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Agriculture's Water Future

Appendix A: Watershed Context
Appendix to the Water Stewardship Plan

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Contents

Document purpose

This document supports a pilot study of implementing water stewardship across an agri-food supply chain. It is the third phase of work for the Agriculture's Water Future project, which is referred to as the AWF project throughout this document.

Setting the watershed context is the beginning of the Agriculture's Water Future (AWF) process. This step involves developing and documenting the characteristics of the watershed where the implementer operates, including water availability, water quality, water source reliability, local stakeholders, current water management, stewardship and governance. This requires research and compiling data and information about the area where the implementer's site is located. The watershed context fits closely with the information gathered about the implementer's site and operations. Together this information is the basis for planning and implementing water stewardship. Further details on the background of the Agriculture's Water Future project can be found in the AWF Phase II report: *A business case blueprint and framework for providing value to the agri-food supply chain through water stewardship* (WaterSMART Solutions Ltd. 2019).

The watershed context is intended to be a tool for creating the water stewardship plans. It provides the information necessary to understand the current state of the watershed (e.g., hydrological, social and economic aspects related to water and the sector of interest), and how a site (e.g., farm, processing facility) interacts with the watershed.

Understanding and documenting the watershed context aligns with the first steps for the with Alliance for Water Stewardship (AWS) Standard (Alliance for Water Stewardship 2019). The information that meets specific criteria for the AWS standard are identified through this document in the blue pop-out boxes.

Geographic context

This section addresses **a portion of** AWS Criterion 1.1 "*Gather information to define the site's physical scope for water stewardship".*

Indicators for Criterion 1.1 include:
"1.1.4: The catchment(s) that the site affect(s) and upon which it is reliant."

A key component to the AWS Standard is defining the physical scope of the site where water stewardship is being implemented. The AWS Standard is a site-based certification system, and the 'site' is defined as the physical area that is owned or directly managed by the implementing organization, and where they carry out their principal activities (Alliance for Water Stewardship 2019). The 'site' can be considered the area within the fence line. Water stewardship requires understanding impacts and planning stewardship actions that extend beyond the fence line. Implementers identify the physical scope for their water stewardship as the site itself <u>and</u> the land and water areas around the site that are impacted by, or have an impact on, the site. The physical scope is defined by each entity implementing the AWS Standard and is dependent on many factors including the local geography, the size of the site, the wastewater produced on the site, and the source of water used by the site.

The AWF project involves two implementers: the St. Mary River Irrigation District (SMRID) and Cavendish Farms (Lethbridge Site) and one producer advisor. Each implementer has their site and defined physical scope. See Figure 2 for a map of the sites and Figure 3 for a map of the physical scope for the implementers. The implementers are part of the same agri-food supply chain and are located in the same watershed, reliant on essentially the same source water. Therefore, the geography of focus for the AWF project is the area that captures all three implementers. This will be referred to as the project geographic area. Figure 4 shows the defined project geographic area. The definition of project geographic area has been adapted from the definition of *Physical Scope* from the Alliance for Water Stewardship Standard version 2.0, as seen below:

> **Project geographic area**: The land area relevant to the supply chain's water stewardship actions and engagement. It should incorporate all or part of the relevant catchment(s) but may extend to relevant political or administrative boundaries. It is typically centered on the supply chain, but may include separate areas where the origin of water supply is more distant. (Alliance for Water Stewardship 2019)

The project geographic area that is the focus for the AWF project is located within the Oldman River watershed (also referenced as the catchment or the basin). This section of the report will introduce the larger scale context, and then go into detail on the project geographic area.

The Oldman River is a sub-basin of the South Saskatchewan River Basin (SSRB), which eventually flows into Hudson Bay. The implementers participating in the AWF project all source their water from the Oldman River watershed. The Oldman River watershed is predominantly in Alberta, but a small portion originates in Northern Montana, flowing north into Alberta. The area of the watershed within Alberta is approximately 23,000 km^2 (Oldman Watershed Council 2010). Figure 1 (below) is a map of the Oldman River watershed, detailing the major sub-basins of the Oldman watershed.

Figure 1: Map of the Oldman River watershed (Oldman Watershed Council 2010)

About 90% of the streamflow in the South Saskatchewan River Basin (SSRB), including the Oldman River watershed, is generated from snow and glacier melt in the Rocky Mountains (WaterSMART Solutions Ltd. 2019).The majority of the Oldman River watershed receives little precipitation throughout the year, and therefore downstream portions of the basin are heavily reliant on precipitation and snowmelt from the Rocky Mountain headwaters for streamflow. A system of major reservoirs and diversions regulates river flows and diverts water to areas of high demand.

The project geographic area of three AWF project implementers is located in the downstream portion of the Oldman River watershed. Figure 2 below shows the locations of the implementers' sites (SMRID and

Cavendish Farms Lethbridge Site), as well as the producer advisor's operation. All are within the Oldman River watershed, which is outlined in black. The SMRID is spread over a large geographic area, and extends beyond the Oldman River watershed into additional areas of the greater SSRB. The original source point of water for all areas of the SMRID is the same upstream reservoir within the Oldman River Watershed.

The map in Figure 2Figure 1 also divides the Oldman River watershed into level 8 scale basins, as defined by the Hydrological Unit Code (HUC). The HUC 8 watershed boundaries are in dark blue.

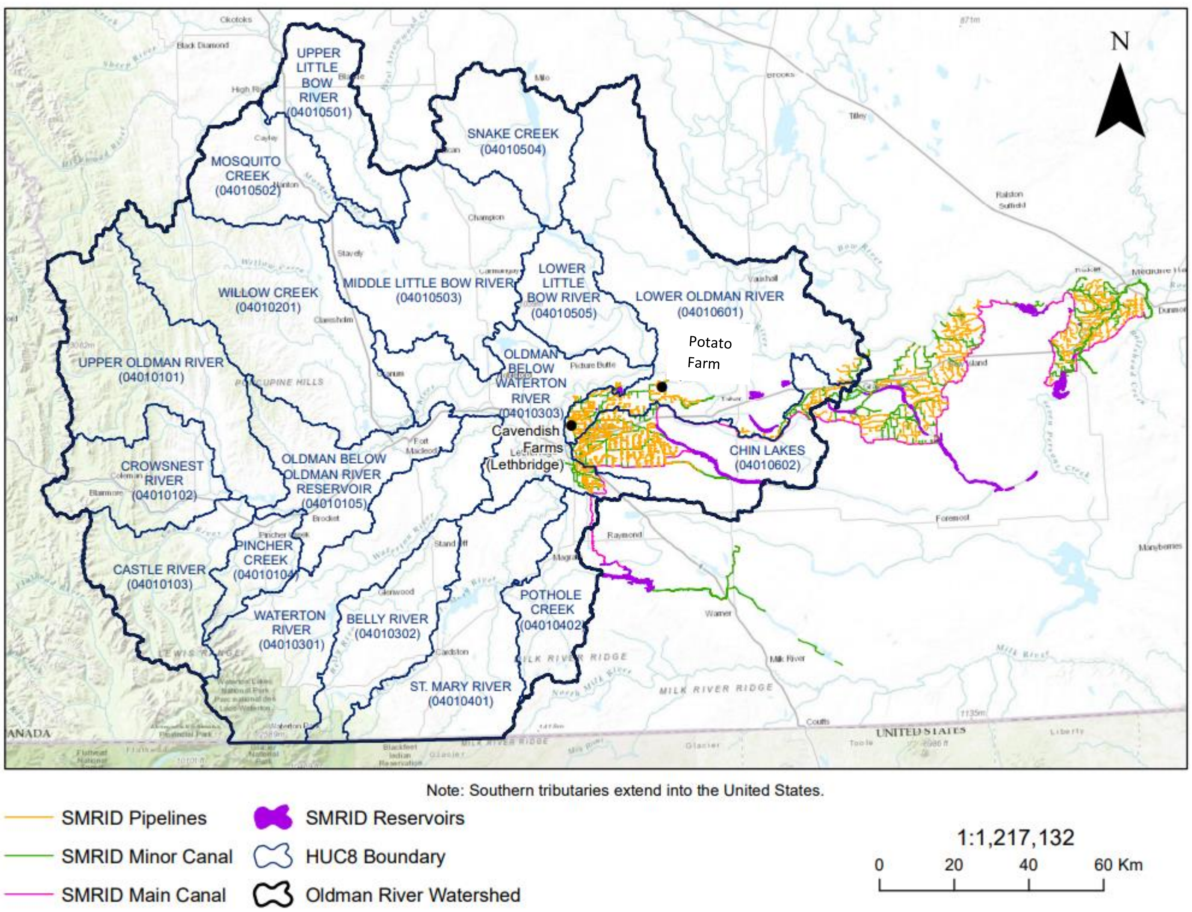

Figure 2: Map showing the locations of the implementers: the SMRID and Cavendish Farms, and the producer advisor's operation.

The physical scope (area beyond the fence line) of each of the AWF project Implementers and producer advisor are shown in Figure 3. The physical scope of each is shaded in a different colour; the SMRID in blue, Cavendish Farms Lethbridge Site in purple, and the potato farm in green. The physical scope of each extends over multiple HUC 8 scale watersheds.

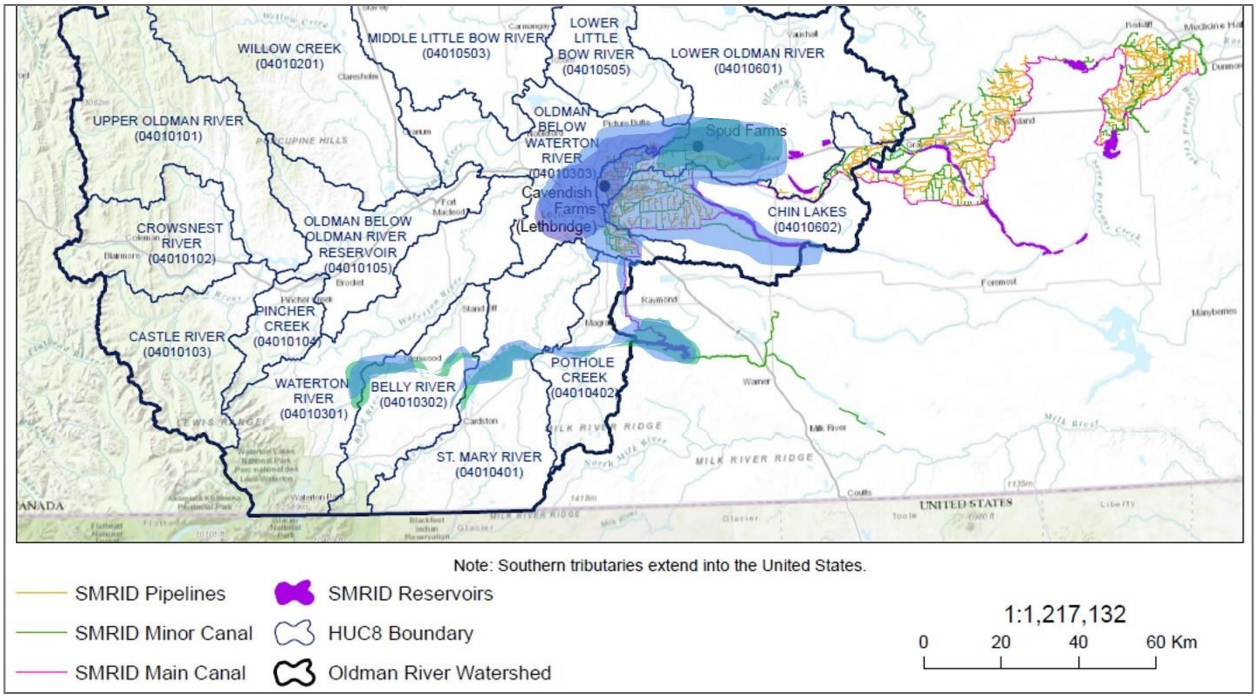

Figure 3: The physical scopes of the two Implementers and the producer advisor are overlaid to show the areas of overlap.

The project geographic area is the focus for watershed stewardship by all three AWF project implementers. The project geographic area is shown in Figure 4.

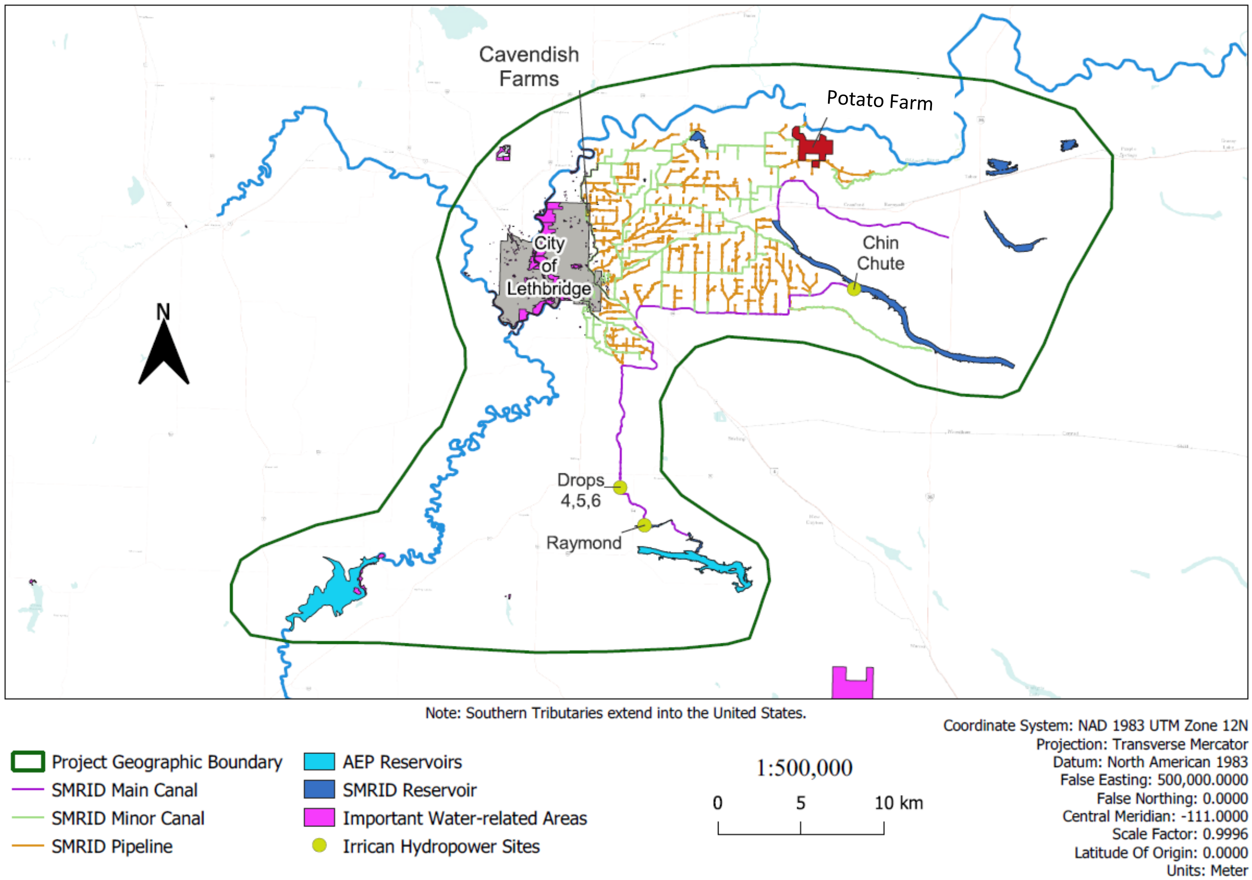

Figure 4: Map displaying the defined project geographic area for the AWF project.

Water quantity

This section addresses **a portion of** AWS Criterion 1.5 “*Gather water-related data for the watershed.”*

Indicator for Criterion 1.5 **that is addressed** is:
“1.5.3 - The catchment water-balance, and where applicable, scarcity, shall be quantified, including indication of annual, and where appropriate, seasonal, variance.”

Water Quantity Context of the Oldman River

Both surface water and groundwater can be evaluated for water quantity and availability. In the Oldman River watershed, surface water is the predominant water source for human uses, with less than 1% of the total water license allocations in the basin issued for groundwater (Government of Alberta 2021). For the AWF project, groundwater is not considered because the AWF implementers rely on surface water.

As noted above, the naturally available water in the Oldman River is mainly determined by the amount of snowmelt and precipitation in the headwaters, which is the area of the watershed with the greatest amount of precipitation (Oldman Watershed Council 2010). Therefore, flow in the Oldman River is naturally highest in the spring, due to snowmelt runoff, and lowest in the late summer.

The St. Mary, Waterton, and Belly rivers are three of the main tributaries to the Oldman River. The headwaters of these three rivers are located in Glacier National Park, Montana (Oldman Watershed Council 2010).

The water quantity in the Oldman River watershed is highly managed, with several major reservoirs capturing snowmelt and releasing it through the year based on the needs of downstream water users. The Oldman River basin has a variety of human water users, including irrigation, industry and municipal use. The differences in allocation for each water use can be seen in Figure 5.

The reservoirs are managed so that water is available for users through the naturally low flow times of the year. If precipitation and snow melt are minimal over multiple years, the reservoirs may not have enough water to meet all water user's demands resulting in challenging drought conditions. The Oldman River watershed has experienced severe drought and flooding events in the past, and the reservoirs play a key role in mitigating both (Oldman Watershed Council 2010).

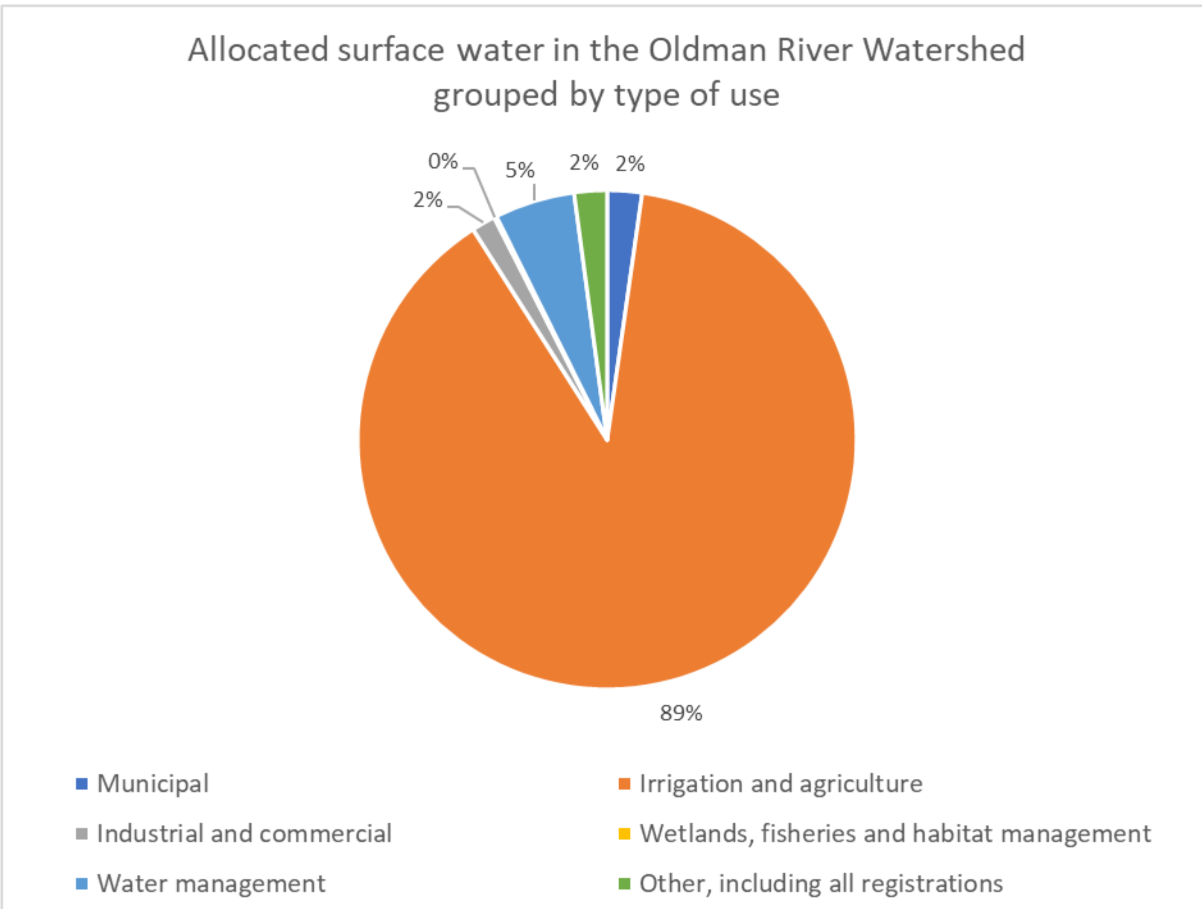

Figure 5. Allocated surface water in the Oldman River watershed grouped by type of use (data source (Government of Alberta 2021)

The total licensed volume in surface water licenses for the Oldman River watershed is 2.25 billion m^3/year (Government of Alberta 2021), which means that approximately 66% of the naturally available water is allocated for users in the watershed.

Because the project geographic area is in the downstream portion of the watershed, water available for human use and instream flows for the environment is largely dependent on how water is managed upstream on the Oldman River mainstem and its major tributaries. This section focusses on key upstream factors at a high-level, as well as the project geographic area specifically.

Project Geographic Area context

Water availability in the AWF project geographic area (Figure 4) is ultimately determined by the snowmelt at the headwaters of the Oldman River. Specifically, water quantity in the AWF project geographic area is determined by the water held in and released from the reservoirs upstream. Reservoirs upstream of the project geographic area of note include the St. Mary Reservoir, the Waterton Reservoir, and Ridge Reservoir. The St. Mary Reservoir and Waterton Reservoir are operated by the Government of Alberta, while the diversion gates from the Ridge Reservoir are operated by the SMRID.

The climate in this region is significantly drier than the upstream areas of the watershed, with between 300mm and 450mm of precipitation per year in different parts of the region (Oldman Watershed Council 2010). The temperatures vary significantly through the year, and frequently windy conditions can also contribute to loss of moisture. Summers are sunny, hot, and dry, with three to four months of growing season. Rich soils make for good agricultural growing conditions, with water as a limiting resource (Oldman Watershed Council 2010). The mean annual natural discharge of the Oldman River measured near Lethbridge from 1912-2001 is 3.4 billion m^3 (Oldman Watershed Council 2010).

Though the Oldman River mainstem at Lethbridge has no significant trends in changes to natural flow (Oldman Watershed Council 2010), simulated climate and streamflow models for the Oldman River indicate lower annual flows and a greater probability of extreme low flows in the future. Projections for the period of 2025-2054 found that there is a 60% chance that daily stream flow will not exceed 104.4 m^3/s. This projected flow is significantly lower than the historical period of 1912-2009, where there was a 60% chance that daily stream flow did not exceed 116.4 m^3/s (WaterSMART Solutions Ltd. 2014).

Climate change projections anticipate that precipitation events in the Basin are likely to become more variable and unpredictable in the future, leading to events such as floods, droughts, and wildfires (Durack, Wijffels and Matear 2012). A striking example is the catastrophic flood events of June 2013, which cost an estimated $6 billion, and in economic terms was considered the worst natural disaster in Alberta's history (McClure 2015). Additionally, projections indicate that summer flows are expected to decrease due to an increase in winter snowmelt (Western Economic Diversification Canada 2020). These changes within the basin will have implications for reservoir and irrigation management (Stewart, Cayan and Dettinger 2005). The Oldman River Basin therefore needs to be resilient and adaptable in responding to a wide range of future climate and stream flow variability.

Within the project geographic area, the Oldman River has a Water Conservation Objective (WCO) in place. The WCO is a regulatory tool that ensures a minimum amount of water in the river for environmental needs, and it requires water to be released from upstream reservoirs to support this minimum flow. See the section in this report titled *Regulatory system and water management authorities* for more information about the WCO for the Oldman River mainstem.

Multi-year droughts have had significant impacts on the region in the past, which have resulted in the implementation of water sharing agreements. For example, a large number of water users committed to sharing the available water during a multi-year drought in 2000-2001. Additionally, irrigation water users in the area have an established system of sharing water through the irrigation districts who supply available water to their members.

Catchment Water Balance

The AWS Standard requires understanding the catchment water balance as a way to help identify increasing water scarcity. The water balance is an assessment of inflows and outflows, as well as storage in the system over a period of time (Alliance for Water Stewardship 2020). The equation defined by the AWS Standard is simplified, especially for the system of an entire catchment. Additional factors such as evaporative losses and consumptive water use can be included. As the name suggests, the equation should balance at least approximately. The catchment water balance is defined by the equation:

(Water outflow) = (Water inflow) + (Change in storage volume)

The estimated naturalized annual flow in the Oldman River is 3.5 billion m^3/year (Government of Alberta 2004). This is a long-term average calculated based on the data recorded since 1914 and adjusted to account for the effects of licensed diversions and reservoirs. The reservoirs in the Oldman River watershed (including the St. Mary, Waterton, and Oldman reservoirs) provide control over the river flow and mitigate drought and flooding. The reservoirs also increase the surface area of water and therefore increase evaporative losses, reducing the total volume of water available over the year. The recorded data shows a decrease in the annual flow volume over time compared to the naturalized series. This can be attributed to the increased consumption and water infrastructure operations upstream of Lethbridge (Government of Alberta 2004).

The authority governing water balance by managing the infrastructure is Alberta Environment and Parks (AEP). Snow and streamflow monitoring is done by AEP using monitoring stations placed on the major rivers and their tributaries. Current water availability data is provided by AEP to its licensed users, as well as predictions of availability for the coming season. These data can also be accessed publicly from Alberta Rivers (Alberta Environment and Parks), which are updated on a monthly basis. See the *Regulatory system and water management authorities* section for further explanation of AEP and regulatory mechanisms for water management in Alberta.

Water source reliability

Water is provided for the Oldman River at the headwaters in the Rocky Mountains, while the headwaters of the Waterton, Belly and St. Mary rivers are in Montana (Oldman Watershed Council 2010). Water availability in Alberta is determined through monitoring by the Government of Alberta.

Water availability of sources originating in the USA, such as the Belly, Waterton and St. Mary rivers, is governed by international agreements between the USA and Canada. These agreements are the Boundary Waters Treaty of 1909 and the International Joint Commission (IJC) Order of 1921, which apportion water from transboundary water bodies between the two nations (Government of Alberta 2020). The IJC is an international organization with representation from the United States and Canada that works to “provide direction on measurement and apportionment” for transboundary waters between the two countries (International Joint Commission 2020). As mandated by the IJC Order of 1921, the Water Survey of Canada and the United States Geological Survey monitor flow volume every 15 days (Government of Alberta 2020). Typically, more water is received in Canada than is strictly required based on the agreements for these transboundary waterways.

Water quality

This section addresses **a portion of** AWS Criterion 1.5 "*Gather water-related data for the watershed.*"

Indicator for Criterion 1.5 **that is addressed** is:
"*1.5.4 - Water quality, including physical, chemical, and biological status, of the catchment shall be identified, and where possible, quantified. Where there is a water-related challenge that would be a threat to good water quality status for people or environment, an indication of annual, and where appropriate, seasonal, high and low variances shall be identified.*"

Water quality at the headwaters

Water quality in the headwaters of the Oldman River is generally high, with the majority of headwater stream flow sourced from snow or glacier melt. The headwaters region in the Oldman River has limited impacts from urban and industrial activities, due to low levels of development in those areas. Additionally, several areas of the headwaters are protected from many activities and forms of future development by national or provincial park designations.

General water quality in the region

Though the water is of high quality at the headwaters of the Oldman River, water quality tends to degrade in the lower reaches of the river due to the impacts of municipal, agricultural and industrial land use. Phosphorus and nitrogen concentrations have been shown to increase in the main stem of the Oldman as the river passes through agricultural regions (Howery 2010). While these major indicators continue to be monitored, monitoring has shown that nitrogen and phosphorous concentrations in the Oldman River mainstem are within provincial water quality guidelines (Oldman Watershed Council 2010). Fecal coliforms and E. Coli were also shown to increase near grazed lands, and more significantly when water samples were taken immediately after larger rainfall events (Hyland, et al. 2003). While there have been fecal coliform guidelines exceedances in the Oldman River mainstem, these events are uncommon (Oldman Watershed Council 2010).

Watershed stakeholders

This section addresses AWS Criterion 1.2 *"Identify stakeholders and their water-related challenges".*

Indicators for Criterion 1.2 include:
"1.2.1: Stakeholders and their water-related challenges shall be identified. The process used for stakeholder identification shall be identified.
1.2.2: Current and potential degree of influence between site and stakeholder shall be identified, within the catchment and considering the site's ultimate water source and ultimate receiving water body for wastewater."

Relevant stakeholders for water stewardship are determined by the implementer, their location, and their impacts. For this watershed context, the initial screening level list of stakeholders captures those who are potentially relevant for the three AWF project implementers. This list of stakeholders is based on the physical location of the project geographic area, and the water users sharing the same source of water as the implementers.

Stakeholders and water related challenges

In any agri-food supply chain, there are a number of individuals and/or organizations that are relevant stakeholders to the water stewardship of the supply chain. However, stakeholders have different levels of interest and influence, depending on their involvement in the supply chain and their power within society. Table 1 (below) is a starting point list of stakeholders that are relevant in the Oldman River Watershed and water stewardship practices. This list is refined further for each implementer specific to their operation, location, and the potato supply chain, which is the focus of the AWF project. The list in Table 1 is not exhaustive but provides the reader with an understanding of the number of potential players that should be engaged when considering water stewardship for an agri-food supply chain.

Stakeholders were suggested using the matrix shown in Figure 6 (below), which considers stakeholder influence, interest and engagement in the given region.

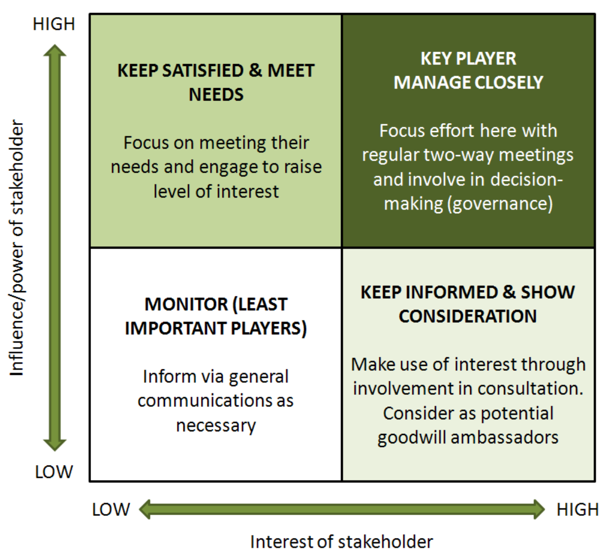

Figure 6: Stakeholder power, interest and engagement matrix (Alliance for Water Stewardship 2020).

Table 1: Starting point list of relevant stakeholders in the Oldman River Watershed for the AWF project

Potential Stakeholder
Alberta Agriculture and Forestry - Provincial Government Department
Alberta Environment and Parks - Provincial Government Department
Alberta Tourism and Rec - Provincial Government Department
Alberta Irrigation District Association
Alberta Conservation Association
Alberta Wheat Commission
BASF (Canola)
Blood Tribe no. 148
Canadian Food Inspection Agency
Cardston County

Cavendish Farms
City of Lethbridge
Ducks Unlimited
Lethbridge County
Lethbridge Fish and Game
Lethbridge North Irrigation District
Magrath Irrigation District
Municipal District of Taber
Newell County
Oldman River Chapter of Trout Unlimited
Oldman Watershed Council
Potato Growers of Alberta
Pulse Growers of Alberta
Raymond Irrigation District
Restaurant buyers
Retail buyers
SMRID
SMRID (western portion) members/rate payers
SMRID central and east members/rate payers
Taber Irrigation District
Town of Taber
Vulcan County
Warner County

Shared water challenges

This section addresses AWS Criterion 1.6 *"Understand current and future shared water challenges in the watershed"*

Indicators for Criterion 1.6 include:
"1.6.1: Shared water challenges shall be identified and prioritized from the information gathered.
1.6.2: Initiatives to address shared water challenges shall be identified."

There are several water-related challenges that are common among water users in the Oldman River basin. The previous sections that discuss the basin's geographic context, regional water quality and water quantity provide background and research on the shared water challenges that will be discussed in this section. Shared water challenges are defined by AWS as challenges that are "shared by the site and one or more relevant stakeholders" (Alliance for Water Stewardship 2020). There may be additional challenges identified through the stakeholder engagement process.

As the Oldman River basin is in an arid region, water must be carefully managed to ensure there is enough for people, for the environment and for a successful economy. Due to the amount of water already allocated for use in the region, the Oldman River and its tributaries are closed to new surface water licence applications. Best water management practices are key to the success of the region.

Table 2 below is a draft list of water challenges shared by multiple users in the Oldman River watershed. This table will be updated and refined to reflect the challenges and concerns that are identified through the stakeholder engagement process of the AWF project. These shared challenges will inform the water stewardship implementation actions of the AWF project implementers.

Table 2: Shared water challenges in the Oldman Basin identified in the initial research of the AWF project

Priority	Challenge	Catchment-level management
	Water security	- Drought response approach in the South Saskatchewan River Basin Water Management Plan - Water sharing agreements during times of drought (Water Act, section 33)
	Water quality	- Stream flow monitoring, the Water Conservation Objective and Instream Flow Needs - Oldman River Basin Water Quality Initiative
	Declining ecological health	- Instream flow needs (IFN) - Whirling disease and invasive species - Monitoring westslope cutthroat trout population in upper reach of Oldman River - Operations of the Oldman River Dam (ORD)
	Adapting to Hotter and Drier Future	- Simulation modelling
	Contaminants	- Emerging Contaminants of Concern

Important water-related areas

This section addresses **a portion of** AWS Criterion 1.5 "*Gather water-related data for the watershed.*"

Indicator for Criterion 1.5 **that is addressed**:
"1.5.5: Important Water-Related Areas shall be identified, and where appropriate, mapped, and their status assessed including any threats to people or the natural environment, using scientific information and through stakeholder engagement."

This section identifies the Important Water-Related Areas (IWRAs) that fall within the project geographic area. The site-specific IWRAs, if applicable, are dealt with in the Watershed Stewardship Plan document for each implementer.

The area must link to water in some way to be considered an IWRA. An IWRA is defined as an area or feature that, if impaired or lost, would adversely impact the environmental, social, cultural or economic benefits derived from the catchment in a significant or disproportionate manner. Although the term 'important' is subjective, the IWRAs are identified through research and engagement with local stakeholders. The term 'water-related' is intentional and it refers not only to areas that contain a natural waterbody, but also areas that rely on water for their condition and protection, but which may be dry for much of the year.

The most obvious IWRAs for this project are the original water diversion points for the water sources of the implementers. Those diversion points are the Ridge Reservoir and the intake for the City of Lethbridge municipal water treatment plant. These two locations provide water to numerous other water users in addition to the implementers.

The Oldman River Valley from Lethbridge to the confluence with the Little Bow River is deeply cut below the Prairie plain and has deep coulees running down to the river. That area falls within the project geographic area and is recognized as an environmentally significant area. The coulee ecosystems and riparian areas are key nesting places for birds, including prairie falcons, golden eagles and ferruginous hawks (Oldman Watershed Council 2010).

There are multiple areas within the City of Lethbridge that have been identified as culturally significant by the Blackfoot Confederacy. The Indian Battle Park, Bull Trail Park, Popson Park, Pavan Park, the Turtle Effigy located on the West Lethbridge Prairie upland, and many other sites within the City of Lethbridge are identified in the 2017 report "Traditional Knowledge and Use Assessment, City of Lethbridge" by the Blackfoot Confederacy Nations of Alberta in association with Arrow Archeology Ltd. (The Blackfoot Confederacy of Alberta in association with Arrow Archaeology Ltd. 2017).

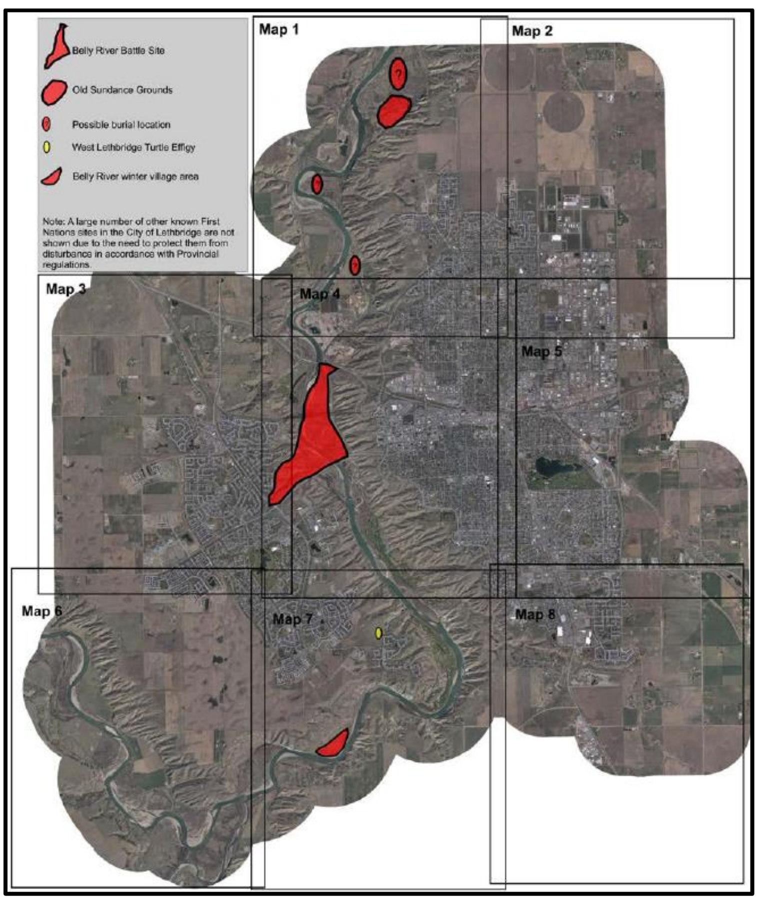

Figure 7. Historical site locations from the Traditional Knowledge and Use Assessment, City of Lethbridge (The Blackfoot Confederacy of Alberta in association with Arrow Archaeology Ltd. 2017).

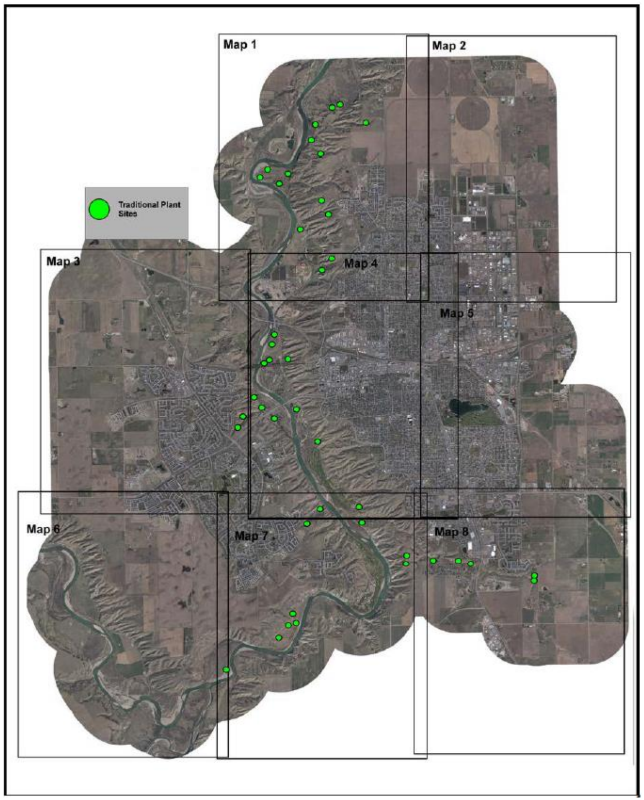

Figure 8. Select plant locations from the Traditional Knowledge and Use Assessment, City of Lethbridge (The Blackfoot Confederacy of Alberta in association with Arrow Archaeology Ltd. 2017)

Within the City of Lethbridge there is a network of connecting city parks that protect much of the river valley and riparian areas through the city limits. Several of these are designated as protected parks because of their ecosystem services. The Elizabeth Hall Wetlands and the Hellen Schuler Nature Reserve are two examples. See Figure 4 earlier in this report for an indication of where these parks are located, in the map legend the parks are referred to as Important Water-Related Areas, identified in pink.

Regulatory system and water management authorities

This section addresses **a portion of** AWS Criterion 1.5 "*Gather water-related data for the watershed.*"

Indicators for Criterion 1.5 **that are addressed** include:
"1.5.1: Water governance initiatives shall be identified, including catchment plan(s), water-related public policies, major publicly-led initiatives under way, and relevant goals to help inform site of possible opportunities for water stewardship collective action.
1.5.2: Applicable water-related legal and regulatory requirements shall be identified, including legally-defined and/or stakeholder-verified customary water rights."

The *Water Act* is the central piece of legislation governing water in the province of Alberta. The *Water Act* provides tools, orders and authority for management of water resources. It supports and promotes water conservation and management of water through the use and allocation of water. Alberta Environment and Parks (AEP) delivers the *Water Act* mandate, manages reservoir ownership and operations, and regulates impacts to water quality under the *Environmental Protection and Enhancement Act* (EPEA), for all water matters not associated with oil, gas, coal and pipelines.

In addition to the *Water Act*, numerous policies and other pieces of legislation provide direction and limit activities related to water. Below are descriptions of several of them. The *Approved Water Management Plan for the South Saskatchewan River Basin* (2006) made various recommendations including to close the Bow, Oldman and South Saskatchewan River sub-basins to new applications and to designate WCOs on the mainstem rivers and their tributaries. The *Bow, Oldman, and South Saskatchewan River Basin Allocation Order* was issued in 2007 as a regulation under the Water Act that implemented the recommendations of the *Approved Water Management Plan*.

Water Conservation Objectives (WCOs) are established under the *Water Act* as a regulatory tool for balancing human and environmental needs for water flows. Water allocation licenses can include conditions that determine minimum flows that must be present before water can be diverted in order to protect the aquatic ecosystem. WCOs affect flows by governing the amount of water that must be released from a dam, when a license holder can divert water, and by guiding government officials on decisions about when water can be allocated, and the amount of water needed for flow restoration.

WCOs do not guarantee the designated WCO volume of water remains in the water course, as some licensees are not subject to a WCO condition and may withdraw water when a WCO threshold is surpassed. There are WCOs for the SSRB, recommended as part of the *Approved Water Management Plan for the South Saskatchewan River Basin*. For the Oldman River mainstem below the Oldman River Dam to the confluence with the Bow River, the WCO is either 45% of the natural flow or the existing instream objective increased by 10%, whichever is greater at any point in time. For the headwater reaches of the Oldman River, the existing instream objective is the WCO (Alberta Environment and Parks, 2019).

Another key legislative piece is the Master Agreement on Apportionment (1969), which outlines how the governments of Alberta, Saskatchewan, Manitoba and Canada share the waters of eastward flowing interprovincial streams. The agreement requires that at minimum 50% of the annual flow by volume of the headwaters of the eastward-flowing provincial watercourses must be passed from Alberta to Saskatchewan.

Water for Life strategy and action plan (2003) affirmed Alberta’s commitment to the wise management of the province’s water resources for the benefit of all Albertans.

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