focused on the condition of the Peace-Athabasca-Slave river system and the Peace-Athabasca Delta;
- Information generated by historical and ongoing management and monitoring programs in the area, including community-based monitoring;
- Contributions and comments received from government, Indigenous governments, industry, environmental non-governmental organizations, and other stakeholders and the public on draft versions of this plan;
- Technical advice received from the IUCN and the WHC, including the 2016 RMM report; and
- The analyses, findings and recommendations of the Strategic Environmental Assessment, including review comments received from government, Indigenous governments, industry, conservation organizations and the public.

3.0 Indigenous Ways of Life

This Action Plan draws upon the knowledge of Indigenous people regarding the state of WBNP WHS and the factors impacting it, including external development, climate change and the site's management and regulatory context. The lived experiences of Indigenous land users and community members are articulated in the petition and other key documents, and have been expressed by Indigenous people in numerous forums over many years. Most recently these perspectives have informed the development of the Strategic Environmental Assessment which was completed in 2018.

While the experiences and concerns emphasized by different Indigenous governments from different areas of WBNP vary, they can be generally summarized as follows as they relate to the OUV of the site (readers are directed to the Petition, RMM Report, SEA and reference material for further detail).

3.1 Indigenous relationship to the land / Indigenous Ways of Life

First Nations and Métis have occupied and used the lands, waters and resources of WBNP for generations and continue to do so. They rely upon the resources of the property to sustain their livelihoods, way of life and culture. From the Indigenous perspective, their people are an integral part of the ecosystem within which they live. The presence and health of natural features and wildlife (i.e., the world heritage values), are inseparable from Indigenous ways of life and the constitutional rights of Indigenous people. The connection between Indigenous ways of life, culture and resources, and the ability to exercise Aboriginal rights is illustrated in Figure 3, below.

Water is fundamental to life and is a top priority and concern for Indigenous people. Indigenous governments also have stewardship responsibilities for taking care of the gift that is water and the life that it supports. Land-users in the PAD describe the park as their grocery store, their kitchen, their school, their medicine cabinet and their photo album, and the place where they have their happiest memories of family and nature (MCFN, 2018a; MCFN, 2018b). The PAD has also been referred to as the heart of the park and the region. The idea that "everything is connected" also applies downstream from the PAD, and management of the Peace and Athabasca Rivers and the PAD is also of interest to communities on the Slave River and Great Slave Lake.

Given the fact that WBNP was inscribed under nature-based criteria for World Heritage, these world heritage values do not relate very well to the more holistic Indigenous perspective that everything is connected and that Indigenous people are intrinsically connected to the land. The following considerations are important to Indigenous people, but are not explicitly included in the site's world heritage values:

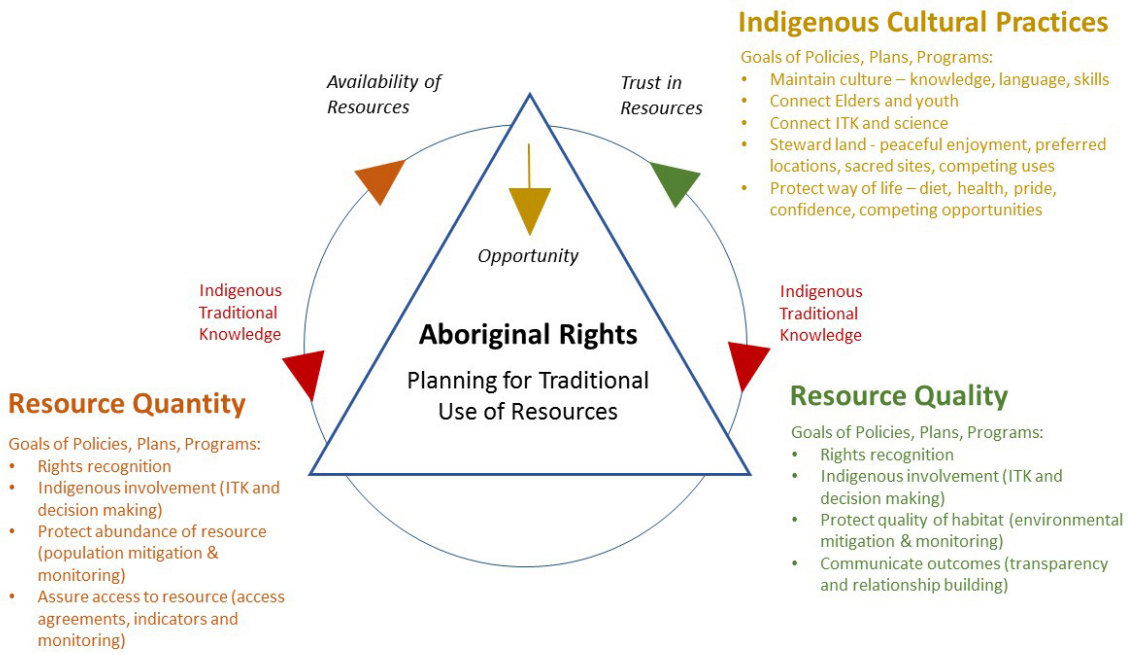

Figure 3: Connection between Indigenous Ways of Life and access to resources (Parks Canada, 2018)

- Recognition of Aboriginal and treaty rights;
- Access to healthy lands and resources for the peaceful exercise of rights, including harvesting and cultural use;
- WBNP as a cultural landscape and a homeland to Indigenous people;
- The health and welfare of Indigenous people;
- The role of Indigenous people in ecosystem relationships;
- The role of other species (e.g. vegetation, moose and caribou) in relation to bison and wolves;
- The role of other areas of the park in safeguarding the world heritage values; and
- Inter-connections between all species (e.g. vegetation, bugs, frogs, mice, bats, birds, etc.), landscapes and Indigenous people.

3.2 Indigenous observations of change / Cumulative impacts on OUV and Indigenous Ways of Life

Indigenous people are intimately familiar with the site's forests, lakes, rivers, creeks, marshes, fish and wildlife, seasons and cycles, including sights, sounds, textures and tastes. Their detailed personal and collective knowledge of the area acquired and shared across generations, their acute observational skills and the time spent traveling, hunting, trapping and fishing on the land enable them to mark changes as

they occur. In many instances, those changes have resulted in a fundamentally altered relationship between Indigenous people and the land, in particular with the Peace-Athabasca Delta system.

Indigenous people note changes in the PAD system that result from cumulative effects, including:

- Athabasca River and PAD water quality has been directly affected by upstream developments, notably by emissions and releases from oil sands developments. Indigenous people are very concerned that the water is no longer safe to drink, and that contaminants are also affecting the abundance and quality of harvested wildlife and the health of the PAD and its people in general.
- Athabasca, Peace and Slave River flows, and water levels in the PAD, are diminished or altered due to water withdrawals (by oil sands producers and other upstream consumers of water), flow regulation and the impacts of climate change. In addition to concerns about impacts on aquatic life, low water levels impede or prevent travel over traditional routes in the PAD to access important harvesting or cultural sites, thereby infringing upon the exercise of their Constitutionally-protected Treaty and Aboriginal rights, as well as the ability to remain connected to their lands and culture.
- Flow regulation by the W.A.C. Bennett Dam in BC has affected the seasonality of Peace River and Slave River flows. Indigenous people are very concerned that lower spring and summer water levels and fewer ice-jam floods have caused some perched lakes to dry out. Changes to the Peace River flow regime during fall and winter create a “double pulse” of flows and two freeze-ups. Indigenous people have identified that this results in drowned muskrats and bank-dwelling beavers, that it further reduces the possibility of ice-jam floods in the spring and that it creates unsafe travel conditions across ice in the winter. Another major dam on the Peace River at Site C has now been approved and Indigenous people are concerned that it will have similar impacts, not only in the PAD but in the Slave and Mackenzie River deltas as well.
- Climate change is further altering flow patterns, and with warmer, shorter winters ice thickness is also diminished, reducing the likelihood of ice-jam flooding required to replenish perched basins.
- Forest fires are causing greater harm now in the face of reduced ecosystem resilience. While fire is an integral part of the natural cycle, forest fires in the PAD and WBNP now cause greater harm. Since the land is drier, forest fires are more frequent, more intense, burn deeper into the soil, and cover larger areas.

Stressors, pathways of effect and outcomes based on Indigenous Knowledge are further illustrated in Figure 4, below.

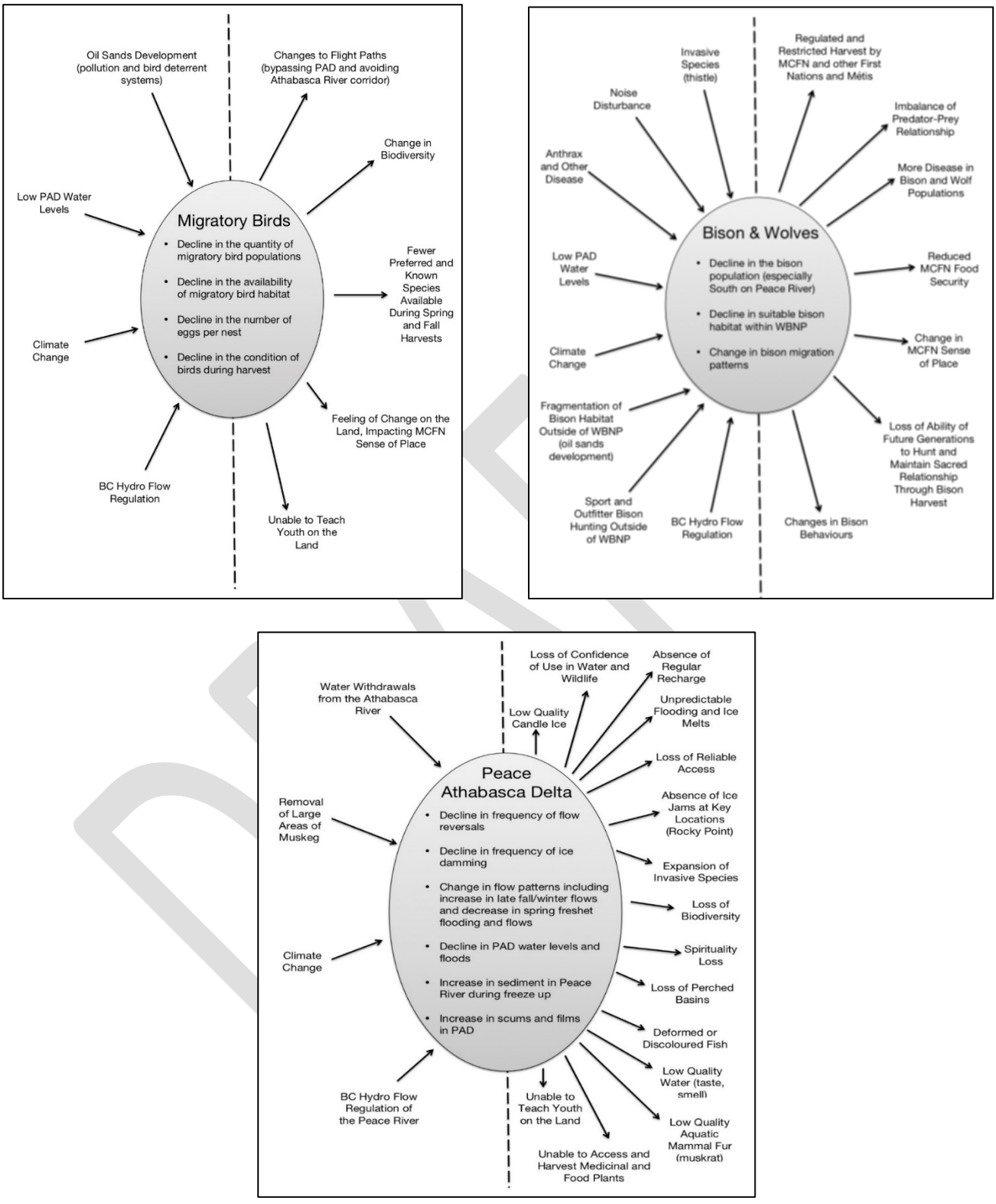

Figure 4: Key Stressors, conditions, and outcomes based on Indigenous Knowledge (MCFN, 2018a)

3.3 Indigenous People and the Establishment of Wood Buffalo National Park

Archeological evidence demonstrates that Indigenous people have inhabited the region that is now Wood Buffalo National Park for more than 8000 years, long before fur traders arrived in the early 1700s. The long history of Indigenous people and their relationships to the lands and waters of the region is, of course, fundamental to a fulsome understanding the impacts of the imposition of the concepts of national parks and world heritage sites to the lived experiences of Indigenous people. This Action Plan is not the place to outline this complex and multi-faceted history, however for the purposes of this Action Plan, it is helpful to provide a very brief overview of this history for readers who are unfamiliar with it.

First Nations people in the area of WBNP signed Treaty 8 with Canada in 1899 and 1900 with the understanding that they would have the right to continue their traditional lifestyles and livelihoods, including the right to hunt, fish and trap "as long as the rivers flow"[6] without interference, not just in their own traditional territory but throughout all of Treaty 8 land.

After Treaty 8 was signed, these treaty rights were constrained by government legislation regulating harvesting as the treaty contemplated lands to be "taken up" and also provided for government to regulate the treaty rights granted.

Relationships between Indigenous people of the area existed long before the signing of Treaty 8 and the establishment of WBNP, and the impacts of colonization, including the establishment of WBNP, had a profound influence on the relationships between Indigenous people and with settler communities.

At the time of the park establishment in 1922 (north of the Peace River), the government understood that it was not reasonable or appropriate to eliminate harvesting within the park, given its size and importance to the people of the area. Instead, harvesting practices were allowed to continue, under a permit system, but only by some Indigenous people. After the park was establishment north of the Peace River, traditional harvesting was considered a "privilege", not an Aboriginal or treaty right, and permits were required and issued in limited numbers. Indigenous harvesters who were actively harvesting in the park at the time of establishment were considered eligible for harvesting permits whereas families with strong ties to the newly established park lands who were not actively harvesting on these lands at the time of establishment were ineligible. Additionally, Métis who had been harvesting on lands that became the new park were no longer permitted to harvest in the park after establishment (and have only recently begun harvesting in the park once again).

In 1926 WBNP was expanded south of the Peace River into the Peace-Athabasca Delta area, largely to accommodate introduced bison herds which were moving beyond the southern boundary of the existing park. As part of this expansion of the park, all persons (both Indigenous and non-Indigenous) who were harvesting in the newly expanded park area at the time were eligible for harvesting permits. Eligibility was still based on being an active harvester in the park at the time of expansion and so families with strong ties to the newly established park lands, who were not actively harvesting on these lands at the time of establishment, were again ineligible for permits.

[6] The phrase "as long as the rivers flow" was included to encourage First Nations to sign the Treaty.

In both the original establishment and the later expansion of the park, government policies led to the exclusion of certain Indigenous members of a community to harvest, trap and fish within the park. This exclusionary policy resulted in a divisions between and within Indigenous communities.

This history of park establishment, along with harvesting regulation, has been a negative one for First Nations and Métis peoples who experienced hardship as a result of these policies which prevented them from maintaining a way of life that had been practiced for generations.

Towards a New Relationship with Indigenous People

This privilege-based system of permits to regulate harvesting remained largely in place until two key Supreme Court of Canada cases. In 2003 the *R. v. Powley* decision recognized the Métis right to hunt in the Sault Ste. Marie, Ontario area. The case also provided a test to determine if Powley-type rights existed elsewhere. Research done in the WBNP area found that the local Indigenous Métis would likely have Powley-type hunting rights. The Government of Canada's response for WBNP was to respect the Métis assertion of rights.

In 2005, the *Mikisew Cree vs. Canada* Supreme Court Decision recognized the existence of Treaty 8 rights in WBNP and confirmed that the duty to consult applied in the context of Treaty 8 rights in WBNP. The Supreme Court of Canada upheld that Treaty 8 First Nation signatories continued to have the right to hunt, fish and trap in the Treaty 8 settlement area and consultation was required if the Government of Canada contemplated an action or activity that could potentially adversely affect the exercise of treaty rights. This effectively struck down the privilege-based system that had been in use at WBNP since 1922.

Today, the Government of Canada recognizes Aboriginal and treaty rights within the park and the importance of First Nations and Métis communities having strong connections to their traditional ways of life and to the lands and water of WBNP, including the ability to practice of traditional activities. While recognizing efforts by Parks Canada to improve relationships and advance cooperative management, First Nations and Métis seek a renewed relationship with park management authorities, one that will support shared decision-making in park management based upon recognition of rights, respect, co-operation and partnership.

4.0 WBNP Management Context

The division of powers within Canada's federal system allows for distinct, but sometimes overlapping, areas of responsibility between the federal government and the provinces/territories. For example, the federal government maintains jurisdiction over WBNP, and the governments of Alberta and Northwest Territories are responsible for land use planning and protected areas in their respective jurisdictions outside of WBNP, including on its boundaries. The Government of British Columbia has jurisdiction over local works and undertakings (including hydro-electric facilities) in the Province of British Columbia. The protection and management of WBNP, while ultimately the responsibility of federal authorities (Parks Canada), exists within a context where decisions made by other jurisdictional authorities regarding land and water management have the potential to impact the OUV of the site.

It should also be noted that Canada's domestic environmental objectives are advanced through a range international agreements that address cross-cutting issues, as well as with a variety of partners on a bilateral, regional or multilateral basis. With respect to the management of WBNP WHS, the most relevant agreements are the *Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention)* and the *Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention)*. Canada is also a signatory to many other international agreements pertaining to the conservation of biodiversity and environmental protection.

4.1 Legislation / Collaboration

Federal Legislation

Parks Canada decisions and actions in protecting, managing and operating a national park are guided by the *Canada National Parks Act* (2000) and by park management plans. The Act provides legal protection for WBNP and also prescribes that the "maintenance or restoration of ecological integrity, … shall be the first priority of the Minister when considering all aspects of the management of parks." Park management plans are prepared every 10 years in consultation with Indigenous governments, stakeholders and the general public, and identify key management issues and challenges along with a framework for addressing them. The 2010 Management Plan for WBNP identifies the PAD's ecological integrity, cooperative management and wood bison management as key areas of focus.

There are a number of other relevant federal acts that also support the protection of the park including, among others: *Navigation Protection Act*; *Canada Water Act*; *Fisheries Act*; *Species at Risk Act*; *Migratory Birds Convention Act, 1994*; *Canadian Environmental Protection Act, 1999*; *Canadian Environmental Assessment Act, 2012*; *Mackenzie Valley Resource Management Act* and *Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act*. Parks Canada collaborates closely with other federal, provincial and territorial departments regarding the application of federal legislation in and around the park.

Provincial and Territorial Legislation

Key provincial and territorial legislation of relevance to WBNP includes:

Alberta:

- *Alberta Land Stewardship Act*: provides the legal basis for Alberta's Land-use Framework, including the development of regional plans. The Lower Athabasca Regional Plan (LARP) is the first regional plan developed in Alberta. Five environmental management frameworks are established under LARP (air quality, groundwater, surface water quality, surface water quantity, and tailings) and a biodiversity management framework is under development. The environmental management frameworks support the management of cumulative effects of development on the environment. A regional plan for the Lower Peace Region will be developed and will include environmental management frameworks.
- The *Water Act* and the *Environmental Protection and Enhancement Act (EPEA)* and their associated regulations are the primary legislation governing water quality and quantity in Alberta. EPEA is the primary legislation governing water quality in Alberta. Approvals for point source discharges such as municipal and industrial releases into rivers in Alberta, and other types of releases, are issued under EPEA. Any proposed new municipal or industrial releases require the proponent to assess the potential effects of the project on water quality as part of

environmental impact assessments and/or applications for operating approvals. The *Water Act* primarily regulates allocation, diversion and uses of surface water and groundwater, including disturbance within water bodies and watercourses. In addition, Codes of Practice are enabled as regulation under both EPEA and the *Water Act*, and define required practices for specified activities.

- The Chief Scientist, Alberta Environment and Parks, has a legislated mandate under EPEA to monitor, evaluate and report on the condition of Alberta's environment. Two independent advisory panels, the Indigenous Wisdom Panel and the Science Advisory Panel, have also been established in legislation to ensure the scientific integrity of the environmental science program, inclusive of Indigenous knowledge, to inform our understanding of the condition of the environment.
- The Alberta *Provincial Parks Act* is one of three pieces of legislation that provides legal direction and guidance for managing Alberta's provincial parks system. The *Provincial Parks Act* has a number of regulations that provide guidance around specific activities and restrictions in provincial parks, wildland provincial parks and provincial recreation areas.

British Columbia:

- *Water Sustainability Act*: governs water stewardship, including water allocation planning, water management planning, drought management, licenses to divert and use water, and licenses to construct works or make other changes in and about a watercourse.
- *Water Protection Act:* protects B.C.'s water by reconfirming the Province's ownership of surface and groundwater, clearly defining limits for bulk water removal, and prohibiting the large-scale diversion of water between major provincial watersheds and/or to locations outside of the province. (https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/laws-rules/water-protection-act)

Northwest Territories:

- In the Northwest Territories, lands and waters are managed through an integrated system of legislation including the *Waters Act*, the *Northwest Territories Lands Act* and the federal *Mackenzie Valley Resource Management Act*.

Saskatchewan

- *Saskatchewan Watershed Authority Act*: directs the management of the province's water resources to ensure safe drinking water sources and reliable water supplies for economic, environmental, and social benefits for Saskatchewan residents. The Authority manages surface and groundwater resources, owns and operates provincial dams, directs watershed planning activities and distributes rights to the use of water resources.
- *Environmental Management and Protection Act*: aims to protect the air, land, and water resources of the province through regulation and control of potentially harmful activities and substances. The Act also regulates drinking water systems.

Reconciliation and Collaboration with Indigenous governments and WBNP

The relationship between Indigenous people and the Crown as a result of colonization in general, and in this case the establishment and management of WBNP specifically, has been a negative one. This negative history requires the Crown to fundamentally change its relationship with Indigenous people. The Government of Canada is committed to achieving reconciliation with Indigenous people through a

renewed, nation-to-nation, government-to-government relationship based on recognition of rights, respect, co-operation, and partnership. Reconciliation efforts are guided by the UN Declaration on the Rights of Indigenous Peoples, the Truth and Reconciliation Commission's Calls to Action[7], constitutional values, and collaboration with Indigenous peoples, as well as with provincial and territorial governments.

Specifically with regard to heritage places managed by Parks Canada, the strengthening of relationships with Indigenous partners is guided by the principles in the agency's resource guide, *Promising Pathways.* Parks Canada's guidance recognizes that heritage places like WBNP were traditional lands prior to establishment of the park, and continue to be traditional lands that are important to the cultural, social, economic and spiritual well-being of Indigenous communities. Parks Canada believes that supporting Indigenous access and use of heritage places will result in the continued strength of Indigenous Knowledge, and that strong Indigenous Knowledge and strong cooperative relationships will lead to two important outcomes: better management of heritage places and healthy Indigenous communities.

At WBNP, park managers work with 11 Indigenous partners both on a bilateral basis and collectively. Due to the diverse geography of the park and differing histories of interaction with the Park, not all Indigenous partners share the same perspectives. Since 2014 WBNP has worked collectively with Indigenous partners through the Aboriginal Committee for the Cooperative Management of Wood Buffalo National Park (CMC). Parks Canada and its CMC partners recognize that there is much work to be done in strengthening the cooperative management committee with a view to increasing engagement of all Indigenous governments in park management, and to providing a more meaningful role in decision-making. These efforts toward shared park management, together with acknowledgement of past wrongs, are steps toward reconciliation based on mutual recognition and respect.

The role of Indigenous governments in land and water governance outside of the park varies by jurisdiction. Indigenous governments in the provinces are engaged in provincial land-use planning processes and consulted about land and water management decisions. In the Northwest Territories, the Northwest Territories Lands and Resources Devolution Agreement[8], land claim agreements and the *Mackenzie Valley Resource Management Act* enable Indigenous governments to play a more direct role in decision making through membership on land and water boards, environmental review boards and a variety of other formal and informal processes.

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[7] "The Truth and Reconciliation Commission of Canada (TRC) was officially launched in 2008 as part of the Indian Residential Schools Settlement Agreement (IRSSA). Intended to be a process that would guide Canadians through the difficult discovery of the facts behind the residential school system, the TRC was also meant to lay the foundation for lasting reconciliation across Canada."
(www.thecanadianencyclopedia.ca/en/article/truth-and-reconciliation-commission)
The TRC made a number of recommendations ("Calls to Action") to redress the legacy of residential schools and advance the process of Canadian reconciliation.
(www.trc.ca/websites/trcinstitution/File/2015/Findings/Calls_to_Action_English2.pdf)

[8] Signed on June 25, 2013, this agreement transferred responsibility for public land, water and resource management in the Northwest Territories from the federal department of Aboriginal Affairs and Northern Development Canada (AANDC) to the GNWT on April 1, 2014.

Inter-jurisdictional Collaboration

Transboundary Water Management:

The Mackenzie River Basin Transboundary Waters Master Agreement commits the Governments of Canada, Saskatchewan, Alberta, British Columbia, Yukon and Northwest Territories to manage the water resources of the basin in a manner consistent with the maintenance of the ecological integrity of the basin's aquatic ecosystem, including the PAD. The Master Agreement also provides for the establishment of bi-lateral water management agreements between provinces and territories that further commit the jurisdictions to work cooperatively to meet this goal. Agreements relevant to WBNP OUV have been completed (Alberta - NWT) or negotiations are ongoing (Alberta – BC and Alberta - Saskatchewan).

Environmental Assessment:

Parks Canada (along with other federal government departments and agencies) participates in joint federal-provincial environmental assessment processes regarding major development proposals with the potential to impact the park (in particular, hydroelectric and oil sands development projects). An important component of these processes is consultation with Indigenous governments to identify and mitigate potential impacts on Aboriginal rights and culture.

Research and Monitoring:

The impacts on WBNP from stressors originating outside the park are studied and monitored by Parks Canada and a range of other organizations including other federal and provincial government departments and agencies, local Indigenous governments, and academic institutions. Collaborative efforts include the Peace-Athabasca Delta Ecological Monitoring Program (PADEMP), a multi-stakeholder group consisting of Indigenous governments, government and non-government organizations whose mandate is to measure, evaluate and communicate the state of the delta using both Science-based and Indigenous Knowledge. Additionally, the Oil Sands Monitoring Program (OSM) is a comprehensive joint federal-provincial effort to monitor the impact of oil sands development in the Lower Athabasca region, including aspects of biodiversity, water quality and quantity, and air quality. Two independent advisory panels, the Indigenous Wisdom Panel and the Science Advisory Panel, have also been established in legislation by Alberta to ensure the scientific integrity of the provincial environmental science program inclusive of Indigenous knowledge to inform our understanding of the condition of the environment. Both PADEMP and OSM collaborate with the Mikisew Cree First Nation/Athabasca Chipewyan First Nation Community-Based Monitoring (CBM) Programs, through which community members use both Science-based and Indigenous knowledge to monitor environmental and traditional use conditions in the PAD. CBM efforts include monitoring in the PAD of water quantity (depth), water quality, ice thickness, snow depth and contaminants in wildlife.

4.2 International Obligations

As a State Party to the *Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention)*, Canada recognizes its responsibilities related to the identification,

protection, conservation, presentation and transmission of cultural and natural heritage to future generations. Canada is committed to managing WBNP in accordance with the guidance provided to countries under the *World Heritage Convention*.

As such, Canada provides regular updates on the state of conservation of WBNP by informing the WHC of any projects that might affect its OUV. Canada also responds to requests made by the WHC and/or World Heritage Committee pertaining to state of conservation issues affecting WBNP WHS, as was the case in 1989, 1991, 1992, 2002, 2003, 2004, 2015, 2017 and 2018.

Two of the largest wetlands within WBNP, the PAD and the Whooping Crane Summer Range, are designated Wetlands of International Importance under the *Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention)*. This Convention provides a framework for the conservation and wise use of wetlands and their resources, including the designated wetlands found within WBNP. Environment and Climate Change Canada is the National Focal Point for Canada under the *Ramsar Convention*.

The Government of Canada also coordinates implementation of a number of international conventions and agreements which are relevant to the management of WBNP. These include the *Convention on Biological Diversity*, the *Convention on the Conservation of Migratory Species of Wild Animals* and the *Convention for the Protection of Migratory Birds in the United States and Canada*.

5.0 Strategic Environmental Assessment (SEA)

In 2015, the World Heritage Committee requested that Canada undertake an SEA of the cumulative impacts of all developments (including hydroelectric dams, oil sands development, and mining) on the world heritage values (OUV) of the WBNP. The SEA was completed in May, 2018.

Considering the pace, scale and complexity of potential threats to WBNP, the overall objective of the SEA was to assess the cumulative impacts of all developments on the world heritage values of WBNP in a way that is inclusive of Indigenous Knowledge and science. Specific objectives were:

- To improve the identification, recognition, and management of cumulative effects impacting WBNP;
- To inform the scope and support the effectiveness of project-level environmental assessments; and,
- To influence the development and implementation of the Action Plan for the protection of the world heritage values of WBNP, by providing recommendations for consideration by the responsible jurisdictional authorities involved in developing the Action Plan.

These objectives were for the related purposes of protecting the world heritage values of the site, maintaining or restoring ecological integrity of WBNP, and maintaining or restoring Indigenous ways of life.

The SEA did not initiate any new studies but rather relied on an extensive review of information and materials provided by experts, including representatives of Indigenous governments (leadership, knowledge holders, land-users, and advisors), researchers, industry, stakeholders, and federal and provincial governments.

Key Results

A key result of the SEA was the establishment of desired outcomes for each element of OUV (Table 1). Action Plan measures will be directed toward supporting the achievement of these desired outcomes.

Table 1: Elements of Outstanding Universal Value and Desired Outcomes (Source: Strategic Environmental Assessment of Wood Buffalo National Park World Heritage Site.)

Criterion – OUV Statement (verbatim text)	Listing of Individual OUV Elements for this criterion	Interpreted meaning	Desired Outcomes
Criterion (vii): "*The great concentrations of migratory wildlife are of world importance and the rare and superlative natural phenomena include a large inland delta, salt plains and gypsum karst that are equally internationally significant.*"	i. Great concentrations of migratory wildlife of world importance	Migratory wildlife means migratory waterfowl* populations which make seasonal use of WBNP. Migratory waterfowl from four continental flyways converge in great numbers on the PAD for staging and breeding habitat. *Waterfowl is understood in this context to include water birds, gulls, shorebirds, cormorants.	• Great concentrations of viable, healthy populations of migratory waterfowl species continue to use WBNP seasonally. • Adequate quantity and quality habitat, unimpaired by contamination, is available for migratory waterfowl to fulfil all key life cycle stages while present in WBNP. • Indigenous governments are able to maintain traditional harvest of waterfowl species and practice their way of life with confidence in healthy, sustainable and accessible populations of waterfowl.
	ii. Large inland delta (Peace Athabasca Delta (PAD))	Portion of the Peace Athabasca Delta within WBNP (80%), with consideration of the portion of the PAD outside of the park. The Delta is understood to include the ecological functions and ecosystems it supports, including vegetation, wildlife and Indigenous communities within the Delta.	• Flow regimes and water quality into the PAD maintain the ecological function of the ecosystem • Flow regimes and water quality into the PAD sustain vegetation communities and healthy and abundant populations of key ecological and cultural species including waterfowl, muskrat, fish, bison and wolves. • Indigenous governments have access to the PAD and are confident enough in the health of the PAD to maintain traditional use

Criterion – OUV Statement (verbatim text)	Listing of Individual OUV Elements for this criterion	Interpreted meaning	Desired Outcomes
			and way of life through hunting, fishing, gathering, and cultural activities.
	iii. Salt plains	Salt plains area within WBNP	• The salt plains remain aesthetically, ecologically and geologically unique in Canada, providing habitat for salt tolerant plants, grazing bison and nesting / staging waterfowl.
	iv. Gypsum karst	Gypsum karst topography within WBNP	• Gypsum karst topography in WBNP remains intact and functioning within natural parameters. • The karst landforms in the Park continue to provide some of the finest examples of collapse and pond sinkholes in the world.
Criterion (ix): "Wood Buffalo National Park is the most ecologically complete and largest example of the entire Great Plains-Boreal grassland ecosystem of North America, the only place where the predator-prey relationship between wolves and wood bison has continued, unbroken, over time."	i. Ecologically complete Great Plains – Boreal grassland ecosystem	The boreal forests and vast sedge meadows of the PAD (the largest undisturbed grasslands in North America) and smaller but numerous meadows north of the Peace River.	• All species and community representatives of the Great Plains-Boreal grassland are present and functioning. • These grasslands continue to provide important grazing and calving areas for Wood Bison.
	i. Intact predator-prey relationship between wolves and wood bison	Intact predator-prey relationship between wolves and wood bison. Includes all bison herds that spend time in the park.	• The predator-prey relationship between wolves and wood bison that spend time in the Park remains intact and within natural ranges of variation • Populations of both species remain viable, evolve as naturally as possible and support Indigenous traditional use and ways of life.
Criterion (x): "Wood Buffalo National Park contains the only	1. Whooping crane breeding habitat		• Habitat continues to support recovery strategy

Criterion – OUV Statement (verbatim text)	Listing of Individual OUV Elements for this criterion	Interpreted meaning	Desired Outcomes
breeding habitat in the world for the Whooping Crane, an endangered species …"		Whooping crane habitat within the WBNP. Includes habitat and population.	goals for breeding pairs and demonstrates resilience to climate change impacts. • Whooping crane population reaches recovery strategy goal. • Recovery and down listing from endangered status.

The Action Plan is further informed by the SEA's evaluation of trends in the status of the park's OUV and the description of pathways of effects. World heritage values of concern that emerged from the SEA analysis are illustrated in Tables 2 and 3 below, and include:

- Migratory waterfowl populations: Indigenous Knowledge indicates populations of waterfowl that have typically stopped in WBNP during migration have shifted their migration route to other areas. Changes in hydrological regime of the PAD have also decreased the quantity and quality of habitat for waterfowl. As a result, the ability of Indigenous governments, peoples and communities to practice their traditional way of life is being negatively impacted, and desired outcomes for the world heritage values are not being met.

- The wood bison population and the grasslands in the PAD that support it: More analysis is needed to understand the current status of the wolf-bison population dynamics, but bison do not adequately support Indigenous ways of life in the park because bison harvest in the park is prohibited due to the species' threatened status. For Indigenous people, this results in reduced food security, altered sense of place, and inability of future generations to maintain sacred relationships through bison harvest.

- The Peace-Athabasca Delta: In the PAD, the SEA found that most pathways of effects and valued components are showing negative trends. Seasonal flows in the Athabasca River have declined over the past fifty years primarily due to the impacts of climate change (with the impact of increasing water withdrawals being a very small contributing factor). Similarly climate change is affecting ice conditions and flows on the Peace River, and flow regulation by the construction of the WAC Bennett Dam in the 1960s has led to decreased summer flows and increased winter flows on the Peace River. Flow rate changes on the Peace and reduced seasonal flows on the Athabasca, in conjunction with climate change, have decreased peak water levels and the extent of open water in the PAD. Indigenous land-users in the PAD also report noticeable changes in the quality of surface water in the rivers and lakes of the PAD, and are concerned about contaminant levels in fish, wildlife and people.

Table 2: Summary of evaluation of desired outcomes (Source: Strategic Environmental Assessment of Wood Buffalo National Park World Heritage Site).

DESIRED OUTCOMES	TREND
Salt Plains: remain aesthetically, ecologically, geologically unique in Canada	→
Gypsum karst topography in WBNP remains intact / functioning within natural parameters.	→
Karst landforms provide some of the world's finest examples of collapse and pond sinkholes.	→
All Great Plains-Boreal grassland species and communities are present and functioning.	→
Grasslands continue to provide important grazing and calving areas for Wood Bison	↓
Adequate habitat available for migratory waterfowl life cycle stages while in WBNP.	↓
Great concentrations of migratory waterfowl continue to use WBNP seasonally.	↓

DESIRED OUTCOMES	TREND
Indigenous groups able to maintain traditional harvest of waterfowl & way of life with confidence in healthy, sustainable and accessible waterfowl populations.	↓
The wolf-bison predator-prey relationship remains intact and within natural ranges of variation.	?
Wolf and bison populations remain viable, evolve naturally and support Indigenous traditional use and ways of life.	→
Whooping Crane habitat continues to support recovery goals for breeding pairs, demonstrates resilience to climate change.	→
Whooping crane population reaches recovery goal / species downlisted	↑

Legend: Stable Trend in Condition: → Improving Trend in Condition: ↑ Declining Trend in Condition: ↓

Table 3: Current stressors and trends in the PAD system (Source: Strategic Environmental Assessment of Wood Buffalo National Park World Heritage Site).

VALUED COMPONENT	TREND
Peace River Seasonal Flows	↓
Peace River Sedimentation	↓
Ice Jam Recharge	↓
Open Water Recharge	↓
Lake Athabasca Water Levels	↓
Central PAD Lake Water Levels	↓
Athabasca River – Annual and Seasonal Flows	↓
PAD Water Quality	↓ →
Athabasca River Water Quality	↓

VALUED COMPONENT	TREND
Groundwater Quality and Quantity	?
Air Quality	↓
Sufficient Water for Indigenous People to Exercise Treaty Rights	↓
Indigenous Access and Enjoyment of PAD	↓
Wildlife Quantity and Habitat	↓
Migratory Bird Quantity, Quality and Habitat	↓
Vegetation Quantity and Quality	↓
Fish Quantity, Quality and Habitat	↓

Legend: Stable Trend in Condition: → Improving Trend in Condition: ↑ Declining Trend in Condition: ↓

Further evaluation was subsequently undertaken of the cumulative impact of future development and climate change on the world heritage values, but was only possible for migratory waterfowl, the PAD and whooping cranes. With the PAD and migratory waterfowl desired outcomes already not being met and with negative trends, the predicted future trends of these desired outcomes is negative. The trend of Whooping Crane population related desired outcomes were expected to continue to be positive.

Building from these analyses above, the SEA concluded with numerous recommendations (Appendix B) related to research, monitoring, and restoration actions required to meet the desired outcomes for the OUV of the site.

6.0 Action Plan

6.1 Themes of the Action Plan

The Action Plan is organized around a series of seven themes, in which the specific recommendations of the RMM report are grouped. These themes include:

- Strengthening Indigenous Partnerships with Wood Buffalo National Park (recommendations 1, 12, 13, 14)
- Environmental Assessment (recommendations 4, 5, 8, 9)
- Conservation Area Connectivity (recommendations 10, 11)
- Tailings Ponds Risk Assessment (recommendations 6)
- Environmental Flows / Hydrology (recommendations 3, 7)
- Monitoring and Science (recommendations 2, 17)
- Wildlife and Habitat Conservation (recommendations 15,16)

Desired outcomes for the OUV of the site were developed through the SEA. Actions taken under the Action Plan contribute to the desired outcomes identified during the SEA process.

6.2 Principles guiding action / Adaptive Management

The following principles, co-developed by representatives of federal, provincial, territorial and Indigenous governments participating in the development of this plan, provide the foundation for the identification and implementation of actions required to protect the OUV of WBNP.

Transparency and Communication: The development and implementation of this Action Plan will be communicated in a genuine, open, easy to understand manner.

Commitment to Action, Informed by Best Available Knowledge/Data: There is a commitment to take action, not a 'plan to plan'. The group recognizes that *sufficient* knowledge does not necessitate *complete* knowledge. Wherever sufficient information exists to undertake an on-the-ground action, without causing undue risk or potential hardship, actions will be taken, impacts monitored, and the

information used to inform future action and decision-making employing an adaptive management approach (see below).

Braiding of Science-based and Indigenous Knowledge: The equal value and unique contributions from these two ways of knowing are acknowledged. Wherever possible, the intention is toward braiding together the knowledge systems, symbolizing that when strands are linked by braiding,

> "*there is a certain reciprocity amongst strands . . .Each strand remains a separate entity, a certain tension is required [to hold the braid together], but all strands come together to form the whole.*[9]*"*

Holistic View - "Water must work for all.[10]**":** The broad-reaching nature of water necessitates a holistic lens, with a mindfulness of the broader view of the ecosystem, the people, and interconnections across the Mackenzie River Basin, of which the Peace, Athabasca, and Slave Rivers are a part.

Cooperation, Unity, and Collaboration: Achieving the desired outcomes identified below will require the cooperation and collaboration of many different partners. Indigenous, federal, and provincial governments that have come together to develop this Action Plan theme intend to continue in collaboration through implementation, finding common ground and points of unity.

"We need to work together as partners. All of us." [11]

Reconciliation and Renewal: The Indigenous and federal, provincial and territorial governments are jointly committing toward building a respectful, renewed relationship within this process, in the spirit of reconciliation and with a shared objective of improving the protection and management of the Outstanding Universal Value of Wood Buffalo National Park.

Responsibility and Accountability: Given the jurisdictional complexity of water governance, a governance body will be established that is responsible and accountable for implementation of the environmental flows and hydrology aspects of the plan. The governance body cannot impinge upon the authority of the jurisdictions to make independent decisions regarding water management or resource development within their jurisdictional authority. The governance body creates a forum for cooperation and collaboration that will leverage the work undertaken by member organizations and recommend actions to authorities within their respective jurisdictions.

<u>Adaptive Management</u>

Actions described in this Action Plan will be implemented in the context of an adaptive management approach that allows the iterative application and refinement of strategies to achieve defined outcomes. Management actions are formulated as hypotheses, to ensure that monitoring can assess whether the intervention or action is meeting the need. Adjustments to actions are made as determined by this assessment, and the cycle continues until the outcome is achieved.

[9] Chapter 1 – Braiding Indigenous Science with Science-based; Gloria Snively and Wanosts'a7 Lorna Williams, *in* Knowing Home Braiding Indigenous Science with Science-based (2016), University of Victoria, Victoria, British Columbia, edited by Drs. Snively and Williams
[10] EFH Technical Working Group participant, 2018.
[11] Elder Terry Marten, MCFN, July 31, 2018 to the EFH working group

The relationship between the principles guiding action and the adaptive management approach, in support of the achievement of broad Action Plan outcomes, is illustrated in figure 5 below.

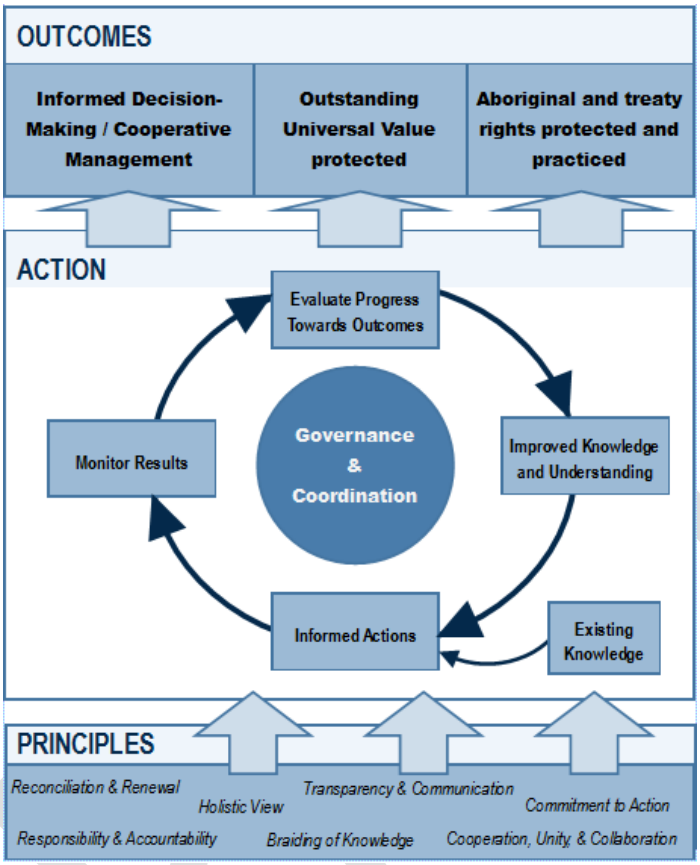

Figure 5: Linkages between principles, adaptive management and Action Plan outcomes.

6.3 Theme: Strengthening Indigenous Partnerships with Wood Buffalo National Park

Recommendation 1: Adopt a clear and coherent policy and guidance to enable the transition to a genuine partnership with First Nations and Métis communities in the governance and management of the property.

Recommendation 12
Consolidate the management resources and capacity to a standard commensurate with World Heritage status and adequately respond to the challenges facing the property by:
a) Reinstating a year round status and staffing of WBNP;
b) Recruiting a full-time Superintendent exclusively in charge of WBNP;
c) Ensuring an adequate Parks Canada presence in Fort Chipewyan, part of the critical PAD area and a major ecological region of WBNP.

Recommendation 13: Further develop the existing Cooperative Management Committee established by the State Party, and consolidate a functional and effective mechanism to involve Aboriginal Peoples in the management of the property.

Recommendation 14: Ensure that the preparation and skills of involved governmental staff correspond to the requirements inherent in the evolving relationship with First Nations and Métis communities.

Context:

Since the establishment of the park, the relationship with the 11 Indigenous partners has been a core purpose and theme of park management. That relationship has changed and evolved over time, as has been the case in Canada generally. The relationship continues to change and work is underway to make the relationship fully reflective of Canada's overall efforts at reconciliation, and to meet the commitments stated most clearly in recommendations 1 and 13. WBNP is committed to this exciting and challenging work, and to demonstrating that commitment to change by ensuring the Indigenous partners are deeply involved in the process of change as well as the resulting change itself.

Wood Buffalo National Park established a Cooperative Management Committee (CMC) in 2014. While all eleven Indigenous governments with an interest in the management of the park are invited to participate, not all are fully engaged at this time, with several groups expressing a preference for engagement through bilateral relationships with Parks Canada. Additionally, many of the 11 Indigenous governments are also involved in bilateral processes of negotiation with Canada, or are exploring options with an intent to pursue a bilateral relationship with Canada.

Early on, the park determined that improving the CMC process as a first priority (Recommendation 13) would help inform the changes needed to fully implement recommendations 1, 12 and 14. To expedite this, a series of meetings with the CMC have been held, and initially a revised terms of reference for the CMC was being developed. However, recently some Indigenous governments in the CMC have been questioning the need for a revised TOR and some feel that the focus needs to be on exploring the development of discrete collaborative polices around staffing and recruitment, and procurement. The CMC also wishes to see continued effort by Parks Canada on exploring bilateral arrangements with Indigenous partners. Parks Canada and the Indigenous communities are in the early stages of this exploratory work. All parties agree that moving towards a more effective and refreshed CMC will be a priority.

At this early stage it is not clear how the bilateral tables with Indigenous partners and the overall CMC will share information and balance interests, nor how the appropriate venue for the many topics of discussion will be determined. Some matters will be considered private between the park and an individual Indigenous partner, while other matters will benefit from involvement of the broader vision the CMC brings. These can be complementary, empowering every Indigenous partner to participate in a manner of their choosing and to share information effectively with all the other groups.

Regardless of what form the CMC and the bilateral tables take moving forward, there will be greater involvement of all Indigenous partners in management decision making, and in policy development. To begin, park specific policies will be developed to facilitate greater involvement of Indigenous partners in their identified key interests of human resources and procurement. This work does not have an end date, rather it will proceed on a permanent basis. These new policy initiatives are targeted for completion and implementation in 2019.

Staffing changes flowing from recommendation 12 are a priority and are underway with the involvement of Indigenous partners. As with the policy review, Parks Canada is committed to achieving these staffing changes within a collaborative process with the Indigenous partners, most notably those residing in Fort Chipewyan. While the broader policy work by the CMC continues on human resources, the Fort Chipewyan Indigenous partners will be directly involved in planning and recruiting for the new positions, as a tangible and immediate demonstration of WBNP moving towards a true partnership in management decision making.

Recommendation 14 will also be implemented beginning in 2019, with guidance from the Indigenous partners. As with the other recommendations, the CMC will play a central role in directing the development of the training program, and will focus on this once the policy work is completed.

Goal: Improved relationships between WBNP and its Indigenous partners results in improved, cooperative management of the park that meets the interests of all parties.		
Actions	**Lead**	**Timeline**
CMC identifies core areas of immediate interest, adjusts CMC process as required, incorporating the means to reconcile diverse perspectives.	PCA	2018/2019
Cooperative Management Committee to develop and adopt policy amendments that meet interests of all parties, in particular related to staffing of Indigenous persons, and a contracting policy to ensure that opportunities for Indigenous persons are enhanced	PCA	2018/2019
Increase capacity for park management and staffing in Fort Chipewyan, to respond to the pressures facing the Peace Athabasca Delta	PCA	2018/2019
Develop and implement a training program for Wood Buffalo National Park staff focused on skills and improved awareness required given the evolving relationship with Indigenous communities.	PCA	2019/2020
Continue engagement through bilateral processes between specific First Nations and Métis groups where these have been established	PCA	On-going

6.4 Theme: Environmental Assessment

Recommendation 4: Conduct, in line with the IUCN World Heritage Advice Note on Environmental Assessment, an environmental and social impact assessment of the Site C project and, if moved forward, any other hydropower projects potentially affecting the Outstanding Universal Value of the property.

Recommendation 8: Expand the scope of the SEA, which was requested by the Committee in its Decision **39 COM 7B.18**, so that it adequately reflects the scale, pace and complexity of industrial development, land use changes and river flow manipulations in the Peace and Athabasca River watersheds, both in terms of individual and cumulative impacts.
Recommendation 5: Conduct an environmental and social impact assessment of the proposed Teck Frontier oil sands mine project in line with the IUCN World Heritage Advice Note on Environmental Assessment, fully taking into account the Outstanding Universal Value of the property, including the PAD. **Recommendation 9:** Expand the scope of monitoring and project assessments to encompass possible individual and cumulative impacts on the Outstanding Universal Value of the property and in particular the PAD.

Context:

The OUV of WBNP may be impacted by project specific and cumulative effects of development external to the park. Actions related to this theme focus on inclusion and consideration of project and cumulative effects on the OUV of the park, on the development of updated cumulative effects assessment guidance and improved cumulative effects assessment methodology, and on the application of regional cumulative effects management frameworks. Actions related to this theme are being addressed through existing federal, provincial and territorial environmental assessment and regulatory processes.

Environmental and social impacts assessment of hydropower projects

The Site C Hydroelectric Project was approved in October 2014 (prior to Decision 39 COM 7B.18) after the completion of a cooperative environmental and socioeconomic assessment of the project by Canada and British Columbia, including a Joint Review Panel. The specific framework for the assessment was set out in the Joint Review Panel Agreement (http://www.ceaa-acee.gc.ca/050/documents/p63919/81725E.pdf), and met many of the standards set out in the IUCN World Heritage Advice note referenced. Following its assessment, the Joint Review Panel concluded that "there would be no effects from the Project on any aspect of the environment in the Peace Athabasca Delta" (JRP Report, page 42.) a conclusion that was not supported by many of WBNP's Indigenous partners.

The Canadian Environmental Assessment Agency (CEAA) is active in verifying compliance with the *Canadian Environmental Assessment Act* 2012 and conditions set out in the decision statement for a project and undertakes enforcement actions as necessary when violations arise. Since the issuance of the Decision Statement for the Site C Project, CEAA has been conducting inspections of the Project to verify that BC Hydro is in compliance with the conditions.

With respect to other hydroelectric developments, Canada has referred the proposed Amisk Hydroelectric Project to an independent review panel. The proponent is not expected to submit its environmental impact statement until 2020. Canada is committed to working with the Government of Alberta and Indigenous communities to amend the Guidelines for the Preparation of the Environmental Impact Statement to provide specific direction to the proponent regarding the consideration of the potential effects of the project on the OUV of the Park, including the PAD, in its Environmental Impact Statement.

Canada is committed ensuring that any future hydroelectric development projects conducted pursuant to federal environmental assessment legislation (CEAA 2012) explicitly consider both the incremental and cumulative impacts of upstream development on the OUV of WBNP and are aligned with the IUCN World Heritage Advice Note on Environmental Assessment and World Heritage, to the extent possible. In keeping with this commitment, two proposed run of the river hydro projects on the Athabasca River were referred to federal environmental assessment due in part to the potential for impacts to the OUV. These proposals were later withdrawn and are not currently proceeding.

Canada and Alberta cooperate in environmental assessments to minimize overlap. For hydroelectric development projects in Alberta, subsequent steps are a public interest decision by the Alberta Utilities Commission, Approvals (e.g. Alberta *Water Act*), and Compliance.

Strategic Environmental Assessment (SEA)

A Strategic Environmental Assessment identifying actual and potential individual and cumulative impacts to the OUV of WBNP was completed in May 2018. As mentioned in the 2018 Progress Report, the scope of the SEA reflected the scale, pace and complexity of industrial development, land use changes and river flow manipulations in the Peace and Athabasca River watersheds. The SEA was submitted to the World Heritage Centre on May 30th, 2018, and to the Joint Review Panel for the proposed Teck Frontier Oil Sands Mine Project for consideration on June 4th, 2018.

Environmental and social impact assessment of the proposed Teck Frontier oil sands mine project

The proposed Frontier Oil Sands Mine Project has been undergoing an environmental assessment by an independent joint review panel since May 2016. On August 24, 2017, together with the Alberta Energy Regulator, the Government of Canada announced an amendment to the Joint Review Panel Agreement to mandate the independent Joint Review Panel to specifically consider and report on the potential environmental and cumulative effects of the project on the OUV of the World Heritage Site, including the PAD. The amendment was developed in consultation with Indigenous communities. Immediately following the announcement, the Joint Review Panel requested additional information from the project proponent to address the changes to its mandate.

The Joint Review Panel held hearings from September 25th to October 24th, 2018. The hearings included opportunities for Indigenous governments, ENGOS, government and other parties to present their views and concerns about the project. However, a number of Indigenous governments downstream of the PAD noted to the Joint Review Panel that, from their perspective, there was little or no consultation and inadequate attention addressing cumulative impacts.

CEAA collaborated with the MCFN to develop a joint methodology for the assessment of the potential impacts of the Teck Frontier project on their Indigenous and Treaty rights. CEAA and the MCFN submitted the methodology on May 25, 2018 to the Joint Review Panel for its consideration in the environmental assessment process. The proposed methodology includes principles for assessing impacts to rights, and an approach including criteria for assessing severity of impacts that could also inform the assessment of the potential impacts of the Project on culture and Aboriginal rights linked to the OUV. CEAA worked with the whole of government, including Parks Canada, to apply the methodology and

provide preliminary outcomes of the assessment of impacts on rights to the Joint Review Panel as part of a federal government submission prior to hearings.

In line with the IUCN World Heritage Advice Note on Environmental Assessment, the Joint Review Panel is undertaking a review of the potential effects of the Frontier Project on the OUV of the World Heritage Site. This assessment will take into consideration the Indigenous Knowledge received from Indigenous governments, as well as the science advice from Parks Canada and other federal authorities.

Following the public hearing, the Joint Review Panel will prepare a report containing its conclusions and recommendations with respect to the Frontier Project. Canada has committed to submitting the Joint Review Panel report to the World Heritage Centre.

Consideration of WBNP OUV in future assessments

Canada has committed to ensuring that all current and future environmental assessments conducted pursuant to federal environmental assessment legislation explicitly consider potential specific and cumulative impacts of upstream development on the OUV of WBNP, where appropriate, and that environmental assessments are aligned with the IUCN World Heritage Advice Note on Environmental Assessment and World Heritage, to the extent possible.

Goal: Ensure that the Outstanding Universal Value of the property is considered in environmental assessments where potential specific or cumulative impacts may occur on the OUV of WBNP, in particular in the Peace Athabasca Delta.		
Action	**Lead**	**Timeline**
Amend Guidelines for the Preparation of the Environmental Impact Statement for the Amisk hydroelectric project to direct consideration of potential effects of the project on the OUV of the Park, including the PAD.	CEAA Alberta – AER	2019/2020
Conduct an SEA on the potential of all developments to impact the Outstanding Universal Value of the Wood Buffalo National Park World Heritage Site, and submit to the World Heritage Centre	Parks Canada	Completed 2018
Submit the SEA to the Joint Review Panel for the Teck Frontier Oil Sands Mine Project for consideration.	CEAA	Completed 2018
Amend the Joint Review Panel Agreement for Teck Frontier to mandate the Panel to consider and report on the potential environmental and cumulative effects of the project on the OUV of the World Heritage Site, including the PAD.	CEAA Alberta – AER (in consultation with Indigenous communities)	2017
Submit the SEA to the Joint Review Panel for the Teck Frontier Oil Sands Mine Project for consideration.	CEAA	2018
Evaluate the potential effects of the Frontier Project on the OUV of the park and provide assessment to the Teck Frontier JRP for its consideration in the environmental assessment.	CEAA	2018/19 and ongoing

Develop and submit to the Teck Frontier Joint Review Panel a joint methodology for the assessment of potential impacts of the Teck Frontier project on the exercise of Aboriginal and Treaty rights.	CEAA (in collaboration with MCFN)	Completed
Ensure that all current and future environmental assessment reviews conducted pursuant to federal legislation consider the specific and cumulative impacts on the OUV of WBNP and are aligned with the IUCN World Heritage Advice Note on Environmental Assessment and World Heritage, to the extent possible.	CEAA	2018/19 and ongoing

Status of Environmental Assessment Legislation

The Government of Canada has made significant progress on its review of environmental and regulatory processes. In June 2017, after taking into account input from other levels of government, Indigenous communities, and a wide range of stakeholders, as well as Expert Panel reports and Parliamentary Studies conducted over the past year, the federal government released a discussion paper for public input on its proposed approach to environmental and regulatory processes. After considering public input received, in February 2018 the Government of Canada introduced proposed legislation (Bill C-69) that would put in place better rules to protect our environment, fish and waterways, including impact assessment of project proposals that may have an impact on national parks. The changes will ensure decisions guided by the following principles:

- Fair, predictable and transparent impact assessment and regulatory processes;
- Participation of Indigenous people in all phases of the assessment process that advances the Government's commitment to reconciliation and to the United Nations Declaration on the Rights of Indigenous peoples;
- Inclusive and meaningful public engagement;
- Timely, evidence-based decisions reflecting the best available science and Indigenous knowledge; and
- Scale of assessment aligned with the scale and potential impacts of the project.

As Bill C-69 goes through the Parliamentary process, amendments have been made in House of Commons in order to provide greater clarity to parts of the proposed legislation following input from Indigenous people, companies and the broader public. Bill C-69, as amended, has been referred to the Senate. A Senate Committee will study the proposed legislation in fall 2018.

The Government of Canada will continue to listen to Canadians and engage with Indigenous people, provinces and territories, stakeholders and the broader public as the proposed legislation makes its way through the Parliamentary process.

Regional Planning, including Cumulative Effects Management Frameworks

In Alberta, regional land-use plans (created pursuant to the *Alberta Land Stewardship Act* (ALSA)) consider cumulative effects in managing development and growth. Environmental management frameworks established under the LARP are key tools to implementing this approach in the oil sands

areas and the PAD. Management frameworks have regulatory backing under the ALSA, and assist in managing long-term, regional scale cumulative effects by setting thresholds, triggers, limits and/or targets. The following frameworks have been developed and implemented in the Lower Athabasca region:

i. Air Quality Management Framework for Nitrogen Dioxide (NO_2) and Sulphur Dioxide (SO_2)
ii. Surface Water Quality Management Framework for the Lower Athabasca River;
iii. Surface Water Quantity Management Framework (SWQMF) for the Lower Athabasca River;
iv. Groundwater Management Framework; and
v. Tailings Management Framework for the Mineable Athabasca Oil Sands.

Under the Land-use Framework, regional-level planning is underway in Alberta through the creation of land use plans for each of Alberta's seven land use regions. Alberta's land use regions are based on major watersheds. The WBNP is adjacent to Alberta's Lower Athabasca and Lower Peace regions.

The Lower Athabasca Regional Plan (LARP) establishes a 50-year vision by providing a blueprint to manage strong economic growth, decrease cumulative effects of development on the environment and address social considerations in northeast Alberta.

The LARP Review Panel Report was released in May 20, 2016. The Government of Alberta accepts the underlying principles of the LARP review and over the past several months, staff have taken actions to address concerns raised in the review request process. These actions include implementation of Indigenous Working Groups for the LARP. The Working Group discussions will:

- find ways to incorporate Indigenous Knowledge and information on traditional land use into Government of Alberta planning and environmental management;
- find ways in which the Government of Alberta can continue to meaningfully consult with Indigenous people in the implementation of the Lower Athabasca Regional Plan; and,
- find ways to account for and address resource management/ cumulative effects issues from the perspective of Indigenous peoples and the Government of Alberta.

The Indigenous Working Group model is intended to enhance First Nations and Métis consultation and engagement throughout the development, implementation and on-going review of Alberta's land use plans. Best practises from other regions, including the Lower Athabasca region will be considered in future collaboration between Indigenous people and the Government of Alberta on land use planning and environmental management processes for the Lower Peace region.

Specific to the impacts of industrial water use, the SWQMF prescribes the management of cumulative oil sands mine water withdrawals from the river through a set of weekly flow triggers and withdrawal limits, and includes a preliminary Aboriginal Navigation Index (ANI) as one of the Adaptive Management Triggers. Adaptive Management Triggers are designed to indicate when river flow or water use conditions are close to or outside of the modelled predictions that were used to develop the framework. The preliminary ANI has been included as recognition of the Athabasca River as an important navigational route.

The Government of Alberta has been working with the Athabasca Region First Nations (ARFN), which is comprised of the Fort McKay First Nation, Athabasca Chipewyan First Nation, Mikisew Cree First Nation and Chipewyan Prairie Dene First Nation, through a Collaborative Working Agreement process. This process is intended to supplement the work being done by the LARP Indigenous Working Groups.

AEP and ARFN have also held practitioners' discussions to review the LARP frameworks, including the preliminary ANI. As part of the implementation of the SWQMF, AEP will continue to work with the ARFN, other Indigenous peoples and stakeholders toward further work on the aboriginal navigation component of the framework.

The SWQMF also anticipates the development of Fish Sustainability and Native Fish Integrity Indices. These indices are not yet in place, but would link flows and flow management to biologically significant changes in fish populations and communities, to further inform protective water withdrawal limits.

Goal: Continue work on further advancing the ANI and addressing navigation, and further developing ecological indicators as committed to under the Surface Water Quantity Management Framework.		
Action	**Lead**	**Timeline**
Refine the Aboriginal Navigation Index in cooperation with ARFN, other Indigenous peoples and other stakeholders.	Alberta – AEP	TBD
Develop and implement ecological indicators and thresholds to evaluate and respond to changes in the aquatic ecosystem (e.g. fish integrity indices).	Alberta – AEP	TBD

6.5 Theme: Conservation Area Connectivity

Recommendation 10: Conduct a comprehensive assessment of options, in order to underpin decision-making to put in place an effective buffer zone, as defined in the Operational Guidelines. The Birch River deserves particular attention as the only relatively intact major watershed of the PAD.

Recommendation 11: Conduct a systematic assessment of options to better realize synergies between the property and land-use planning in its immediate vicinity, including the existing and planned provincial protected areas.

Context:

The aim of this theme is to identify actions that collectively promote the functional connectivity and resilience of conservation areas in the Wood Buffalo region. Despite the relatively large size of WBNP, protected areas alone are not sufficient for long term biodiversity conservation. To be successful protected areas should be incorporated into regional networks of protected and conserved areas and integrated with landscape-scale land use planning[12]. For this reason RMM recommendations 10 and 11 relate to creating an effective buffer zone as a means of integrating WBNP with the land use of the surrounding region. This idea is further supported by the SEA that suggests WBNP be situated in an ecologically connected landscape (SEA, p. 7-10).

Actions associated with this theme are presented in 3 broad categories. First, the category "Establishment of New Protected and Conserved Areas" identifies actions for increasing the amount of protected area adjacent to WBNP. These protected areas provide a key element to buffering the OUVs

[12] Margules, C. R., and Pressey, R. L. 2000. Systematic conservation planning. Nature. 405:243–253.

of WBNP from potential stressors and promote regional connectivity. Second, the category "Needs Assessment for an Ecologically Functional Network" focuses on spatially defining key requirements for protecting representative ecosystems, wildlife populations, supporting habitats, and associated ecological processes (i.e., wildlife movement, predator-prey dynamics). An aim of this assessment is to provide a landscape-scale gap analysis that compares ecosystem requirements with existing and planned protected areas in the region. Third, the category "Options Analysis for Effective Buffer Zones" applies results for the gap analysis and develops scenarios for buffer zone options surrounding WBNP WHS.

There is a strong link to the "Science and Monitoring" and "Wildlife and Habitat Conservation" themes of the Action Plan in terms of ensuring OUVs are protected through enhanced landscape connectivity in a regional network of protected and conserved areas.

Outcomes:

The actions identified below are intended to advance the following outcomes:

1. Improved connectivity for wildlife and supporting ecological processes.
2. Increased ecological integrity and resiliency of the Outstanding Universal Values of Wood Buffalo National Park World Heritage Site
3. Strengthened relationships with Indigenous partners through respectful application of Science-based and Indigenous Knowledge to conservation planning.

These outcomes are supported by recommendations made by the RMM and SEA.

Action Categories:

Actions for this theme are presented in three categories related to improved connectivity and landscape integration of WBNP. These categories are:

1. Establishment of New Protected and Conserved Areas: Establishing buffer zones around WBNP through the establishment of adjacent protected and conserved areas.
2. Needs Assessment for an Ecologically Functional Network: Determining the ecological functional needs of the OUVs of WBNP WHS.
3. Options Analysis for Effective Buffer Zones: Identifying potential gaps necessary for the maintenance of OUVs that can guide future conservation planning and/or management.

Establishment of New Protected and Conserved Areas:

The establishment of protected and conservation areas adjacent to WBNP WHS is within the jurisdictional authority of the Government of Alberta and the Government of the Northwest Territories and occurs pursuant to related land-use and protected area planning processes led by these governments.

In Alberta, protected area establishment and landscape integration in the Wood Buffalo region includes the Lower Athabasca Regional Plan (LARP) process supported by the Alberta Land Stewardship Act. This

process promotes the development of cooperative management arrangements with various Indigenous communities to support Aboriginal rights and cultural values and, as such, addresses RMM recommendations related to Indigenous partnerships. Achievements from LARP that directly support this theme of the Action Plan include:

- In Spring 2018, five new or expanded protected areas were legally established in the Lower Athabasca Region, adding 1.36 million hectares to the parks and protected areas system (Figure 6).
- With the remaining LARP commitments, the total conserved land in the region is 2 million hectares, or 22% of the region.
- Three of the five new protected areas (Birch River Wildland Provincial Park, Kazan Wildland Provincial Park and Richardson Wildland Provincial Park) as well as the Caribou Mountains Wildland Provincial Park in the Lower Peace Region are directly adjacent to WBNP, and provide significant buffers and landscape connectivity to Wood Buffalo. The Birch River Wildland Provincial Park includes part of the Birch River watershed (Figure 1).
- The establishment of new and expanded wildland provincial parks contributes to the conservation of more than 6.7 million hectares of boreal forest, the largest contiguous protected boreal forest in the world under the guidelines of the International Union for Conservation of Nature[13].

In addition, the Government of Alberta is actively discussing with Indigenous communities and various stakeholders the proposed development of a Biodiversity Stewardship Area (BSA) immediately south of WBNP. The BSA is an initiative spearheaded by the MCFN and Teck Resources Inc.

Potential conservation areas in the Lower Peace Region were identified, reflecting the Government of Alberta's commitment for conservation area planning in that region in alignment with regional planning. Candidate conservation areas in support of caribou range planning were also identified in the Lower Peace Region in Alberta's Draft Provincial Caribou Range Plan.

Healthy Land, Healthy People: GNWT Priorities for Advancement of Conservation Network Planning 2016-2021 is a five-year work plan outlining how the GNWT is moving forward collaboratively with conservation network planning in the NWT. Protected areas planning by the GNWT is guided by this document.

Under the auspices of regional land use planning processes in the NWT, some community-based areas of interest adjacent to WBNP have also been identified, of which some overlap with candidate areas is identified in HLHP. Further progress on these areas and other areas identified for conservation objectives in the future will be accomplished through the coordination of established and future regional land use planning processes in alignment with HLHP. The GNWT is committed to completing regional land use planning in the NWT, including the Dehcho and southeastern part of the NWT, which both border WBNP. The GNWT proposes a government-to-government approach to planning with Indigenous Governments and Organizations in this region.

[13] The news releases can be found at https://www.alberta.ca/release.cfm?xID=55951F7FBFC21-B342-F69F-2BB2163D213E56F7

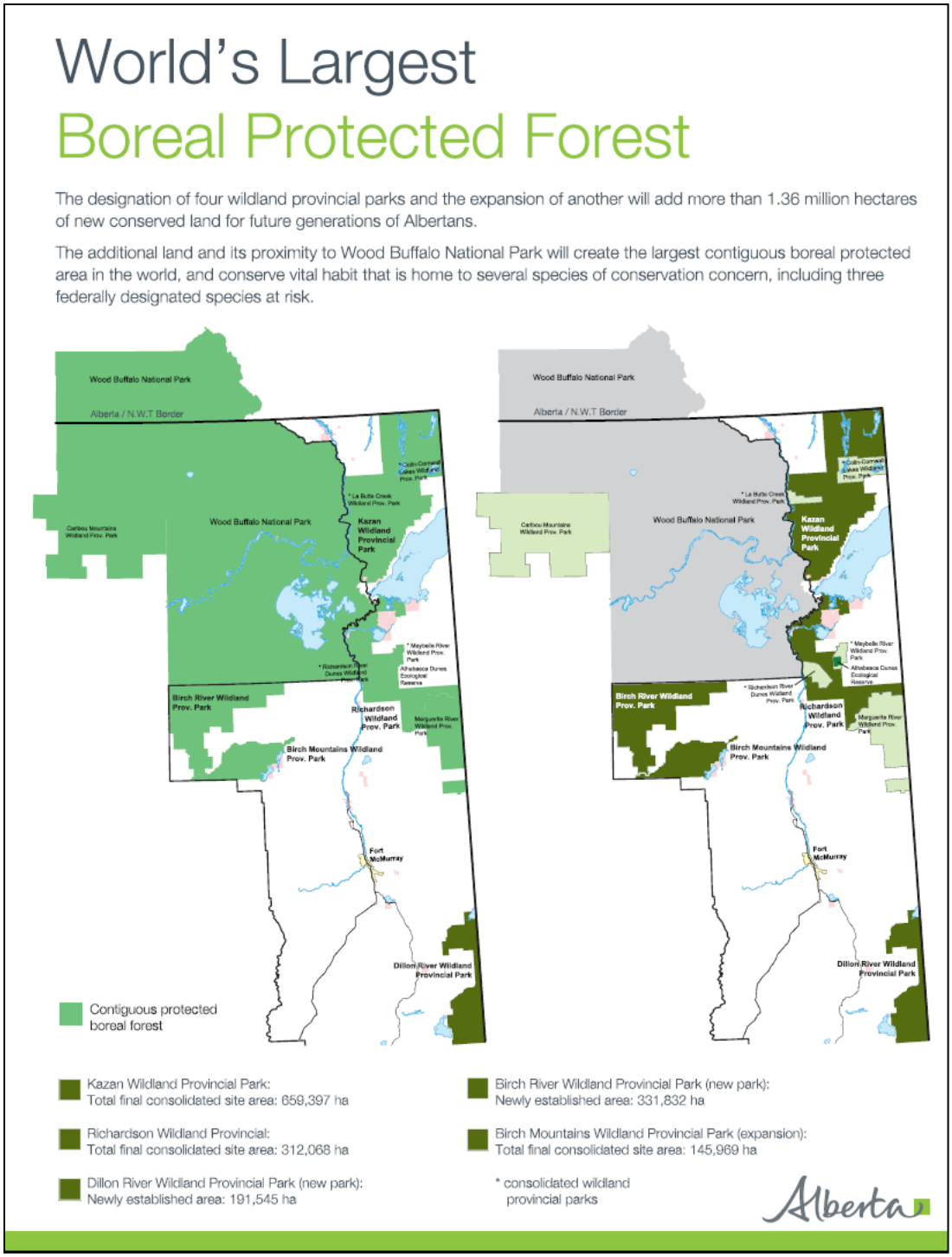

Figure 6: Government of Alberta's new designated wildland provincial parks (Government of Alberta, 2018)

The establishment of new protected areas throughout the Wood Buffalo region are further supported by the Pathway to Canada Target 1 initiative—a pan-Canadian effort to meet Canada's international commitments under the Convention on Biological Diversity[14]. Through Canada Target 1 jurisdictions have committed to protect 17% of Canada's terrestrial and inland waters through a coordinated network of protected and conserved areas. This effort directly links, and supports, the efforts of this Action Plan to promote conservation area connectivity in the Wood Buffalo region and to enhance the landscape integration of the WBNP WHS.

Goal: Within individual jurisdictions, establish buffer zones around WBNP through the establishment of adjacent protected and conserved areas.

Action	Lead	Timeline
Formal establishment of some new conservation areas under the Lower Athabasca Regional Plan, adjacent to WBNP, with the aim to increase functional connectivity for OUVs within the region.	Alberta – AEP	Completed 2018
Promote the development of cooperative management arrangements with Indigenous communities to support Aboriginal rights and cultural values for the five new and expanded wildland provincial parks under the Lower Athabasca Regional Plan.	Alberta – AEP	Ongoing
Advance (through discussions with Indigenous communities and various stakeholders) the proposal for development of a Biodiversity Stewardship Area immediately south of WBNP.	Alberta – AEP	Ongoing
Integrate an Indigenous Guardian Program[15] to support Indigenous stewardship of new conservation areas under the Lower Athabasca Regional Plan.	Alberta – AEP	2019/20 and ongoing
Advance conservation priorities under "*Healthy Lands, Healthy People: Government of Northwest Territories: Priorities for Advancement of Conservation Network Planning – 2016 - 2021*".	NWT (in consultation with IGOs)	TBD
Advancing regional land use planning processes in areas surrounding WBNP	NWT (in consultation with IGOs)	Ongoing
Enhance communication and explore opportunities for closer collaboration particularly under the Pathway to Canada Target 1 initiative.	Alberta, NWT, Canada – PCA, ECCC-CWS	2018/19 and ongoing
In association with the Pathway to Canada Target 1 support efforts to establish new tools for conservation[16]	Alberta, Canada – PCA, ECCC-CWS	2018/19 and ongoing

[14] For information on Pathway to Canada Target 1, refer to: http://www.conservation2020canada.ca/

[15] For more information on the Indigenous Guardians Program see: https://www.ilinationhood.ca/our-work/guardians/

[16] New tools for conservation refer to recently developed pan-Canadian standards for protected areas, other effective conservation measures, and Indigenous protected and conserved areas. For more information see: http://www.scics.ca/en/product-produit/news-release-canadas-natural-legacy/

that contribute to conservation area connectivity in the WBNP region.		

Needs Assessment for an Ecologically Functional Network:

In order to ensure the OUV of WBNP is well buffered from surrounding land use and that conservation areas within the region are sufficiently connected, a landscape scale needs assessment will be undertaken. This assessment will focus on the habitat and movement needs of key species (including but not limited to Whooping Crane and Wood Bison—including the Ronald Lake bison herd) that disperse in and out of WBNP into the surrounding region. These efforts will consolidate Science-based and Indigenous Knowledge on the local ecology of these species and apply updated habitat suitability models at a landscape scale. These models will include the development of species-specific cost surfaces in order to identify potential movement constraints and bottlenecks for animals that disperse outside of WBNP boundaries.

Goal: Determine the ecological functional needs of the OUVs of WBNP WHS as they relate to conservation area connectivity.		
Action	**Lead**	**Timeline**
Consolidate Indigenous and scientific information on the habitat and dispersal requirements for key species through extensive literature review and community-based workshops.	PCA/ECCC	2018/2019
Acquire existing data related to species occurrence and remote sensing for spatial analysis and mapping	PCA	2018/2019
Identify and confirm information gaps through a follow up multi-partner workshop and identify plans to fill these gaps.	PCA	2019
Conduct analysis of assembled data and apply habitat and movement information acquired during workshops to develop a series of species-specific, landscape scale, habitat suitability maps with corresponding movement cost surfaces.	ECCC/PCA	2019/2020
Peer review and gather feedback on spatial models. Peer review will include follow up workshops to identify accuracy, strengths and weaknesses of resulting maps.	PCA/ECCC	2019/2020
Generate a series of map packages for subsequent communications and planning purposes that describe the results of the modeling process and highlight habitat and movement needs for key species throughout the WBNP region.	PCA/ECCC	2019/2020

Options Analysis for Effective Buffer Zones:

In Alberta, province-wide conservation gap analysis is already used to understand the contribution of sites to the current system, and identify the need to establish new park lands for both conservation and recreation. The conservation gap analysis is based on a scientific framework that uses a coarse filter/fine filter approach. Coarse filter conservation targets have been set for all identified Natural Landscape Types in Alberta. They provide the basis for completing the parks system. The fine filter approach is used to identify gaps for species, communities and features that are not captured in a coarse filter approach.

One of four priority actions identified in Alberta's Plan for Parks is to: conserve landscapes - including identifying new parks to meet provincial recreation, tourism and conservation goals. Through Alberta's Land-use Framework process, new lands are currently being identified to fill gaps in the system. Key criteria for conservation areas identified in regional plans are:

- Areas with little to no industrial activity;
- Areas that support aboriginal traditional uses;
- Areas that are representative of the biological diversity of the area (e.g., landforms, species, vegetation); and
- Areas of sufficient size.

The previous two sections of this theme describe actions that will establish new protected areas adjacent to WBNP WHS that will contribute to an effective buffer zone and identify the landscape scale habitat and movement needs of key OUV elements. This section brings these outputs together in a formal gap analysis that can inform future planning and management decisions. Leading edge tools and methods[17] will be used to identify how the current network of protected and conserved areas can be efficiently augmented to increase the conservation area connectivity of the region, focusing on areas of the Wood Buffalo National Park region that have not completed a conservation area planning process (e.g., Lower Peace Region in Alberta).

Goal: Identify potential gaps necessary for the maintenance of OUV that can guide future conservation planning and/or management.		
Action	**Lead**	**Timeline**
Conduct workshop on spatial priorities for conservation including objectives for a gap analysis on areas in and adjacent to WBNP.	PCA	2020
Undertake landscape gap analysis and spatial conservation prioritization exercise using current methods and tools (i.e., Marxan).	PCA/ECCC	2020
Produce maps and communication products that provide results of gap analysis and present design options for	PCA	2020

[17] Conservation planning tools, such as Marxan, are used internationally to inform the design of nature reserve networks. For example, see: Bicknell, J.E. et al. 2017. Designing protected area networks that translate international conservation commitments into national action. Biological Conservation. 214: 168-175. Also see: http://marxan.org/about.html

contributing to a regional network of protected and conserved areas, including a buffer zone adjacent to WBNP.		

6.6 Theme: Tailings Ponds Risk Assessment

Recommendation 6: Conduct a systematic risk assessment of the tailings ponds of the Alberta Oil Sands region with a focus on risks to the Peace-Athabasca Delta, and submit the report of this assessment to the World Heritage Centre, for review by IUCN, in accordance with Paragraph 172 of the *Operational Guidelines*.

Context:

The water used during oil sands mining is managed and stored in tailings ponds. In 2013, almost a billion cubic metres of fluid tailings were stored in ponds with a net cumulative footprint of 220 km^2. Fluid tailings pose a risk to the PAD through seepage into the Athabasca River, and through the potential for dam failure. Actions taken to address the environmental risk posed by fluid tailing ponds occur pursuant to the *Tailings Management Framework for the Mineable Athabasca Oil Sands*.

Alberta has a rigorous regulatory program for individual sites to address the environmental risk posed by tailing ponds. This includes regulation of tailings ponds through approvals and compliance programs under various legislation, such as the dam and canal safety regulation under Alberta's *Water Act*, the *Environmental Protection and Enhancement Act, the Public Lands Act* and *the Oil Sands Conservation Act*.

A description of key regulatory requirements and programs related to tailings ponds is below.

Oil Sands Management and Monitoring:

On March 13, 2015, the Government of Alberta released the *Tailings Management Framework for the Mineable Athabasca Oil Sands* (Tailings Management Framework). Through implementation of a comprehensive framework for the management of fluid fine tailings, Alberta is actively working with oil sands mine operators to reduce the risk and liability of tailings ponds in a proactive manner that emphasizes progressive reclamation and reduced tailings volumes over time. As framework implementation is advanced, the risks of potential seepage or breach are reduced.

- The framework ensures that fluid fine tailings are treated and reclaimed progressively throughout the life of the project. Under the framework, operators must adhere to an approved tailings volume profile.
- Tailings ponds are managed using a threshold management system that sets strict limits on the volume of tailings permitted to accumulate.

Various initiatives are being undertaken to support implementation of the Tailings Management Framework and assist in managing risks. These include efforts aimed at advancing an integrated water management system for oil sands mines and work to explore the viability of end pit lakes as functioning and effective landscape features. This implementation work is ongoing and supported through the participation of stakeholders and Indigenous people.

The Oil Sands Monitoring program (OSM), as referenced under the theme of Monitoring and Science, is a significant commitment of time and money to comprehensive environmental monitoring in northeast Alberta. The program, led jointly through Alberta Environment and Parks, and Environment and Climate Change Canada, has conducted monitoring related to tailings ponds to inform a risk assessment, including monitoring of emissions to the air as well as seepage to the groundwater. In addition, ambient monitoring of air quality and aquatic ecosystem health upstream and downstream of active tailings ponds has occurred since 2012 under the OSM program. Indigenous communities participate in the OSM program, including through Community Based Monitoring, and will play a much stronger role in program governance in 2019-2020.

In April 2018, an Oil Sand Process Water Science Team was established to inform government and the Alberta Energy Regulator, through credible scientific information, on prior release of treated oil sands process affected water. The Science Team is led by Alberta's Chief Scientist and consists of scientific and Indigenous knowledge experts and representatives from industry, Indigenous communities, academia, and federal and provincial governments. Alberta Environment and Parks holds the mandate for environmental monitoring in the province and also supports this risk assessment through ongoing monitoring efforts in the region.

Regulatory Requirements and the Regulator

A suite of regulatory requirements manage tailings ponds and associated seepage. These are designed to ensure that provincial regulators can hold mineable oil sands operators accountable for tailings ponds management. Existing regulatory approvals do not allow any releases of tailings water to land or water bodies.

Most regulatory aspects of oil sands development are implemented by the Alberta Energy Regulator (AER), which is tasked to oversee that oil sands are developed in alignment with government policy; in an environmentally responsible way;, and, that operators are held accountable for cleaning up infrastructure and associated sites.

- *Directive 085: Fluid Tailings Management for Oil Sands Mining Projects*
    - establishes management and reporting requirements that operators must meet in order to demonstrate that all fluid tailings will be ready to be reclaimed within 10 years of the end of mine life, as outlined in the *Tailings Management Framework*.
- *The Conservation and Reclamation Regulation* (under the *Environmental Protection Enhancement Act* [EPEA])
    - requires that mine operators reclaim disturbed lands, including tailings ponds, to an equivalent land capability in accordance with EPEA approval conditions and any other applicable standards, criteria and guidelines.
- *The Water Act* and the EPEA
    - ensures requirements are met for geotechnical stability and safety of tailings ponds.
    - The engineering of tailings ponds typically anticipates some seepage, with efforts to minimize it, depending on local geology.
    - EPEA and the *Water Act* recognize newer tailing ponds (1994 to present) naturally seep from their dykes; however, measures are taken to ensure seepage is intercepted and pumped back to the tailings pond or into a recycle water system to be treated and reused in the production process. Approvals issued under EPEA set out requirements for

groundwater recapture systems, monitoring, evaluation and reporting of groundwater quality.

- Dam Safety: Various laws, policies and processes regulate dams, including those associated with tailings ponds, in Alberta. The purpose of dam safety regulation is to promote safety of the dams and canals in the province, to prevent loss of life and to minimize economic and environmental losses due to potential failure of these structures.
    - The Dam Safety Regulatory Framework consists of the *Alberta Water Act*, the Water (Ministerial) Regulation, Ministerial Orders, and provincial dam safety guidelines.
    - Dams in Alberta are built, maintained, operated and decommissioned in a manner that is aligned with provincial, national and international guidelines and best practices.
    - The Alberta Energy Regulator Dam Safety Program ensures that tailings ponds are designed, constructed, operated, maintained and decommissioned safely.
    - Dam safety assessments are done every third year on tailings ponds and the operators.

Goal: Tailings ponds are constructed, managed and maintained to limit impacts to the Athabasca River, and new and legacy tailings volumes are reclaimed in a timely manner, so that the risk of tailings ponds to the PAD is minimized.		
Actions	**Lead**	**Timeline**
Implement the Tailings Management Framework	Alberta Environment and Parks	Ongoing
Minimize fluid tailings accumulation by ensuring that fluid tailings are treated and reclaimed progressively during the life of a project and all fluid tailings associated with a project are ready to reclaim within 10 years of end of the mine life of that project.	Alberta Energy Regulator	Ongoing
Establish project-specific target, triggers and limit for new fluid tailings.	Alberta Energy Regulator	Ongoing
Develop plans to reduce legacy tailing volumes to a ready-to-reclaim state by end of mine life.	Alberta Energy Regulator	Ongoing
Tailings ponds are designed, constructed, operated, maintained, and decommissioned safely.	Alberta Energy Regulator	Ongoing
Evaluate tailings pond emission monitoring to inform a risk assessment of contaminant exposure as needed.	OSM Program (Alberta-AEP; Canada-ECCC)	Ongoing
Conduct ambient environmental monitoring to inform a risk assessment on changes to environmental condition as needed.	OSM Program (Alberta-AEP; Canada-ECCC), Alberta-AEP	Ongoing
Establish Oil Sands Process Affected Water Science Team to provide credible scientific information to inform government and regulatory bodies on process water treatment and release. Create additional Science Teams as needed to support implementation of the Tailings Management Framework.	–Alberta Environment and Parks	Team established. Work Ongoing.
Provide regulatory oversight to ensure tailings dams are safe and managed appropriately by operators.	Alberta Energy Regulator	Ongoing

6.7 Theme: Environmental Flows and Hydrology

Recommendation 3:
To enable informed decision-making, conduct environmental flows assessments to the highest international standards for the Peace, Athabasca and Slave Rivers as they pertain to the health of the PAD, in order to identify water flows needed to sustain the ecological functioning of the PAD under the circumstances of existing and planned future dams and water withdrawals. These assessments should incorporate projections of climate change and should determine the cumulative effects on the PAD and the property of flow regulation of all existing and proposed dams on all three rivers.

Recommendation 7:
Establish adequate baseline hydrological information of the Peace and Athabasca River Basins to enhance the reference for monitoring and assessing current and future hydrological conditions.

Context:

The Environmental Flows and Hydrology (EFH) theme content was informed through a series of workshops in 2018, with representatives from WBNP's 11 Indigenous partners, Alberta, British Columbia and Northwest Territories governments, BC Hydro, Environment and Climate Change Canada (ECCC), and Parks Canada Agency (PCA). ECCC convened the meetings and compiled this content.

There is an opportunity to implement early action to support immediate improvement on the ground in the Peace-Athabasca Delta (PAD), and to inform long-term, broad scale actions. The actions outlined herein are intended to work toward achieving three desired outcomes: 1) Ecological and Hydrological Integrity; 2) Practice of Aboriginal rights; and 3) Informed Decision-Making.

Through implementation of this Action Plan, SMART (Specific, Measurable, Achievable, Relevant, Time-bound) targets, indicators and specific objectives will be defined and refined to monitor and track progress toward achieving these outcomes. There is a strong link to the Science and Monitoring Theme (section 6.9) in undertaking the work to monitor change and the impacts of actions.

Outcomes:

The actions and objectives outlined below are intended to advance three major desired outcomes:

1. **Ecological and Hydrological Integrity** - Water quantity[18] improvements, including variability, are optimized to restore and sustain ecological functioning and integrity of the PAD to support the OUV.
2. **Practice of Aboriginal rights** - Water quantity improvements in WBNP are optimized to sustain the exercise of Aboriginal and Treaty Rights by enabling safe navigation, supporting healthy and abundant traditional resources and maintaining Indigenous ways of life in the PAD System[19].

[18] As defined in Glossary.
[19] The Peace-Athabasca Delta and the Athabasca, Peace, and Slave Rivers , and Lake Athabasca, as they pertain to the health of the PAD.

3. **Informed Decision-Making** - Improved baseline data/knowledge and comprehensive environmental flows assessments inform decision-making related to the ecological and hydrological integrity of the PAD System.

Water is deeply interconnected to the elements supporting the Outstanding Universal Value (OUV) of WBNP and more information is required to better understand many of these interconnections. The EFH drafting team has worked toward identifying actions and classing them into themes, shown as categories below, recognizing the complicated connections between actions.

EFH categories:
Actions are grouped into four categories:

1. Partnerships in Governance
2. Water: When, Where, and How Much?
3. Action Toward Outcomes and Informed Decision-making
4. Information Sharing

Many of the actions below are duplicated or overlapping because they support multiple or subsequent actions. However, the guidance of the FPTI Committee and the communication mechanisms that it establishes will ensure that connections are made and that efforts are not duplicated in this process or with previous work. The knowledge hub and proposed integrated PAD research and monitoring program will also support the interconnectedness of these actions within and across relevant themes.

Partnerships in governance:

The actions outlined in this chapter are highly interconnected and require cooperation and oversight to ensure coordination and information sharing. To this end, a Federal-Provincial-Territorial-Indigenous (FPTI) committee will be established with a mandate and terms of reference for implementing these chapter actions. The EFH working group identified a series of factors that should be reflected in the governance structure including: the foundational nature and importance of the identified guiding principles, stability and longevity, sufficient resourcing, shared planning, process and criteria for decision-making, and the equal voice and inclusion of the diverse Indigenous governments and government representatives.

This FPTI committee will be responsible for the EFH work and will connect with related Action Plan processes where relevant and appropriate. Environment and Climate Change Canada (ECCC) commits to leading the development of the FPTI committee and to remain in a convening and coordinating role until the FPTI committee is established.

Goal: To establish renewed and effective partnerships through a cross-jurisdictional governance team to guide and inform management actions toward achieving the desired hydrology outcomes for the PAD and WBNP.	
Lead: ECCC will take a transitional role while the FPTI Committee is established	
Action	**Timeline**

Convene and resource an FPTI Committee and Secretariat to oversee implementation of the EFH portion of the WBNP Action Plan.			2018-2020
Implementation Detail	Identify key members to develop terms of reference	**Targeted Completion:** November 2018	
	Confirm resourcing requirements for Indigenous representatives' participation to draft the terms of reference	November 2018	
	Appoint Committee Leadership for determined tenure	April 2019	
	Identify the budgeting requirements from 2020 onward	June 2019 onward	
Develop a Terms of Reference that establishes: • Accountability and Reporting • Authority • Roles and Responsibilities, including a clear mandate • Communication to member organizations, decision-makers and invested parties • Criteria for decision-making • Resourcing • Mechanism to evaluate actions taken and provide for adaptive management			2018-2019
Implementation Detail	Develop a first draft terms of reference based on key governance features identified by the working group	**Targeted Completion:** November 2018	
	Convene a governance and decision-making workshop with the identified committee members	November 2018	
	Complete a proposed terms of reference	February 2019	
	Finalize terms of reference	September 2019	
Establish and task project teams to implement key actions (e.g. structural alternatives project team; target/objective-setting) outlined for the EFH theme. Note that timelines will be variable as the needs for various project teams change.			2019+
Implementation Detail	Committee to establish and task project teams	**Targeted Completion:** January 2019	
	Project teams with identified lead(s) undertake detailed work planning to inform timelines and resourcing needs for the 2020-21 fiscal year and to complete the project team's assigned mandate	May 2019	
	Establish linkages to existing processes, progress reporting and communication mechanisms	December 2019 onward	
	Project teams commence implementation of work plan(s), starting in 2019	To be determined	
Establish clear lines of communication and linkages to existing processes such as the Mackenzie River Basin Board, WBNP Cooperative Management Committee, Alberta-NWT Bilateral Management Committee, Alberta Watershed Planning and Advisory Councils, etc.			2019

Implement a progress reporting mechanism to Federal, Provincial, Territorial, and Indigenous governments.	2019-2020
Communicate the findings of assessments, research, and modelling with stakeholders and Indigenous communities.	ongoing

Water: when, where and how much?

Setting objectives: what does success look like on the ground?

Early actions in objective setting are based on available knowledge. Key geographic areas for immediate intervention will be identified from the EFH working group meetings and existing literature (e.g. MCFN and ACFN Indigenous Knowledge). There is a need to identify key sites that are important to Indigenous people that are currently undocumented. Identifying specific objectives to be achieved in the longer term will require additional knowledge gathering.

It is also important to identify where and when water is not desirable. For example, increased river flows through winter have been noted to cause mortality in beaver and muskrat, compromise ice road integrity, and negatively influence the possibility of ice-jam spring flooding.

Goal: Identify and describe the areas and conditions where changes to water quantity would support the achievement of the Outcomes for Ecological and Hydrological Integrity & Practice of Aboriginal rights.

Action			**Team Lead**	**Timeline**
Identify key sites for early action				
Document priority locations in the PAD (Figure 7) where ecological integrity is impacted and intervention is required. Determine which of these is appropriate for early action.			PCA / Indigenous partners	2018
Identify priority areas from currently documented sites of navigational and/or cultural importance in the PAD and identify which of these are appropriate to inform early action and monitoring for trends			Indigenous partners / PCA	
Implementation Detail	Identify geographic coordinates for the locations already identified by the EFH Working Group as having potential for early restorative action in WBNP: • Egg Lake adjacent to the Revillon Coupe • Rat Lake • Birch River • PCA muskrat monitoring sites • Off channels of the Peace of navigational importance • Scow channel, near Rocky Point on the Peace River • Twin islands	**Targeted Completion:** November 2018	PCA/ Indigenous partners	

	• Big slough, on the Peace River • Chenal des Quatres Forches, toward increasing water level in Lake Mamawi			
Set specific water level objectives to inform early action and monitoring for trends in the PAD			PCA/ MCFN/ACFN/ Ft Chip Métis	2019
Implementation Detail	Identify the key objectives for the selected early action locations	**Targeted Completion:** March 2019	PCA/ Indigenous partners	
	Initiate feasibility studies to assess what actions could be done to make progress toward these objectives.	April 2019	PCA / Indigenous communities	
Complete identification of full set of objectives				
<u>Navigation</u> Undertake Indigenous use interviews to identify priority navigation routes and pinch points for all communities that travel within WBNP for the practice of Treaty and Aboriginal Rights, where not currently documented.			Indigenous communities	2019-2022
• Identify the conditions required for safe and productive practice of Rights across the year (e.g. depth of water, connectivity)			Indigenous communities	2019-2022
<u>Sites of Cultural Importance</u> Undertake Indigenous use interviews to identify areas and timing of key contemporary and historic cultural importance including, but not limited to, medicine, hunting, gathering, spiritual and cultural practice.			Indigenous communities	2019-2022
• Describe the requirements of these locations to support these practices (e.g. What plants and animals are there? When are they in high or low abundance? Are there access routes and water quantity conditions required beyond those identified as priority navigation routes?)			Indigenous communities / PCA	2019-2022
<u>Ecological Integrity</u> Identify key areas of WBNP where water quantity changes are required to restore ecological integrity			PCA / Indigenous partners	2019-2020
• Identify the specific hydro-ecological end points that are necessary to maintain the ecological integrity of these areas (e.g. hydrological regime supports increased muskrat, reduced thistle or willow encroachment)			PCA; /Indigenous partners	2019-2020
Document the information from all above activities and summarize the specific objectives in a final report(s)			PCA	2020-2022
Over time, using adaptive management (see section 7.1.2 in the SEA), learn through action, monitoring, and modelling what water quantity change supports achievement of these objectives.			FPTI Committee	ongoing

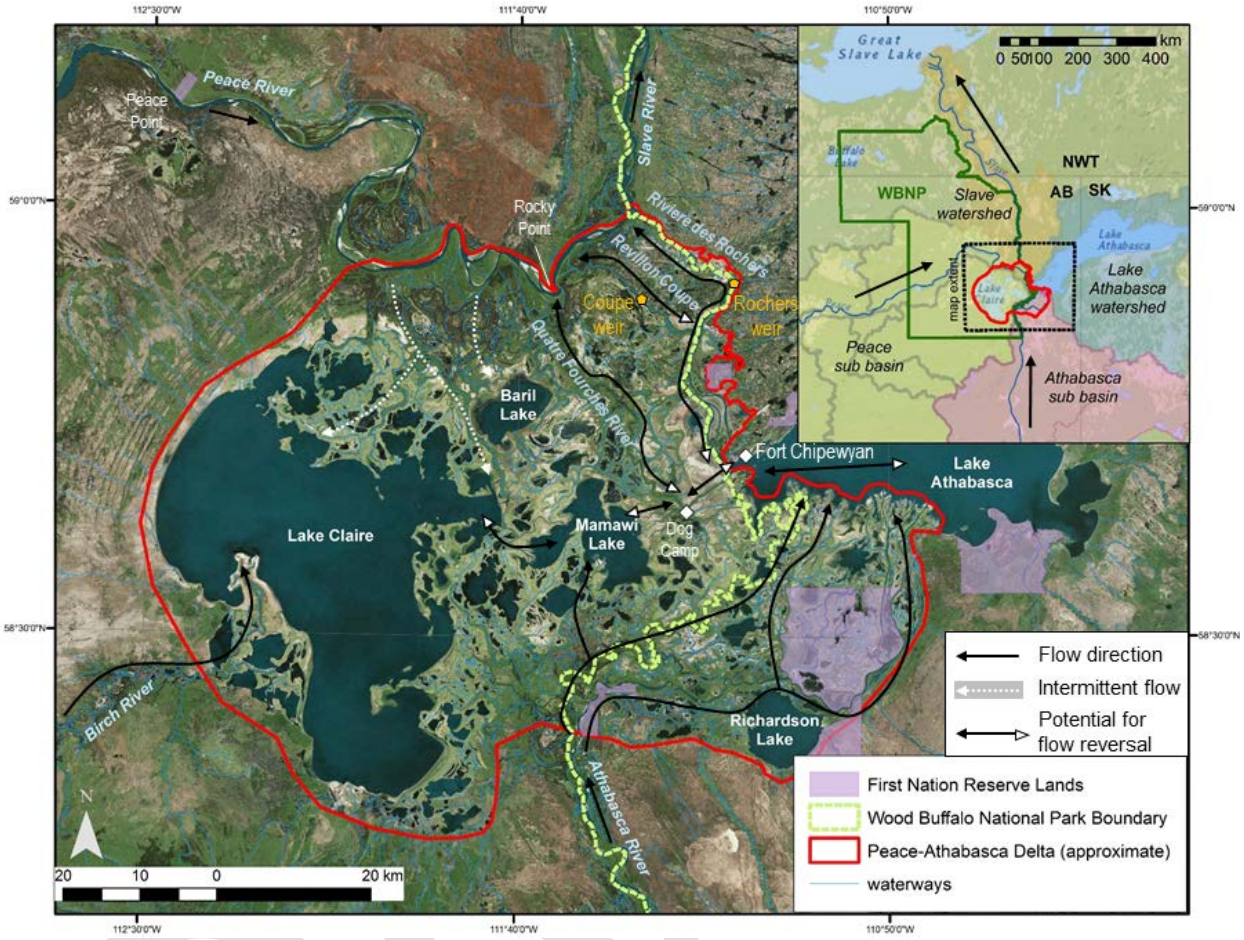

Figure 7: Key locations and flow directions within the Peace-Athabasca Delta.

Setting objectives: how will we measure progress?

Indicators of some aspects of ecological integrity have been developed in previous works through the Northern Rivers Ecosystem Initiative (NREI)[20], the Northern Rivers Basin Study (NRBS)[21], and by Indigenous partners and Parks Canada within WBNP. Basin-wide, high-level indicators are in development for the State of the Aquatic Ecosystem Report under the Mackenzie River Basin Board.

Goal: Set SMART (Specific, Measurable, Achievable, Relevant, and Time-bound) water quantity targets and indicators toward achieving the objectives identified in 2.1.

Targets and indicators will indicate progress toward both ecological and Indigenous use objectives and may be qualitative (e.g. feeling of safety during navigation) or quantitative (e.g. depth of water at a particular location). Targets typically include variability, minimums and maximums, thresholds, etc., and will be refined as they are developed.

Action	Team Lead	Timeline
Assess use of existing indicators developed with Indigenous expertise, such as by the Mackenzie River Basin Board, the NREI and NRBS, those in place in WBNP through Parks Canada and Community-Based Monitoring programs.	ECCC	2019
Identify gaps in knowledge for indicators and targets and develop a plan to address these gaps	ECCC / PCA	2019
In conjunction with 'objectives' interviews, conduct interviews of elders and land users to inform development of Indigenous SMART targets and rights-based indicators for Indigenous use objectives identified above (e.g. abundance of harvested species and/or traditional use plants; navigability of priority routes).	Indigenous partners	2019-2022
Informed by the objectives and baseline hydrological conditions identified below, develop SMART targets (or target ranges or thresholds) and indicators to assess: • progress toward intermittent high elevation recharge of the PAD's perched basins (including key sites of Indigenous cultural importance within these perched basins, if applicable) • progress toward low elevation recharge and connectivity (including key sites of Indigenous cultural importance) • navigability of seasonal priority routes	PCA	2019-2023
Make the targets and indicators available via the Knowledge Hub (see section EFH4.1), with regular reporting	PCA / Indigenous communities	2020-2023

[20] Donald, D,, W. AIKen, J. Syrgiannis, N. Glozier, F. Hunter, and M. Gilchrist. 2004. State of the Aquatic Environment Peace-Athabasca Delta – 2002. In: Environment Canada, Northern Rivers Ecosystem Initiative: Collective Findings. Compiled by F.M. Conly, Saskatoon, SK (with Alberta Environment).

[21] Donald, D., F. Wrona, W. Warwick, W. AIKen, F. Hunter, and J. Syrgiannis. 1996. Indicators of ecosystem integrity: Peace-Athabasca Delta. Project Report No. 107, Northern Rivers Basins Study.

Monitoring progress to inform adaptive management

This goal will be achieved through significant linkages with the Monitoring and Science Theme actions (section 6.5).

Goal: Establish a monitoring regime that tracks the trend of indicators identified above across the extent of WBNP and the PAD and over time that evaluates the effectiveness of management actions, building on existing monitoring programs where possible.		
Action	**Lead**	**Timeline**
Assess and inventory the historic and ongoing monitoring within WBNP	ECCC/PCA/ Community-Based Monitoring (CBM) Program	March 2019
In coordination with actions taken pursuant to Monitoring and Science theme, identify gaps in the types and location of monitoring within WBNP required to support monitoring of: a. indicators, including navigability b. baseline / reference parameters, c. parameters required for model operation and validation, and d. water management actions.	FPTI Committee	2019+ Ongoing and adapted through learning and as needed.
Make monitoring data available[22], to local communities and decision-makers in a timely and transparent manner.	FPTI Committee	2018+

Action toward outcomes and informed decision making:

These actions are based on the principle of *Commitment to Action, Informed by Best Available Knowledge/Data.* There is sufficient information to take early "on the ground" action toward understanding and improving the ecological and hydrological integrity of the PAD. These early actions include:

- Establishing a protocol to support potential strategic flow releases to enhance ice-jam flooding;
- Creation of ice-dams in strategic locations under appropriate conditions;
- Possible installation of temporary control structures; and
- Targeted ecological restoration through hydrology-related actions.

Learnings from these actions will inform and support the development of longer-term options, including a better understanding of the risks and benefits of higher-risk or larger-scale changes. Modelling work will be used to assess the potential outcomes and interactions of options including, but not limited to:

- changes in water withdrawals on Athabasca River,
- changes to WAC Bennett water release regime across different seasons (e.g. spring releases; winter, fall, and summer flow regulation) to influence Peace River flows,

[22] Some MCFN data from the CBM program are already available on the Mackenzie Data Stream.

- control structures (e.g. weirs) within the PAD.

Early action to improve knowledge of the baseline hydrologic conditions will support decision-making and directly address Recommendation 7 from the RMM. Early actions, including modelling, will also support the development of the environmental flows assessments denoted in Recommendation 3 of the RMM.

Enhance spring flooding in WBNP - strategic flow releases:

One of the unique features of the PAD is the perched basins (Figure 8). Though the delta is fairly flat, these 'raised' or perched basins are periodically filled with water during extreme flooding events that occur due to ice jam events in the spring.

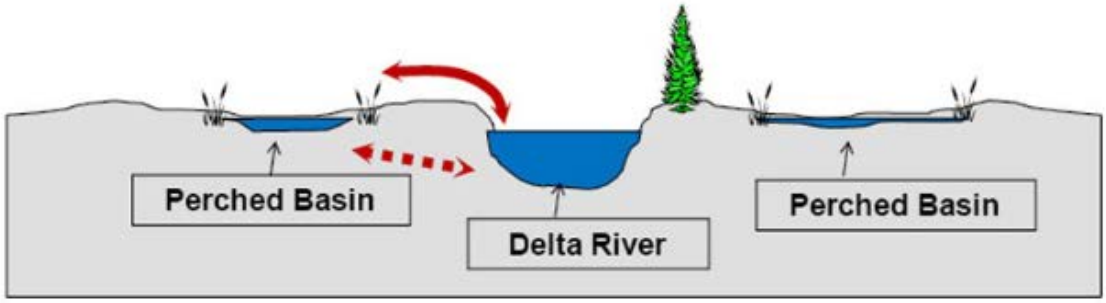

Figure 8: Perched Basins. From http://www.pademp.com/delta-ecology/hydrology/

BC Hydro and Alberta are working to establish a protocol and parameters for BC Hydro to release water (test flow release) to enhance ice-jam flooding. The protocol will consider the risks for people and communities upstream of WBNP on the Peace River, downstream on the Slave River and in the PAD. Consultation and communication with these parties is required to assess and manage risk.

This set of actions by BC and Alberta is framed by the commitment made in a letter from British Columbia Minister Bennett to Alberta Minister Fawcett, dated February 4, 2015:

> "*BC Hydro remains open to a proposal from the Government of Alberta for a test flow to influence an ice jam event in the PAD similar to the 1996 request. Contemplation of a test flow, as indicated, would be considered for opportunities that would not impact BC Hydro ratepayers, existing infrastructure in British Columbia or dam safety.*
>
> *Under such a test, I trust that the Government of Alberta will continue to evaluate and manage any effects on Alberta's interests, including those unintended consequences that may arise from flooding."*

Little Red River Cree Nation (upstream of WBNP on the Peace River) and Alberta Environment and Parks are also working with the Mighty Peace Watershed Alliance and Northern Peace Tribal Council explore the impact of the Peace River flow regime on the Lower Peace Wetlands, including the Peace Athabasca Delta, including risks and possible actions to safeguard communities, farmland and

infrastructure. Learnings from this work as it progresses will be communicated to support the development of this test release protocol.

Goal: Establish protocols for, and identify circumstances under which, a strategic release of water from the Williston Reservoir behind the W.A.C. Bennett dam could enhance an ice-jam flood event within WBNP to encourage flooding of the PAD, including its perched basins, while minimizing unwanted upstream and downstream risks.	
Lead: BC, BC Hydro, AB	
Action	**Timeline**
Create a protocol for a proposal from the Government of Alberta for a test flow (a release of water from the Bennett dam) to influence an ice jam event in the PAD similar to the 1996 request. The development of the protocol would include consideration of: i) who and to whom the request would be made, ii) what information would be included in the request, iii) parameters that would be considered in making the request, iv) consideration of risks and liability for consequences for water management decisions that cause harm to interests of stakeholders, Indigenous people and unintended consequences to the aquatic ecosystem, v) communication protocols to inform communities upstream and downstream to Great Slave Lake that may be affected and need to be consulted and notified of the request vi) timelines for assessing conditions, submitting a flow request, and response to the request, vii) Monitoring plan to be ready for implementation	2018-2020
Assemble currently available data and information that could indicate if a test flow has a reasonable chance of being successful while minimizing the risk of unintended negative consequences.	2018-2019
Identify gaps in knowledge, review assembled information and confirm gaps using a workshop format, and develop plans to fill knowledge gaps.	2018-2019
Communicate with all stakeholders about management actions within the Peace-Athabasca Delta System to ensure risks are understood and acceptable.	2019-2021
Implement the protocol as opportunities arise, including water release, if supported.	As conditions allow (after the above steps are completed)
For each particular test flow, establish assessment criteria and appropriate monitoring	
Conduct analysis, modeling, and monitoring related to addressing knowledge gaps with the purpose of identifying more specific parameters that could be used to inform Alberta's request for a test flow release. For example, the spring breakup in 2018 and other years could be used as a test case to inform the protocol.	2019-2021 (and beyond)

Update the protocol for a request from Alberta for a test flow release to influence an ice jam event in the PAD with more specific parameters, or update based on lessons learned from any subsequent ice jams and/or test flows	2021-2022 (and beyond)

Enhance spring flooding in the PAD – artificial ice damming:

Recognizing the role of ice in spring flooding of the PAD, the Peace-Athabasca Delta Technical Studies (1993-96) investigated the use of an ice dam to retain spring break-up flows and inundate local perched basins. The ice dam was constructed over winter 1994/95 at the outlet of Mamawi Lake using spray ice technology. Although above normal winter temperatures and below normal run-off limited the success of the trial that year, the successful installation of an ice dam supports the potential use of this approach at critical hydraulic nodes within the PAD when conditions are predicted to be favourable.

Goal: To enhance spring flooding using artificial ice damming within WBNP		
Action	**Lead**	**Timeline**
Establish project team	PCA / Indigenous partners	December 2018
Review past attempt to create an ice dam and related recommendations, and confirm one or more locations where an ice dam(s) could support the desired outcomes	Project team	Jan 2019
Establish goals and objectives and develop a plan (i.e. Terms of Reference) to install an ice dam(s) to meet goals and objectives, including: - identification of necessary environmental pre-conditions, - monitoring plan, - develop budget, - conduct environmental assessment, - communicate plan to jurisdictions and stakeholders, - conduct consultations with all potentially impacted parties	Project team	Jan 2019 - March 2019
Obtain required equipment (spray ice pump(s), monitoring equipment, etc.), establish field team to implement plan.	Project team	Apr. - Nov. 2019
Implement plan (given necessary environmental pre-conditions are met).	Project team	Dec 2019-May 2020, or when conditions allow
Monitor / document implementation and results, assess results against objectives, refine plan for implementation in future years.	Project team	Dec 2019-Oct 2020

Assess the potential for ice dams to support improved ecological and hydrological integrity in other parts of the PAD.		

Establish adequate baseline information:

Recommendation 7 from the RMM is to establish adequate baseline hydrological information of the Peace and Athabasca River Basins in the context of being better able to understand cumulative impacts of hydropower impacts and water withdrawals in light of existing or expected influences from climate change or future projects[23]. While the development of this baseline will directly address Recommendation 7, it will also inform monitoring of actions taken to achieve this Action Plan and will provide a strong basis for environmental flows modelling.

Goal: To enhance monitoring and to improve the assessment of current and future water quantity conditions in the Peace and Athabasca River Basins.			
Action		**Lead**	**Timeline**
Assess the current state of knowledge and monitoring *(science and monitoring theme)* within the PAD		ECCC	2018 – April 2019
Implementation Detail	Contractor to update the AECOM 2010 report[24] on the state of the PAD		
Assess the current state of knowledge and monitoring within the Peace and Athabasca River Basins		FPTI Committee	2019-2020
Develop a common understanding of the complex hydrological function of the Peace and Athabasca River Basins and the PAD.		FPTI Committee	
Conduct a water balance assessment of the Athabasca and Peace River basins).		ECCC	
Determine the appropriate reference time point and scale to define baseline(s) conditions, including: pre-development, present conditions, naturalized[25]		FPTI Committee	
Determine if appropriate baseline indicators are being monitored and identify gaps.		FPTI Committee	
Develop plan to gather information to fill gaps in western and Indigenous knowledge		FPTI Committee	
Undertake elder interviews (in conjunction with other interviews) to inform the pre-regulation and pre-development state of hydrology within the Peace-Athabasca River Basins and Delta.		Indigenous partners	
Ensure identified hydrological indicators are being monitored at appropriate spatial and temporal scale. Integrate with target and indicator monitoring toward objectives wherever possible.		FPTI Committee	2021-2022

[23] Reactive Monitoring Mission Report, p. 27

[24] Synthesis of Ecological Information Related to the Peace-Athabasca Delta. 2010. Report prepared for PADEMP by AECOM.

[25] For modelling/simulation purposes discussed herein, naturalized is modelled natural flows without regulation or withdrawals on the Peace and Athabasca rivers.

Communicate findings from baseline assessment to modelling work and to decision-makers to inform decisions related to future development or management action	FPTI Committee	2022+
Periodically review and update baseline(s) as information comes available and share results	FPTI Committee	2025+

Conduct Environmental Flow Assessments:

Recommendation 3 suggests that environmental flows assessments be conducted for the Peace, Athabasca, and Slave River, as they pertain to the health of the PAD, to identify the water flows needed to sustain the ecological functioning of the PAD under the circumstances of existing and planned future dams and water withdrawals. The Reactive Monitoring Mission (RMM) Report also highlights the need to better understand the interactions between the naturally dynamic high latitude ecosystem of the PAD and climate change[26].

Hydrologic and/or hydraulic models exist for the Peace and Athabasca sub-basins, and for the Mackenzie River Basin and will be drawn upon to support early actions. Other initiatives have developed, recommended development, or identified technical recommendations that will be drawn upon towards building a comprehensive model for the PAD, such as the Mackenzie River Basin hydraulic model commissioned by the Mackenzie River Basin Board, the Integrated Watershed Management Plan for the Peace and Slave Watersheds[27] by the Mighty Peace Watershed Alliance and work commissioned by the Athabasca Watershed Council[28].

However, all of the existing models have some gaps in understanding and modelling of the hydrology and hydraulics within this complex, cold-weather delta. To address Recommendation 3 from the RMM, a longer-term modelling effort will work toward building a basin-wide, holistic, inter-jurisdictional model that more fulsomely captures the complex interactions that influence the health of the PAD.

In addition to addressing Recommendation 3, environmental flows assessments and water balance modelling will be used to support near-term actions using existing or readily obtainable information. Near-term modelling work includes assessment of temporary or short-term control structure options and identifying options toward achieving Indigenous navigability and ecological outcomes within WBNP.

These assessments will draw on, and be available to inform, work being undertaken in other themes of this Action Plan as they relate to EFH theme actions, (i.e. tailings pond management, science and monitoring, environmental assessment) and in other jurisdictional or community processes. Models will be made available to decision-makers when contemplating actions that could impact the hydrology of the PAD.

Refinement of the Surface Water Quantity Management Framework (SWQMF) for the Lower Athabasca River, could help to support the achievement of the desired outcomes for ecological and hydrological

[26] P.16, Reactive Monitoring Mission Report
[27] https://www.mightypeacewatershedalliance.org/projects/integrated-watershed-management-plan
[28] https://awc-wpac.ca/resources/awc-reports/

integrity and navigability in the PAD. The SWQMF contains a preliminary Aboriginal Navigation Index (ANI) that relates Lower Athabasca River flow rates to Indigenous navigability; Alberta and regional Indigenous people are working toward refining this Index (see section 6.4, Environmental Assessment). Complementary supporting actions will be taken through the EFH work.

Goal: To identify, modify and, if necessary, produce environmental flows assessment models that incorporate state-of-the-art understanding of localized effects of the past, ongoing, and projected climate changes, to inform future and ongoing management actions that could impact WBNP.		
Action	**Lead**	**Timeline**
Hold a workshop to facilitate a common understanding of the influence of oil sands withdrawals on Indigenous navigability	ECCC / AB / MCFN	Nov 2019
Gather information required for both short and long term modelling		
Inventory and assemble relevant currently available hydrological and geomorphological data, existing models (e.g. Athabasca River Basin Initiative and ongoing work under LARP for the Athabasca River, AEP forecast model of the Peace River, Mackenzie River Basin Hydraulic Model, data from Community-Based Monitoring) and information for the Peace and Athabasca Rivers and tributaries and include this inventory (and data, as appropriate) in the knowledge hub	ECCC	January-April 2019
Hold a workshop(s) with Science-based and Indigenous Knowledge experts to scope the variables and data required to produce: (1) a simplified (or geographically restricted) model(s) with existing data to predict and understand the effects of small-scale management options being considered. (2) a holistic, basin-wide, multi-jurisdictional environmental flows model	ECCC	March 2019 onward
Review existing models and modeling results to identify options to achieve the identified objectives for Indigenous navigability.	Indigenous communities / ECCC	2019-2020
Build a holistic basin-wide environmental flows model		
Identify gaps and undertake a plan to address these gaps, including potential field studies, and develop finer-scale climate change scenarios for the longer-term holistic model, as requested in Recommendation 3.	ECCC	2019-2023
Develop a holistic, basin-wide, multi-jurisdictional model to the highest international standards to understand hydrological, ecological, and Indigenous use relationships in light of current and future climate change and cumulative effects of withdrawals and regulation.	FPTI Committee	2020-2024
Make the model(s) and requisite data available to inform future management actions or decisions in the Mackenzie basin that could impede or support the achievement of the PAD objectives and outcomes.	FPTI Committee	2025

Update the model framework as data become available through study and management actions and share results.	FPTI Committee	2025+

Structural Alternatives:

The assessment and implementation of water management structures within the PAD began with the installation of a temporary rock-filled dam on the Chenal des Quatre Fourches at the outlet of Mamawi Lake in 1971. The dam was installed to immediately raise water levels, while studies were undertaken to find more permanent, environmentally acceptable solutions to address the low water levels. The dam was damaged in the 1974 flood and removed in 1975 (as planned) following completion of Riviere des Rochers weir[29].

Following an options assessment, a submerged outflow weir was constructed on the Riviere des Rochers (with fish bypass channel and boat tramway) in 1975. The weir delays the rate of outflow and raises water levels on Lake Athabasca and within the connected system of PAD lakes and channels. A second submerged outflow weir was installed on the Revillon Coupe in 1976 as studies predicted high velocities and erosion on that channel with the installation of the first weir. The weirs have helped to restore summer peak lake levels, but the amplitude of water levels is less than under the natural regime[30]. The weirs do not influence the perched basins flooded by ice jams on the Peace and Athabasca Rivers.

During the Peace-Athabasca Delta Technical Studies (1993-1996), a range of structural alternatives to manage water levels in the PAD were assessed[31]. These options included both temporary and permanent structures of both large and small scale.

Goal: Strategically-placed short- and/or long-term water management control structure(s) within the PAD create a local hydrological regime that supports the ecological functioning and Indigenous use in identified target areas		
Action	**Lead**	**Timeline**
Small-scale and/or temporary control structures		
Assemble and review overview of the existing data and information related to past, current, or potential control structures in the PAD: • state of the weirs currently in place • alternatives considered, rationale for chosen options, design criteria, and effectiveness of the weirs currently in place (including past modelling exercises)	PCA	2018-2019

[29] Peace-Athabasca Delta Implementation Committee. 1987. Peace-Athabasca Delta Water Management Works Evaluation. A report prepared under the Peace-Athabasca Delta Implementation Agreement. 63pp.

[30] De Boer 1996, as reproduced in the Strategic Environmental Assessment p 5-21.

[31] DeBoer, A. 1996. Structural Alternatives. Task G.0 – Structural Alternatives. Peace-Athabasca Delta Technical Studies. 1996. 46 pp.

<table>
<tr><td colspan="3">• new alternatives that were not considered or available at time of construction (e.g. feasibility study on inflatable rubber dams)
• previous weir/dam experiments in the PAD (e.g. Ice dam at Dog Camp and small trench/weirs on perched basins in Athabasca Delta)
• Weirs and dams that have been considered in the past but not implemented and why not (e.g. Big Egg Lake)</td><td></td><td></td></tr>
<tr><td rowspan="5">Implementation Detail</td><td>Assemble existing data and information</td><td>Task Lead(s):
ECCC</td><td>Targeted Completion:
April 2019</td></tr>
<tr><td>Establish a structural alternatives project team</td><td>Indigenous partners, PCA, AB</td><td>Oct 2019</td></tr>
<tr><td>Employ a contractor to assess the effectiveness of the two existing weirs (Rivière des Rochers and Revillon Coupé) and identify any maintenance required to ensure that the weirs operate as originally designed.</td><td>PCA (Coupé weir) / AB (Rochers weir)</td><td>Dec 2019</td></tr>
<tr><td>Undertake a feasibility assessment on the potential use of one or more temporary control structures to meet specific water level objectives in the Lake Claire and Mamawi Lake area of the Peace-Athabasca Delta, including simple modelling of potential outcomes.</td><td>ECCC</td><td>Dec 2019</td></tr>
<tr><td>Consultation with Indigenous partners</td><td>Indigenous partners / AB / PCA</td><td>Dec 2019</td></tr>
<tr><td colspan="3">Review assembled information, modelled areas/extents, etc. in a workshop to confirm gaps in knowledge including linkages between PAD with current or future structural scenarios, varying flow input, and impacts upstream and downstream.</td><td>FPTI Committee</td><td>Fall 2019</td></tr>
<tr><td colspan="3">Pending feasibility assessment results and consultation with local communities, complete the full design for one or more pilot control structures.
• Determine appropriate Indigenous and hydro-ecological indicators and monitor for effects of the weir
• Learning from monitoring of implementation results, adjust timing and length of installation and/or site of installation</td><td>PCA and/or AB</td><td>2019-2020</td></tr>
<tr><td colspan="3">Install one or more pilot control structures and/or repair existing weirs, as designed</td><td>PCA and/or AB</td><td>2021-2024</td></tr>
<tr><td colspan="3">Monitor and adapt installation as required to progress toward objectives</td><td>FPTI committee</td><td>2021+</td></tr>
<tr><td colspan="5">Longer-term structural options</td></tr>
</table>

Identify remaining gaps in knowledge, including linkages between PAD with current or future structural scenarios, varying flow input, and impacts upstream and downstream.	FPTI Committee	2021
Longer-term structural options will be assessed in the cumulative framework to test interactions with other management options. Continued monitoring of pilot structures, existing structures and ice damming efforts will provide key information.	FPTI Committee	2021-2024

Longer-term Peace-Athabasca Delta System Management Options – Holistic Perspective (Cumulative lens):

Early actions, knowledge gathering and modelling work will inform the knowledge base required to fully assess the potential of larger-scale actions toward achieving the desired ecological and Indigenous outcomes for the WBNP in balance with upstream and downstream impacts.

Goal: Identify and assess the risk of alternative management options to provide recommendations toward achieving desired flows and water levels		
Action	**Lead**	**Timeline**
Using or adapting models built and knowledge obtained from environmental flows assessments and early actions, assess the predicted impacts of potential management options, singly or in combination. Options to consider include, but are not limited to: • changes in water withdrawals on Athabasca River (see actions in 6.4 Environmental Assessment), • changes to WAC Bennett water release regime across different seasons (e.g. spring releases; winter, fall, and summer flow regulation) to influence Peace River flows, • control structures (e.g. weirs) within the PAD.	FPTI Committee	2020-2021
Select a set of priority scenarios to undertake more detailed evaluation including assessing what impact each has on the achievement of key selected ecological and traditional use objectives/outcomes (using indicators as identified above, such as muskrat).	FPTI Committee	2021-2023
Assess the impact of priority scenarios on interests upstream and downstream of the PAD	FPTI Committee	2022-2023
Environmental assessment and detailed analyses of desired management options	Jurisdictional authority	2024
Recommend the preferred management approach(es) to the relevant jurisdictional authorities that could support achieving the ecological and traditional use EFH objectives.	FPTI Committee	2024
Continue to monitor and adapt toward achieving the desired outcomes.	FPTI Committee	2024+

Information sharing

Establish a single-window knowledge hub:

Goal: To establish a Knowledge Hub to make Peace-Athabasca Delta information and data from Science-based and Indigenous Knowledge sources more easily accessible. (Create a single window to access information related to the PAD hydrology, both at a plain language and technical level)		
Action	**Lead**	**Timeline**
Complete a user-needs survey to assess what type of information and presentation the various users require or want.	ECCC	April 2019
Establish an appropriate knowledge hub platform, informed by similar existing resources (e.g. Mackenzie Data Stream) that targets needs without creating redundancies. • Ensure that the platform and data storage are supported through time, including archival information.	ECCC	2018-2020
Establish data sharing protocols.	FPTI Committee	As needed
Develop a basic ethics and data sharing agreement that can be adapted as needed.	MCFN	2019
Update knowledge hub routinely with monitoring and study data from within WBNP.	FPTI Committee	ongoing
Establish communication mechanisms and frequency to exchange information with (a) communities, (b) jurisdictions and governments, and (c) stakeholders and the general public.	ECCC / FPTI Committee / All	2019-2020
Regularly review and evaluate the effectiveness of the Knowledge Hub and ensure links are up to date.	FPTI Committee	2020 onward

6.8 Theme: Monitoring and Science

Recommendation 2
Considering the increasing pressures on the property at this time, prioritise conservation and ensure that the State Party's science capacity enables Parks Canada's legal obligation to maintain and restore the Ecological Integrity of the property.

Recommendation 17
Incorporate invasive alien species (IAS) into the overall monitoring of the property and the PAD based on science and local and Indigenous Knowledge, and based on monitoring results, develop an appropriate management response to control the spread of IAS.

Context:
The nature of the current challenges and development pressures on the ecological integrity of WBNP requires inter-jurisdictional collaboration and coordination to better understand and assess potential impacts and to inform decision-making. While there are numerous scientific and monitoring initiatives underway in and around WBNP, and specifically in the PAD, there exist ongoing challenges to ensure that these initiatives are appropriately networked, and that results arising are communicated in an accessible manner. There will, by necessity, be overlap between actions taken in support of this theme and those related to other themes such as Environmental Flows and Hydrology, and Wildlife and Habitat Conservation.

An integrated PAD research and monitoring program

The PAD is the primary element of OUV of concern with regard to the specific and cumulative impacts of development external to the park. Several initiatives include research and monitoring activities in the PAD and have specific mandates and program objectives. Some key initiatives are described below.

Peace-Athabasca Delta Ecological Monitoring Program (PADEMP): Parks Canada has been leading PADEMP since 2008, with the goal of developing an integrated ecological monitoring program for the delta that can measure, evaluate and communicate the state of the Peace-Athabasca Delta ecosystem, including any changes resulting from cumulative regional development and climate change. The program is being developed using both Science-based and Indigenous Knowledge, and is directed by a Steering Committee with representation from federal, provincial, territorial and Indigenous governments. PADEMP's activities to date include:

- collection and synthesis of available information on the delta;
- development of a draft Vulnerability Assessment;
- identification of key monitoring questions and information gaps;
- initiation of the PADEMP muskrat survey, to address local concerns regarding this ecological and cultural key-stone species, and to serve as a model of how to bring together Science-based and Indigenous Knowledge in monitoring programs;
- coordination of four annual PADEMP Forums in Ft. Chipewyan, to bring those engaged in local and regional research and monitoring together with local Indigenous Knowledge holders and community members to discuss key concerns and questions, and to stimulate collaboration and communication; and
- communication through PADEMP newsletters and website (pademp.com).

WBNP Ecological Integrity (EI) Monitoring Program: WBNP implements a monitoring program to evaluate the ecological integrity of the park. Following a nationally standardized approach,

the program consists of a small suite of approved EI indicators and supporting measures that are carefully selected to represent the biodiversity and biophysical processes of the park's ecosystems in the context of the larger scale natural processes. Several of WBNP's monitoring measures are primarily related to the PAD, including water birds, water extent, wetland type, muskrat abundance, vegetation change, contaminants in colonial water bird eggs, river discharge, and water quality. The results of the program are presented in the State of the Park Report and inform park management planning.

Parks Canada is updating its ecological monitoring policy to explicitly include Indigenous Knowledge in the description of the condition of each National Park. WBNP will serve as a mentor and example to other parks as it engages and collaborates with Indigenous Knowledge holders.

MCFN / ACFN Community-based Monitoring Program (CBM): Since 2008, MCFN and ACFN (2010) CBM programs have been using scientific methods and local IK and wisdom passed down by Elders to watch, listen, understand and report on activities that may cause harm to their traditional lands and resources in the PAD. The programs measure water depth, water quality, ice thickness and snow depth, and CBM staff collaborate with other federal, provincial, territorial and University researchers in examining contaminants in wildlife. The CBM programs also collect information on water levels related to navigation, and a fish monitoring component is in development. The results of their studies are used to inform community members about the state of the traditional territory, to assist the leadership in establishment of Indigenous policies and to inform consultation processes surrounding the impacts of resource development.

Oil Sands Monitoring Program (OSM): The Governments of Canada and Alberta cooperate to lead the OSM Program – a comprehensive environmental monitoring program aimed at improving understanding of the long-term cumulative effects of oil sands development throughout the oil sands region of Alberta including the Lower Athabasca River and the PAD.

The OSM program monitors surface water quality and quantity, groundwater quantity and quality, biodiversity, air quality, wildlife and deposition across many indicators and relative to different limits of change. Critical to the program is reporting on environmental condition by environmental theme area but also in an integrated manner across theme in the interest of understanding where cumulative effects are occurring relative to oil sands development. This effort includes collecting, managing and assessing data and knowledge, measuring change, development of limits of change, determination of adequate baseline and ensuring all is conducted to the highest standards of science and inclusive of and informed by Indigenous Knowledge.

Determination of causes outside of oil sands development does not fall within the program. In the case of the PAD for example, there are many factors beyond oil sands development that may influence environmental conditions in the PAD. With a $50 M annual funding commitment under the Oil Sands Monitoring Program Regulation, the OSM program can provide significant information on changes in environmental condition but further work to attribute causal factors for the change beyond oil sands would be required through augmented monitoring.

In December of 2017, the Ministers of Alberta Environment and Parks and Environment and Climate Change Canada, signed a Memorandum of Understanding (MOU) that renews each Government's commitment to monitoring of oil sands development. The agreement also recognized and affirmed treaty and Aboriginal rights of Indigenous peoples as per Section 35 of the *Constitution Act, 1982*. Indigenous communities are involved in many aspects of monitoring under the program and the program is evolving and maturing to be more inclusive of Indigenous knowledge and expertise including relevant indicators to Indigenous communities. Governance of the program will involve Indigenous communities in the region through an Operational Framework Agreement that has been co-developed with communities. And, under the new MOU, the Government of Canada (Environment and Climate Change Canada) will invest up to an additional $2 million annually to assist local Indigenous communities – including some of those whose traditional territory includes Wood Buffalo National Park – to develop and implement community-based environmental monitoring projects.

Despite the efforts above, there remains no integrated PAD research and monitoring network that brings together these existing efforts, using both Science-based and Indigenous Knowledge, to identify and address information gaps and comprehensively assess cumulative effects on the PAD (Figure 9).

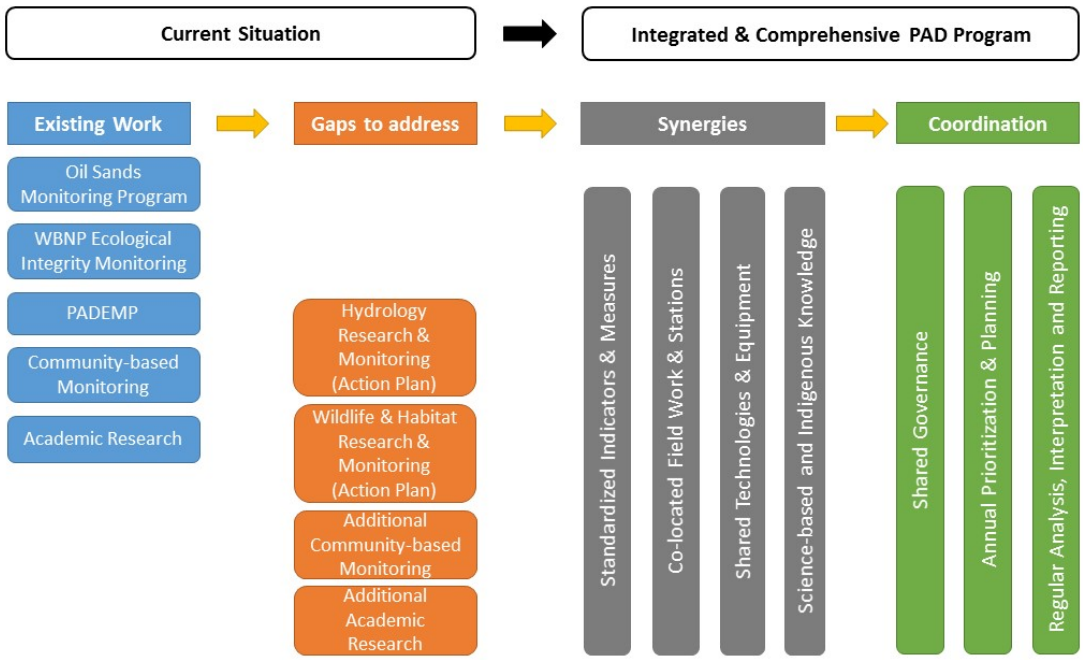

Figure 9: Desired evolution of integrated PAD research and monitoring program.

The Government of Canada is committed to working with the governments of Alberta, British Columbia, the NWT and Indigenous partners to develop and implement an integrated program of research and monitoring for the PAD. This program will be informed, in part, by the findings and recommendations of the Strategic Environmental Assessment.

Such a program must have strong community involvement to ensure community concerns are addressed, to ensure data and findings / results are accessible to community members, and to engender trust. To facilitate the development and implementation of the program, a community-based research and monitoring hub is envisioned that:

- supports the integration and coordination of PAD-related research and monitoring activities;
- identifies community concerns and areas where additional research and monitoring is required;
- connects researchers with the community, Indigenous governments and PAD research and monitoring priorities;
- informs research and monitoring goals, supports research and monitoring activities (including Community-based Monitoring programs), and collects and mobilizes knowledge to inform decision making;
- connects elders and youth to ensure transfer of Indigenous Knowledge and retention of culture; and
- develops and implements education / training programs, and provides local employment opportunities.

Other supporting commitments related to this theme and scheduled for early implementation include:

- PAD Research and Monitoring Workshop: to support the development of an integrated PAD research and monitoring program by identifying key questions and concerns, identifying gaps in knowledge, selecting appropriate indicators, creating linkages to existing/emerging science and monitoring programs, and stimulating new research and monitoring activities.
- PAD Annual Symposium: to encourage information sharing, collaboration, and engagement to improve PAD research and monitoring and mobilize knowledge in support of improved decision making.
- Wetland Classification of PAD and Park: to support ecological assessments of PAD, Whooping Crane nesting area and other park wetlands.
- High resolution digital terrain imagery of the PAD: to support development of a high resolution digital elevation model of the delta required to facilitate hydrological assessments / modelling.
- Invasive species monitoring: currently incorporated into the PAD vegetation monitoring program and expanded in 2018 to the Salt Plains.

Goal: An Integrated PAD Research and Monitoring program (using both WS and IK), supported by a community based research and monitoring hub, is implemented to detect cumulative effects on the PAD and to generate information that informs land-use management and regulatory decision making.		
Actions	**Lead**	**Timeline**
Coordinate PAD Research and Monitoring Workshop(s); develop and implement integrated PAD Research and Monitoring Program.	Federal - PCA	2018/2019 – 2019/2020, and ongoing
Initiate annual PAD Symposium to share findings of PAD-related science and monitoring work underway by various organizations	Federal - PCA	2018/2019
Undertake Wetland Classification of the PAD and of WBNP to support ecological assessments of the PAD and other wetlands within WBNP	Federal - PCA	2018/2019
Obtain high resolution digital terrain imagery of the PAD	Federal - ECCC	2019/2020

Advance the concept of a PAD monitoring hub to support better integration of Science-based and Indigenous Knowledge of the PAD	TBC	2019/2020
Develop periodic State of the PAD reports – for further discussion	Federal - PCA	TBD
Expand invasive species monitoring and management to the Salt Plains as part of on-going vegetation monitoring in WBNP WHS	Federal - PCA	2018-2019

6.9 Theme: Wildlife and Habitat Conservation

Recommendation 15 Further harmonize and adopt the Species Recovery Strategy for Wood Bison throughout its range, including but not limited to the Greater WBNP Ecosystem, and specifically: a) Urgently invest in comprehensive and independent analysis of the conservation importance and status of the Ronald Lake Bison Herd (RLBH), including threats to it posed by proposed development, within a broader Species Recovery Strategy; b) Dedicate, in full cooperation with Aboriginal Peoples, adequate attention and funding to the management of Wood Bison, including as regards the development of disease management options other than culling.
Recommendation 16 Continue to closely monitor the entire used and potential nesting area of the Whooping Crane within the Greater WBNP Ecosystem so as to be able to respond to possible changing management requirements.

Context:

The recommendations related to this theme are focused primarily upon the status of wood bison and whooping cranes, two of the most prominent species at risk in WBNP. Actions addressing these recommendations are being taken in the context of species recovery planning.

Wood Bison Recovery Strategy

The final *Recovery Strategy for the Wood Bison (Bison bison athabascae) in Canada* (Recovery Strategy) was completed and publically posted in September, 2018. The recovery strategy outlines four broad strategic directions for the recovery of the species including:

1) contain and prevent the spread of bovine tuberculosis and brucellosis from Wood Bison local populations with diseases to disease-free local populations, cattle, ranched bison, and evaluate current disease management options;
2) Maintain at least 90% of the genetic diversity, as measured by allelic diversity, within the Wood Bison sub-species and local recovery populations for the next 200 years;
3) increase potential for connectivity among isolated local free-ranging, disease –free populations, and for population expansion;

4) increase public awareness and acceptance for Wood Bison, including acknowledging and augmenting social, cultural, ecological, economic relationships among Wood Bison and Indigenous people and local communities.

In 2014, Alberta Environment and Parks (AEP) initiated a species status re-assessment process for wood bison in Alberta. This scientific assessment will be reviewed in summer 2018 by the provincial Endangered Species Conservation Committee. The committee will provide recommendations to the Alberta Minister of Environment and Parks on the legal designation under the Wildlife Regulation, protection and recovery of species at risk in the province. If a species is listed as Endangered or Threatened, a recovery planning process is typically initiated.

Only two naturally-founded (i.e., not translocated by humans) disease-free Wood Bison local populations are known: the Ronald Lake Bison Local population and the Wabasca Wood Bison Local population (ECCC 2016a). Both of these herds are small in size (@ 200 and @ 40 wood bison, respectively), but are culturally important to Indigenous people and may be important to species recovery because:

- they may harbour genetic diversity not represented in the human-translocated local populations, and
- they contribute to the population and distribution objectives outlined in the *Recovery Strategy for the Wood Bison (Bison bison athabascae) in Canada.*

The Ronald Lake Bison Herd (RLBH) is located between the Athabasca River and the Birch Mountains and is mostly outside the boundaries of WBNP WHS. The herd ranges south into the area of active oil sands leases and north into WBNP.

The RLBH has been determined to be disease free (bovine tuberculosis and brucellosis) and to be genetically differentiated from the other wood bison herds in the greater WBNP ecosystem. This suggests that gene flow between the RLBH and WBNP herds has been minimal since the 1920s when diseased plains bison were introduced to WBNP. As such, the RLBH is evolving independently of WBNP herds and has high conservation importance as one of only two naturally founded, disease-free wood bison herds.

While the Recovery Strategy recognizes that the herd is vulnerable to mine development impacts and to disease transmission from wood bison with diseases in the greater WBNP region, much remains unknown about the status of this herd. The Government of Alberta, which has jurisdictional authority for the management of the RLBH, is undertaking a series of actions to support its management. This includes the establishment (2014) of the RLBH Technical Team (RLBHTT)[32] to direct independent studies to better inform regulatory and management decisions which could affect the herd's viability on the landscape. A multi-year program of study has been undertaken to better understand the status of the herd including the collection of information on the herd's range and distribution, habitat quality and quantity, disturbance impacts, herd population parameters and predation impacts.

[32] Members of the RLBHTT include Government of Alberta, Parks Canada, Environment and Climate Change Canada, Mikisew Cree First Nation, Athabasca Chipewyan First Nation, Fort McKay First Nation, Fort McMurray Métis, Fort McKay Métis, Teck Resources Ltd., CNRL, and Northland Forest Products.

In addition, the Government of Alberta has been working with Indigenous communities to establish an Indigenous Knowledge Research Process (IKRP) parallel to the RLBHTT to inform regulatory decisions and management of RLBH. In March 2016, Alberta Environment and Parks also invited Indigenous communities to participate in a cooperative management initiative with the goal of developing and implementing a long-term management strategy for the RLBH.

To better protect the herd, and to respond to concerns expressed by Indigenous communities about the cumulative impacts of sport hunting and industrial development on herd viability, the Alberta government designated the Ronald Lake wood bison as a "subject animal" in March 2016, meaning these animals can only be hunted for subsistence by Indigenous people. In WBNP, the wood bison remains a protected species and cannot be hunted.

The Wabasca wood bison herd is located south of the Peace River in the Mikkwa-Wabasca-Harper Creek lowlands. The largest single threat faced by the Wabasca local population is likely hunting. The Wabasca herd has not been designated as a "subject animal" as Ronald Lake herd has, so the hunting on the herd is unregulated. Currently, the hunting pressure on the local population is unknown, although animals have been taken by both Indigenous and non-Indigenous hunters, as well as by the province for management purposes (related to reducing the risk of disease transmission in the greater WBNP wood bison population, or disease-testing the herd).

ECCC's Canadian Wildlife Service is currently undertaking an Imminent Threat Assessment (ITA) for Wood Bison in response to requests for Canada's *Species at Risk Act* emergency orders from two First Nations. The assessment focuses on both the Ronald Lake and Wabasca wood bison herds. The objective of the assessment is to determine if there is an imminent threat to the survival or recovery of the species. The ITA process will also provide useful information regarding the importance of the herds to wood bison conservation, especially in regards to the Indigenous Knowledge gathered during the ITA process. Consultations on the imminent threat assessment are currently underway with 11 Indigenous communities whose traditional territories overlap the ranges of the Ronald Lake and Wabasca bison herd. If it is determined by the Minister of Environment and Climate Change Canada that an imminent threat exists, Canada has discretion to issue an emergency protection order under section 80 of the *Species at Risk Act*.

Further to managing the risk of disease transmission to disease-free wood bison or cattle herds, the *Recovery Strategy for the Wood Bison (Bison bison athabascae) in Canada* recommends, as an action item, a collaborative multi-stakeholder bison disease management planning group to examine options and coordinate activities aimed at eliminating the risk of bovine brucellosis and tuberculosis transmission.

Whooping Crane Recovery Strategy

The *Recovery Strategy for the Whooping Crane (Grus americana) in Canada* was released in 2007.

The Canadian Wildlife Service and Parks Canada continue to closely monitor the nesting area of the Whooping Crane within the Greater WBNP ecosystem. This work involves annual aerial monitoring of habitat conditions, nest establishment and recruitment of young whooping cranes into the population. Current and proposed research efforts include satellite tracking to learn more about threats to the population and high-resolution remote sensing to assess the extent and use of breeding habitat. In addition, Alberta Environment and Parks is working with ECCC to identify landing and stopover sites in

the oil sands region for Whooping cranes during migration, with the intent of eventually delineating key areas or habitats and providing guidance on land use management within those areas.

The whooping crane population is continuing on its path to recovery, with a record number of nests (98) detected in 2017 resulting in 63 fledged chicks (including the very rare occurrence of 4 sets of fledged twins). In 2018, 84 nests were detected and 24 chicks fledged, a reflection of interannual variability and the cyclic nature of chick production.

Critical habitat for whooping cranes is currently identified within WBNP WHS. As the population continues to grow and more nests are established both inside and outside of the park, monitoring results will be used to further identify and manage the critical habitat required to support population recovery.

Goal: Support the recovery of wood bison and whooping crane within and beyond WBNP through the implementation of recovery actions and species management.		
Actions	**Jurisdictional Lead**	**Year**
Complete the Recovery Strategy for Wood Bison	ECCC	2018
Undertake an Imminent Threat Assessment for Ronald Lake and Wabasca Wood Bison Herds	ECCC	2018/19
Launch a collaborative multi-stakeholder bison disease management planning group to examine options and coordinate activities aimed at eliminating the risk of bovine brucellosis and tuberculosis transmission	PCA/Provincial co-leads	TBD
Develop one or more Action Plans for Wood Bison	ECCC	2022
Begin work to identify critical habitat for Wood Bison	ECCC	2018
Develop a cooperative management initiative with interested Indigenous partners to develop a long-term management strategy for the Ronald Lake Bison Herd	Alberta - AEP	On-going
Develop an Indigenous Knowledge Research Process to compliment the Ronald Lake Bison Herd Technical Team	Alberta - AEP	On-going
Continue to monitor the nesting area of the Wood Crane within the WBNP and its wider ecosystem	ECCC and PCA	Ongoing
Conduct high resolution remote sensing to assess the extent and use of whooping crane breeding habitat	ECCC and PCA	2018-19
Update critical habitat identification for Whooping Crane	ECCC and PCA	2022
Identify landing and stopover sites used by Whooping Cranes within the oil sands region during migration	ECCC and AEP	2019

7.0 Implementation, Reporting and Review

7.1 Implementation of the Action Plan

This Action Plan aims to facilitate collaboration between federal, provincial and territorial governments which all have jurisdictional authorities and responsibilities for actions outlined in this Action Plan.

A Federal-Provincial-Territorial Senior Management Committee, comprised of senior management officials from the Government of Canada, the Government of Alberta, the Government of British Columbia and the Government of the Northwest Territories, was established to provide oversight and direction in the development of this Action Plan, and to ensure that relevant jurisdictional processes and initiatives could be harnessed to support the development of actions to address the RMM recommendations. This committee of senior managers was supported by a Federal-Provincial-Territorial Directors Committee which was responsible for ensuring cooperation and engagement between various levels of government and with Indigenous partners and stakeholders to develop the Action Plan. It is expected that these bodies will continue to play key coordination roles to support implementation of the Action Plan going forward.

As implementation of the Action Plan advances, various governance mechanisms will harnessed and/or developed, where appropriate, to advance actions identified in this plan. Actions identified in this Action Plan related to management of environmental flows and hydrology require the cooperative efforts of provincial and territorial levels of government which have jurisdictional authorities for water and Indigenous communities which have stewardship responsibilities. To this end, the proposed Federal-Provincial-Territorial-Indigenous (FPTI) committee (outlined in section 6.7) will be key to supporting this collaboration. The EFH working group identified a series of factors that should be reflected in such a governance mechanism including: the foundational nature and importance of the identified guiding principles, stability and longevity, sufficient resourcing, shared planning, process and criteria for decision-making, and the equal voice and inclusion of the diverse Indigenous groups and government representatives.

For several of the thematic areas of the Action Plan, and the actions therein, mechanisms to support implementation are already in existence. For example, the Cooperative Management Committee of WBNP which includes representatives of Indigenous partners and Parks Canada will be the primary forum through which Indigenous groups and Parks Canada will collaborate to strengthen relationships in support of the cooperative management of WBNP, although bilateral relationships between Canada and First Nations and Métis are also key to supporting collaboration in specific areas of the park and its management. As implementation of the Action Plan advances, appropriate coordination and communication linkages with the proposed FPTI committee for environmental flows/hydrology and the CMC will be developed.

7.2 Reporting on the Action Plan

Parks Canada Agency, which has the mandate and legislative responsibility to protect and manage Wood Buffalo National Park World Heritage Site, and which also acts as the State Party representative of Canada to the World Heritage Convention, will lead the reporting on implementation of this Action Plan. Recognizing the range of jurisdictional authorities and roles of different levels of government, Parks Canada will lead this reporting on implementation of the Action Plan in collaboration with other federal

government departments, with the Government of Alberta, the Government of British Columbia, the Government of Northwest Territories and with Indigenous partners of Wood Buffalo National Park.

Reporting on progress with the Action Plan's implementation will be periodic and within the timelines established between Canada and the World Heritage Committee once this Action Plan has been received.

Reports on the implementation of the Action Plan will be made publically available through the World Heritage Centre website.

7.3 Review

The Plan will be regularly updated and reviewed on a periodic basis, responding to new information, changing circumstances and emerging issues. It is anticipated that the Plan's actions and priorities will be updated following each review process, and that these actions, if adapted over time, will also be harmonized with other planning processes of WBNP where this may be appropriate. An initial mid-term review will be completed in 2020 to assess progress in implementation.

Appendix A: Reactive Monitoring Mission Recommendations (by thematic area)

Theme: Strengthening Indigenous Partnerships with WBNP

Recommendation 1: Adopt a clear and coherent policy and guidance to enable the transition to a genuine partnership with First Nations and Métis communities in the governance and management of the property.

Recommendation 12
Consolidate the management resources and capacity to a standard commensurate with World Heritage status and adequately respond to the challenges facing the property by:
a) Reinstating a year round status and staffing of WBNP;
b) Recruiting a full-time Superintendent exclusively in charge of WBNP;
c) Ensuring an adequate Parks Canada presence in Fort Chipewyan, part of the critical PAD area and a major ecological region of WBNP.

Recommendation 13: Further develop the existing Cooperative Management Committee established by the State Party, and consolidate a functional and effective mechanism to involve Aboriginal Peoples in the management of the property.

Recommendation 14: Ensure that the preparation and skills of involved governmental staff correspond to the requirements inherent in the evolving relationship with First Nations and Métis communities.

Theme: Environmental Assessment

Recommendation 4
Conduct, in line with the IUCN World Heritage Advice Note on Environmental Assessment, an environmental and social impact assessment of the Site C project[33] and, if moved forward, any other hydropower projects potentially affecting the Outstanding Universal Value of the property.

Recommendation 5
Conduct an environmental and social impact assessment of the proposed Teck Frontier oil sands mine project in line with the IUCN World Heritage Advice Note on Environmental Assessment, fully taking into account the Outstanding Universal Value of the property, including the Peace-Athabasca Delta.

Recommendation 8
Expand the scope of the Strategic Environmental Assessment (SEA), which was requested by the Committee in its Decision **39 COM 7B.18**, so that it adequately reflects the scale, pace and complexity of industrial development, land use changes and river flow manipulations in the Peace and Athabasca River watersheds, both in terms of individual and cumulative impacts.

Recommendation 9

[33] As noted in the 2017 State of Conservation Report, the State Party has rejected this recommendation with regard to the Site C project as there is no legal mechanism to suspend or negate an authorization and undertake a new environmental assessment for a project that has been approved.

Expand the scope of monitoring and project assessments to encompass possible individual and cumulative impacts on the Outstanding Universal Value of the property and in particular the PAD.

Theme: Conservation Area Connectivity

Recommendation 10
Conduct a comprehensive assessment of options, in order to underpin decision-making to put in place an effective buffer zone, as defined in the *Operational Guidelines*. The Birch River deserves particular attention as the only relatively intact major watershed of the PAD.

Recommendation 11
Conduct a systematic assessment of options to better realize synergies between the property and land use planning in its immediate vicinity, including the existing and planned provincial protected areas.

Theme: Tailings Ponds Risk Assessment

Recommendation 6
Conduct a systematic risk assessment of the tailings ponds of the Alberta Oil Sands region with a focus on risks to the Peace-Athabasca Delta, and submit the report of this assessment to the World Heritage Centre, for review by IUCN, in accordance with Paragraph 172 of the *Operational Guidelines*.

Theme: Wildlife and Habitat Conservation

Recommendation 15
Further harmonize and adopt the Species Recovery Strategy for Wood Bison throughout its range, including but not limited to the Greater WBNP Ecosystem, and specifically:
a) Urgently invest in comprehensive and independent analysis of the conservation importance and status of the Ronald Lake Bison Herd, including threats to it posed by proposed development, within a broader Species Recovery Strategy;
b) Dedicate, in full cooperation with Aboriginal Peoples, adequate attention and funding to the management of Wood Bison, including as regards the development of disease management options other than culling.

Recommendation 16
Continue to closely monitor the entire used and potential nesting area of the Whooping Crane within the Greater WBNP Ecosystem so as to be able to respond to possibly changing management requirements.

Theme: Environmental Flows / Hydrology

Recommendation 3
To enable informed decision-making, conduct environmental flows assessments to the highest international standards for the Peace, Athabasca and Slave Rivers as they pertain to the health of the Peace-Athabasca Delta (PAD), in order to identify water flows needed to sustain the ecological functioning of the PAD under the circumstances of existing and planned future dams and water

withdrawals. These assessments should incorporate projections of climate change and should determine the cumulative effects on the PAD and the property of flow regulation of all existing and proposed dams on all three rivers.

Recommendation 7
Establish adequate baseline hydrological information of the Peace and Athabasca River Basins to enhance the reference for monitoring and assessing current and future hydrological conditions.

Monitoring and Science

Recommendation 2
Considering the increasing pressures on the property at this time, prioritise conservation and ensure that the State Party's science capacity enables Parks Canada's legal obligation to maintain and restore the Ecological Integrity of the property

Recommendation 17
Incorporate invasive alien species (IAS) into the overall monitoring of the property and the PAD based on science and local and Indigenous knowledge, and based on monitoring results, develop an appropriate management response to control the spread of IAS.

Appendix B: Strategic Environmental Assessment Recommendations
(by thematic area)

Theme: Environmental Assessment

Submit this SEA to the Joint Review Panel for the Teck Frontier Oil Sands Mine Project for consideration. Revise the *Guidelines for the Preparation of an Environmental Impact Statement* for the Amisk Hydroelectric Project to include a requirement to evaluate the effects on the Outstanding Universal Values of WBNP and the effects the project would have on the ability to restore the PAD.

Refer projects under the *Canadian Environmental Assessment Act, 2012* (or subsequent legislation) and *Mackenzie Valley Resource Management Act* for environmental assessment when they might have significant adverse environmental effects on the World Heritage Values of WBNP world heritage site and evaluate those potential impacts as part of the assessment.

Include an analysis of the impacts of projects within WBNP on the World Heritage Values of WBNP proportionate to the risk of the project to the World Heritage Values.

Build on the experience of this SEA by including IK related to WBNP in project assessments.

Theme: Conservation Area Connectivity:

When conducting the systematic assessment of options required by RMM recommendation 11, consider:

- Protection of Whooping Crane habitat and supporting hydrology beyond the WBNP boundary
- Protection of hydrology supporting karst within WBNP
- Habitat protection for bison herds ranging beyond the WBNP boundary
- Implications for changes to other species that may affect the wolf-bison relationship such as deer, moose and caribou
- Opportunities to reduce the risk to water quality

A number of the forest management agreements bordering WBNP are held by Indigenous governments. These agreements present opportunities for management to address the issues identified in SEA recommendation 18 either through long term conservation forest management agreements, protected areas that permit timber harvesting (permitted in some IUCN category VI parks), Indigenous protected and conserved areas or other effective area-based conservation measures.

Theme: Tailings Ponds Risk Assessment

The evaluation of the risk of the tailings ponds on the PAD and OUV objectives should include an evaluation of the probability and consequence of catastrophic failure as well as risks from seepage, VOCs, GHG emissions and bird impacts.

Ensure active involvement of relevant Indigenous governments in the risk assessment process so that Indigenous views and perspectives are represented and taken into account to support trust in the restoration of resource quality.

Ensure that the risk assessment captures the cumulative impact of both existing and future tailings ponds facilities within the Athabasca River basin.

Theme: Wildlife and Habitat Conservation

Analyze bison population data in light of the end of wolf control to better understand the population's natural range of variability.

Complete the identification and protection of Whooping Crane critical habitat to meet desired outcomes.

Implement additional measures to protect the Wabasca Bison herd and the entire Ronald Lake Bison Herd range from non-Indigenous hunting.

While maintaining or restoring the ecological integrity of WBNP, minimize the risk of disease and parasite transmission to or from cattle. Proactively consider implementing management actions that support the wood bison recovery goal of the local population levels being sufficient "to sustain traditional Aboriginal harvesting activities, consistent with existing Aboriginal and Treaty rights of Aboriginal peoples of Canada".

Theme: Environmental Flows / Hydrology

Implement cross-jurisdictional (including Indigenous governments) cooperation in order to achieve the world heritage desired outcomes for the PAD and the national park by:

- Recognizing the fact that water releases are complex hydrological events with potential negative consequences, consult with communities upstream and downstream of the PAD to ensure intervention risks are understood and acceptable.
- Providing major water releases from the Bennett Dam at appropriate opportunities during the early freshet to encourage ice-jam events capable of flooding the PAD's perched basins
- Investigating and implementing strategies to promote favourable flooding conditions on the Peace River, involving reducing water flow in late fall to promote lower and thicker ice cover freeze up, as well as increasing water flow during spring freshet and summer open water season.
- Reviewing the relative success of past attempts to restore flood conditions in the PAD, including the following releases of water from the Bennett dam to inform above work

Consider options for strategically placed water management/control structures within the PAD, recognizing flow regulation, water withdrawals, and projected climate change impacts on available water resources and implement using an adaptive management approach, including:

- Reviewing past attempts to control outflow on the PAD, conducting modelling analyses of interventions in Recommendation 1 and climate change, identifying appropriate feasible objectives and evaluating implications of any options for the downstream.
- Developing options for constructing ice dams, improvement to or additional rockfill weirs, inflatable/gated weirs, and/or retentive/flexible flow barriers at strategic points within the PAD to restore water levels in the PAD in the short term and long term.

- Establishing a monitoring system in the PAD to measure ice conditions (thickness and quality), water levels, advise on water release measures, and to verify the effectiveness of physical interventions measures (flow releases and flow barriers) on an ongoing basis.

- Developing a PAD water management group to monitor the success of implementing water release/control measures.

Work with Alberta's Climate Change office and federal climate change specialists to determine more precise climate change model projections for the Athabasca and Peace River basins. Surface Water Quantity Management Framework (SWQMF) to incorporate all three world heritage desired outcomes for the PAD

Update the SWQMF to incorporate all three world heritage desired outcomes for the PAD, including:

- Completing the work required to address gaps in knowledge related to impacts to the PAD identified in SWQMF.
- Including a mechanism that provides mitigation for navigation and access by Indigenous people.

Install additional monitoring capability at the hydrological stations on the Athabasca River below the Fort McMurray oil sands area, including.

- Investigating options for the Embarras, Old Fort and/or 27th Baseline stations
- Investigating the ability to measure water depths to provide data for navigational studies on the Athabasca River.
- Assessing water quality in terms of flow rates (AECOM, 2010)
- Estimating sediment and nutrient loads to the PAD

Install a hydrometric monitoring station on the Peace River at the 5th meridian.

Develop a hydrologic and hydraulic model of the watershed for the Peace, Athabasca, Lake Athabasca and PAD system that could be used to understand the cumulative impacts of upstream developments and activities and assess restoration options.

Conduct a water balance of the entire lower Athabasca River basin or, alternately, Fort McMurray downstream to the PAD, and Peace River basin considering:

- Weekly surface water demand (m^3/s) for oil sands facilities from the mainstem Athabasca River
- Weekly surface water withdrawals from tributary rivers of the Athabasca River (i.e., not the main stem as measured at the Fort McMurray station)
- Municipal and other non-industrial water withdrawals
- Projected weekly start up surface water demand for the three new conventional mine projects coming on line (mainstem AR and tributary)
- Weekly groundwater demand for in-situ oil sands facilities
- Projected groundwater demand for reasonably foreseeable in-situ projects coming on line
- Annual volume of surface water being diverted by conventional and in-situ oil sands facilities from rain/snow and muskeg/peat water
- Weekly peak demand for surface water for the oil sands (mainstem and tributary)
- Weekly low flow surface water demand during the winter (if any)

- Annual volume of in-situ process water being injected into deep formations (and the depth of injection)
- Groundwater discharge rate into the Athabasca River downstream of the oil sands
- Water volumes entering the PAD from the Athabasca River
- Annual estimate of total volume of surface water being removed by conventional oil sands facilities
- Annual estimate of total volume of groundwater being removed by in-situ oil sands facilities

In order to determine the difference between climate variability and anthropogenic effects on the Athabasca River over the past fifty years, investigate the naturalized flows (flow conditions that would have existed without the effect of industrial, agricultural, and municipal water withdrawals) below the Fort McMurray hydrometric station.

Theme: Monitoring and Science

Opportunistically include monitoring and research on karst and salt plains in other research and monitoring programs.

If Pine Point Mine becomes closer to an application for full mine operation, conduct research on hydrological connectivity between the mine site and the karst and Whooping Crane habitat.

Analyze breeding waterfowl data for the PAD to better define the quantitative objectives breeding bird populations in the PAD and to better understand the relationship between breeding waterfowl population trends in the PAD and elsewhere in North America.

Develop a multi-partner project to understand changes in waterfowl migration around WBNP. A key element of this project should be a more detailed exploration of IK about changes in waterfowl migration. During the SEA discussions, Indigenous land users discussed in much greater detail the changes they had seen by species and differences in spring and fall migration patterns etc. It wasn't possible to explore all this detail in the SEA, but it would be helpful in the context of this project.

Establish an approach to monitoring and understanding waterfowl migration numbers and routes.

Complete the WBNP fire management plan including consideration of climate change.

Support IK studies that can feed into the Action Plan implementation. A robust monitoring program will be essential as the Action Plan is implemented.

Implement approaches to monitoring for all monitoring recommendations that integrate IK and science and engage local land users, including Community Based Monitoring programs. The Peace-Athabasca Delta Ecological Monitoring Program provides an example of the approach that could be used.

Ensure monitoring information and hydrological data is provided by regulatory and industry bodies in a transparent and easily accessible format.

Ensure data collected by researchers on world heritage values is shared in a manner that it can benefit broader ongoing work.

Use integrated monitoring approaches, particularly in the PAD, to support understanding in this very complex ecosystem. For example, monitor sediment, ground water, fish, water, snow, wildlife and air in an interconnected manner. This approach can help with understanding the linkages between biota and the dynamic abiotic processes that are characteristic of the PAD.

Develop and implement objectives to maintain/restore traditional resources (such as bison, muskrat, moose, migratory waterfowl, fish and traditional plants) and biodiversity in the PAD.

Develop and implement adaptive management approaches for managing invasive species (such as thistle) using science and IK.

Develop and implement site specific guidelines for water and sediment quality in the Athabasca and Peace Rivers and Athabasca River estuary in Lake Athabasca, including:

- Referring to CCME 2003 for published approaches;
- Providing a better information about water quality concerns, particularly for parameters which are associated with the commonly occurring highly suspended sediments, such as total metals, total petroleum hydrocarbons (TPH) including F1-F2 fractions and nutrients.

Implement a large-scale monitoring program for PACs and PAHs in the PAD, including:

- Expanding the scope of the current JOSM PAH water monitoring program to snow sampling, spring runoff sampling, and an expanded water sampling within PAD water bodies and tributary rivers;
- Implement an air quality monitoring program for PAHs and RCSs in Fort Chipewyan;
- Distinguishing between petrogenic vs. pyrogenic PAHs in PAD.

Update and expand the Surface Water Quality Management Framework for the Lower Athabasca Region to include monitoring stations in the Peace Athabasca Delta, a more comprehensive selection of oil sands related contaminants and guidelines or thresholds relevant to the desired outcomes for the PAD.

Implement a fish monitoring program for western Lake Athabasca and the PAD.

Develop life-cycle assessment (LCA) for major pollutants such as Hg including global sources when applicable.

Initiate a study of natural sources of pollutants originating from bitumen deposits through which the Athabasca River and its tributaries are incised, or other sources responsible for loading of PAD sediments

- Propose measures how to manage natural pollution from bitumen and groundwater in order to manage cumulative effects on the PAD.
- Quantify contribution of tributaries to the mass balance of contaminants of potential concern (COPC'-s) that influence water quality in PAD.
- Assess Birch Mountain contribution to PAD pollution from its natural Black Shale deposits and propose measures to control it.

Glossary

Cumulative environmental effects / impacts: effects on the environment which are caused by the combined results of past, current and future activities.

Ecological Integrity = with respect to a national park, "…a condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes."[34]

Environmental flows: a term that describes the quantity, timing, and quality of freshwater flows and levels necessary to sustain aquatic ecosystems which, in turn, support human cultures, economies, sustainable livelihoods, and well-being. In this definition, aquatic ecosystems include rivers, streams, springs, riparian, floodplain and other wetlands, lakes, coastal waterbodies, including lagoons and estuaries, and groundwater-dependent ecosystems.[35]

Hydrology: the scientific study of the quantity, movement, storage, and distribution of water on Earth.

Indigenous Knowledge (IK): Knowledge of Indigenous traditional and cultural activities, as well as knowledge of the natural world including physical environments, the cosmos, and the spirit world, and the values and principles governing Indigenous persons' conduct and interactions with one another, the natural world, the cosmos, and the spirit world, transmitted through oral tradition, ceremonies, song, pneumonic devices, laws and stories and by conducting and observing Indigenous traditional and cultural practices.

Outstanding Universal Value (OUV): Outstanding Universal Value is one of the central ideas underpinning the World Heritage Convention. Broadly, its meaning follows the common sense interpretation of each word:

- Outstanding: properties should be exceptional or superlative - they should be the most remarkable places on earth.
- Universal: properties need to be outstanding from a global perspective.
- Value: the natural and/or cultural value of a property.

PAD System: the Peace-Athabasca-Delta and the Peace, Athabasca and Slave Rivers as they pertain to the health of the PAD.

Reactive Monitoring: the reporting by the World Heritage Centre, other sectors of UNESCO and the Advisory Bodies to the World Heritage Committee on the state of conservation of specific World Heritage properties that are under threat

[34] Canada National Parks Act

[35] *Arthington et al. 2018. The Brisbane Declaration and Global Action Agenda on Environmental Flows (2018). Frontiers in Environmental Science DOI:10.3389/fenvs.201800045*

Reactive Monitoring Mission: the verification of the source and contents of information received (from a source other than a State Party) that a world heritage site has seriously deteriorated.

Science-based Knowledge: Knowledge derived through the application of the scientific method, a trial and error process focused on testing hypotheses through observation, measurement, and experiment.

Water Quantity is characterized by the magnitude and timing of flow (cubic metres per second), water level (metre) and/or water depth (metre). It can be influenced by precipitation, evaporation, land cover, transpiration, weirs, dams and diversions in or out of the watershed and will vary annually and seasonally.