

# **Heart River Watershed Management Plan Terms of Reference**

2016 Update

Prepared for:

Northern Sunrise County  
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## Acronyms

AEP – Alberta Environment and Parks

ACIMS – Alberta Conservation Information Management System

AGRASID – Agricultural Regions of Alberta Soil Inventory Database

ALUS – Alternative Land Use Services

APRS – Air Photo Record System

ASIC – Alberta Soil Information Centre

AWCS – Alberta Wetland Classification System

*EPEA – Environmental Protection and Enhancement Act*

ESA – Environmentally Significant Area

FWMIS – Fish and Wildlife Management Information System

WAC – Heart River Watershed Advisory Committee

LAT – Landscape Analysis Tool

MPWA – Mighty Peace Watershed Alliance

NRC – Natural Regions Committee

NSC – Northern Sunrise County

SOW – State of the Watershed

ToR – Terms of Reference

WAIR – Wetland Assessment Impact Report

WAC – Watershed Advisory Committee

WPAC – Watershed Planning and Advisory Council

## 1 Introduction

When the initial Term of Reference (ToR) for the Heart River watershed was drafted in 2006, the Heart River was the source of municipal and regional rural water supplies for Northern Sunrise County (NSC) and the Village of Nampa (Village). The Village provided the water supply, storage and treatment services and NSC, through the East Peace Water Co-op, purchased treated water from the Village and distributed it to the regional system. The regional system provided the treated water to the Hamlets of St. Isidore, Marie Reine, Reno, and 305 other rural users. The system did not have sufficient quality and quantity of water to continue supporting residents in the Heart River watershed. A new water treatment system was built in 2012 that now brings water from the Peace River to residents of the Heart River watershed. The focus of the 2006 ToR was on safe and secure drinking water. As the majority of residents in the Heart River watershed no longer rely on the Heart River for drinking water, the focus of the updated ToR has been adjusted. The updated ToR now focuses on healthy aquatic ecosystems and reliable water quality supplies for a sustainable economy, as per the Alberta *Water for Life* goals.

The County and Village along with the Municipal District (M.D.) of Smoky River No. 130, Big Lakes County, stakeholders and area residents developed a ToR in 2006 and a watershed management plan (WMP) in 2008 following the process outlined in Alberta Environment's *Framework for Water Management Planning* (Alberta Environment, 1999). The plan was intended to balance water quality, environmental, community, and economic issues with government legislation for the protection and management of water resources and the intentions of this goal will be the same for the updated WMP. Since the completion of our plan, the Province appointed the Mighty Peace Watershed Alliance, which is the basin advisory council that includes the Heart River. The planning initiatives between both groups will continue to be linked.

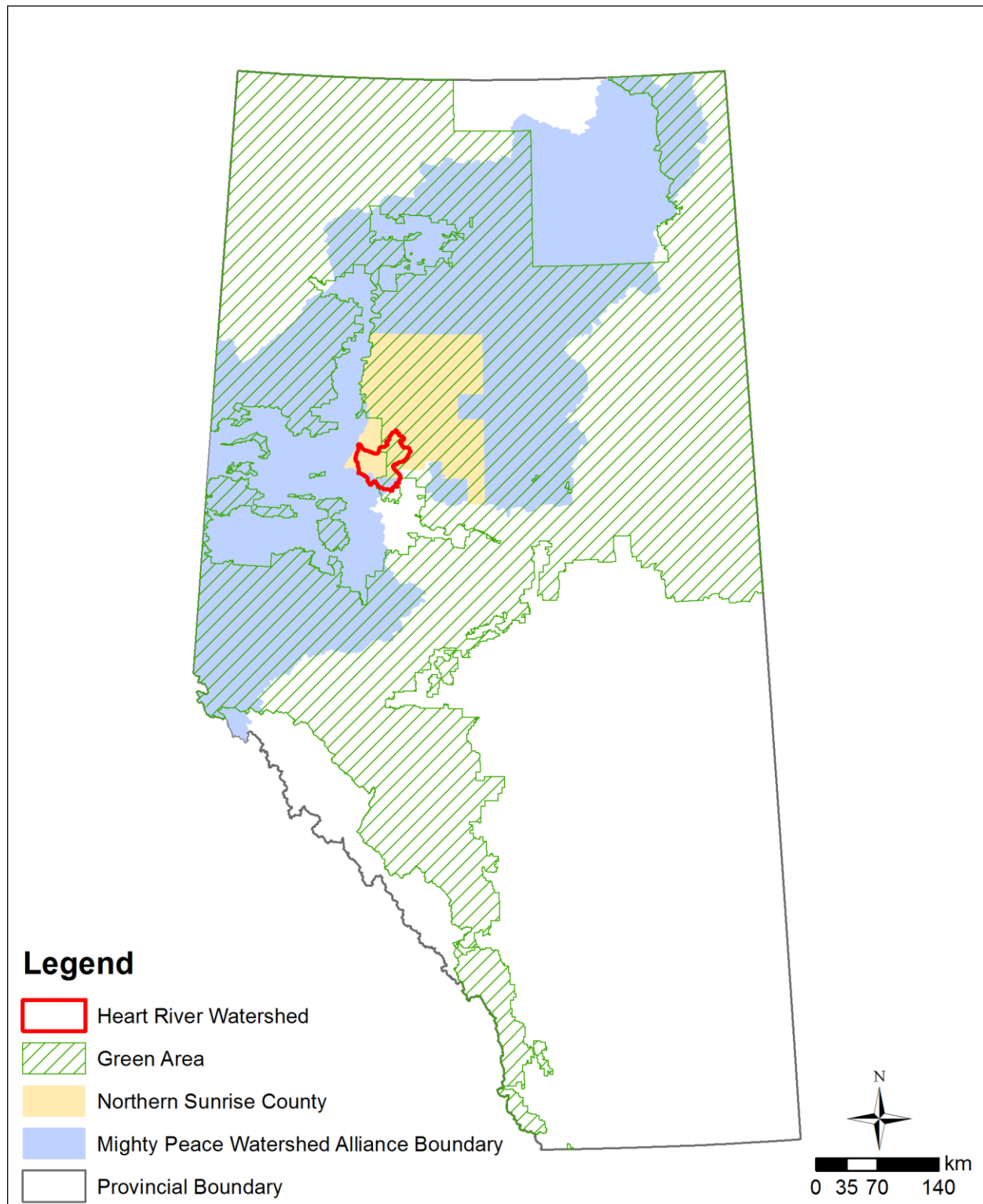
Alberta Environment and Parks (AEP) is responsible for allocating water and protecting the aquatic environment. Under the *Environmental Protection and Enhancement Act (EPEA)* (Government of Alberta, 2000), AEP is also responsible for controlling pesticide/herbicide use and wastewater releases into the environment. Although AEP approved the 2006 ToR for a water management plan and are expected to approved the updated 2016 ToR, as outlined in the *Framework*, they can only approve those components of the WMP for which they have a legislated mandate.

The quality of water in the Heart River and aquatic ecosystem health are impacted by resource extraction including oil and gas, forestry, agriculture, and other human developments within the Heart River watershed. NSC along with the Village and the Heart River Watershed Advisory Committee (WAC) wish to protect the quality of water in the watershed and promote healthy aquatic ecosystems, therefore they have made updating the current watershed management plan (WMP) a priority. Additionally, the WAC has updated the 2006 Terms of Reference to include a mandate for wetland and riparian protection within the watershed. The committee will work towards updating the WMP in 2017, following Provincial approval and public consultation.

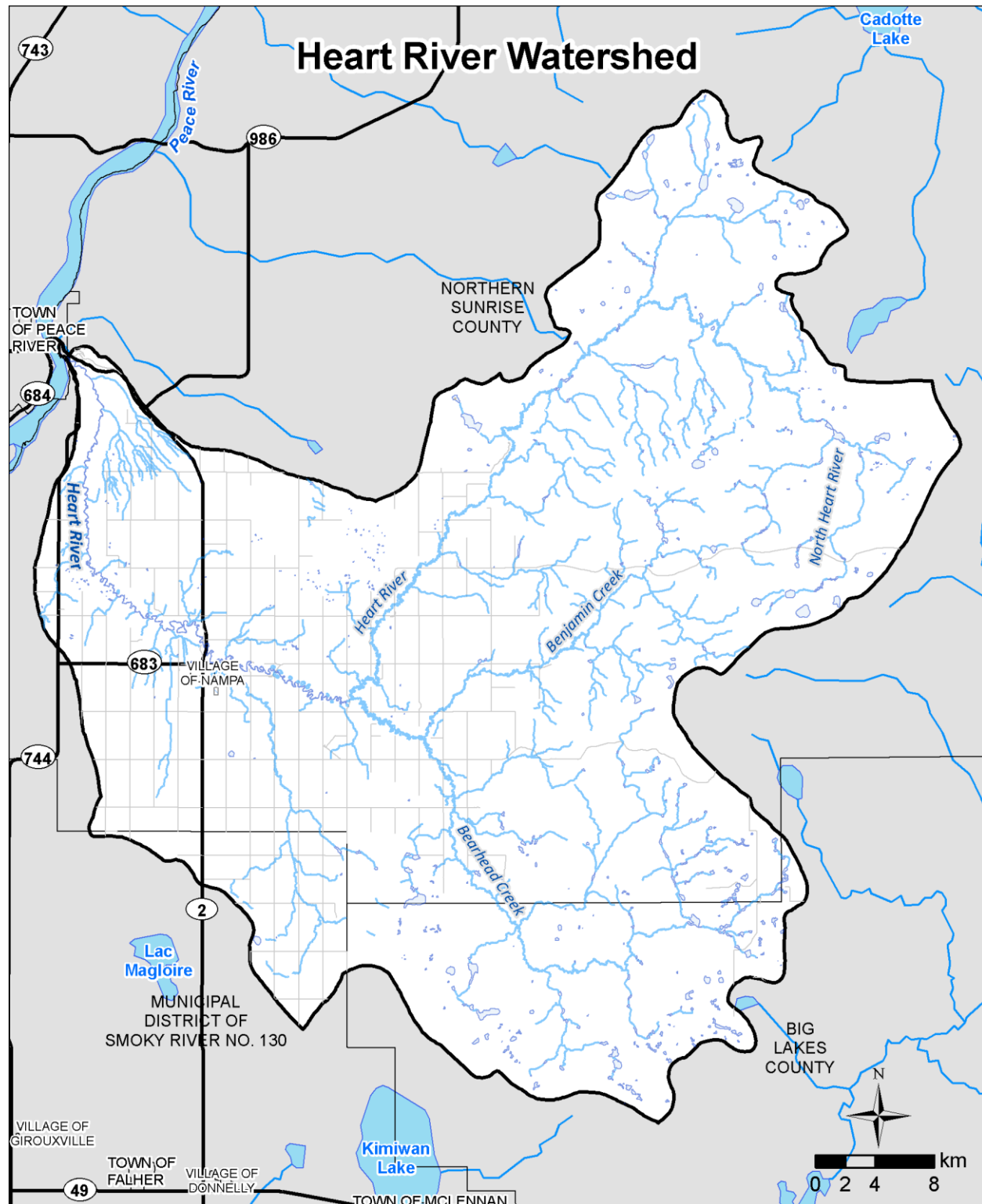
## 2 Background

The Heart River watershed is located in northwestern Alberta, with its headwaters approximately 70 kilometers north of the Town of High Prairie (**Figure 1**). The Heart River drains into the Peace River at the Town of Peace River. The major tributaries to the Heart River are the North Heart River, Bearhead Creek including Benjamin Creek, and Myrtle Creek including the Nampa South Drainage Project (**Figure 2**).

Municipalities included within the Heart River watershed include the NSC, Big Lakes County, the Municipal District of Smoky River, the Village of Nampa and, at the confluence with the Peace River, the Town of Peace River. The Duncan First Nation (William McKenzie Indian Reserve No. 151K) has some reserve area located within the Benjamin Creek sub-basin. Two Provincial Parks are located in the watershed: Greene Valley Provincial Park located at the Town of Peace River and Harmon Valley Provincial Park located along the upper reaches of the North Heart River. Frank Lake, located just south of the Hamlet of Reno in the upper reaches of Bearhead Creek, is an important staging and nesting area for Tundra and Trumpeter Swans (Himer, 2001).



**Figure 1.** Location of the Heart River watershed in northcentral Alberta, Canada.



**Figure 2.** Heart River watershed and major river tributary boundaries.

The watershed slopes from an elevation of approximately 701 metres at its headwaters to 564 metres at the Heart River hydrometric station near Nampa. Extensive peatland areas, particularly in the upper reaches of the watershed, and numerous lakes and wetlands provide abundant storage capacity to dampen flows within the watershed. Approximately 313 km<sup>2</sup> (16%) of the watershed is agricultural (white area) land and 1602 km<sup>2</sup> (84%) is Crown (green area) land. The white area is located primarily in the lower reaches of the watershed.

The watershed has two hydrometric stations: Heart River at Nampa and the Nampa (South) Drainage. The Heart River station is operated by the Water Survey of Canada and has flow data going back to 1963. The Nampa (South) Drainage has been operated by AEP since 1991. The contributing drainage area to the hydrometric station Heart River at Nampa is estimated to be 1915 km<sup>2</sup> (New Water EnviroSolutions and Associates Inc., 2004).

Given the extensive development pressures from agriculture and industry within the Heart River watershed, NSC commissioned a study in the fall of 2002 to determine water quality impacts. The water quality monitoring program has continued annually since 2002 and has expanded to include additional surface and ground water sites on the North Heart River, Myrtle Creek, and Benjamin Creek. A report summarizing the results of the monitoring program is produced yearly, the most recent being the 2014 water quality study (Aquality Environmental Consulting Ltd., 2014). The results of the 2014 report revealed the site with the best water quality scored 78% (fair) on the Aquality modified AEP River Water Quality index, and the poorest water quality site scored 55% (marginal). The report recommends NSC continue working with their municipal partners and the WAC to address water quality issues in the Heart River watershed and continue implementing the Heart River WMP.

On April 7, 2005, NSC held a public workshop to present the details of the first Aquality water quality summary report to the watershed residents. At that workshop, the public was invited to participate on a Watershed Advisory Committee. On November 1, 2005, the WAC was formed to direct the development and implementation of a watershed management plan for the Heart River Watershed. The WAC included representatives from NSC, the Village of Nampa, the MD of Smoky River No. 130, Big Lakes County, and representatives from oil and gas, forestry, agriculture and local watershed residents. In the future, the WAC hopes to attract representatives from non-government agencies, such as Ducks Unlimited Canada, the Alberta Conservation Association, and the Frank Lake Naturalists. Regulatory agencies such as Fisheries and Oceans Canada, Environment Canada, the Alberta Government, Community Development and others may also play a key role in the development and implementation of the updated watershed management plan.

The objectives of the WAC are as follows:

- to identify water management issues in the Heart River Watershed through a public consultation process
- to update and implement the current Watershed Management Plan for the Heart River watershed
- to develop alternatives for effective stewardship and management of agricultural lands, particularly within the riparian areas, to improve water quality and watershed health
- to restore altered or drained natural wetlands and protect existing wetlands where practical through collaboration with landowners
- to develop alternatives for effective management of sewage, wastewater, and agricultural chemicals (pesticides/herbicides) to minimize potential impacts on the quality of the water in the watershed
- to develop and encourage low impact alternatives for urban and rural housing developments
- to encourage all stakeholders to manage all land uses, including industrial and resource developments, to minimize stormwater runoff and groundwater impacts
- to increase public awareness of the linkage between land uses and development practices to water quality and watershed/ecosystem health

## 2.1 Purpose of Plan

The primary purpose of the updated Heart River WMP is to provide all levels of government and other resource managers a tool to maintain and enhance the quality of water in the Heart River watershed. The updated plan will assist regulators to make informed land use and water management decisions impacting the health and security of the aquatic ecosystem. The WMP will provide direction for other resource stewards, including local residents and agricultural producers, to make wise stewardship decisions.

Riparian area and wetland management will be addressed in the updated Heart River WMP to improve water quality and watershed health. Consequently, wildlife and waterfowl conservation and protection will be considered. Management of riparian areas and wetlands affects existing wildlife and waterfowl populations. The reduced availability of these areas may result in the loss of nesting and staging areas for waterfowl and interrupt critical wildlife corridors. Thus, an assessment of the watershed riparian areas and wetlands will be a key component of the updated watershed management planning process.

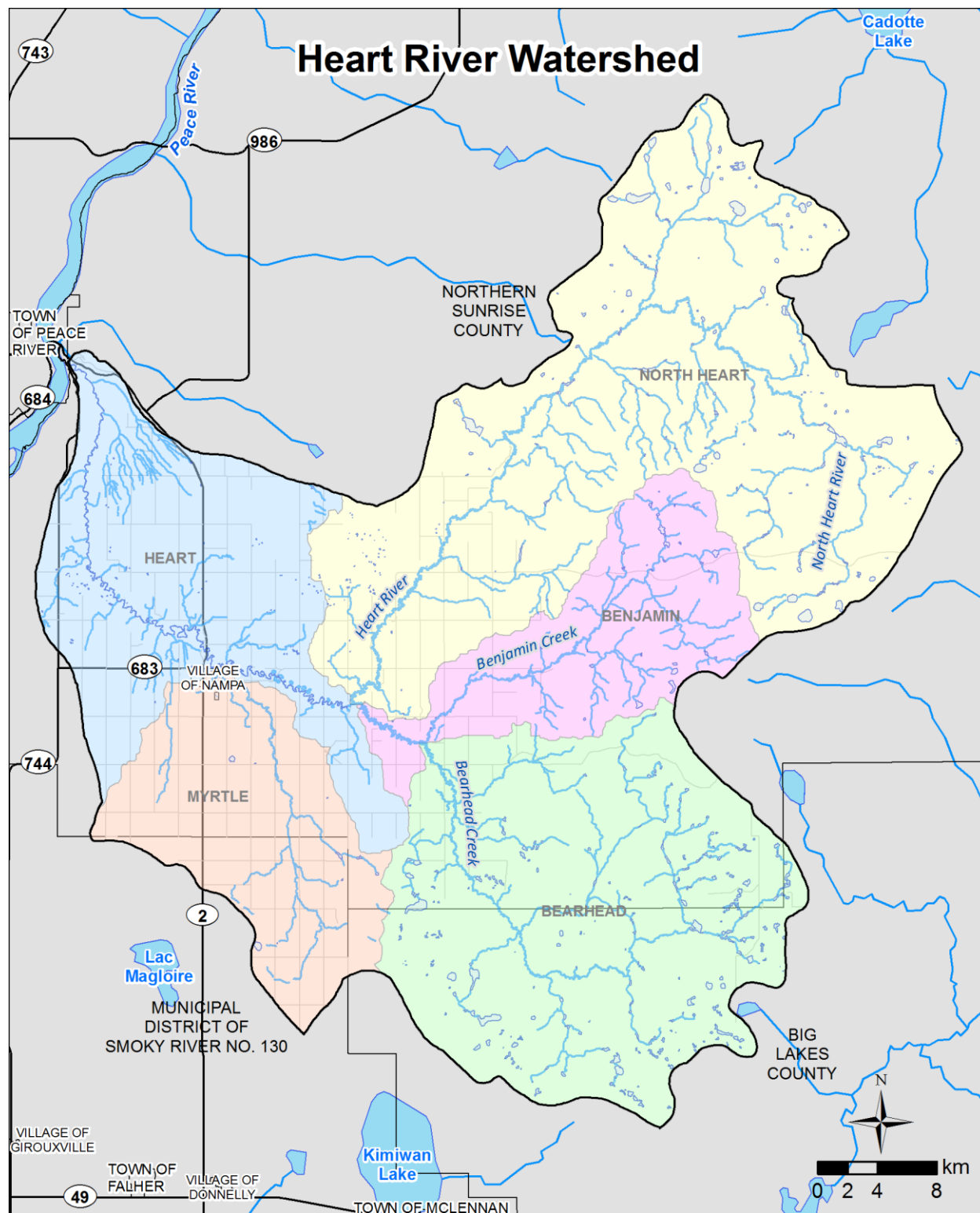
The updated Heart River WMP cannot be developed in isolation and must consider other regional initiatives that may be affected such as the Mighty Peace Watershed Alliance (MPWA), the Frank Lake Important Bird Area, and the Greene Valley Provincial Park. Other factors that may be included in the updated WMP include economic development, fish and wildlife management, community health, and

agricultural, commercial and industrial developments may be considered in the updated Watershed Management Plan.

### 3 Planning Area

The area of interest in the updated ToR and WMP will be defined by the drainage basin of the Heart River from the confluence with the Peace River, as shown in **Figure 3**.

The watershed has been divided into three major sub-basins: the North Heart River, which has a drainage area of approximately 830 km<sup>2</sup>; Bearhead Creek, which includes Benjamin Creek, and has a drainage area of approximately 773 km<sup>2</sup>; and Myrtle Creek, which includes the Nampa (South) Drainage Project, and has a drainage area of 201 km<sup>2</sup>. Benjamin Creek has a drainage area of 205 km<sup>2</sup>; and the Nampa (South) Drainage Project has a drainage area of approximately 28 km<sup>2</sup>.



**Figure 3.** Heart River watershed planning area showing major subbasins in colour.

## 4 Planning and Policy Context

The following legislation and policies will be referenced to develop the updated Heart River WMP:

- *Fisheries Act* (Government of Canada, 1985)
- *Navigation Protection Act* (Government of Canada, 1985)
- *Water Act* (Government of Alberta, 2000)
- *Environmental Protection and Enhancement Act* (Government of Alberta, 2000)
- *Municipal Government Act* (Government of Alberta, 2000)
- *Forests Act* (Government of Alberta, 2000)
- *Public Lands Act* (Government of Alberta, 2000)
- *Wildlife Act* (Government of Alberta, 2000)
- *Fisheries Act* (Government of Alberta, 2000)
- *Alberta Land Stewardship Act* (Government of Alberta, 2009)
- *The Framework for Water Management Planning* (Alberta Environment, 1999)
- *Water for Life: Alberta's Strategy for Sustainability* (Government of Alberta, 2008)
- Alberta Wetland Policy (Government of Alberta, 2013)
- county, municipal districts, and Village municipal development plans
- county, municipal districts, and Village municipal land use bylaws
- county, municipal districts, and Village municipal area structure plans

The government departments and municipalities responsible for administering the legislation and policies will be invited to participate in the process for updating the WMP. As the regulator, AEP will be responsible for approving and enforcing those provisions of the updated WMP that fall under their legislated mandate.

The purpose of Alberta's *Water for Life: Alberta's Strategy for Sustainability* (Government of Alberta, 2008) is to develop plans to effectively manage the quantity and quality of the Province's water supply and systems. The updated Heart River WMP will continue to be an example of the planning approach recommended in the *Water for Life* Strategy, and will incorporate initiatives and directions emanating from the Strategy.

### 4.1 Linkages with Regional Strategies

Regional strategies provide direction for natural resource and environmental management over specific areas of the Province. Development of a Peace River Basin Watershed Management Plan is not anticipated in the foreseeable future. The updated Heart River WMP plan must consider future Peace River Basin Watershed Management planning, the Land Use Framework and other regional planning strategies including the Wapiti River Watershed Management Plan, Frank Lake Important Bird Area, Greene Valley Provincial Park Management Plan, Alternative Land Use Services (ALUS), and First Nations.

#### **4.1.1 Mighty Peace Watershed Alliance (MPWA)**

The Heart River is a tributary of the Peace River and the Peace River is now the drinking water source for most residents of the Heart River watershed; as such the updated WMP will address the goals of the Mighty Peace Watershed Alliance (MPWA) as outlined in their three-year strategic plan (Mighty Peace Watershed Alliance, 2014) and the State of the Watershed (SOW) report (Mighty Peace Watershed Alliance, 2015) for the Peace River watershed.

The MPWA commissioned a SOW report for the Peace River watershed. The report identifies impacts to the watershed and data gaps for impacts including wetland area lost and riparian health. The report encourages stewardship to address local water quality problems in the Peace River watershed and identifies the WAC as an important organization for stewardship.

The MPWA three-year strategic plan 2015 - 2018 identifies access to safe and secure drinking water as a goal of the plan. To achieve this goal, the MPWA will collaborate with existing organizations including the WAC and develop a WMP for the Peace River watershed. The plan identifies wetlands and protection for source drinking waters as information gaps. There is a heavy focus on stewardship and collaboration to meet the goals of this plan. The Peace River WMP will be linked to the Heart River WMP and the updated Heart River WMP will align with the goals of the MPWA strategic plan and SOW report as these will likely be included in the Peace River WMP. The Heart River WAC has been involved and remains involved in the process of determining the goals and activities of the MPWA.

#### **4.1.2 Wapiti River Watershed Management Plan**

The Wapiti WMP is currently under development and the ToR was released in 2013 (CharettePelIPoscente Environmental Corp., 2013). The MPWA is part of the steering committee for the development of the WMP.

#### **4.1.3 Alternative Land Use Services (ALUS)**

Alternative Land Use Services (ALUS) is a non-profit community and farmer driven program that provides support to farmers who choose to maintain riparian and wetland areas within their land. As agriculture has an impact on water quality in the Heart River watershed the ALUS program is an important initiative to link to the updated WMP.

#### **4.1.4 Other Linkages**

The Notikewin River Stewardship Group and Grimshaw Aquifers watershed groups are other active planning groups in the Peace Watershed.

## 5 Project Management

The *Water for Life* Strategy endorses a shared responsibility and partnership approach to watershed management planning. Watershed stewardship groups and advisory committees must be multi-stakeholder, necessitating a collaborative process. In addition, effective and inclusive public consultation is required throughout the watershed management planning process. The project management structure envisioned for the Heart River Watershed Management Plan is shown in **Figure 4** and described below.

### 5.1.1 AEP Director, Northern Region

The Alberta *Water Act* (Government of Alberta, 2000) and the *Framework for Water Management Planning* (Alberta Environment, 1999) identify the Alberta Environment and Parks Regional Director responsible for water management planning to sign off on those components of the terms of reference for a watershed management plan, for which AEP has a legislated mandate. Similarly, the Director can only approve those components of the watershed management plan for which AEP has a legislated mandate.

### 5.1.2 Heart River Watershed Advisory Committee

The WAC provides the overall leadership in the development of the updated ToR and the development and implementation of the updated WMP. The WAC communicates with and advises the provincial government during the watershed management planning process. The committee will ensure appropriate and effective public consultation takes place and will direct the Technical Advisory Committees.

### 5.1.3 Technical Advisory Committees

The WAC set up a Technical Advisory Committee (TAC) to address specific areas of concern identified by the WAC and the public as mandated in the 2006 ToR. The TAC is accountable to the WAC and is composed of technical experts from participating stakeholder agencies, government departments, and consultants. The TAC works according to specific terms of reference determined by the WAC. Each TAC have their own chairperson to guide the completion of assigned projects.

### 5.1.4 First Nations

First nations residing within the Heart River watershed will be invited to participate in updating the WMP. Specifically, the Duncan First Nation, Lubicon Lake First Nation, and Woodland Cree first nation will be invited to participate in reviewing the updated ToR and to give input and review the updated WMP. Culturally appropriate approaches will be considered for effective consultation.

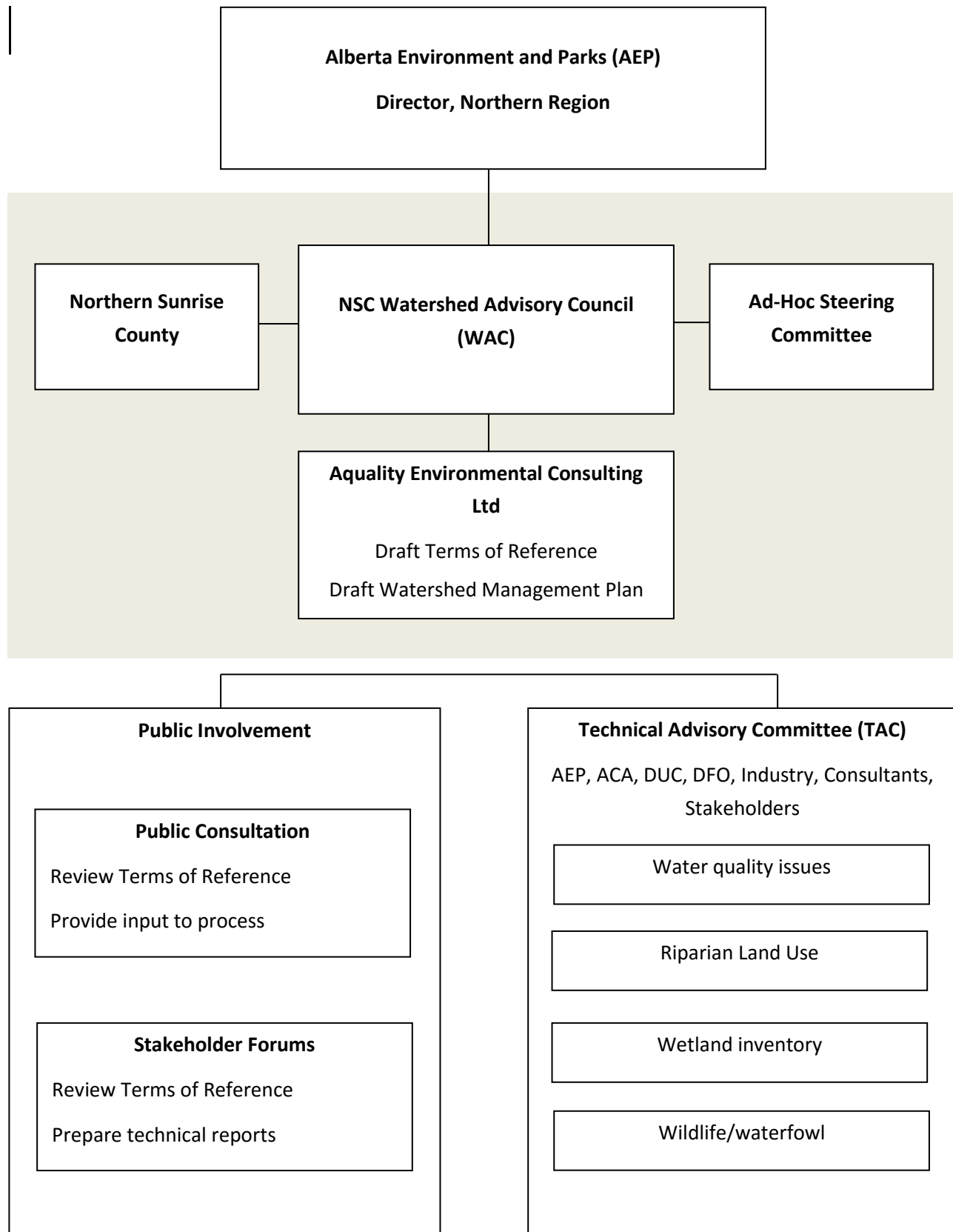
### 5.1.5 Public Involvement

Public involvement is critical to the successful development and implementation of the updated WMP. Public involvement will be included through two spheres of influence: stakeholder groups and the public.

Stakeholder groups may include affected municipalities, First Nations, tourism, recreation, and agriculture, oil, gas, and forestry industry. These stakeholder groups will include people with known interests or viewpoints or having a particular expertise, and these groups can provide a range of views and community values that should be considered in the development of the updated WMP. The intent is to have these stakeholder groups represented on the WAC and actively involved in developing the WMP.

The public includes local individuals residing within the watershed who are personally interested in the plan but are not directly involved in regional water management issues.

The public will be consulted to review the update ToR and other documents, to provide advice on key issues, and to review the updated WMP. Public consultation will be achieved through open house, newsletters, questionnaires (such as perception surveys), and media communications.



**Figure 4.** Heart River watershed management plan relationship structure.

## 5.2 Planning Process

The planning process identifies the steps required to update the WMP. **Figure 5** shows the four phases required to successfully complete the update and the phases are described below.

### 5.2.1 Setting the Stage

To set the stage for the update the organizational structure for the update will be defined. The goals, objectives, scope, and deliverables of the update will be identified. General information required to support the technical assessments required for the updated plan will be outlined and the public consultation process will be developed. Finally, the plan implementation strategy will be set up.

### 5.2.2 Plan Preparation

To prepare the updated WMP, data and information will be collected, educational materials will be developed, and alternative water management scenarios will be modeled and evaluated. From these pieces of information recommendations for the updated plan will be made. The results of this phase will form the basis for decision-making to formulate the updated water management goals and objectives. The findings and conclusions will be presented and shared with stakeholders and the public for their review and comments.

### 5.2.3 Plan Formulation

A draft version of the updated WMP will be produced once all the data and information is collected, water management goals and objectives are formulated, and decisions are made regarding the implementation of water management alternatives. A draft version of the updated plan will be presented and shared with the stakeholders and the public for their review and comments. Once the comments have been incorporated the plan will be finalized and submitted to AEP for approval.

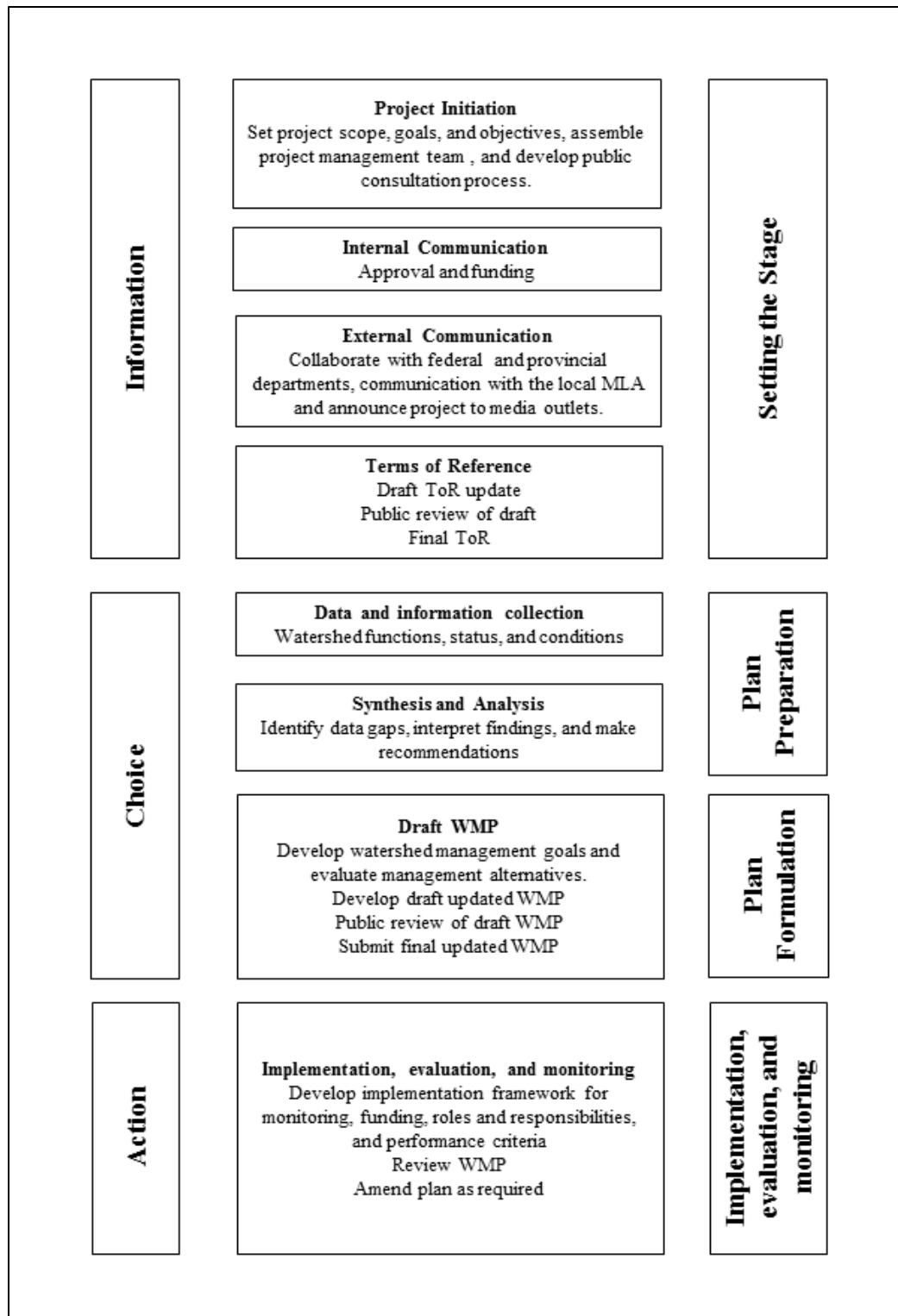
### 5.2.4 Plan implementation, evaluation and monitoring

To implement the updated WMP the roles and responsibilities, budgets and funding, and long-term monitoring needs and priorities will need to be identified. The updated plan content will be evaluated and monitored for both overall success and performance and compliance with existing legislation, policy, and standards. Some of the targets identified in the updated plan will require a greater length of time to achieve than other targets, therefore performance monitoring provides resource managers the ability to measure the plan progress and confirm results. The updated plan should be revised as necessary to achieve the desired results. A schedule to review and revise the updated plan will be developed to summarize when the plan will be revisited and how adjustments will be made. The review is critical to ensure the WMP remains relevant and reflects current objectives.

Although the planning process is sequential, some components can be started before the completion of earlier components. For example, NSC has already initiated, and is continuing, a public awareness program regarding:

- water quality within the Heart River watershed

- facts, issues, and values associated with the aquatic environment
- riparian area and wetland management
- principal concepts and terminology used in watershed management planning
- linkages between land use and the aquatic environment



**Figure 5.** Heart River watershed management planning process overview.

### 5.3 Public Communication and Consultation

Public communication and consultation is integral to the successful completion and implementation of the Watershed Management Plan. The WAC is committed to open communication that fosters trust, credibility, integrity, and ensures the long-term viability of the proposed updated WMP.

The objectives of public communication and consultation are as follows:

- to provide timely and accurate information
- to obtain feedback and advice from stakeholders and the public
- to address community issues and concern
- to create a public awareness of water quality, riparian, and wetland area management issues
- to incorporate community values into the planning and evaluation process
- to promote effective and open communication between water resources managers, stakeholders, and the public
- to provide ample opportunity for mutually acceptable solutions

Input will be accepted on all aspects of water resources and watershed management, but input outside the current scope of the WMP will be evaluated for inclusion in subsequent revisions.

Residents living in the Heart River watershed may be unfamiliar with certain aspects of the watershed. For example, the linkage between land use practices and the resultant effects on aquatic environments may not be fully understood by landowners and agricultural producers. Information that will strengthen residents understanding of the watershed must be made available and understood prior to discussing watershed management strategies.

#### 5.3.1 Previous Public Process, Outcomes and Information

In 2005, the WAC was formed to address water quality issues in the Heart River watershed while Northern Sunrise County initiated an education and awareness program that included:

- a public workshop on April 7, 2005 to present the results of the 2003/04 water quality study to the public
- semi-annual newsletters from the WAC were mailed to ratepayers from 2003 - 2009.
- co-sponsoring an agricultural tour that included riparian area management awareness
- personal meetings with watershed residents and agricultural producers to create an awareness of riparian area management and other issues to generate interest in participating in the Watershed Advisory Committee
- an open house on November 2, 2005 to exhibit the different environmental agencies and government departments, and the programs available to assist residents and agricultural producers to make their operations more environmentally sustainable
- annual WAC meetings to present the results of the annual water quality study

- a municipal “Water Bootcamp” to educate planners and municipal leaders regarding water quality issues and laws affecting water in Alberta

The April 2005 workshop was well attended and some people volunteered to participate on the Watershed Advisory Committee. The agricultural tour was also well attended, however, the riparian area awareness component was only a small part of the tour, and the positive attendance may have been due to the other aspects of the tour. Although time and schedules did not allow for meetings with all watershed residents, the personal meetings that did take place identified additional producers with an interest in serving on the Watershed Advisory Committee. Approximately 30 people attended the November 2005 Open House. Location and time of day may have contributed to the small turnout.

### **5.3.2 Relationship Between Public Consultation and Planning Process**

Public advice and feedback on the proposed goals, objectives, and actions are required to resolve issues. Public involvement in the planning process will include the following:

- WAC participation to develop the public involvement process, the updated ToR, and the updated WMP
- education and information sessions to raise awareness of issues
- identifying and prioritizing issues
- reviewing and commenting on the updated ToR
- reviewing and commenting on the updated WMP
- providing formal input during workshops and presentations

The public will be invited to review and comment on the draft updated ToR and WMP.

### **5.4 Public Consultation Communication Strategy**

Open and regular communications are integral to the successful development and implementation of the updated WMP. The communication strategy will convey timely and accurate information to the public and will identify community issues and concerns. Throughout the planning process, detailed information may be provided to the stakeholders and the public using fact sheets, workshops, displays, feature stories, mail-outs, newsletters, news releases, ads, and presentations. Stakeholder and public input will be obtained through workshops, open houses, public meetings, surveys, and websites.

The communications plan will initiate and maintain contact with stakeholders and the public to solicit advice and feedback using media releases, open houses, information materials, and First Nations outreach. The media releases will be used to inform the public about the project. Project milestones, open houses, public meetings, and workshops will be advertised in local newspapers and advertised on local radio and community television. The open houses will be used to provide a forum for the WAC and the TAC to discuss issues with, and receive input and advice from, the public. The information materials

will be developed and distributed to the public as necessary and appropriate. Materials will include newsletters, fact sheets, mail outs, and feature stories. The municipal and AEP website will also be used to disseminate information. Finally, NSC has initiated a comprehensive dialogue with the Duncan First Nation regarding the Heart River WMP.

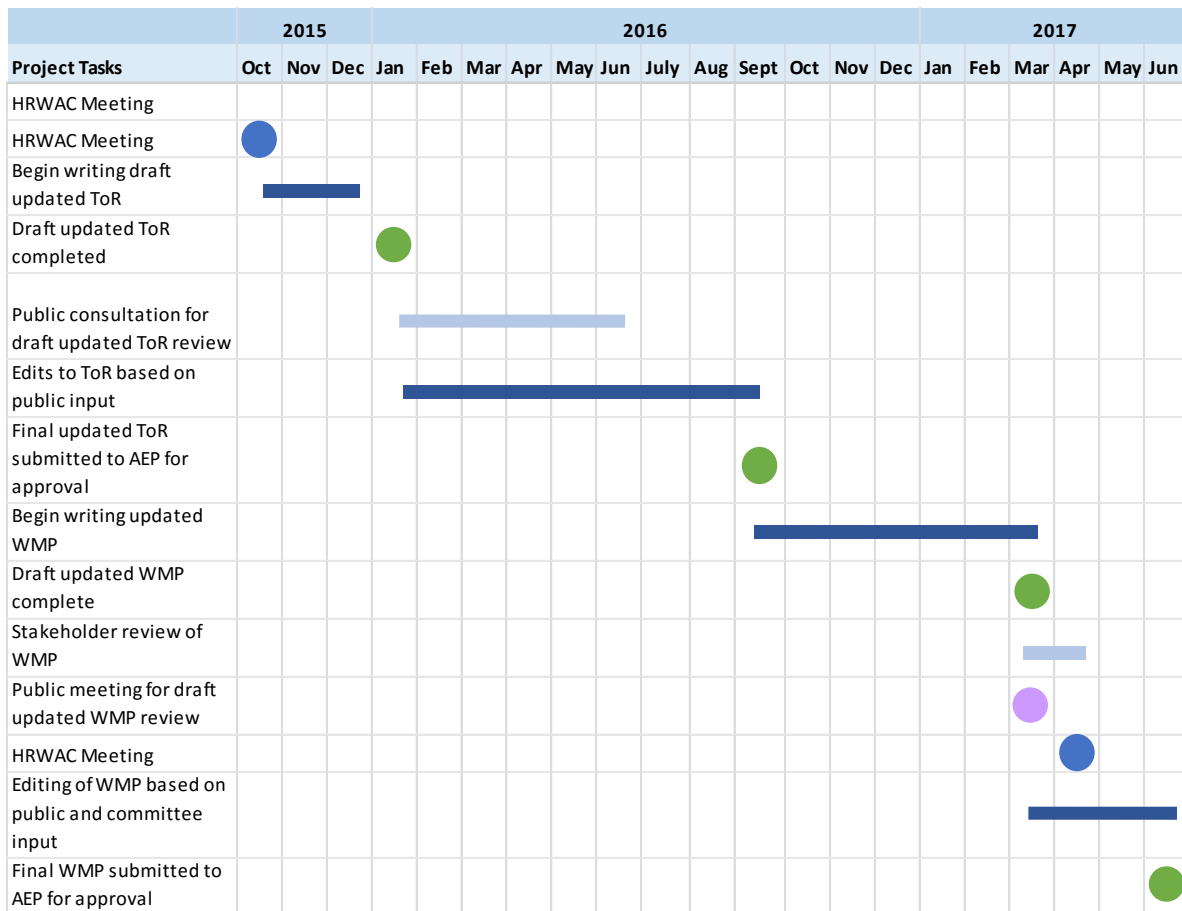
## 5.5 Work Plan and Schedule

The work timeline is summarized in **Table 1** and major deliverables appear in **Table 2**. The Setting the Stage component is under way. The planning process has been initiated and the scope, goals, and objectives have been established. The information needs and partners are being identified and the terms of reference are being drafted. For the Plan Preparation component, data is being collected and evaluated, providing the basis for decision-making to formulate the watershed management goals and objectives. In the Plan Formulation phase the goals and objectives are determined, the watershed management plan is drafted and the public review occurs. In the Plan Implementation, Evaluation and Monitoring phase, the plan implementation framework is developed, including monitoring and a schedule for review and amendment.

**Table 1.** Heart River updated WMP tentative work timeline.

Activity	Timeframe	Lead
<b>Setting the Stage</b>		
Project initiation: identify scope, goals, and objectives	Complete	WAC
Develop updated draft ToR	January 2016	WAC
Inform local MLA of project initiation	January 2016	WAC
WAC review of draft updated ToR	February 2016	WAC
Outline general information needs	On-going	WAC
Invite government departments to participate	On-going	WAC
Develop partnerships with industry and municipalities	On-going	WAC
Initiate TAC	On-going	WAC
Develop ToR for technical components	On-going	TAC
Education and awareness, public consultation	On-going	WAC and TAC
Public review of draft ToR	September 2016	WAC
First Nation consultation	On-going	WAC and NSC
AEP approval of updated ToR	December 2016	Northern Region Director
<b>Plan Preparation</b>		
Compile water quality information for Heart River and tributaries	On-going	TAC
Complete wetland inventory	May to September 2016	TAC
Complete wetland and riparian areas assessments	May to September 2016	TAC
Complete wildlife/waterfowl assessment	May to September 2016	TAC
Public review of technical reports	On-going	WAC and TAC

Activity	Timeframe	Lead
Land use inventory; to augment land use area structure plans & municipal development plans	On-going	WAC and TAC
<b>Plan Formulation</b>		
Prepare draft updated WMP	December 2016 to March 2017	WAC and TAC
Public review of draft updated WMP	April 2017	WAC and TAC
First Nation consultation	May 2017	WAC and NSC
Finalize updated WMP	June to September 2017	WAC
Submit updated WMP plan to AEP for approval	December 2017	WAC
<b>Plan Implementation, Evaluation &amp; Monitoring</b>		
Develop implementation framework	December 2017	WAC and NSC
Develop schedule for review and amendment	December 2017	WAC and NSC
Monitor	On-going	WAC and NSC



**Table 2.** Project deliverable timelines for updated ToR and WMP.

## 6 Data Collection and Analysis

To complete the updated WMP, information and data must be reviewed and data gaps identified. One project currently underway is the water quality monitoring program. The monitoring program has been in place since 2002 and provides a baseline to measure the effectiveness of the WMP.

### 6.1 Technical Studies

The TAC will define the detailed project scope required to address the appropriate goals and deliver their component of the WMP. The following technical tasks have been identified to complete the updated WMP:

- water quality monitoring
- riparian and wetland assessments
- wetland inventory
- land use assessment

#### **6.1.1 Water Quality Monitoring**

Compile water quality information for the Heart River and its tributaries to determine areas of concern. Develop alternatives and best management practices for improving the water quality.

#### **6.1.2 Riparian and wetland area assessment**

Riparian and wetland area assessments are required to determine current and historical conditions of riparian and wetland areas in the Heart River watershed. Develop alternatives for restoring and/or enhancing riparian areas and wetlands. The use of new technologies, such as unmanned aerial vehicles is being explored.

#### **6.1.3 Wetland inventory**

A drained wetland inventory is required to determine the current and historical condition of riparian and wetland areas in the Heart River watershed. This will show areas where wetlands have been drained within the watershed in the past 80 years.

#### **6.1.4 Land Use Assessment**

Assess existing land use and land use practices to identify areas of concern. Develop alternative best management practices for improving the water quality.

#### **6.1.5 Environmental Awareness**

Education and outreach has been an important goal for the group since its inception. The group will continue to raise the awareness of environmental issues in the Heart River watershed through public consultation and outreach and other media such as the NSC website.

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