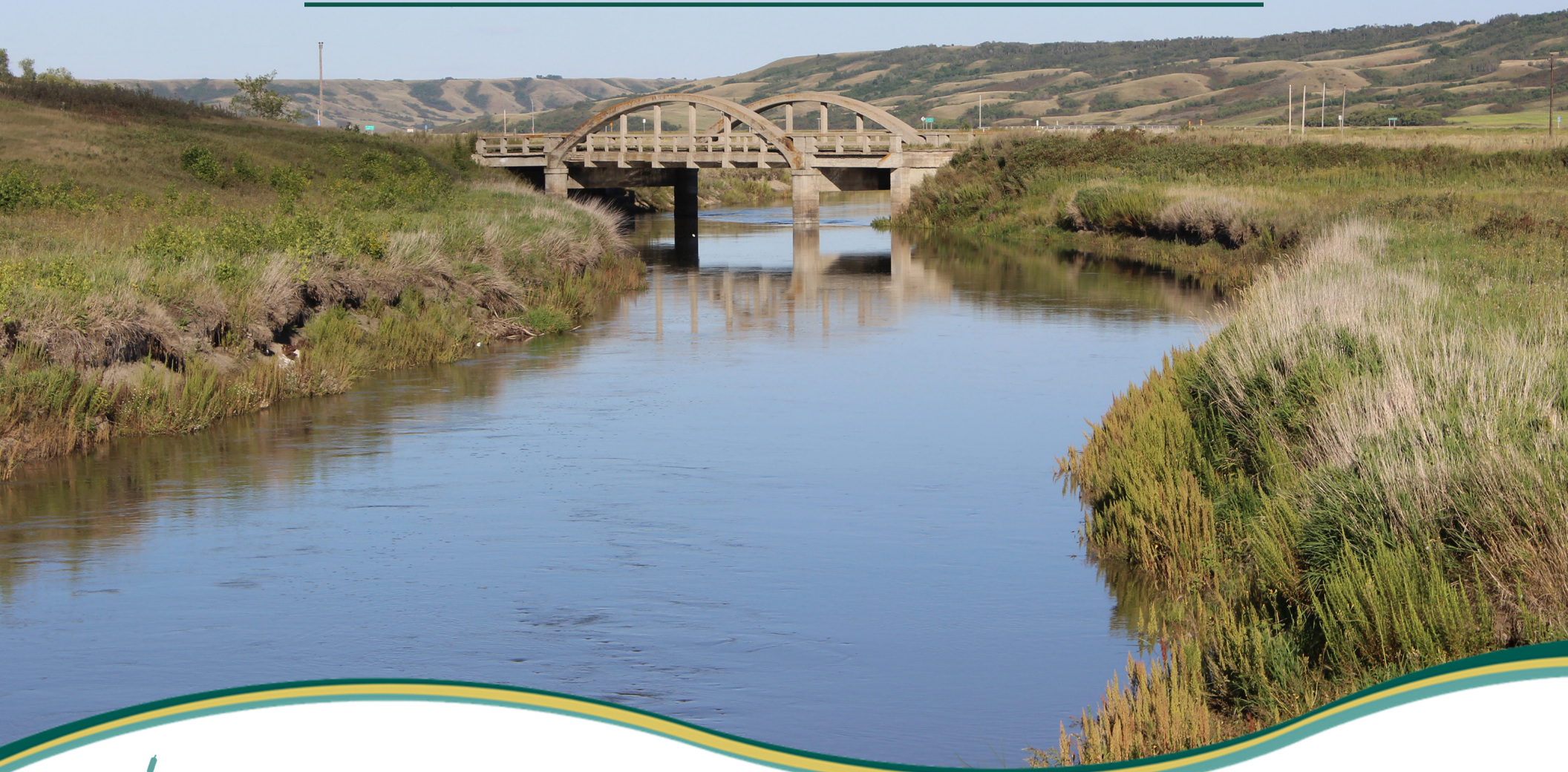
SOUTHEAST WATERSHED DISTRICT
CLIMATE CHANGE 2025
ADAPTATION PLAN



SAW
Saskatchewan
Association
of Watersheds

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ACKNOWLEDGEMENTS

As we have gathered to develop this climate change adaptation planning document, and work into the future to implement, review and revise this living document, we acknowledge that we are on Treaty 2, 4 and 6 Territory and the Homeland of the Métis. We pay our respect to the First Nation and Métis Ancestors of this place and reaffirm our relationship with one another.

Financial support for this project was provided by Environment and Climate Change (ECCC) Canada and the Water Security Agency (WSA). In kind support from the Prairie Adaptation Research Collaborative (PARC), Johnson Shoyama Graduate School (JSGS) of Public Policy, and ClimateWest was also provided. SAW would like to acknowledge the many contributions of the Southeast Climate Change Adaptation Planning (CCAP) Project community engagement participants.

A more comprehensive version of the Southeast Watershed District Climate Change Adapation Plan can be accessed at:

www.saskwatersheds.ca

SAW Saskatchewan Association of Watersheds

Water Security Agency

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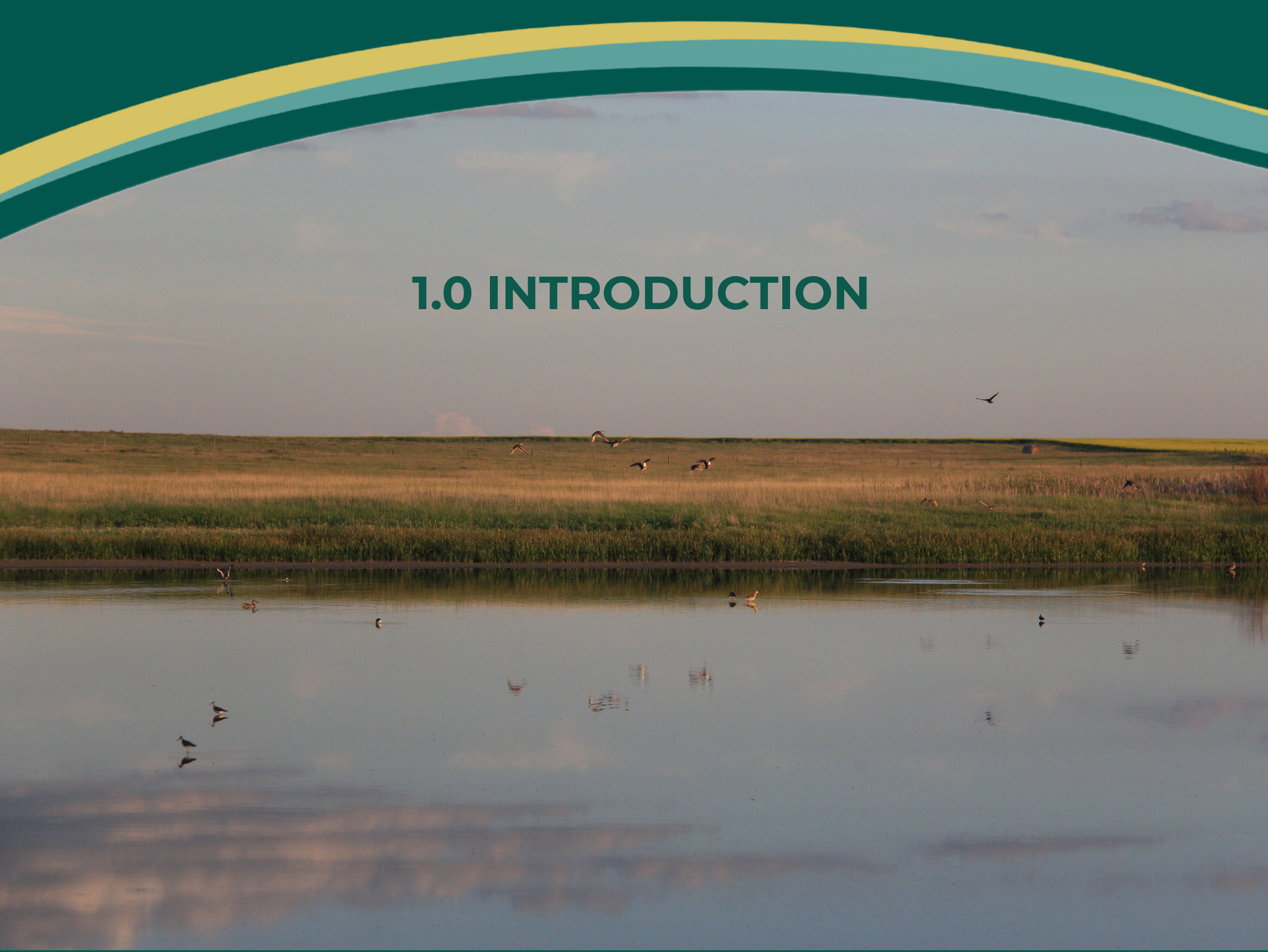
Canada

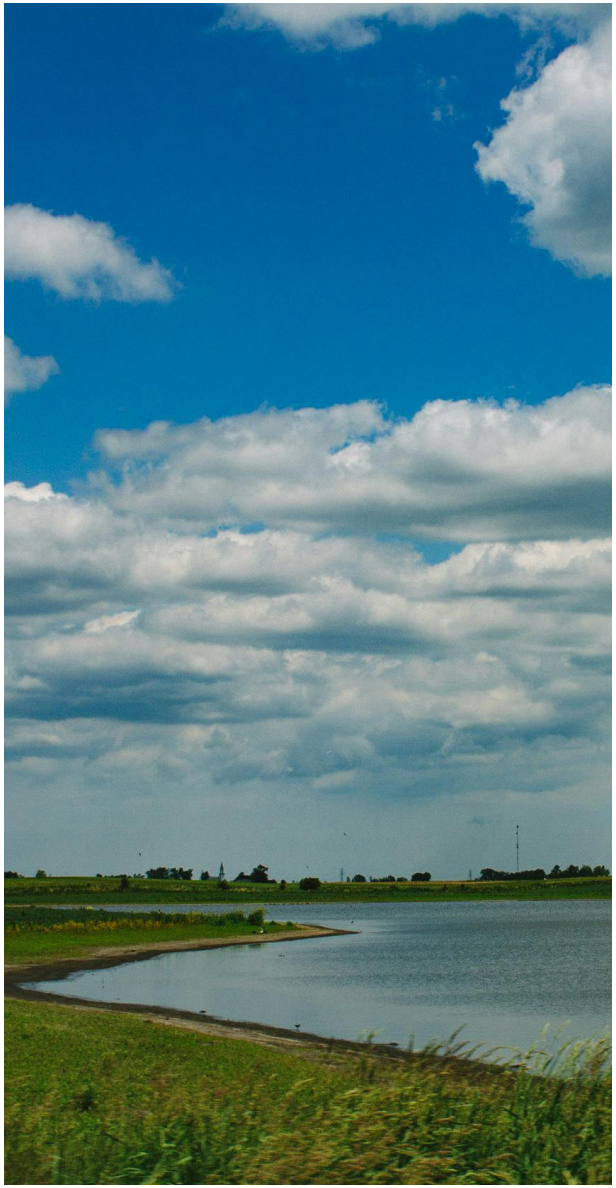
1.0 INTRODUCTION



Saskatchewan has a naturally variable semi-arid climate, inter- and intra-annually, and across different regions encompassing the unique geography of the province, from the grasslands to the northern boreal forest. Throughout Saskatchewan, climatic conditions are characterized by short, hot summers, long, cold winters, and low annual precipitation.

Climate model projections for the Canadian Prairies show warming temperatures (i.e., maximum and minimum temperatures), increased precipitation (i.e., in the amount and timing of precipitation events), increased evapotranspiration during the summer months, as well as an increase in extreme events (i.e., droughts and floods) (Herrington et al., 1997; Kharin et al., 2007; Kerr et al., 2019; Bonsal et al., 2019; Zhang et al., 2019; Sauchyn et al., 2020). Differences in the future climate of Saskatchewan will be further emphasized by the underlying natural variability experienced within this region (Sauchyn et al., 2020).

With future changes in precipitation, temperature, and extreme events, the ability of watersheds to continue to provide water and other critical watershed services to urban, rural and Indigenous communities will be impacted. Changing climatic conditions will also continue to contribute to health risks related to extreme heat, wildfires, and illnesses spread by organisms (Berry and Schnitter, 2022). It is important for communities to understand what climate change issues, impacts, and effects that they face, and how they can proactively adapt, as climate change impacts will continue to affect our livelihoods, economy, society, culture, and traditions.



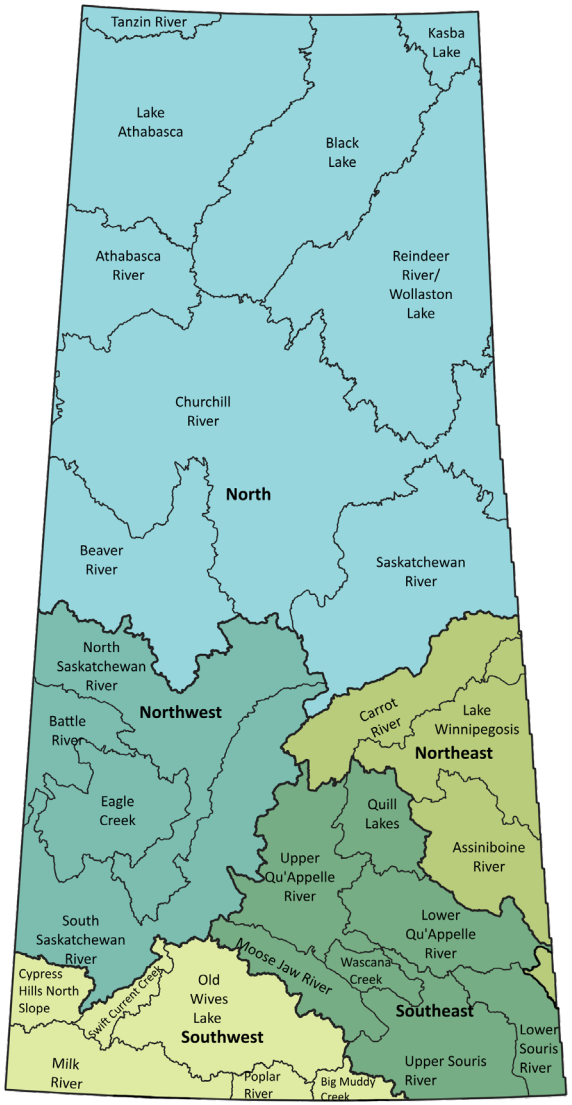


Figure 1. SAW Watershed Districts

While climate change impacts are widespread across geographic space, this climate change adaptation plan is focused within the geographical boundaries of the Southeast Watershed District. Figure 1 illustrates the SAW Watershed Districts.

This climate change adaptation plan for the Southeast Watershed District has been developed to provide communities and citizens with actions and strategies for climate change resilience and adaptation – to better understand climate change risks, impacts and effects for the economy, the natural environment, and infrastructure within the region, as well as prioritize and adapt to risks.

Figure 2 outlines the five (5) community planning and engagement steps. The purpose of step one is to develop a plan to engage stakeholders, communities and citizens within the Southeast Watershed District, and compile background information and climate change projections. For step two, the goal is to understand the vulnerabilities within the Southeast Watershed District. Climate change projections were based on a high emissions business as usual scenario. The purpose of step three is to use the climate change impacts and effects identified and conduct a future focused climate risk assessment, characterizing the severity of impacts anticipated to occur within the Southeast Watershed District under projected climate conditions by the 2100s, to determine the priorities for action and strategy planning. For step four, the goal is to define climate change adaptation actions and strategies to manage high priority impacts and consequences to formulate the climate change adaptation plan. The development of the climate change adaptation plan for the Southeast Watershed district considers existing and planned measures in place to build resiliency for climate related impacts and effects within the district.

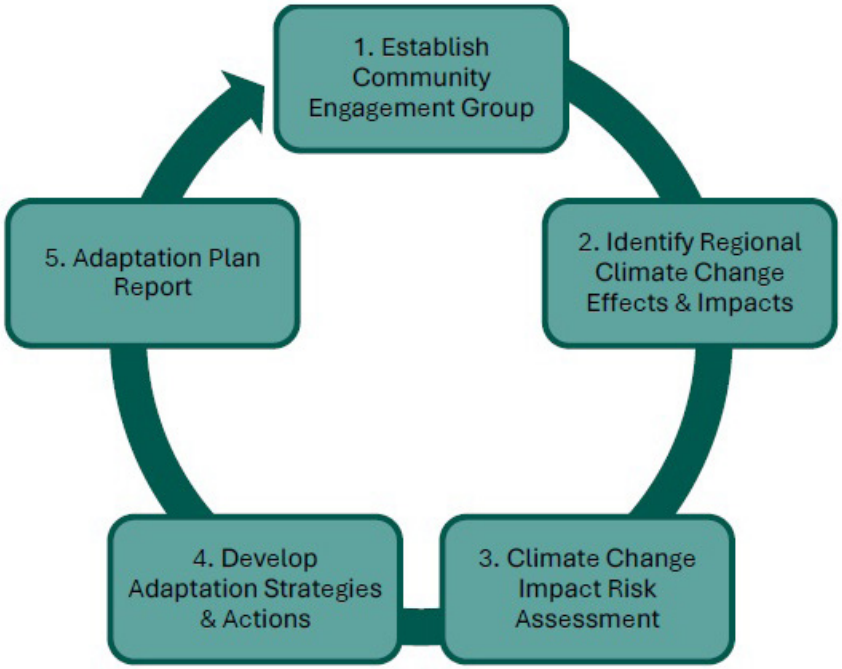


Figure 2. Community Engagement Climate Change Adaptation Planning Process

Figure 3. Southeast Climate Change Adaptation Planning Community Engagement Meeting

Throughout the community engagement process, we focused on four (4) forms of regional climate change impacts (Figure 4). Effects refer to the observed and predicted changes in general environmental and climatic conditions, while impacts refer to changes experienced in local natural systems, human health, cultural resources and practices, and infrastructure. For example, the effects of climate change include more frequent severe storm events, such as heavy precipitation, hail, and intense wind over short periods of time. The impact of those effects could include rapid runoff leading to streambank erosion, changes to ecosystem services, property damage, and the potential loss of life.

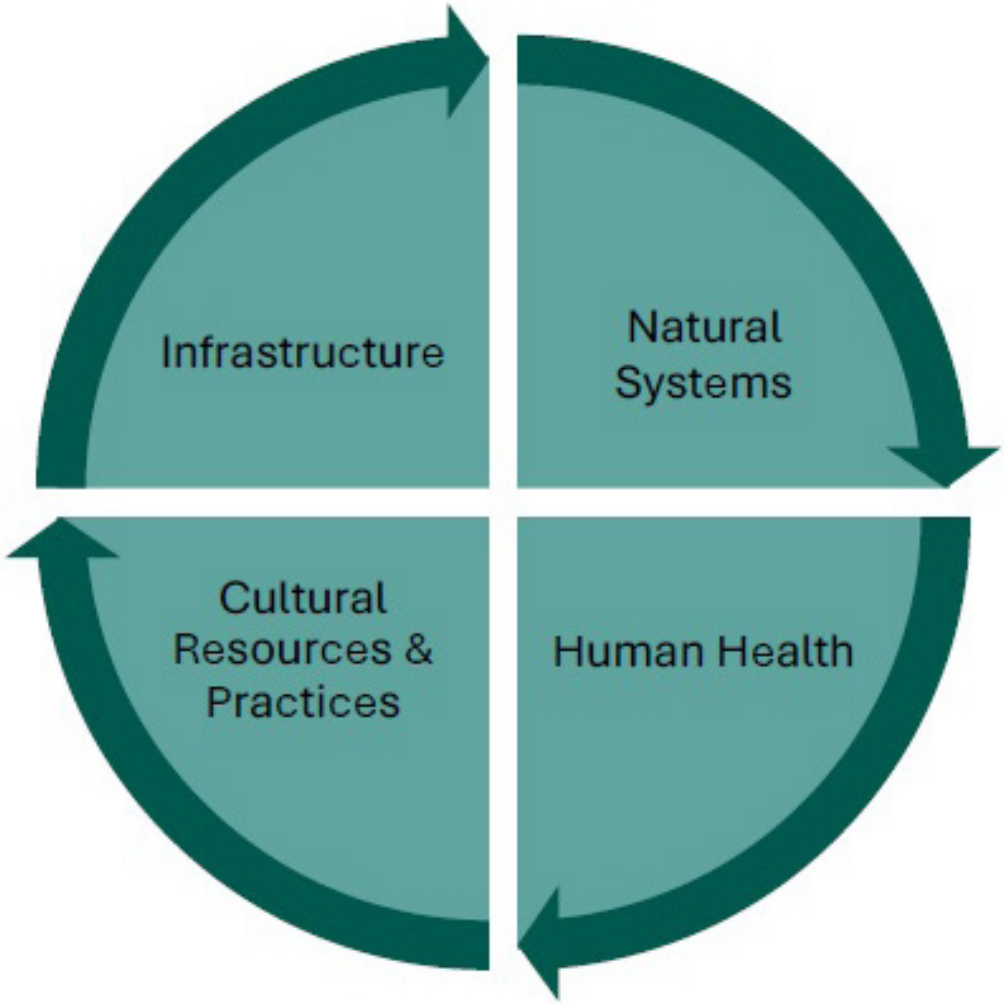


Figure 4. Categories Utilized During the Planning Process to determine Climate Change Impacts and Effects in the Southeast District.

2.0 CLIMATE CHANGE ADAPTATION PLAN STRUCTURE

This climate change adaptation plan for the Southeast Watershed District has been developed to provide communities and citizens with actions and strategies for climate change resilience and adaptation – to better understand climate change risks, impacts and effects for the economy, the natural environment, and infrastructure within the region, as well as prioritize and adapt to risks. This climate change adaptation plan is structured as follows (Table 1):

Table 1. Southeast Watershed District: Climate Change Adaptation Plan Structure

1. Objectives and Overview of Project
2. Summary of Background Geographic Information
3. Climate Change Projections
4. Climate Change Impacts Strategies & Actions

1. Southeast Watershed District: Geographic Information

The Southeast Watershed District (Figure 5) includes seven watersheds, the Upper and Lower Qu'Appelle, Upper and Lower Souris, Wascana Creek, Moose Jaw River and Quill Lakes watersheds. Together these watersheds cover a total area of approximately 88,097 km² in Saskatchewan. The boundaries of the district are the North Dakota border to the south, the Manitoba border to the east, the Missouri Coteau to the west, and the Lake Winnipegosis and Assiniboine watersheds to the north and northeast.

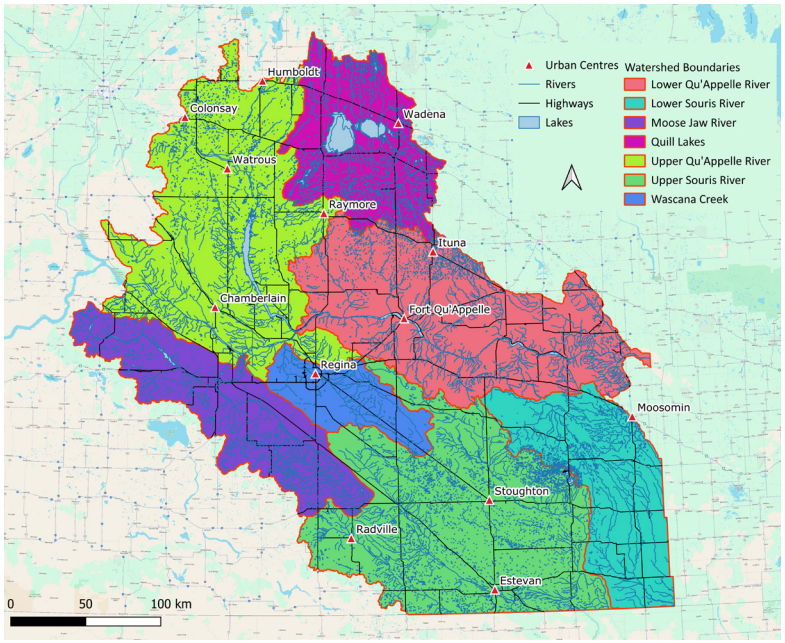


Figure 5. Southeast Watershed District: Watersheds (Government of Saskatchewan, 2023a; Natural Resources Canada, 2023; Statistics Canada, 2022)

Four ecoregions are represented in the Southeast Watershed District (Figure 6). The relatively consistent climatic conditions across the district reflect the similarity between its ecoregions. Each ecoregion is classified based on a variety of factors including climate, soil and parent material, topography, hydrology, geology, and flora and fauna.

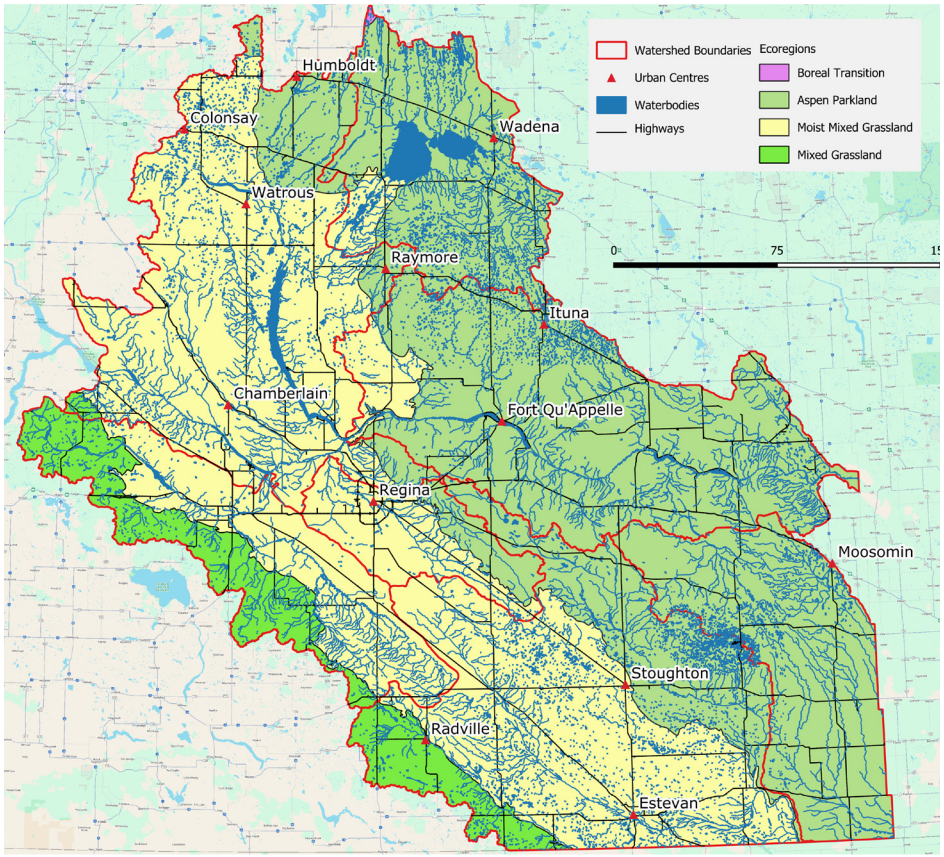


Figure 6. Southeast Watershed District: Ecoregions (AAFC, 2023a, 2023b; Government of Saskatchewan, 2023a; Natural Resources Canada, 2023).

Aspen Parkland: The eastern area of the district falls within the Aspen Parkland ecoregion. This ecoregion is the transitional zone between coniferous and deciduous forests to the north, and prairie to the south. The dominant tree species are deciduous, such as trembling aspen, and the landscape is mainly grasslands that have been converted to cropland.

Moist Mixed Grassland: The central area of the watershed district falls with the Moist Mixed Grassland ecoregion. This ecoregion is part of the prairie ecozone of Canada. The area has a semi-arid climate and generally has warmer annual average temperatures and lower average annual precipitation than the Aspen Parkland to the east.

Mixed Grassland: The western edge of the district belongs to the Mixed Grassland ecoregion. Two watersheds, the Moose Jaw River Watershed and the Upper Souris River Watershed, have areas covered by this ecoregion along the slopes of the Missouri Coteau. The Mixed Grassland ecoregion has a drier climate then the Moist Mixed Grasslands ecoregion with average annual precipitation between 250 and 350 mm.

Boreal Transition: Only a very small portion of the watershed district north of Humboldt is classified as part of the Boreal Transition ecoregion. The Boreal Transition is a transitionary ecoregion between the Boreal Forest and Aspen Parkland ecoregions.

1.1 Climate

Climatic conditions across the Southeast Watershed District vary due to differences in precipitation across the region. Trends in temperature and precipitation generally align with ecoregion boundaries. However, the prairie ecoregions are known for their large range in climatic variability. The region experiences multi-year wet and dry cycles. Within the Southeast Watershed District, mean annual temperatures range from 1.0°C – 3.2°C. The semi-arid continental climate of the district is characterized by short hot summers, cold winters, and extreme variation in temperature events throughout the year. Average annual precipitation ranges from 375 – 600 mm. Evapotranspiration influences the occurrence of dry and wet periods and contributes to convective rainfall patterns.

1.2 Surface Water

The availability of surface water in the Southeast Watershed District is primarily dependent on snow melt from spring runoff. Rainfall contributes to the water supply during the summer months. Peak flow in the creeks and rivers that provide the drinking source water for communities regularly occurs in the spring. Following spring runoff, discharge volumes decrease throughout the summer as water levels fall due to losses from evapotranspiration and a lack of substantial inputs.

While most communities in the Southeast Watershed District rely on groundwater for drinking water supplies, several of the communities including the largest communities use surface water sources. Surface water provides the drinking water for cities including Regina, Moose Jaw, Estevan, and Weyburn. Approximately 280,000 people including the residents of Regina and Moose Jaw rely on Buffalo Pound for their drinking water supply. Several smaller communities use reservoirs or dugouts as surface water sources. In the Qu'Appelle and Wascana watersheds this includes Craik, Edenwold, Sarnia Beach, Humboldt, Muenster, Liberty, Viscount, Bruno and Strongfield. Communities in the Upper Souris that rely on surface water include Midale, Ceylon, Creelman, Osage, North Weyburn and McTaggart.

Water source type is the most significant factor in determining the contamination risk of a community's water supply. Surface water is more likely to encounter sediment or nutrient runoff as it runs over the land or streambed surface and is more susceptible to contamination. Communities that rely solely on surface water are also more susceptible to water shortages due to periods of hydrologic drought, as they do not have access to deep groundwater aquifers. The Southeast Watershed District has a high density of streams and wetlands on the landscape, and surface water quality and quantity are of concern across the district.

Wetlands are threatened by urbanization, agricultural activities, and climate variability and extremes, highlighting the importance of their management. High nutrient loads of phosphorus and nitrogen impact fish habitat and contribute to algal growth in water bodies. Riparian areas adjacent to wetlands are essential transition spaces between

water bodies and upland spaces that provide ecological functions including water filtration, sediment trapping, erosion control, and provide habitat for fish and wildlife species.

1.3 Groundwater

Groundwater resources in the southeast watershed district are characterized by the underlying geological landscape, including bedrock and glacial formations, each watershed in the district has its own aquifers of varying quality and yield. Groundwater resources have more long-term stability and less variability than surface water sources as groundwater is not solely dependent on continuous precipitation. Groundwater supplies can vary within aquifers and across regional aquifer systems. Deep aquifers that supply groundwater in the southeast district are extensive.

Groundwater quality varies across the district and generally degrades with depth. There are several aquifers used for drinking and sanitary water, with water quality varying among them. Aquifers used for drinking water include surficial, glacial drift and bedrock aquifers. Important named large aquifers used for drinking water include the Hatfield Valley and Estevan Valley buried-valley aquifers. Deep groundwater wells are commonly used by rural residents for their homes and livestock. The quality of deep groundwater is more consistent than aquifers nearer to the surface due to the diminished risk of contamination from the ground surface. Abandoned wells can place even deeper aquifers at a greater risk of contamination. Detailed groundwater mapping is available for the Moose Jaw and Regina areas and in the area around the Estevan Valley aquifer.

1.4 Southeast District Population

Figure 7 is a map of Saskatchewan's population by Census Division (Government of Saskatchewan, 2021), with the watershed districts outlined in red. Within the Southeast Watershed District, the population is greatest in the northwest and west-central areas of the district. Larger urban centres include Regina, Moose Jaw, Weyburn and Estevan. Figure 8 is a map of First Nations Reserve Lands in the Southeast Watershed District. There are twenty First Nations with reserve lands in the district. All are signatories to Treaty 4 apart from Standing Buffalo Dakota First Nation; White Bear, Pheasant's Rump and Ocean Man are primarily located in Treaty 2 but are signatories to Treaty 4. Three treaties cover the land of the Southeast Watershed District, Treaties 2, 4, and 6; most of the land is part of Treaty 4, the southeast corner of the province is in Treaty 2 while a small portion of the Upper Qu'Appelle watershed is in Treaty 6.

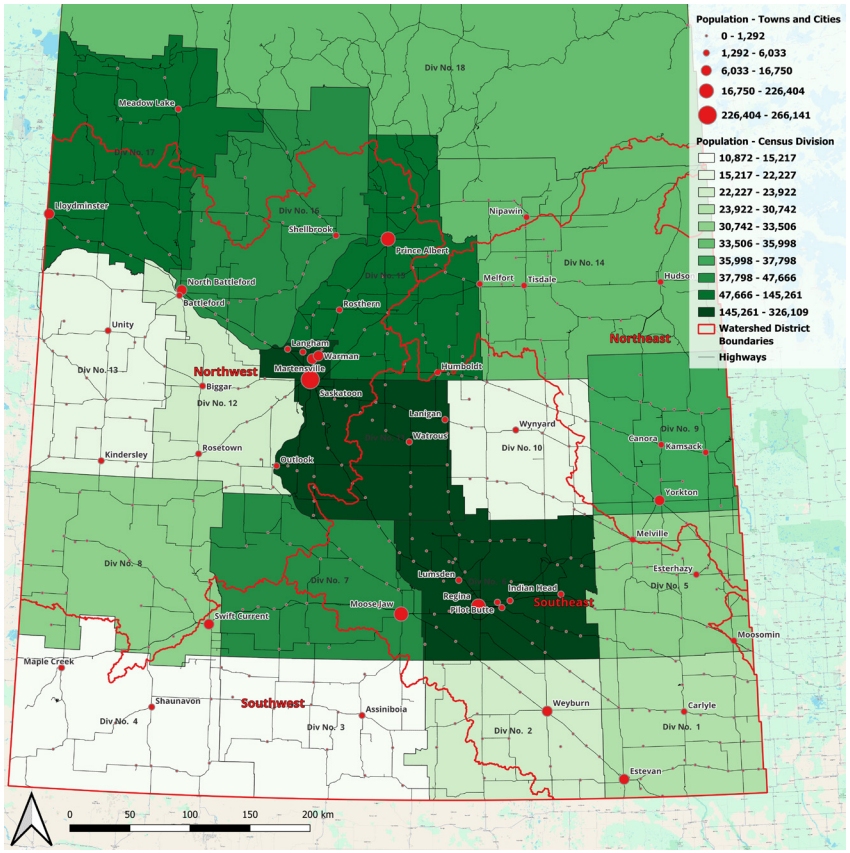


Figure 7. Saskatchewan Population by Census Division (Government of Saskatchewan, 2021; 2023a).

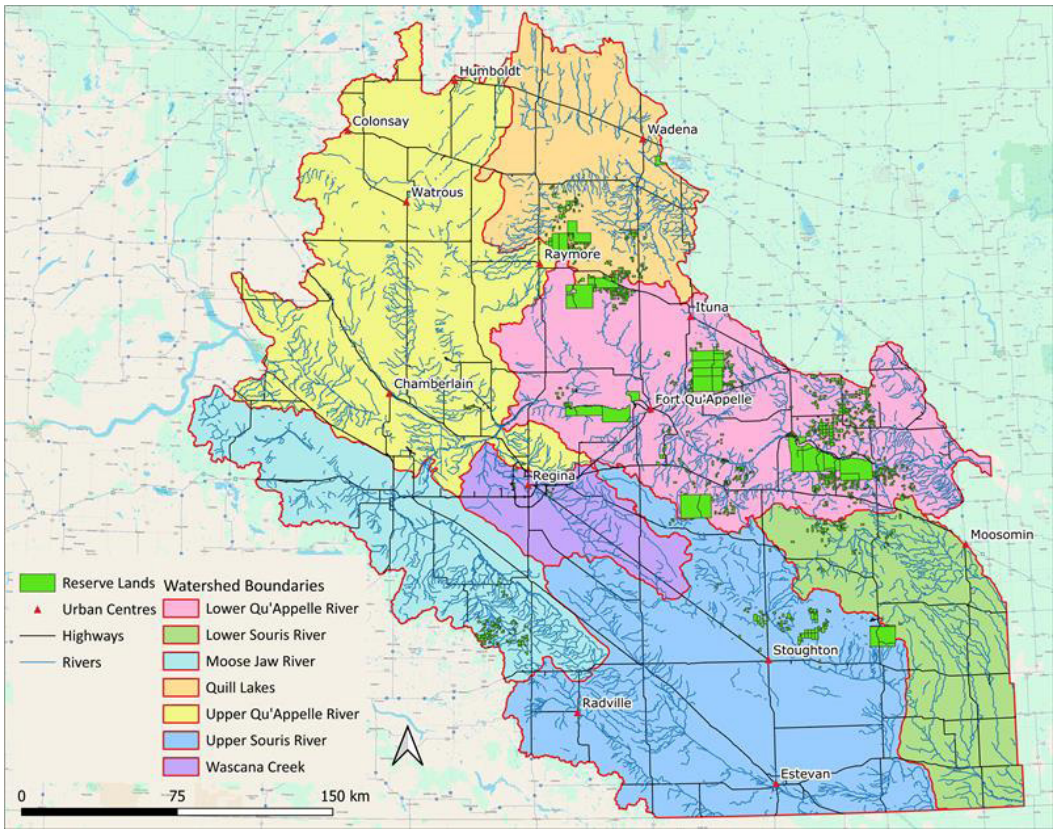


Figure 8: Southeast Watershed District: Reserve Lands (Government of Saskatchewan, 2021; 2023a).

3.0 SOUTHEAST WATERSHED DISTRICT CLIMATE PROJECTIONS

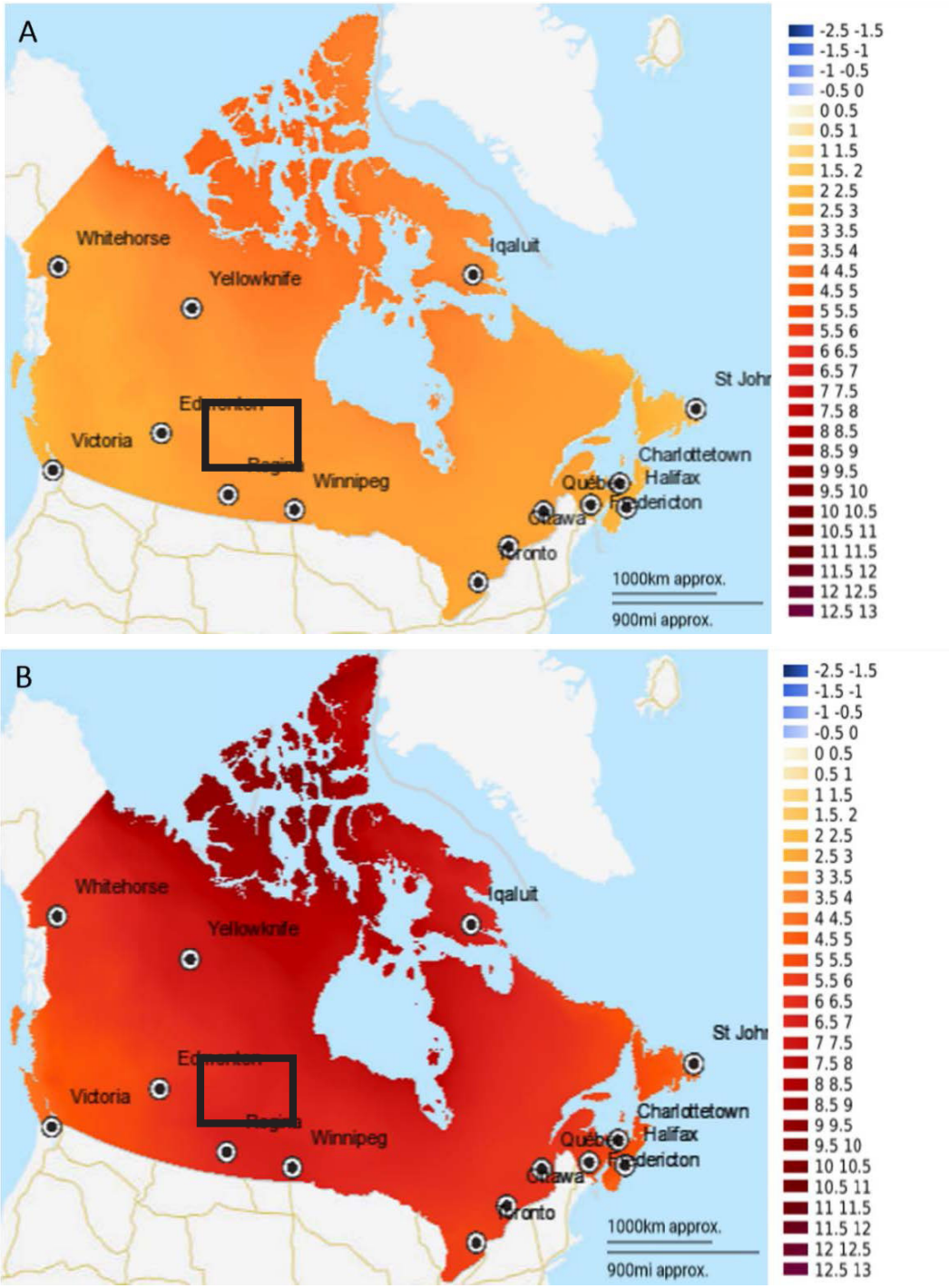
Climate change threatens the Earth's land, water, air, biodiversity, and ultimately our livelihood. Within the Southeast Watershed District, some of the identified impacts and effects of climate change include the increased threat and intensity of wildfire and smoke, changes to water quality and quantity of streams, wetlands, and lakes, migration of plant and animal populations, increased prevalence of pests and diseases, and the increased likelihood of crop failures and livestock stress.

While predicting the future climate is inherently uncertain, using a multi-model ensemble of climate projections that consider a range of plausible scenarios accommodates this uncertainty. Climate projections were gathered from the Climate Atlas of Canada (2019) and ClimateData.ca (2023) using an ensemble of global climate models. Global climate models consider many factors including temperature, precipitation, land type and use, and emissions scenarios using different Representative Concentration Pathways (RCPs). RCPs are scenarios that include time series of emissions and concentrations of the full suite of greenhouse gases, aerosols, and chemically active gases, as well as land use and cover. There are a range of RCPs that vary from a low emissions scenario characterized by active mitigation, with declining radiative forcing (RCP 2.6), stabilization in radiative forcing (RCP 4.5), and a rise in radiative forcing (RCP 8.5).

Specific to the Southeast Watershed District, climate projections (Climate Atlas of Canada, 2019; ClimateData.ca, 2023) indicate:

- Annual minimum and maximum temperatures will increase.
- Projected winter minimum temperatures will change, as much as +7.0 °C in the far future period, and thus, winter lows are expected to become far less cold.
- The number of annual cold days where daily minimum temperatures drop below -15 °C will decrease by up to 33 days in the near future time period.
- Total annual precipitation will increase by approximately 8–10% throughout the Southeast District, however, precipitation variability is projected to increase throughout time.
- Spring minimum temperatures are projected to increase by approximately 4 °C, and spring precipitation will increase in total and range, by approximately 26%.
- A high range of variability in both summer minimum and maximum temperature results in ranges suggesting lower potential minimums in the near future than the historical baseline.
- Winter maximum and minimum temperatures and total precipitation are projected to increase, however with the increase in temperatures, the form of precipitation could be rain versus snow.
- Throughout all seasons, the greatest change will be in total spring precipitation and winter minimum temperatures, increasing by 20–25%, and 4.8 °C, respectively, throughout the Southeast Watershed District.

Figure 9. Average Annual Temperature Change Variation for Canada (°C) (High Emissions Rates, RCP 8.5) for 2041–2060 (A) and 2081–2100 (B) (Canadian Centre for Climate Services, 2023). The Southeast Watershed District is located within the black square.



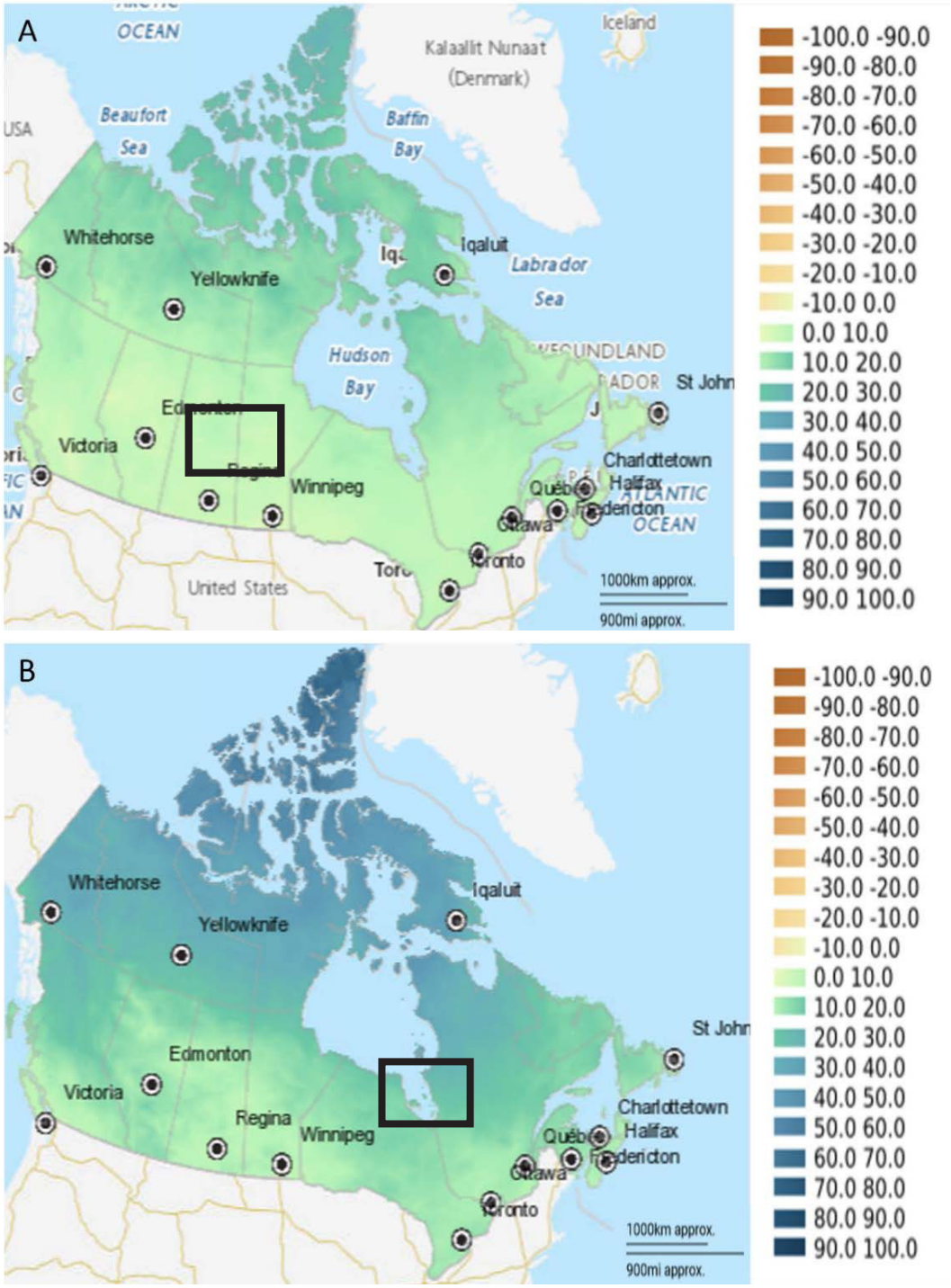


Figure 10. Total Annual Precipitation Change Variation for Canada (mm) (High Emissions Rates, RCP 8.5) for 2041–2060 (A) and 2081–2100 (B) (Canadian Centre for Climate Services, 2023). The Southeast Watershed District is located within the black square.

As shown in Figure 11 (below), climate projections estimate that there could be significant changes to the timing of the first fall frost. The first fall frost is significant as it is the approximate end of the growing season for frost sensitive crops and plants. The frost-free season is expected to extend later in the year, with the date of the first fall frost projected later in the season compared to the historical average. This the first date of fall or late summer, after July 15th, on which the daily minimum temperature falls below 0°C (Tmin > 0°C). Historically, the first fall frost of the season has occurred in late August to early September throughout the district, but the date could be up to three weeks later in some areas resulting in a frost-free season that stretches into late September or early October.

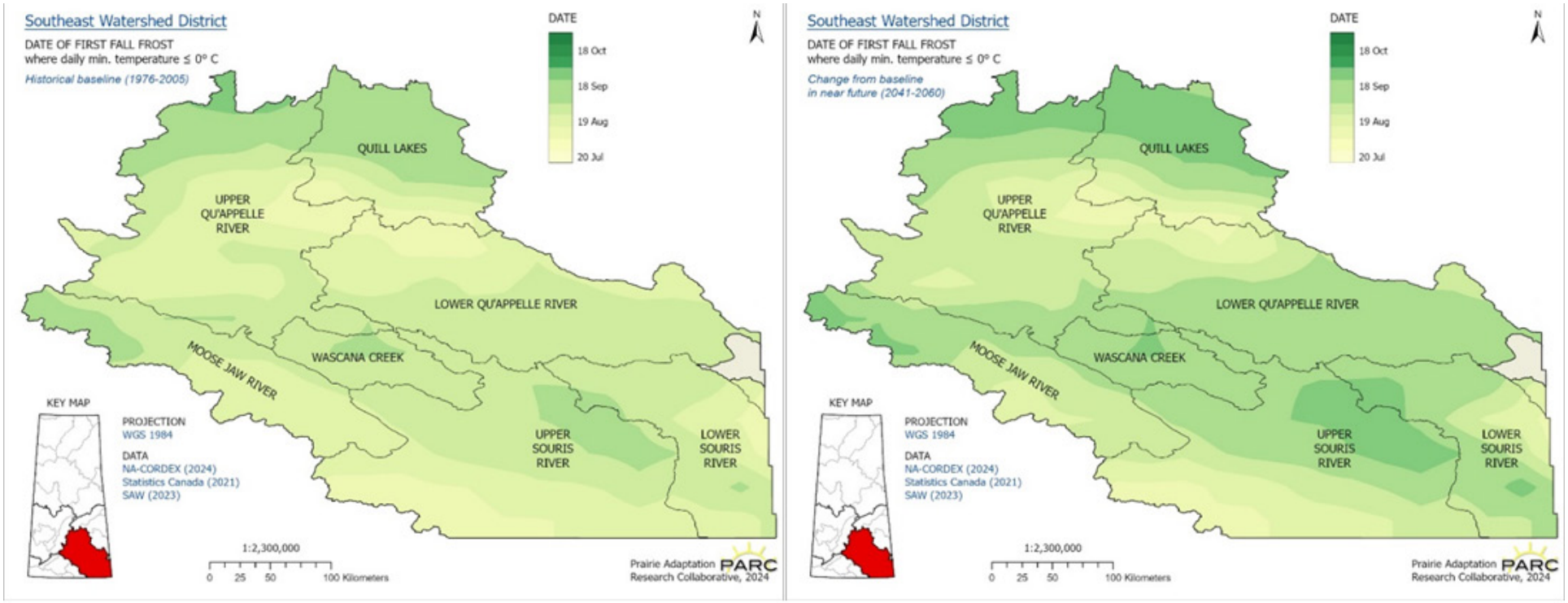


Figure 11. (A) Average Date of First Fall Frost, 1976 – 2005; (B) Projected Date of First Fall Frost, 2041 – 2060 (Belanger, Basu and Sauchyn, 2024).

As shown in Figure 12 (below), climate projections indicate earlier dates for the last spring frost. The last spring frost is approximately the beginning of the growing season for frost sensitive crops and plants. This is the last date before July 15th after which there are no daily minimum temperatures during the growing season less than 0°C (Tmin > 0°C). Historically, the last spring frost date has ranged from Mid May to early June across the district, with the earliest last spring frost date occurring in the northern regions of the Upper Qu'Appelle River and Quill Lakes watersheds. By 2060, the average last spring frost date could be as early as mid April in some areas in the district, and very few locations will have frost into June.

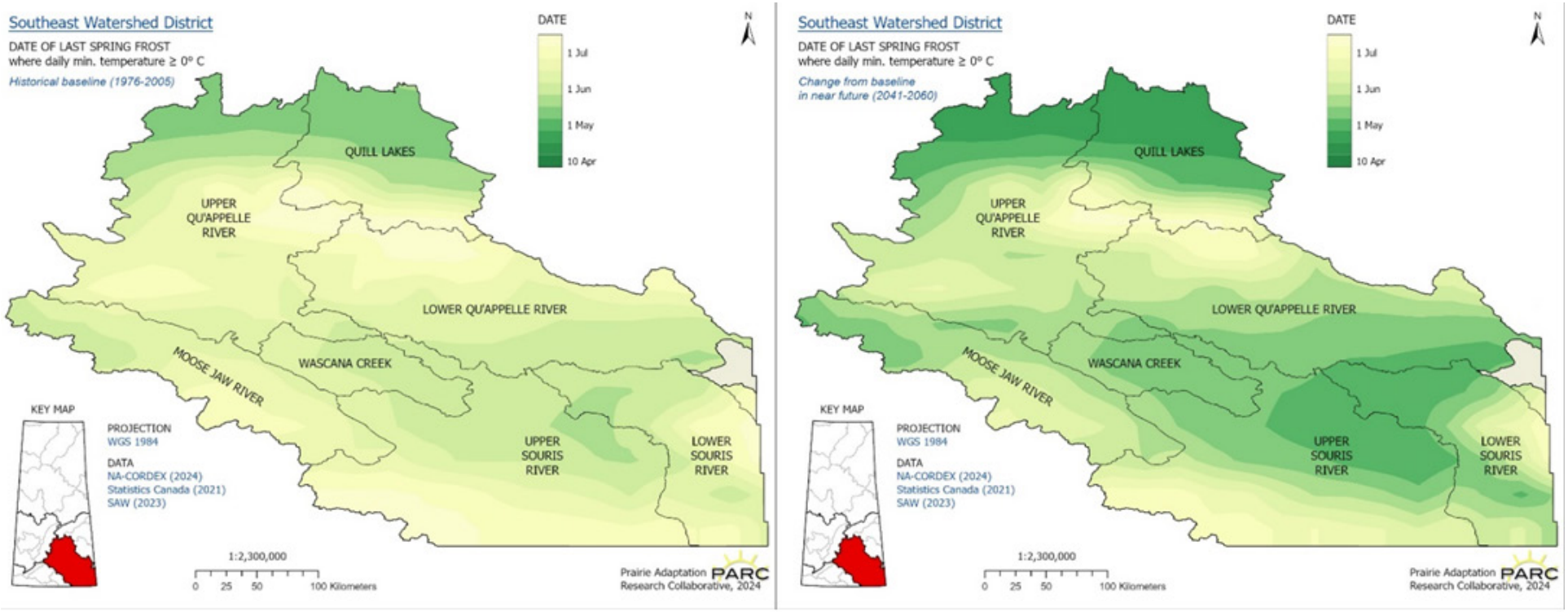


Figure 12. (A) Average Date of Last Spring Frost, 1976 – 2005; (B) Projected Date of Last Spring Frost, 2041 – 2060 (Belanger, Basu and Sauchyn, 2024).

Figure 13 represents the projected changes to the number of growing degree days (GDDs) within the Southeast Watershed District by 2060. Increased temperatures and a longer frost-free season will lead to an increase in GDDs within the Southeast Watershed District. GDDs are a measure of climatic conditions being warm enough to support plant growth. GDDS are the annual sum of the number of degrees °C for each day that the mean temperature is greater than a predetermined base temperature. In Saskatchewan, the base temperature used for calculating GDDs is generally 5°C since that is the minimum temperature required for the growth of canola and other forage crops commonly grown in the province (Climate Atlas of Canada, 2019).

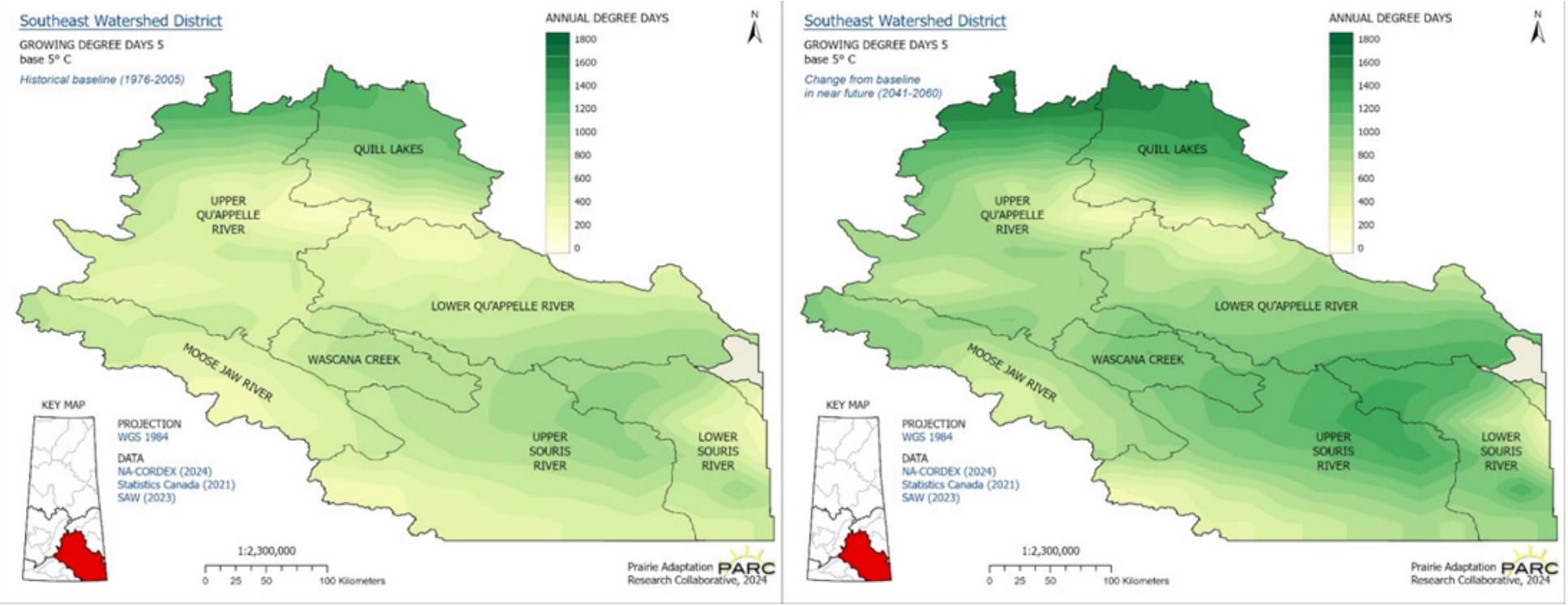


Figure 13. (A) Average Number of Growing Degree Days, Base 5°C, 1976 – 2005; (B) Projected Number of Growing Degree Days, Base 5°C, 2041 – 2060 (Belanger, Basu and Sauchyn, 2024).

The growing season is the time period when weather conditions are conducive to plant growth. Air temperature, the number of frost days, rainfall, daylight hours, and other factors limit the length of the growing season. The growing season is the number of days between the last occurrence of 0°C in the spring and the first occurrence of 0°C in the fall. Figure 14 depicts changes to the length of the growing season across the country under different emissions scenarios (Natural Resources Canada, 2022). Throughout the Southeast Watershed District, under a high emissions scenario, (RCP 8.5), the growing season length is projected to increase to approximately 120 – 160 days by 2100, compared to a baseline (1981 – 2010) of 80 – 100 days.

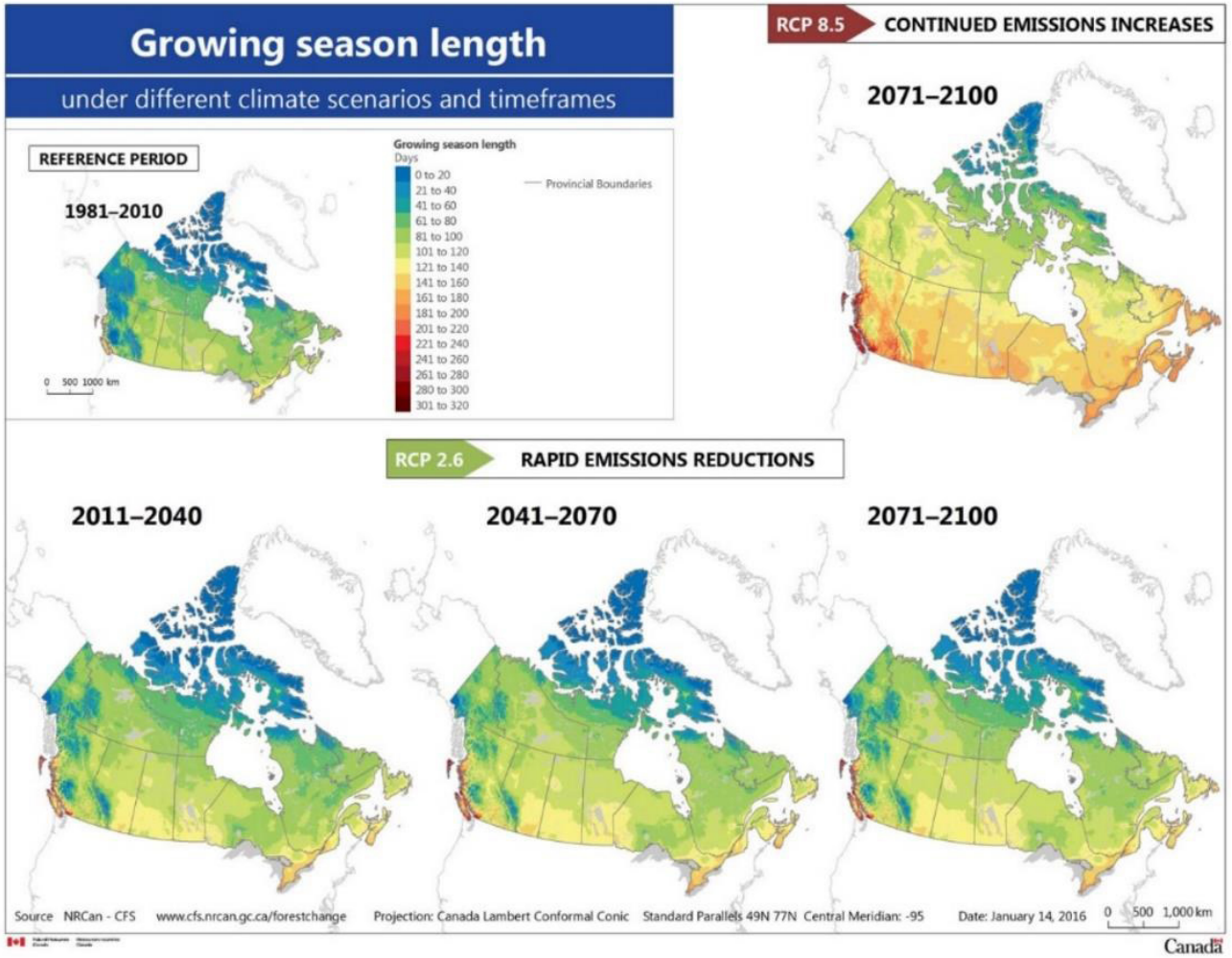


Figure 14. Growing Season Length under Different Scenarios and Time-frames (Natural Resources Canada, 2022).

4.0 IMPACTS, STRATEGIES, AND ACTIONS

The climate change adaptation risk assessment involved the process of evaluating the risks of the identified effects and impacts of climate change within the Southeast Watershed District to determine the appropriate management actions in response to, to recover from, and to build resiliency to climate change extremes and variability. The level of risk for the Southeast Watershed District resulting from each impact was determined by combining the outcomes of the likelihood assessment and the consequence assessment. Each community engagement participant worked through a workbook of identified effects and impacts, providing a score of 1 – 5 for the likelihood of occurrence and 1 – 5 for the consequence.

A 1–5 likelihood of occurrence score was determined by engagement group participants for each impact and/or effect using the scale in Figure 15. A descriptor of Most Unlikely (1) would describe the climate change impact and/or effect as expected to happen less than once every 100 years (50% annual chance) by the 2100s.

A 1–5 consequence score was determined by engagement group participants for each climate change impact and/or effect using the scale in Figure 15. A descriptor of Insignificant (1) would describe the climate change impact and/or effect as negligible or minimal, whereas a descriptor of Catastrophic (5) would describe the climate change impact and/or effect as severe or detrimental.

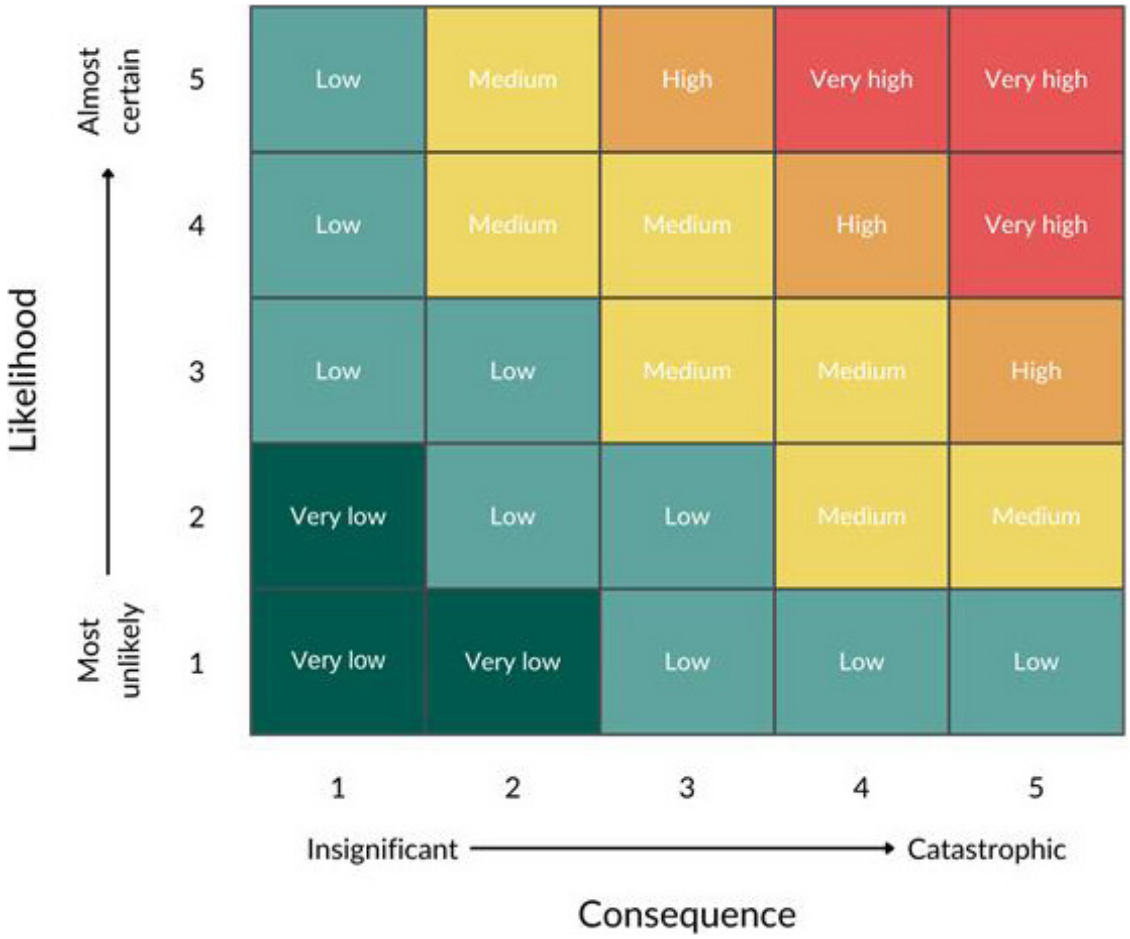


Figure 15. Risk Assessment Matrix.

The risk assessment matrix (Figure 15) was then used to delineate between climate change impacts and/or effects that pose a significant threat (i.e., red squares), and those that do not (i.e., blue squares) for the Southeast Watershed District. Following the risk assessment workbook exercise, the outcomes of the likand consequence assessments were combined and to determine the overall risk level for each climate change impact and/or effect. Results from the community engagement risk assessment were presented to the engagement group at the final meeting.

Climate change impacts and/or effects that scored between 8 to 25 were considered. For example, a score of 20–25 would indicate that adaptation actions and strategies should be developed in the very near future (1–5 years) to reduce the risks, a score of 15–25 would indicate that adaptation actions should be developed in the future to reduce risks, and a score of 8–14 would indicate that adaptation actions may be developed in the future. A score less than 8 would indicate that no action is required at this time beyond monitoring, however, it should be part of regular reviews of the climate change adaptation plan. It should be noted that all potential and effects of climate change cannot be addressed in this climate change adaptation plan.

The next step in the process was to identify actions and strategies to manage priority climate change impacts, to adapt and build resiliency to their consequences. Climate change adaptation actions and strategies were prepared from various literature sources and then further informed by community engagement participants. The Climate Change Adaptation Strategies for the Southeast Watershed District are presented below. The series of actions that are provided are recommended for implementation within the near future to increase community and regional resilience to the anticipated impacts of climate change within the region.

The climate change adaptation plan for the Southeast Watershed District contains 30 recommended strategies that have been organized according to nine themes: Water Resources (Quantity), Water Resources (Quality), Ecosystem Services, Human Health and Well-being, Traditional Resources and Cultural Practices, Engineered Infrastructure, Agriculture, Forestry, Recreation and Tourism (Tables 2 - 9). These nine themes were further identified by the engagement group as we worked through our initial focus of the categories of natural systems, human health, infrastructure, and cultural resources and practices.

Table 2. Impacts, Strategies and Actions: Water Resources (Quantity)

Water Quantity Impacts

1. Frequency and severity of climate extremes and variability have the potential to cause district wide consequences to both the timing and availability of water resources within the Southeast Watershed District.
2. Extreme precipitation (e.g., rain or snow) and snowmelt runoff events have the potential to result in culvert failure, road washouts, flooding for communities (e.g., Estevan, Weyburn, Moosomin, Moose Jaw, Regina, Lumsden, Oxbow, Craven, Redvers, Carnduff, Watrous, Manitou).
3. The potential for increased river and creek (and tributary) flooding (e.g., Souris River, Wascana Creek, Moose Jaw River, Arm River, Avonlea Creek, Pipestone Creek, Antler River, Moose Mountain Creek, Qu'Appelle River).
4. Lack of adequate precipitation and drier than normal conditions, creating hydrologic drought conditions over different time scales within the Southeast Watershed District could increase water demand and create stress on source waters, affecting critical infrastructure, wildlife and aquatic ecosystems.
5. Extended periods of hydrologic drought could reduce available ground and surface water supply, leading to greater reliance on human-made reservoirs, and the potential need to identify new small-scale reservoirs to capture runoff and mitigate drought impacts.
6. Drought could increase the risk of water contamination from livestock adjacent to waterbodies and reservoirs, leading to increased demand on river systems.

Strategy 1	**Actions**
Restore the capacity of watersheds and sub-basins and increase community resilience to mitigate extremes in both precipitation, such as snow and rain, and runoff events. **(Impacts 1 through 6)**	1. Identify communities that do not have hydrologic drought response plans and collaborate with federal, provincial, Indigenous, municipal governments, stakeholders, local residents, industry and other non-government organizations (NGOs) to complete the plans (e.g., Estevan, Regina, Weyburn, Moose Jaw, Craik, Lumsden, Moosomin, etc.) that consider response and transformations such as alternative water sources and storage options. 2. Identify communities within the Southeast Watershed District that do not have flood risk mapping completed and collaborate with federal, provincial, Indigenous, and municipal governments, stakeholders, local residents, industry and other NGOs to complete and interpret the assessments. 3. Support the development of river and creek flood hazard mapping that includes climate risk and climate projection data for communities to accelerate mapping progress for small and large water courses (e.g., Qu'Appelle River, Souris River, Pipestone Creek, etc.) within the Southeast Watershed District. 4. Collaborate with provincial and federal governments and other NGOs to develop funding to incentivize and promote land and water BMPs through programming such as, but not limited to, Alternative Land Use Systems (ALUS), Prairie Watersheds Climate Program (PWCP), Saskatchewan Watershed Environmental Agricultural Program (SWEAP), and Resilient Agricultural Landscape Program (RALP).

	5. Retain and/or restore wetlands throughout the Southeast Watershed District through programs such as ALUS and Ducks Unlimited Canada (DUC) and/or collaborate with the Water Security Agency (WSA) to develop and implement the Agriculture Water Management Strategy. 6. Collaborate with stakeholders and watershed groups within the Southeast Watershed District (e.g., Wascana and Upper Qu'Appelle Watershed Association, Lower Souris Watershed Committee, Quill Lakes Watershed Association, Moose Jaw River Watershed Stewards) and other non-profit organizations (i.e., Ducks Unlimited, Nature Conservancy of Canada, Nature Saskatchewan, etc.). 7. Source Water Protection Planning which considers climate-related and economic risks for watersheds without plans and updating completed plans (e.g., Lower Qu'Appelle, Moose Jaw River, Lower Souris and Upper Souris Rivers) through a collaborative and regional planning approach. 8. Develop and implement lake management plans (i.e., Last Mountain Lake, the Qu'Appelle Lakes, Nickle Lake, Foam Lake, Jansen Lake, Buffalo Pound Lake, etc.) and a lake stewardship strategy.
Strategy 2 Reduce evaporation from regional reservoir and lake surfaces throughout the Southeast Watershed District (e.g., Buffalo Pound Lake, Pasqua Lake, Echo Lake, Boundary Reservoir, Last Mountain Lake, Jansen Lake, Craik Reservoir, Nickle Lake, etc.) **(Impacts 1 through 3)**	**Actions** 1. Enhance and restore streambanks, wetlands, lakeshores, and functional riparian areas to reduce exposed water surfaces. 2. Use natural or artificial floating covers, such as floating wetlands on reservoir, lakes, retention ponds (i.e., City of Regina stormwater retention ponds), etc.
Strategy 3 Continue community engagement, consultation and public education on regional water resource supply and climate resilience, adaptation, change, extremes, and variability within the Southeast Watershed District. **(Impacts 1 through 6)**	**Actions** 1. Develop and disseminate educational information, materials, and programming for citizens throughout the Southeast Watershed District (e.g., educational information factsheets, online information portals, information sessions, and/or signage). 2. Modify, enhance and/or improve preparedness education, awareness and communication.

Table 3. Impacts, Strategies and Actions: Water Resources (Quality)

Water Quality Impacts

1. Gradual increases in average annual summer and winter temperatures, increased water temperatures, and reduced water quality in surface water bodies (e.g., rivers, lakes, reservoirs and wetlands) throughout the Southeast Watershed District (e.g., Buffalo Pound Lake, Last Mountain Lake, Qu'Appelle River, Souris River, Pipestone Creek, Nickle Lake, Boundary Reservoir, Crooked Lake, Rafferty Reservoir, Fishing Lake, the Qu'Appelle Lakes, Big and Little Quill Lakes, etc.)
2. Insufficient or inadequate regional water systems during hydrologic drought are at increased risk of contamination from sewage effluent and other pollutants, with high costs associated with adopting proper adaptation strategies and water treatment solutions.
3. Smaller communities are unable or cannot afford to maintain or regulate levels of contaminants and particulates in water.
4. Increased overland runoff leads to increased phosphate loads, eutrophication and deoxygenation, and algae blooms in fresh waterbodies, creating the potential for water-borne illnesses to spread throughout wild and domestic animal populations.
5. Increased temperatures could lead to the degradation of water quality from previously safe sources of water, leading to water-use restrictions and a lack of potable water in some smaller communities.
6. Higher concentrations of salt might be applied to roadways during the winter which leaches onto fields and natural areas, contaminating water sources for livestock and humans.
7. Storm water systems have the potential to lose capacity and functionality because of extreme variability and rapid shifts between extreme weather events and associated runoff.

Strategy 4 Prevent the warming of surface waterbodies within the Southeast Watershed District. **(Impacts 1 through 7)**	**Actions** 1. Collaborate with the WSA to research and complete and/or update lake management plans within the Southeast Watershed District. 2. Increase shading through streambank and riparian restoration and enhancement projects (e.g., Qu'Appelle River, Moose Jaw River, Souris River, Wascana Creek, etc.). 3. Provide aeration to waterbodies throughout the Southeast Watershed District (e.g., Buffalo Pound Lake, Moosomin Reservoir, Kenosee Lake, Boundary Reservoir, Rafferty Reservoir, Crooked Lake, Craik Reservoir, Wascana Lake, Last Mountain Lake, etc.). 4. Install floating islands, aquacaps, solar coverings and/or reflective surface on waterbodies throughout the Southeast Watershed District, depending on their size and location.
Strategy 5 Develop and implement source water protection planning for watersheds within the Southeast Watershed District. **(Impacts 1 through 7)**	**Actions** 1. Prepare and/or update source water protection plans and lake management plans for watersheds and communities within the Southeast Watershed District.

	2. Restore shorelines and riparian areas to maximize riparian health through riparian restoration projects including tree planting (e.g. resilient native tree species) and habitat enhancement along water courses and water bodies to mitigate environmental degradation on the aquatic environment and quality of water (e.g., Moose Jaw River, Qu'Appelle River, Souris River, Pipestone Creek, Wascana Creek, Boggy Creek, Condie Reservoir, Last Mountain Lake, etc.). 3. Prevent and/or minimize contaminant runoff by supporting and implementing the WSA's Agricultural Water Management Strategy. 4. Collaborate with provincial government to deliver Saskatchewan's Healthy Beaches Program (Government of Saskatchewan, 2022).
Strategy 6 Reduce overland flow rates during storm events, and filter storm and sewer overflows and wastewater. **(Impacts 2, 3, 4, 6 and 7)**	**Actions** 1. Flood risk mapping and planning for urban centres and municipalities (e.g., Moose Jaw, Regina, Weyburn, Estevan, Moosomin, Lumsden, etc.) that considers climate change, increased variability and extreme events and economic analysis. 2. Promote and implement BMPs such as extended detention wetlands, rainwater harvesting, recycling grey water, permeable surfaces, and green infrastructure initiatives. 3. Implement Floating Treatment Wetlands (FTWs) on storm water retention ponds, effluent storage, and dugouts (e.g., City of Regina storm water retention ponds, Craik Reservoir, Moosomin Reservoir, Town of Wolseley lagoons, Town of Indian Head lagoons, etc.).
Strategy 7 Continue community engagement, consultation and public education on regional water resource supply and climate resilience, adaptation, change, extremes, and variability within the Southeast Watershed District. **(Impacts 1 through 7)**	**Actions** 1. Develop and disseminate educational information, materials, and programming for citizens throughout the Southeast Watershed District (e.g., educational information factsheets, online information portals, information sessions, and/or signage). 2. Modify, enhance and/or improve preparedness education, awareness and communication.

Table 4. Impacts, Strategies and Actions: Ecological Goods and Services

Ecosystem Services Impacts

1. Lake and stream levels might decline during periods of hydrological drought, causing stress to aquatic and riparian plant and animal populations.
2. Increased annual temperatures and grassland wildfire activity throughout the Southeast Watershed District have the potential to increase evapotranspiration and reduce soil moisture availability.
3. Shifting climatic conditions and frequency and severity of extreme events have the potential to impact habitat, species assemblages and distribution throughout the Southeast Watershed District (e.g., pollinator species could no longer be able to overwinter as successfully, reducing their ability to pollinate crops, gardens, and wildflowers).
4. Wetland drainage has the potential to impact the amount of carbon sequestered.
5. Severe wind events (exceeding 90 km/hr) have the potential to increase soil erosion.
6. Shoreline degradation of surface water bodies during hydrologic drought or excessive moisture events throughout the Southeast Watershed District could impact shorebird (e.g. piping plovers) and other species that rely on wetlands and shorelines for their habitat.
7. Changes to the length of growing season may increase the prevalence of both existing and new invasive species (aquatic [e.g. zebra and quagga mussels] and terrestrial), pests, and diseases (e.g., new species arrivals, population expansion, more dispersal, rapid reproduction, more habitat and more vulnerable hosts) for aquatic and grassland ecosystems.
8. Fish and other aquatic and riparian species could be impacted by changes to ice cover over lakes and waterbodies, erosion, and increased nutrient loading.

Strategy 8	**Actions**
Maintain and minimize the negative impacts to ecosystem functions within the Southeast Watershed District. **(Impacts 1 through 8)**	1. Source water protection planning and implementation that considers increased climate variability and extremes for watersheds that don't have source water protection plans and updating the existing source water protection plans (e.g., Lower Qu'Appelle, Moose Jaw River, Lower Souris and Upper Souris Rivers) to determine current and future relevancy. 2. Collaborate to complete habitat restoration by continuing to develop and partner with provincial, federal, municipal and Indigenous governments and NGOs on delivery of habitat enhancement programming and incentives.
Strategy 9	**Actions**
Minimize the spread of plant, aquatic, and terrestrial invasive species. **(Impacts 2, 3, 6, and 7)**	1. Collaborate with provincial, federal, municipal and Indigenous governments, researchers, and other NGOs to monitor the spread of plant (e.g., leafy spurge, common thistle, burdock, etc.) and aquatic (e.g. invasive mussels), and terrestrial (e.g., ticks mosquitos, etc.) invasive species. 2. Collaborate with federal and provincial governments to continue to monitor for aquatic invasive mussels (e.g., Quagga and Zebra mussels).

	3. Promote existing education programs to citizens to enable them to know how to identify and report invasions of invasive species, such as Clean Drain Dry and iMapInvasives (Saskatchewan Conservation Data Centre, 2024). 4. Promote citizen science initiatives and monitoring programs for invasive species. 5. Work with citizens, communities, stakeholders, provincial, federal, Indigenous and municipal governments, and other NGOs to control invasive species using the most appropriate method, depending on the species.
Strategy 10 Maximize the potential for successful reclamation and restoration within the Southeast Watershed District. **(Impacts 1 through 8)**	**Actions** 1. Use climate resilient native plant species, including trees, shrubs and grasses, and promote tree planting programs (e.g., SAW's Tree for Life, SaskPower's Shand Greenhouse, etc.). 2. Promote planting and conservation of drought resilient vegetation and species. 3. Adjust seed timing as necessary. 4. Work with citizens, communities, stakeholders, provincial, federal, Indigenous and municipal governments, and other NGOs to promote grassland conservation programs.
Strategy 11 Continue community engagement, consultation and public education on regional water resource supply and climate resilience, adaptation, change, extremes, and variability within the Southeast Watershed District. **(Impacts 1 through 8)**	**Actions** 1. Develop and disseminate educational information, materials, and programming for citizens throughout the Southeast Watershed District (e.g., educational information factsheets, online information portals, information sessions, and/or signage). 2. Modify, enhance and/or improve preparedness education, awareness and communication.

Table 5. Impacts, Strategies and Actions: Human Health and Well-being

Human Health and Well-being Impacts

1. An increase in consecutive days of high summer temperature will increase space cooling requirements in buildings and facilities throughout the Southeast Watershed District.
2. With warming temperatures, higher humidity, and more precipitation, new vector borne diseases may emerge (i.e., Zika virus)
3. Warming temperatures may create a more suitable environment for tick species and tick-borne diseases to survive throughout the Southeast Watershed District (e.g. Lyme Disease)
4. Extreme wet and dry multi-year events impacting local food crops and gardens, affecting access to local food and negatively impacting quality of life (i.e., stress, anxiety, depression)
5. Stress could become heightened for those who face increased insurance costs and long wait times to clean up or rebuild following extreme precipitation and flooding events.
6. If there is an increased frequency of tornadoes and hailstorms, infrastructure, crops and gardens may be damaged, leading to increased food insecurity.
7. Changes to the amount and timing of precipitation and increased annual temperatures may impact and degrade water quality, potentially leading to contaminated drinking water, increasing stress from the cost and uncertainty of finding new sources of potable water.

Strategy 12 Reduce the spread and minimize the impacts of new diseases and invasive species within the Southeast Watershed District. **(Impacts 2 and 3)**	**Actions** 1. Collaborate with federal and provincial governments to monitor invasive species and disease vectors (e.g. Vector-borne disease surveillance in Canada). 2. Promote BMPs and response plans to minimize the invasion and/or spread of new diseases, pests, and invasive species.
Strategy 13 Increase local accessibility to diversity of foods and alternative water sources for small and large communities throughout the Southeast Watershed District. **(Impacts 4, 6 and 7)**	**Actions** 1. Promote and collaborate with provincial and federal governments, and other NGOs to create incentive programming for agricultural producers to diversify crops. 2. Support and expand local and regional markets throughout the Southeast Watershed District. 3. Planning and implementation of self-sustaining community food forests and indoor farms for rural, urban and Indigenous communities. 4. Work with citizens, communities, stakeholders, provincial, federal, Indigenous and municipal governments to create emergency response plans and drought indicators for surface and groundwater resources.

Strategy 14	**Actions**
Implement climate resilient infrastructure and promote community adaptation. **(Impacts 1, 5, 6, and 7)**	1. Upgrade stormwater drainage systems, dugouts, lagoons and wastewater treatment systems for small and large communities throughout the Southeast Watershed District. 2. Promote green infrastructure initiatives, rainwater harvesting, grey water recycling, wetland retention, tree planting and cool roofing.

Table 6. Impacts, Strategies and Actions: Traditional Resources and Cultural Practices

Traditional Resources and Cultural Impacts

1. Increased climate variability and extreme events have the potential to change hunting activities and therefore reduce food security.
2. Wildlife migration and behaviour patterns may shift if the length and timing of seasons changes, which could result in some species (i.e., moose, elk, deer, migratory birds) becoming less common across the Southeast Watershed District
3. Changes to the amount and timing of precipitation and increased annual average temperatures, could potentially reduce wildlife habitat and forage (e.g., some plant species may not be able to make the shift, some temperature sensitive species will potentially die off, increased invasive plant and animal species, etc.).
4. Indigenous artifacts, traditional sites, and sweat lodges could be at a greater risk of destruction by flooding and/or wildfire activity.
5. Traditional naturopathic medicines may be more difficult to find or harvest.

Strategy 15	**Actions**
Restore and maintain the habitat, including water quality and quantity, that supports traditional plant and animal species and traditional historic sites for Indigenous communities within the Southeast Watershed District. **(Impacts 1 through 5)**	1. Collaborate with Indigenous communities such as Ocean Man, Fishing Lake, Piapot, Standing Buffalo, Day Star, Carry the Kettle, Muscowpetung, Star Blanket, Cowessess, and Pasqua First Nations within the Southeast Watershed District to identify community watershed needs. 2. Identify Indigenous communities that require source water protection planning and implementation for their Nations and communities. 3. Collaborate with communities, federal and provincial governments, and other NGOs to complete drought and flood planning and implementation for Indigenous communities (e.g., Pasqua, Cowessess, etc.). 4. Collaborate with Indigenous communities to enhance native species habitat restoration through community led food forests and gardens. 5. Collaborate with Indigenous communities, academia (e.g., University of Regina, University of Saskatchewan, SaskPolytechnic), provincial and federal governments, and other NGOs to provide incentives and education on habitat corridor protection and restoration to assist with the migration of traditional plants and animal species under changing climatic conditions. 6. Collaborate with Indigenous communities, academia, and other NGOs to promote citizen science-based projects to monitor and track changes for plant and animal species within the Southeast Watershed District.

	7. Use Indigenous local knowledge, such as oral traditions and history, to support community emergency response planning for hydrologic drought, flooding, and wildfires. 8. Enhance education and engagement through online resources, fact sheets, videos, and presence at community events.
Strategy 16 Mitigate regional and local challenges to climate extremes and variability. **(Impacts 1 through 5)**	**Actions** 1. Support Indigenous governments and communities to develop water shortage and flooding emergency response plans. 2. Support Indigenous governments and communities with alternative water sources and water supply sources during emergencies. 3. Support collaborative planning between federal, provincial, Indigenous and municipal governments that incorporate extreme events and impacts on communities.

Table 7. Impacts, Strategies and Actions: Engineered Infrastrature

Engineered Infrastructure Impacts

1. There is the potential for greater risk of damage to rural, urban, and Indigenous community infrastructure from more frequent and intense climatic extremes (e.g., rainfall or snowmelt induced events, consecutive days of hot temperatures, more frequent freeze/thaw events, climate induced wildfire events, etc.).
2. More frequent freeze/thaw processes throughout the winter could cause rail lines and power transmission systems to become unreliable.
3. The current design of reservoirs, storm water retention, and water conveyance structures may not be adequate to handle extreme fluctuations in water runoff.
4. Culverts and roads may wash out more frequently, leading to safety concerns, and potential disruptions to emergency services accessing remote locations.
5. Increased temperatures for consecutive days in the spring and summer can increase the demand on the energy grid.
6. Damage to electrical infrastructure during storms with intense precipitation and extreme winds (exceeding 90 km/hr) may cause more frequent and longer lasting power outages.
7. Potential algae blooms in freshwater bodies could increase the need for irrigation projects to transfer water, and the cost and effort required to treat water so that it is safe for use.

Strategy 17 Reduce the upstream flow rates and provide storage opportunities for excess flow in extreme wet years. **(Impacts 1, 2, 3, 4, 6 and 7)**	**Actions** 1. Identify flood susceptible communities throughout the Southeast Watershed District and collaborate with federal, provincial, and Indigenous governments to complete flood risk mapping. 2. Promote and implement BMPs such as extended detention wetlands. 3. Retain, restore and create wetlands in key identified locations throughout the Southeast Watershed District to stabilize water flow rates into Indigenous, urban and rural infrastructure. 4. Review and research potential storage opportunities.
Strategy 18 Increase regional and community resiliency to mitigate climate extremes and variability. **(Impacts 1 through 7)**	**Actions** 1. Support rural, urban and Indigenous communities to collaborate with provincial (e.g., SaskPower, WSA, SaskWater, SaskEnergy, SPSA, etc.) and federal agencies to develop emergency response plans and key infrastructure transformation assessments. 2. Collaborate with provincial and federal governments, and other NGOs to develop funding to incentivize and promote land and water BMPs.

Strategy 19 Minimize the fire hazard around key infrastructure in communities throughout the Southeast Watershed District. **(Impact 1)**	**Actions** 1. Assistance with fuel reduction around communities, residences, and high-risk infrastructure such as targeted grazing, prescribed burning, and thinning. 2. Promote FireSmart (FireSmart Canada, 2024) landscaping, use of buffer strips, and urban forestry management plans.
Strategy 20 Integrate green infrastructure into rural, urban, and Indigenous community planning. **(Impacts 1 through 7)**	**Actions** 1. Promote education on the implementation of green infrastructure and low impact development to protect landscapes and people from heat, heavy rainfall, drought, flooding, and other extreme weather events. 2. Promote the use of green spaces for cooling, natural area protection, raingardens, xeriscaping and drought tolerant plants, shading structures, etc. 3. Implement Floating Treatment Wetlands (FTWs) on storm water retention ponds, effluent storage, and dugouts (e.g., City of Regina, storm water retention ponds, etc.). 4. Encourage, incentivize and support industrial and municipal facilities to adopt water reuse practices to reduce reliance on freshwater sources and alleviate pressure on local and regional water supplies.

Table 8. Impacts, Strategies and Actions: Agriculture

Agriculture Impacts

1. Winter precipitation in the form of snow or ice, and mid-winter melting conditions, will have the potential to impact snowpack and soil moisture conditions for agricultural operations.
2. Intense summer precipitation events with rain and hail and severe wind gusts (exceeding 90 km/hr) have the potential to damage agricultural crops.
3. If growing season length increases, wildlife may cause more damage to agricultural crops and fields as they have extended opportunities to graze.
4. Insufficient precipitation during prolonged droughts may lower the quality of crops produced to the point where irrigation projects may be required throughout the Southeast Watershed District.
5. Excess road salt applied during the winter months, could increase the salinity on agricultural land with runoff.
6. Hydrological drought could impact natural springs, causing them to lose their ability to recharge, resulting in less water available for livestock.
7. Hotter summer temperatures will have an impact on livestock (e.g., increased mortality, reduced productivity, reduced feed, grasshoppers, etc.).
8. Extreme dry or wet multi-year events impact plant productivity and ability of grazing lands to adequately support cattle, impacting the ranching industry.
9. Extreme dry or wet multi-year events impact local food crops and gardens.
10. Multiple consecutive days of extreme heat have the potential to reduce agricultural yields and productivity from heat stress on crops.
11. Reduced yields and agricultural productivity due to invasive species (e.g., thistle, burdock, etc.).
12. Flooding of agricultural fields, delaying seeding and or/harvest, leading to reduced agricultural yields and productivity.
13. Agricultural land and practices have the capacity to sequester carbon to offset climate change impacts and effects.
14. Potential for positive changes to crop yields and opportunities for warm weather crops throughout the Southeast Watershed District.

Strategy 21	**Actions**
Shift to climate resilient crops and forages. **(Impacts 1 through 14)**	1. Research and development for plant varieties and breeds that are suitable to withstand climate stress and ecosystem shifts - such as extreme temperature, excessive moisture, increased extreme variability between wet and dry conditions and warm and cool temperatures, and/or changes to the length and timing of the growing season within the Southeast Watershed District. 2. Support demonstration sites and workshops to showcase successful BMPs adopted by farmers and ranchers for climate resiliency.
Strategy 22	**Actions**
Adopt agricultural practices that make crops and livestock more resilient to climatic change, extreme events, and increased variability throughout the Southeast Watershed District. **(Impacts 1 through 14)**	1. Implement practices such as crop rotation, providing shade and structure for livestock, and adaptive grazing management. 2. Collaborate with provincial and federal governments, industry, and other NGOs to develop program funding incentives for agricultural producers (e.g., PWCP, SWEAP, ALUS, FRWIP, RALP, etc.).

	3. Collaborate with communities, agricultural producers, provincial and federal government, industry stakeholders, consultants, and researchers to promote and implement BMPs, access to technology, irrigation, and use of agricultural inputs throughout the Southeast Watershed District. 4. Collaborate with the WSA on the development and implementation of the Agriculture Water Management Strategy.
Strategy 23 Mitigate regional changes to climate variability and extremes through technological advancements. **(Impacts 1 through 14)**	**Actions** 1. Support the establishment of irrigation opportunities, reservoir holding capacity, and water-saving technologies for agricultural producers within the Southeast Watershed District. 2. Collaborate with provincial and federal governments to develop and deliver incentive programming to aid agricultural producers to adopt BMPs to reduce greenhouse gas (GHG) emissions, such as PWCP, SWEAP, ALUS, RALP, etc. 3. Collaborate with the WSA on the development and implementation of the Agriculture Water Management Strategy.
Strategy 24 Increase local accessibility to a diversity of foods. **(Impacts 1, 2, 3, 4, 9, 10, 11 and 12)**	**Actions** 1. Promotion and collaboration with provincial and federal governments, and other NGOs to create incentive programming for agricultural producers to diversify crops. 2. Support and expand local and regional farmer markets throughout the Southeast Watershed District. 3. Implement agriculture solutions such as self-sustaining community food forests for urban, rural and Indigenous communities.
Strategy 25 Reduce GHG emissions and maximize opportunities and capacity to sequester carbon from agricultural activities. **(Impacts 13 and 14)**	**Actions** 1. Implement practices that reduce GHG emissions, such as low emissions fertilizers or feed additives for livestock that aid digestions processes and increase productivity over time to reduce GHG emissions per unit of production. 2. Adopt practices that sequester carbon, such as minimum till conversion of annual cropland to perennial cover, cover cropping, polyculture, multi-cropping, and planned rotational grazing.
Strategy 26 Continue community engagement, consultation, and public education on agriculture and climate resilience, adaptation, change, extremes, and variability throughout the Northeast Watershed District. **(Impacts 1 through 14)**	**Actions** 1. Response and transformation planning for communities within the Southeast Watershed District (e.g., City of Estevan, City of Weyburn). 2. Modify, enhance and/or improve education, awareness and communication methods to urban, rural and Indigenous communities throughout the Southeast Watershed District.

Table 10. Impacts, Strategies and Actions: Recreation and Tourism

Recreation and Tourism Impacts

1. High extreme temperatures negatively impact surface water quality, increasing algae blooms and decreasing the quality of recreational lakes (e.g., Buffalo Pound, Last Mountain Lake, the Qu'Appelle Lakes, the Quill Lakes, etc.).
2. If winters become shorter and warmer, winter activities including ice fishing may be restricted or cancelled due to thinner ice on lakes and smaller waterbodies, and there could be fewer opportunities for snowmobiling, skiing, skating, and other winter activities that require snow or ice.
3. Lake levels may shift around cycles of drought and extreme precipitation, changing shorelines, reducing the quality of beaches, and affecting boating activity on lakes.
4. Periods of drought may lead to water restrictions, reducing the opening times or availability of splash pads or pools.
5. Lakes may have poorer water quality and reduced capacity for water sports and lake-based tourism, including reduced use of regional or provincial parks.
6. Outfitters may lose business if there is not adequate food or water for game animals.

Strategy 27	**Actions**
Create and continue community engagement, consultation, and public education on watershed services, water resources (quantity and quality) and climate resilience, adaptation, change, extremes, and variability within the Southeast Watershed District. **(Impacts 1 through 6)**	1. Develop and disseminate educational information, materials, and programming about watershed services and water resources for citizens throughout the Southeast Watershed District (e.g., educational information factsheets, online information portals, community information sessions and workshops, BMP demonstration sites, and/or signage). 2. Modify, enhance and/or improve emergency preparedness, awareness, and communication. 3. Response and transformation planning for communities within the Southeast Watershed District.
Strategy 28	**Actions**
Maximize the climate resiliency of both communities and resort-based communities throughout the Southeast Watershed District. **(Impacts 1 through 6)**	1. Lake management planning and implementation for Buffalo Pound Lake, Quill Lakes, Last Mountain Lake, Moosomin Reservoir, Kenosee Lake, Whitebear Lake, Nickle Lake, Crooked Lake, Rafferty Reservoir, Boundary Reservoir, etc. 2. Shoreline restoration education to citizens and resort-based communities (e.g. Natural Edge projects). 3. Collaborate with provincial, federal, and Indigenous governments, stakeholders, and other NGOs to incentivize and adopt BMPs for both communities and resort-based communities. 4. Identify, assess and create healthy riparian buffers along lake and wetland shorelines and streambanks within the Southeast Watershed District. 5. Collaborate with provincial government and stakeholders to deliver Saskatchewan's Healthy Beaches Program (Government of Saskatchewan, 2022).

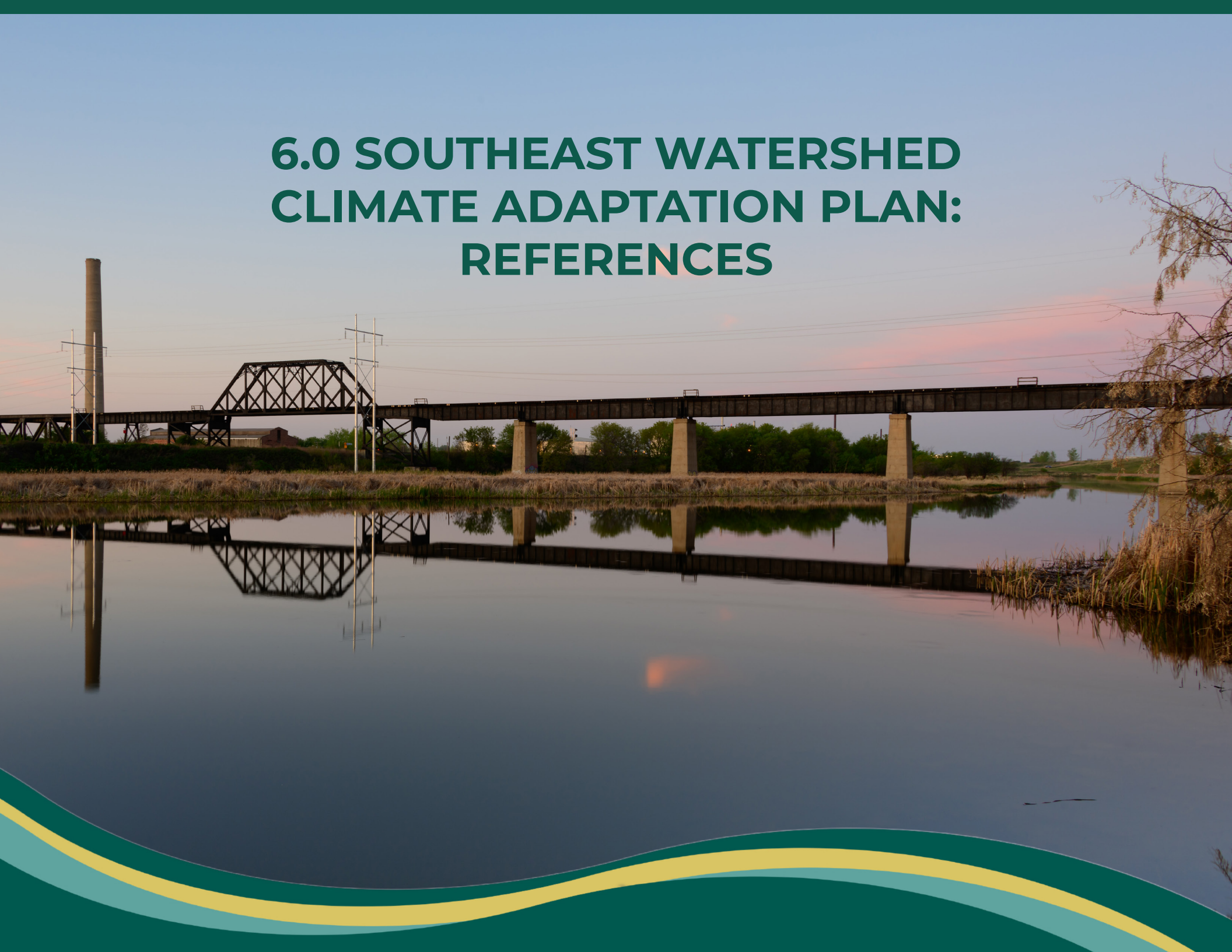
5.0 BUILDING RESILIENCY FOR THE SOUTHEAST WATERSHED DISTRICT: PATH FORWARD

The Southeast Watershed District Climate Change Adaptation Plan provides a list of recommended strategies and actions to increase climate resiliency within the Southeast Watershed District. The path forward will include the implementation of the climate change adaptation plan. Many of the actions can be implemented quickly through individual actions, and several of the actions will require a collaborative approach with longer timeframes, and require working with citizens, stakeholders, provincial and federal governments, and other NGOs.

It is important for communities to understand what climate change issues, impacts, and effects that they face, and how they can proactively adapt, as climate change impacts will continue to affect our livelihoods, economy, society, culture, and traditions. Therefore, continuation of community engagement, consultation and public education on watershed services and climate resilience, adaptation, change, extremes, and variability within the Southeast Watershed District is a key aspect of this climate change adaptation plan.

The climate change adaptation plan should be monitored regularly and include a 3–5-year review of the climate change adaptation plan, to ensure that it is relevant to the Southeast Watershed District. The plan should be updated with recent scientific research and information on climate projections, and thus the impacts and effects related to those climate projections which ultimately affect the priority of the risks for the district. The review should also consider whether the actions and strategies have been implemented effectively or not to achieve the appropriate results, ensuring progress towards achieving climate resilience for the Southeast Watershed District.

6.0 SOUTHEAST WATERSHED CLIMATE ADAPTATION PLAN: REFERENCES



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A more comprehensive version of the Southeast Watershed District Climate Change Adapation Plan can be accessed at:

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