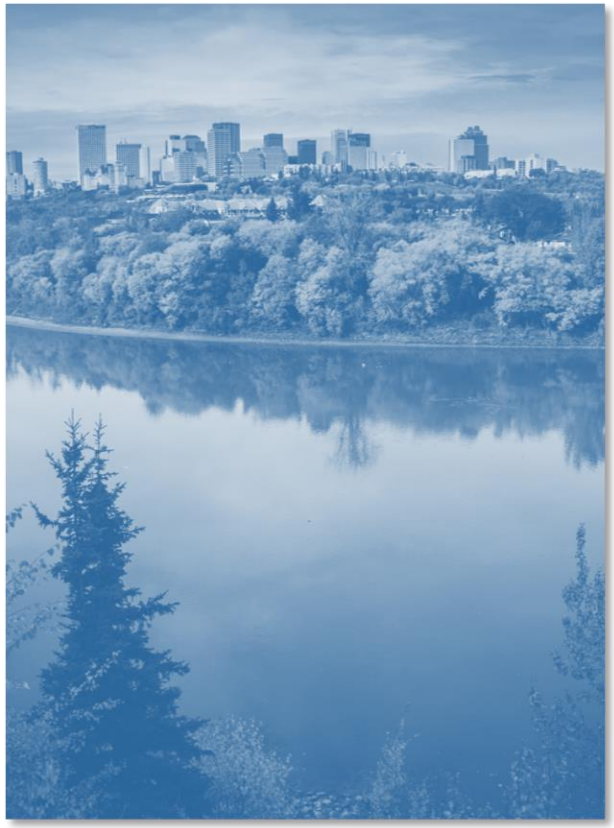
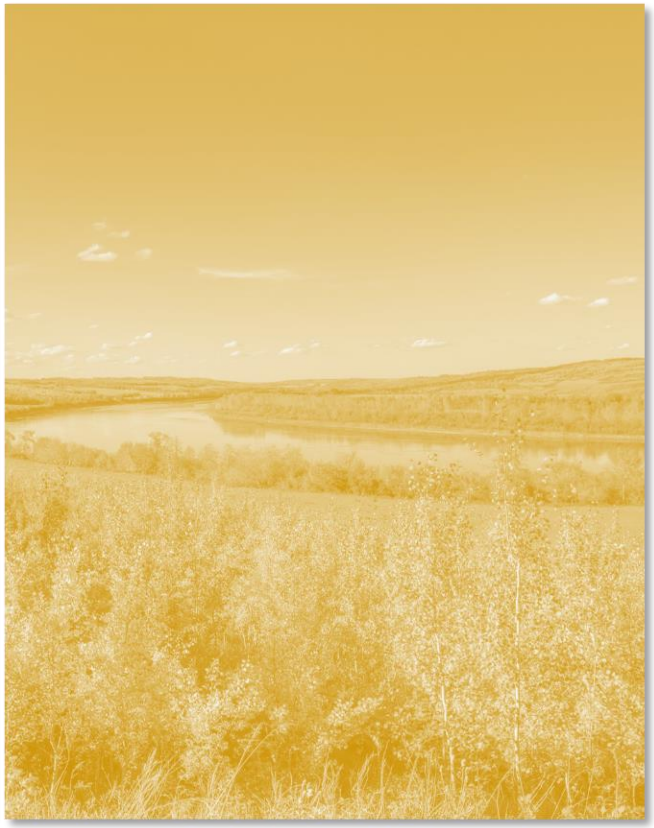
Sturgeon River Watershed Alliance

NSWA
NORTH SASKATCHEWAN WATERSHED ALLIANCE

2021 Update

Michelle Gordy | LILSA AGM | August 21, 2021

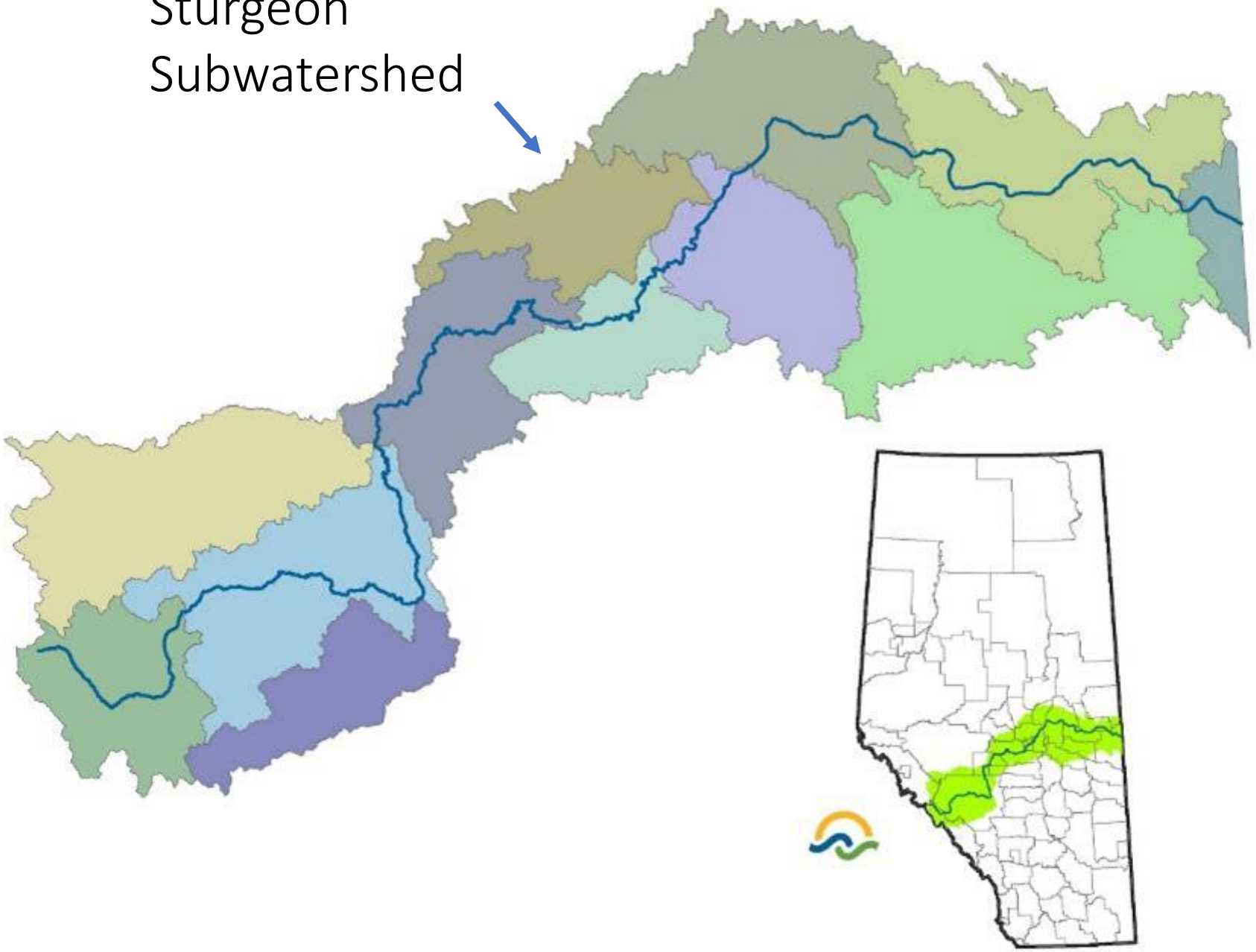




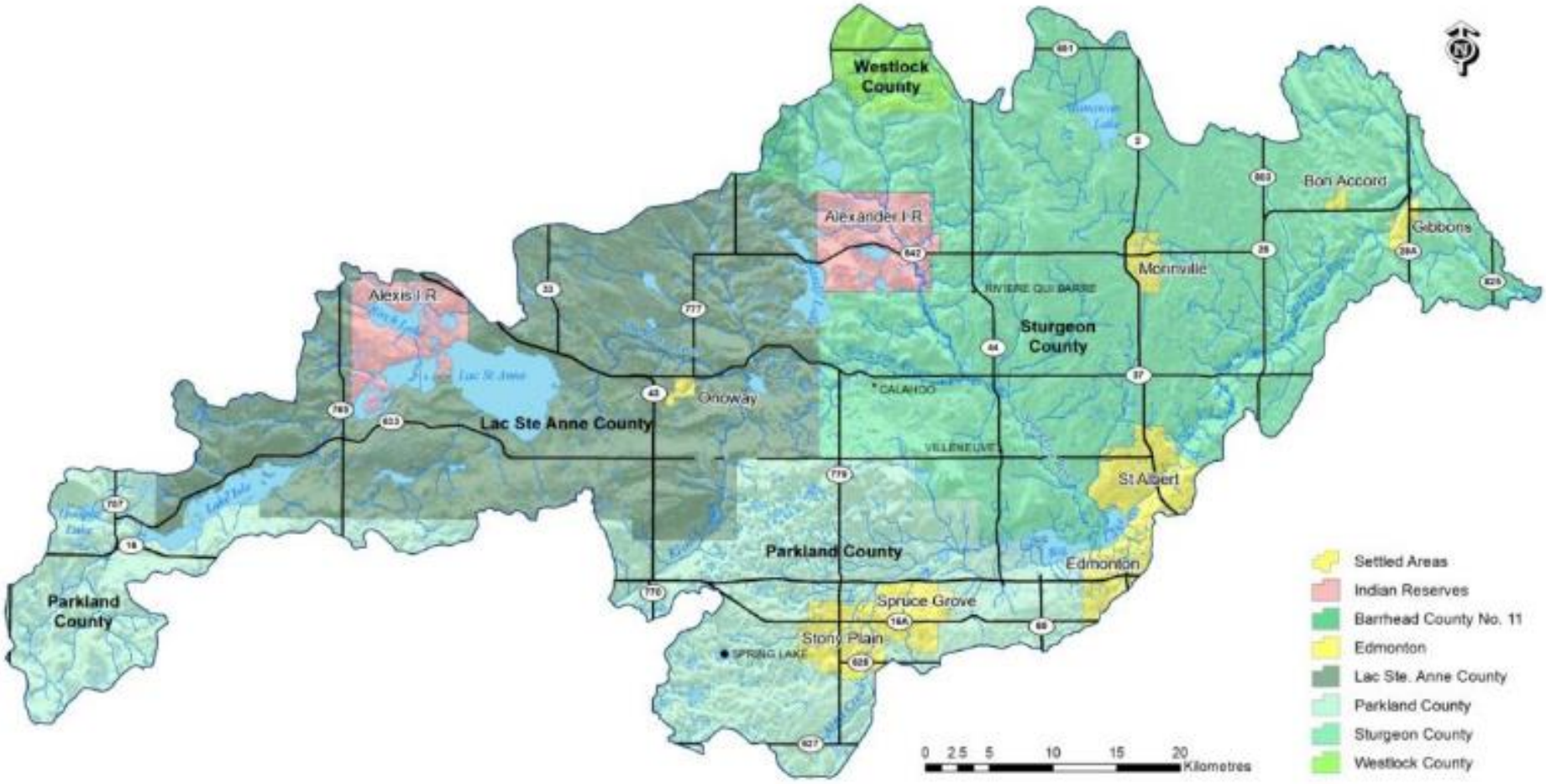
Outline

- Background
- Watershed Management Plan
- Priorities and Next Steps
- Current work & Relevance to LILSA

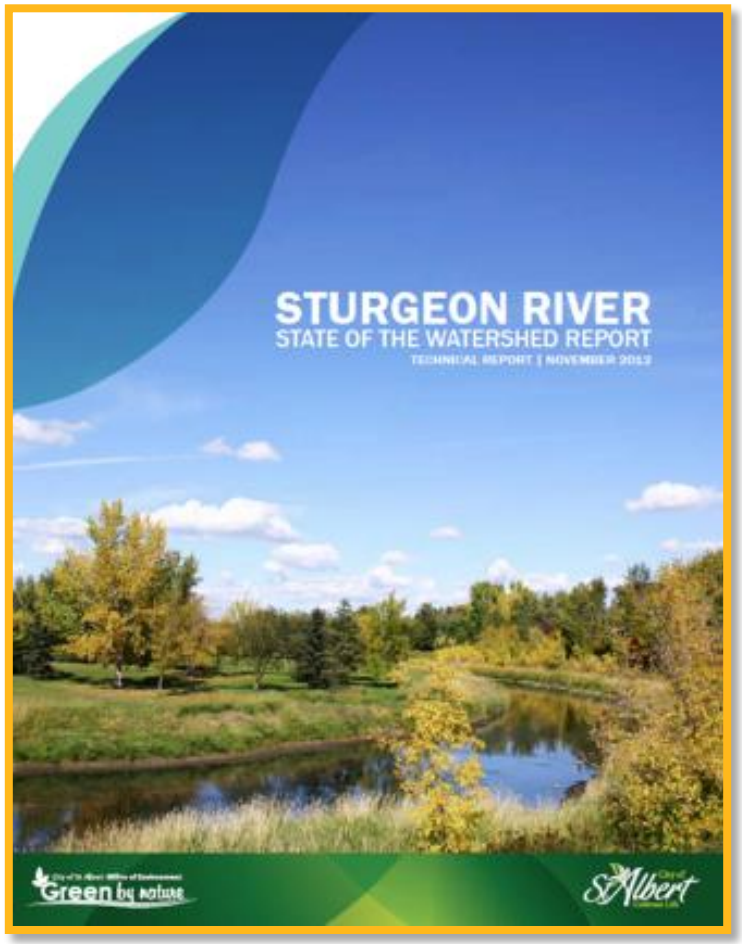
Sturgeon Subwatershed



Sturgeon River Watershed



State of Report



- Completed in 2012 by the City of St. Albert.
- Assessed overall ecological health using 15 indicators and gave an overall grade of ***FAIR.***
    - Establish a municipally led watershed group
    - Fill information gaps by completing technical studies
    - Develop an Integrated Watershed Management Plan

Sturgeon River Watershed Alliance

- Lac St. Anne County
- Parkland County
- Sturgeon County
- City of Edmonton
- City of Spruce Grove
- City of St. Albert
- Town of Gibbons
- Town of Morinville
- Town of Onoway
- Town of Stony Plain
- Village of Alberta Beach
- Summer Villages of Lac Ste. Anne & County East
- Alexander First Nation
- Alexis Nakota Sioux Nation
- Metis Nation of Alberta
- *Alberta Conservation Association*
- *Alberta Environment and Parks*
- *Big Lake Environmental Support Society*
- ***Lake Isle/Lac Ste Anne WQM Society***
- *Wagner Natural Area Society*

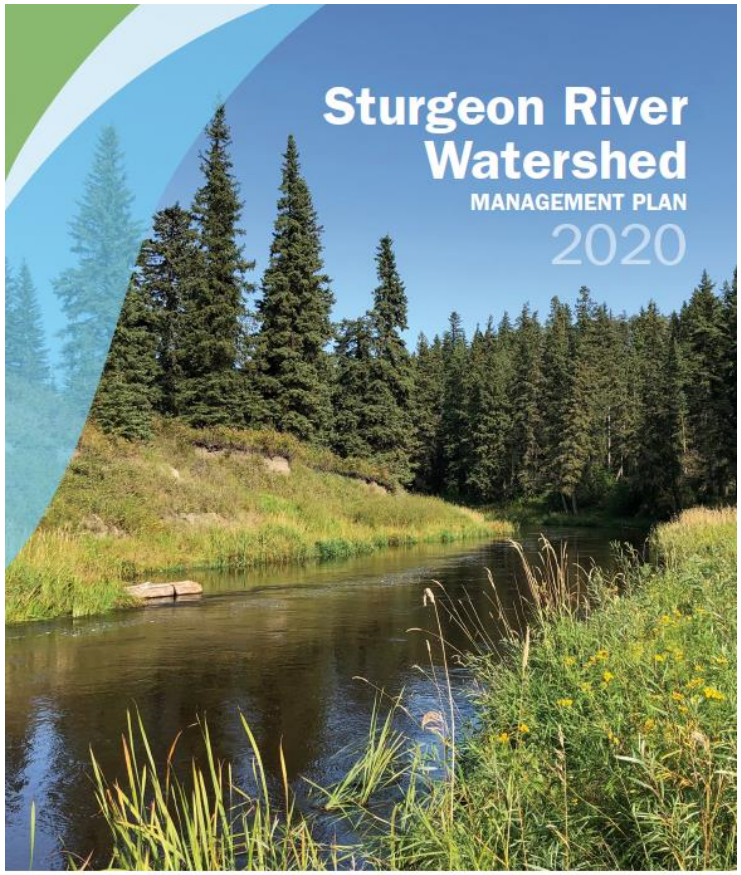
Information Gaps

- Water Quantity
- Groundwater
- Water Quality
- Aquatic Health
- Riparian Areas
- Land Planning Tools

Challenges

- Rapid urban/country residential expansion
- Agricultural intensification
- Increase in stormwater runoff and pollution
- Loss of natural areas, wetlands, riparian intactness
- Fluctuating water levels
- High nutrient inputs / poor water quality
- Blue-green algae, fish kills, invasive species (flowering rush)

Watershed Management Plan



- ✓Watershed approach
- ✓Clear goals and performance measures
- ✓Voluntary alignment of policies and plans
- ✓Coordinates intermunicipal collaboration
- ✓Promotes local and regional stewardship
- ✓Encourages work to address knowledge gaps

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NORTH SASKATCHEWAN WATERSHED ALLIANCE

SRWA

Six Outcomes

1. Aligned Policies and Plans
2. Safe, Secure Drinking Water Supplies
3. Healthy Aquatic Ecosystems
4. Reliable Water Supplies
5. Wise Land Use
6. Local and Regional Initiatives

Aligned Policies and Plans

1. Well informed decision-making leads to aligned *policies and plans*, which in turn ensures a healthy watershed.

Goals:

- Policies, plans and management actions are aligned
- Decision making is based on best available knowledge

Key Actions:

- Riparian & Wetland Strategy including policies and tools
- Build on existing water quality monitoring programs

Safe, Secure Drinking Water

2. All residents have access to *safe, secure drinking water* supplies, whether they are on public or private systems that draw from surface or groundwater.

Goals:

- Residents have access to safe, secure drinking water
- Groundwater is understood and managed sustainably

Key Actions:

- Encourage governments to identify issues and enhance programs
- Educate planning staff on potential GW risks

Healthy Aquatic Ecosystems

3. *Aquatic ecosystems*, including our rivers, lakes, wetlands and other waterbodies, are healthy.

Goals:

- Water quality is improved
- Aquatic ecosystems are healthy
- Develop and implement wetland and riparian area strategies
- Lakes and their watersheds are recognized as highly valued, limited resources and managed such that they are healthy for current and future generations

Healthy Aquatic Ecosystems

Key Actions:

- Develop wetland, riparian and flood plain goals and targets
- Conserve priority fish habitat for key species

Reliable Water Supplies

4. Reliable, quality *water supplies* are available for a sustainable economy.

Goals:

- Water supply is managed effectively to support aquatic ecosystems, communities and the economy

Key Actions:

- Compare existing data to instream flow needs
- Explore models to determine current and future water needs
- Identify and promote beneficial management practices to promote water conservation

Wise Land Use

5. *Wise land use* ensures the cumulative effects of growth and development are mitigated for, the land is resilient to climate change, and individuals and communities are well prepared for flood and drought events.

Goals:

- The cumulative effects of land use are understood and considered in decision making
- The effects of climate change are understood and mitigated

Wise Land Use

Key Actions:

- Promote LEED standards and low impact development
- Support programs such as ALUS Canada, Green Acreage program and Environmental Farm Plans

Local and Regional Initiatives

6. Residents and stakeholders support the Sturgeon Watershed Management Plan and are willing to participate in *local and regional initiatives* to improve watershed health.

Goals:

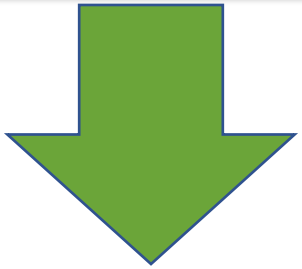
- Residents are engaged through education, outreach and stewardship opportunities
- The SRWA is representative, well-attended and effective at using a collaborative approach to implement the SRWMP.

Local and Regional Initiatives

Key Actions:

- Provide support to local NGOs and stewardship actions
- Provide support to Steering and Technical committees
- Develop a workplan and budget and apply for grants

Watershed Management Plan Implementation



- ✓Watershed Management Plan outlines outcomes to be addressed over 10 year timeframe
- ✓Work will be prioritized by Steering and Technical Committees based on importance and timeliness of actions and resource availability.

Alberta Community Partnership grant of $200,000 (2020 – 2023) will address priority short term actions

Priorities and Next Steps 2021 - 2023

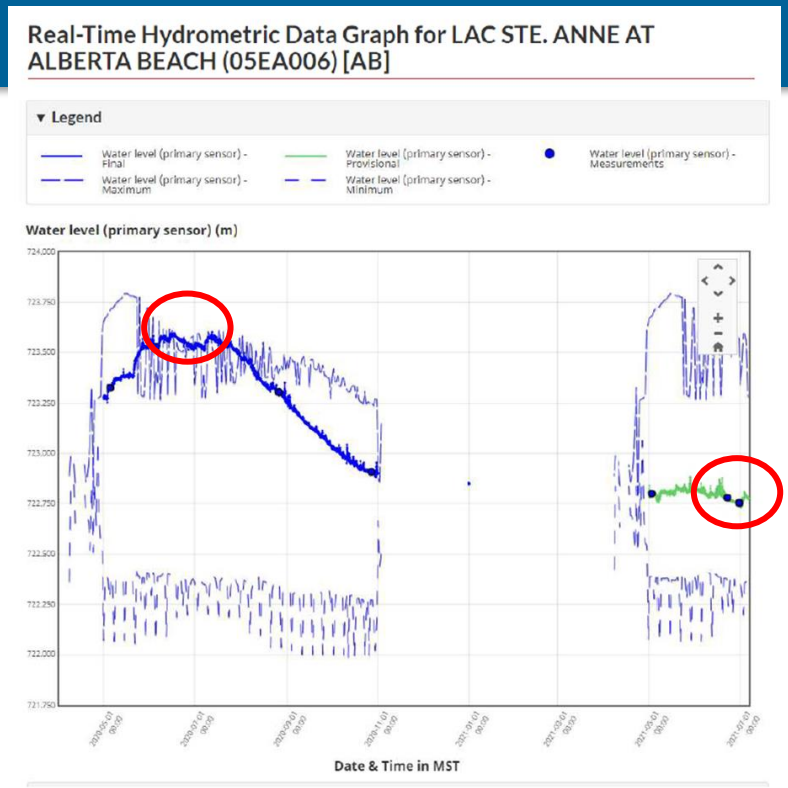
- Riparian and Wetland Conservation and Restoration Strategies
- Water Quality/Aquatic Ecosystem Monitoring Program
- Watershed Planning Alignment and Tools (flood risk areas, riparian setbacks, environmentally sensitive areas, overlay maps)
- Communications and Engagement (Educational forums, workshops, information resources)

Current Work

Water Quantity

2021 Water Levels

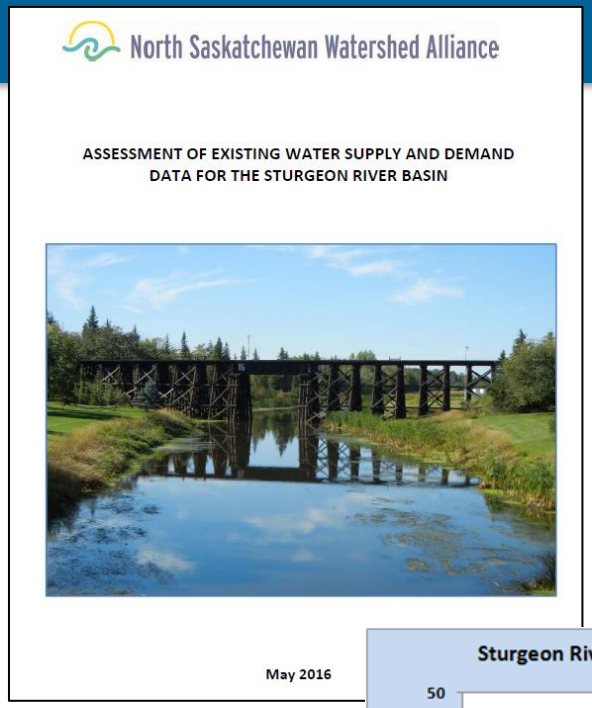
- *Significant variability between 2020 and 2021*
- 2020: good snow cover and wet summer had waters levels higher than normal
- 2021: Lack of snow and dry spring have water levels lower than normal



Ilse Lake and Lac Ste. Anne

- 0.75 metre lower than last spring
- Still not at minimum levels recorded
- Wide variability perceptions

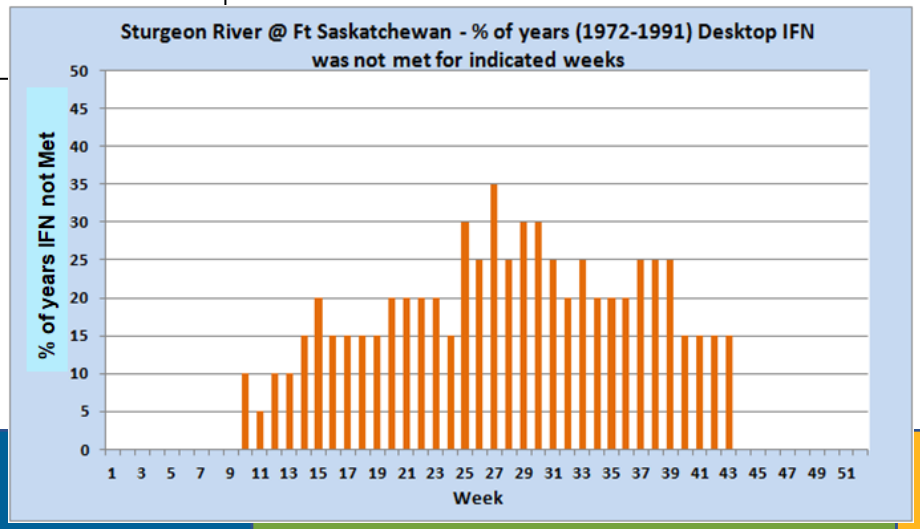
Water Quantity



Desktop Instream Flow Needs:

- Not met in up to 35% of years,
- Most significant in weeks 25-30 (June-July)

Goal 4.1 *Water Supply is managed efficiently to support aquatic ecosystems, communities and the economy*



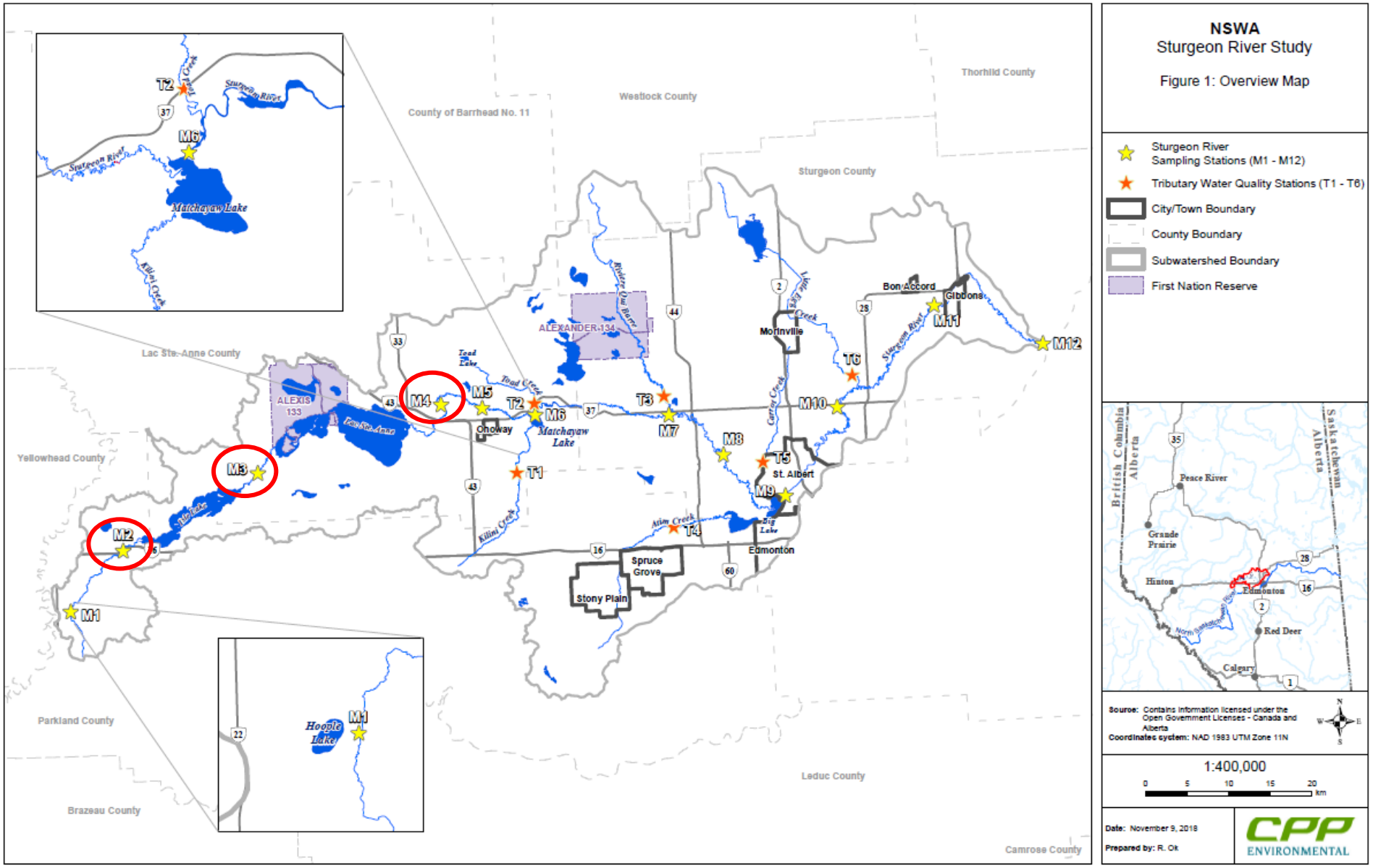
Action Plan:

- *Establish mainstem water quantity working group (AEP, SRWA, Technical support)*

Water Quality Monitoring

Sturgeon River WQ Monitoring

- Tetra Tech Consulting
- 12 sites (8 Sturgeon and 4 Tributaries)
- 3 sampling events/year
- High flow (spring), summer storm and low flow (late summer/fall)
- Nutrients, salts, sediment, oxygen



NSWA
Sturgeon River Study

Figure 1: Overview Map

- Sturgeon River Sampling Stations (M1 - M12)
- Tributary Water Quality Stations (T1 - T6)
- City/Town Boundary
- County Boundary
- Subwatershed Boundary
- First Nation Reserve

Source: Contains information licensed under the Open Government Licenses - Canada and Alberta
Coordinates system: NAD 1983 UTM Zone 11N

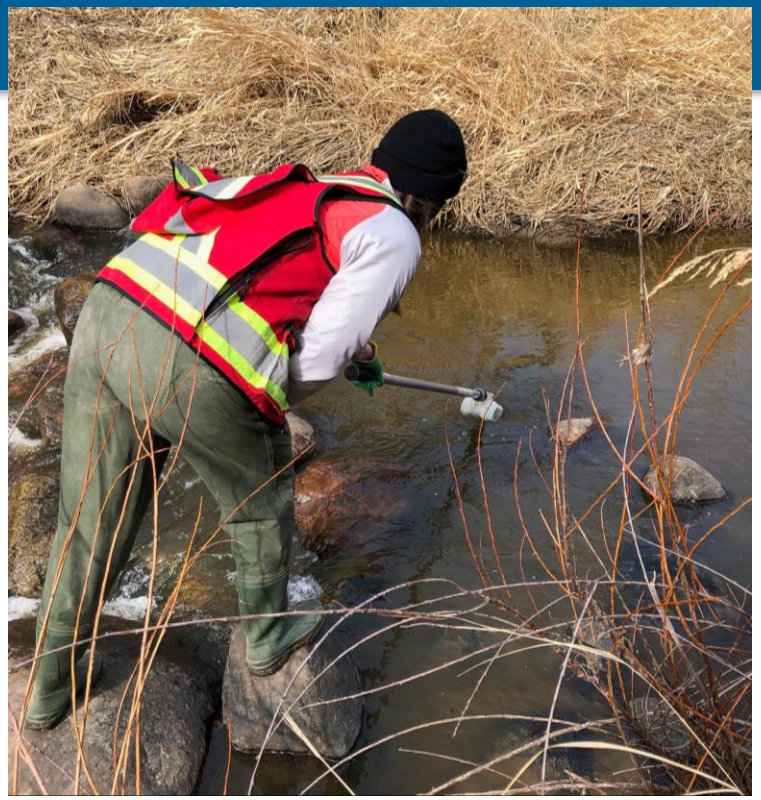
1:400,000

0 5 10 15 20 km

Date: November 9, 2018
Prepared by: R. Ok

CPP ENVIRONMENTAL

Water Quality Monitoring

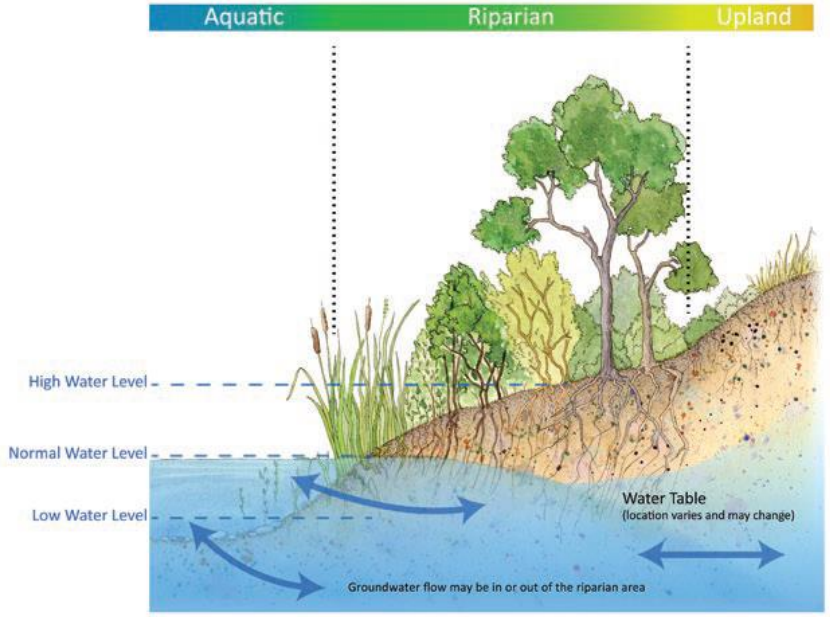


First Sample Event

- Spring sampling April 8th
- Preliminary findings:
  - TSS and Turbidity exceedances
  - Some high nutrient and salts values but no exceedances
  - Good dissolved oxygen values

Developing a Riparian Strategy

Why are riparian areas important?



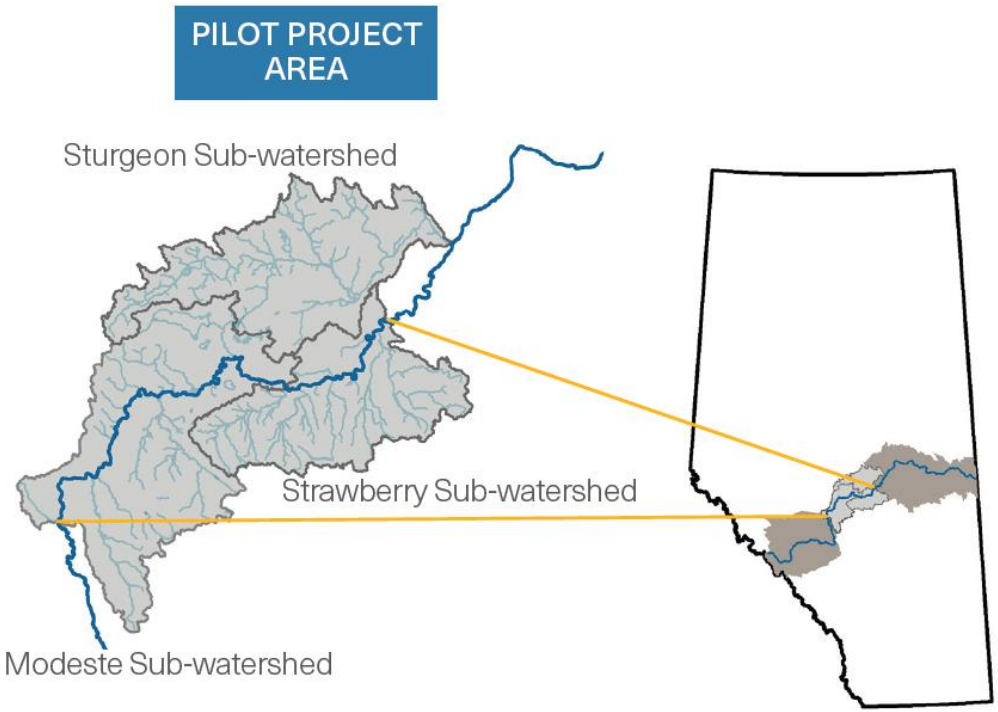
Ecosystem services provided by riparian habitats:

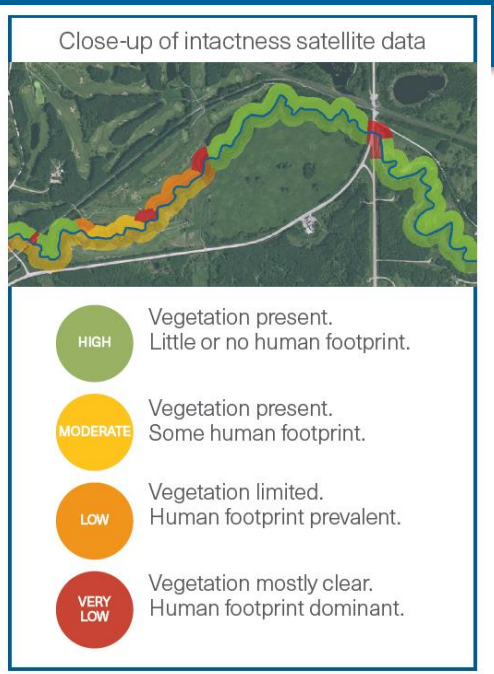
- Recharge aquifers
- Filter water and increase water quality
- Trap and retain sediment
- Build and maintain streambanks
- Store flood water and reduce flood water energy
- Reduce and dissipate stream energy
- Maintain biodiversity
- Create primary productivity

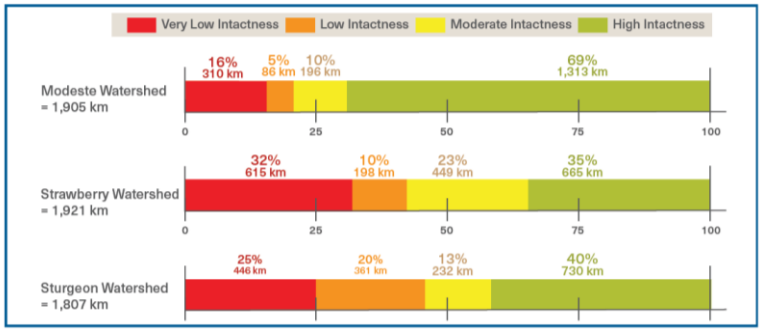
Developing a Riparian Strategy

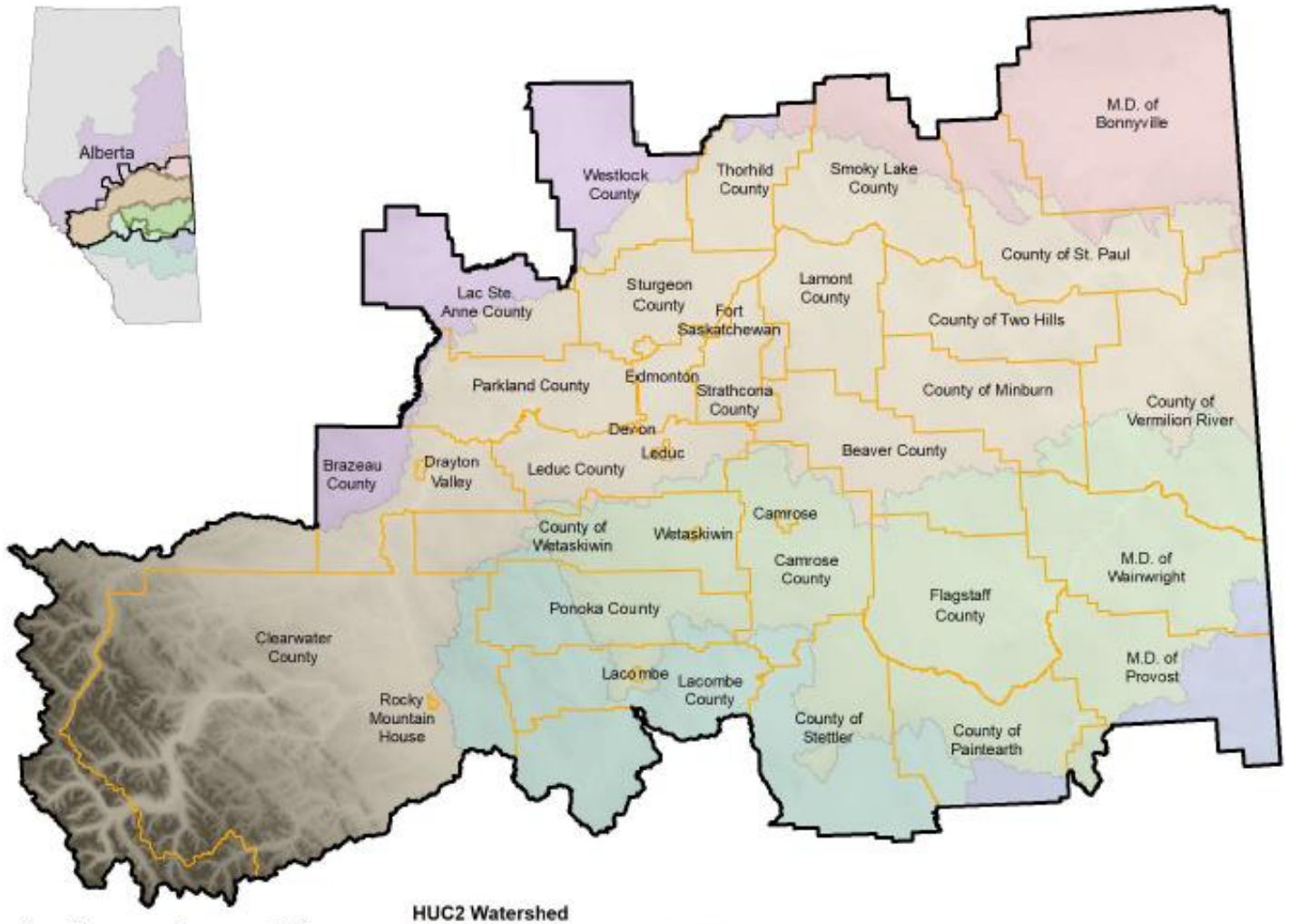
1. Increase public awareness via education and outreach
2. Provide greater support to private land stewardship initiatives
3. Facilitate policy alignment & integrated water and land use planning
4. Where needed, advocate for restoration efforts on crown lands
5. Promote research and knowledge building

Intactness Pilot Project








Alberta
Westlock County
Thorhild County
Smoky Lake County
M.D. of Bonnyville
County of St. Paul
Lac Ste Anne County
Sturgeon County
Fort Saskatchewan
Lamont County
County of Two Hills
Parkland County
Edmonton
Strathcona County
County of Minburn
County of Vermilion River
Devon
Leduc
Beaver County
Brazeau County
Drayton Valley
Leduc County
Camrose
County of Wetaskiwin
Wetaskiwin
Camrose County
M.D. of Wainwright
Ponoka County
Flagstaff County
Clearwater County
Lacombe
Lacombe County
M.D. of Provost
Rocky Mountain House
County of Stettler
County of Paintearth
0 20 40 80 120 KM
Base Map Data provided by Government of Alberta under the Open Government Licence – Alberta. LiDAR Data provided by Airbourne Imaging, Northwest Geomatics Ltd., and AltaLIS Ltd.
HUC2 Watershed
Athabasca River Basin
Battle River
Beaver River
North Saskatchewan River
Red Deer River
Sounding Creek
Study Area Extent
Municipal Boundaries

Sub-watershed Targets

Sturgeon sub-basin:

Objective: *Conserve high quality riparian habitat in the Sturgeon Sub-watershed. Habitats identified as High Conservation Potential will be conserved first.*

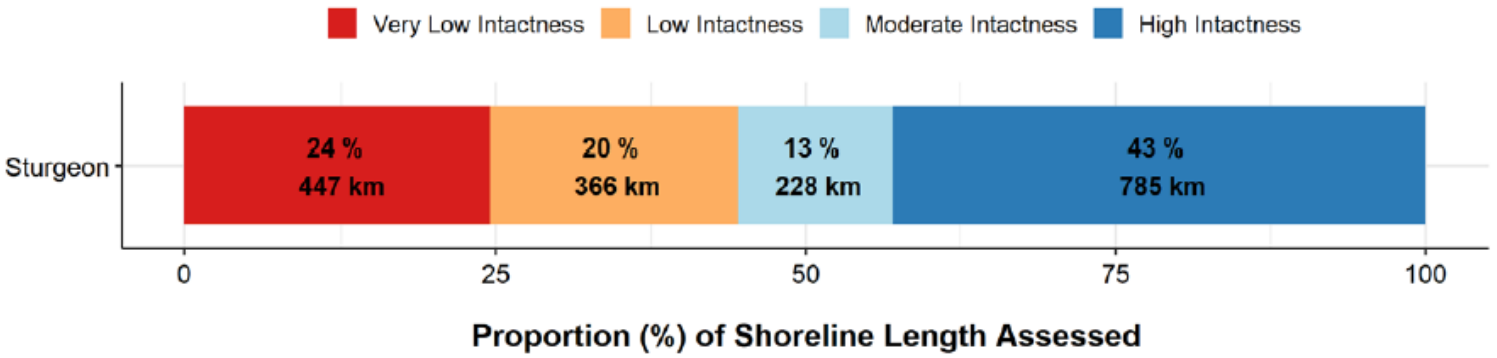
Measure: *Conserve existing (43%) high-quality riparian habitat.*

Target: 65% of high-quality riparian habitat is achieved

Objective: *Restore riparian habitats that have been impacted or impaired in the Sturgeon Sub-Watershed. Habitats identified as High Restoration Potential will be restored first.*

Measure: *Restore 22% of riparian habitats that have been impacted.*

Target: 65% of high-quality riparian habitat is achieved



Municipal Report Cards

What is Intactness?

- Intactness is a measure of riparian condition at a broad scale (watershed or region)
- Measures how natural habitat has been altered or impaired by human activity
- Measures the quantity of natural, woody, and human footprint using satellite data

Intactness Results for LSA County

1,736 KM of shorelines assessed in Wetaskiwin County

13/29 lakes had 65%+ High Intactness

19/43 creeks had 65%+ High Intactness

Intactness Ratings

- Vegetation mostly cleared. Human footprint dominant.
- Vegetation limited. Human footprint prevalent.
- Vegetation present. Some human footprint.
- Vegetation present. Little or no human footprint.

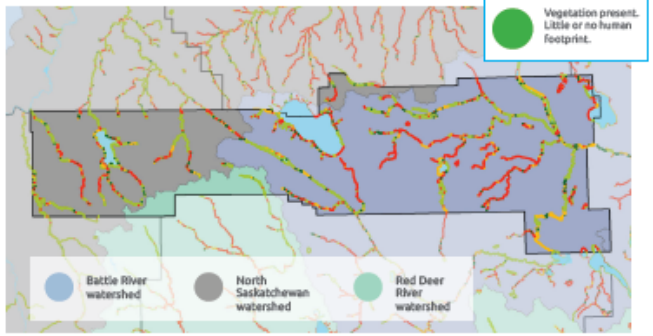


Figure 1: Map of Riparian Intactness in the municipality. To view more data, please see the attached Appendix.

LSA County Overall Intactness

23%	8%	18%	51%
Very Low	Low	Moderate	High

What is Catchment Pressure?

- Indicates pressures on the landscape that might impact riparian health
- Includes natural stressors (e.g., slope, forests) and human stressors (e.g., land-use intensity)
- High pressure=high stress for riparian areas. Data was collected to inform prioritization dataset

Catchment Pressure Results for LSA County

1,736 KM² area of land assessed

38% of area which is low pressure

28 # of catchment areas in the municipality

Pressure Ratings

- High Pressure
- Moderate Pressure
- Low Pressure

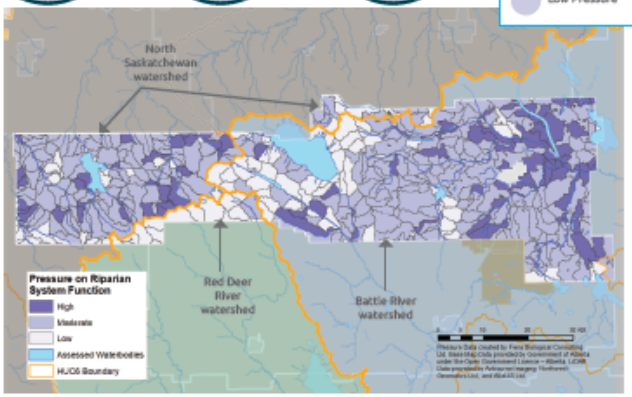


Figure 1: Map of Catchment Pressure in the municipality. To view more data, please see the attached Appendix.

LSA County Overall Pressure

19%	64%	17%
High	Moderate	Low

Municipal Report Cards

What is Prioritization?

- Combines intactness scores and pressure scores to highlight which riparian areas are most affected by landscape pressures
- Conservation rating are prioritized where riparian intactness is high and landscape pressures are low
- Restoration rating are prioritized where riparian intactness is low and landscape pressures are high

Prioritization Results for LSA County

1,736 KM of shorelines assessed in Wetaskiwin County

320 KM high restoration priority

444 KM high conservation priority

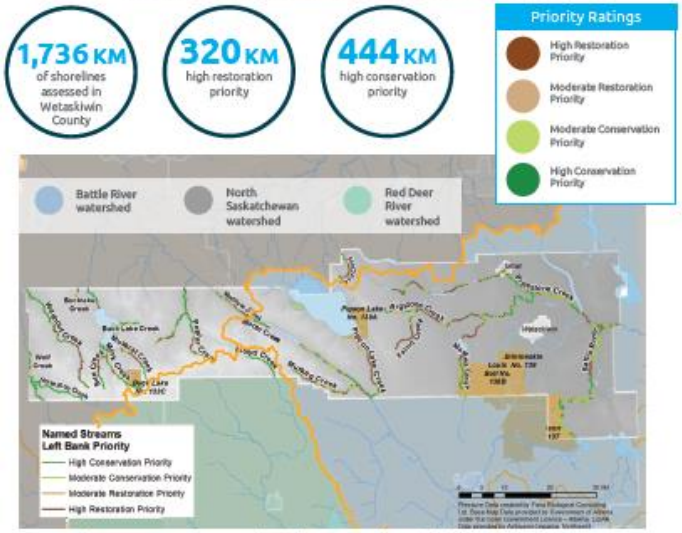


Figure 1: Map of Restoration and Conservation Priorities in the municipality.
To view more data, please see the attached Appendix.

LSA County Overall Prioritization

40%	18%	10%	32%
High Restoration	Moderate Restoration	Moderate Conservation	High Conservation

LSA's Top 4 Conservation & Restoration Priorities

Restoration

- Lake: Myriad Lake
- Unnamed Lake: UL-090101-04
- Named Creek: Pigeon Lake Creek
- Unnamed Creek: Falun Creek 01

Conservation

- Lake: Long Lake
- Unnamed Lake: UL-090101-05
- Named Creek: Lloyd Creek
- Unnamed Creek: Maskwa Creek 01

Conservation & Restoration Priorities: Within a watershed context

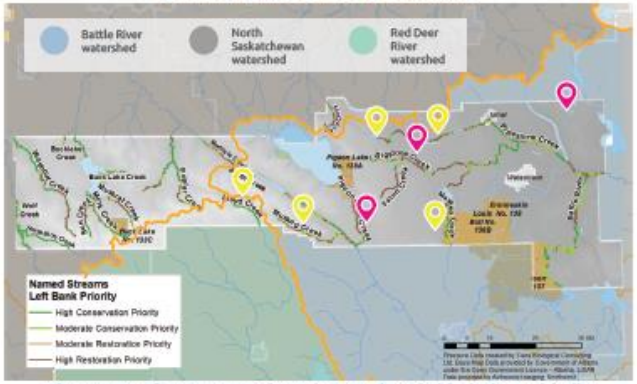


Figure 4: Map of top 3 Conservation and Restoration Priorities in the municipality.

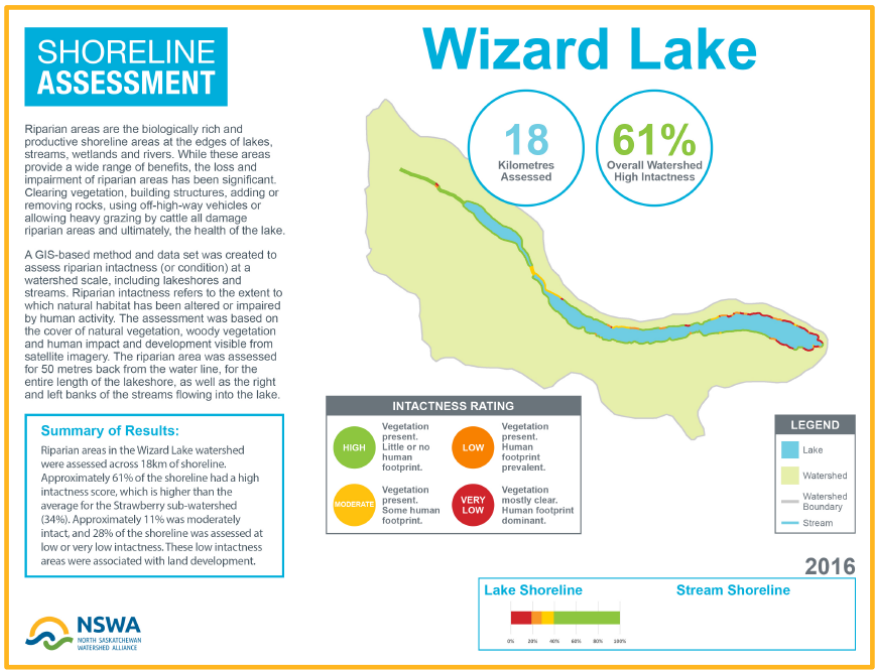
To view more data, please see the *Appendix.*

Next steps to conserve or restore impacted or impaired riparian habitats:

1. Use priority maps to direct conservation and restoration efforts
2. Develop policies at the municipal level for land management
3. Provide incentives for private landowners to restore degraded riparian habitats
4. Restore and conserve riparian habitats through municipal reserves, land trusts and/or conservation groups

See the Appendix for a comprehensive list of priorities. To find out more about riparian condition data and resources, go to: riparian.info

Waterbody Report Card



SHORELINE ASSESSMENT

Riparian areas are the biologically rich and productive shoreline areas at the edges of lakes, streams, wetlands and rivers. While these areas provide a wide range of benefits, the loss and impairment of riparian areas has been significant. Clearing vegetation, building structures, adding or removing rocks, using off-high-way vehicles or allowing heavy grazing by cattle all damage riparian areas and ultimately, the health of the lake.

A GIS-based method and data set was created to assess riparian intactness (or condition) at a watershed scale, including lakeshores and streams. Riparian intactness refers to the extent to which natural habitat has been altered or impaired by human activity. The assessment was based on the cover of natural vegetation, woody vegetation and human impact and development visible from satellite imagery. The riparian area was assessed for 50 metres back from the water line, for the entire length of the lakeshore, as well as the right and left banks of the streams flowing into the lake.

Summary of Results:

Riparian areas in the Wizard Lake watershed were assessed across 18km of shoreline. Approximately 61% of the shoreline had a high intactness score, which is higher than the average for the Strawberry sub-watershed (34%). Approximately 11% was moderately intact, and 28% of the shoreline was assessed at low or very low intactness. These low intactness areas were associated with land development.

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Wizard Lake

18 Kilometres Assessed

61% Overall Watershed High Intactness

INTACTNESS RATING

- HIGH: Vegetation present. Little or no human footprint.
- LOW: Vegetation present. Human footprint prevalent.
- MODERATE: Vegetation present. Some human footprint.
- VERY LOW: Vegetation mostly clear. Human footprint dominant.

LEGEND

- Lake
- Watershed
- Watershed Boundary
- Stream

2016

Lake Shoreline | Stream Shoreline

Why are riparian areas important?

- **IMPROVE WATER QUALITY** by trapping sediments, filtering nutrients and pollutants, reducing enrichment that leads to increased aquatic plant and algal growth;
- **MITIGATE FLOODS AND DROUGHTS** by storing and slowing the release of water and reducing erosion;
- **IMPROVE BIODIVERSITY** by providing fish and wildlife habitat and cooling water temperatures;
- **PROVIDE AESTHETICALLY PLEASING AREAS** for recreation or cultural activities; and
- **ADD LOCAL ECONOMIC VALUE** by increasing property values or providing areas for nature viewing.

Where is a riparian area?

How can you improve the health of your riparian area?

- Leave your shoreline natural—don't remove any plants, grasses or aquatic vegetation as they all play an important role in keeping your lake healthy.
- If your shoreline has been cleared of vegetation, replant with native plants as much as possible and watch for invasive species. Report as appropriate.
- Learn more about the health of your riparian area
- For larger areas, create a management plan to improve the intactness of the riparian area over time
- More resources are available at alberta.ca search "riparian"

Strategy 2. Provide greater support to private land stewardship initiatives

- Action 2.1. Encourage more recreational lake property owners to restore their shorelines by promoting and getting more capacity to lake groups and lake programs (e.g. Living by Water, WWMC, LILSA) to in turn…

- Action 2.2. Get more agricultural private land owners doing on-the-ground restoration projects by collaborating with existing initiatives to build capacity to expand into areas where projects are currently absent.

- Action 2.3. Highlight areas needing work and work that has been done

Web-portal

Three key purposes:

- Riparian data access x2
- Resources
- Projects on the ground

RIPARIAN WEB PORTAL TRAINING

Planners and Project Managers in government, agriculture, & ENGO;
Get the background and skills you need to use the data and
contribute your riparian projects to this exciting new resource.

101: Dive into the Riparian Data: Our Intactness Project

Wed. June 16, 1:30pm
Tues. July 13, 1:30pm
Thurs. Sept. 9, 10:00am

102: Where Data Meets Action: Riparian Web Portal

Mon. June 21, 1:30pm
Thurs. Sept. 9, 1:30pm

All Workshops are offered at no cost, via Zoom.
Attendees must complete the 101 workshop before 102.

Register at battleriverwatershed.eventbrite.com

Thank You!

Why "municipally-led"?

- Under the revised (2019) *Municipal Government Act*, the purpose of a municipality includes *"to foster the well-being of the environment".*
- Additionally, as per Section 60(1): *"subject to any other enactment, a municipality has the direction, control and management of the bodies of water within the municipality, including the air space above and the ground below"*.
- Municipalities are land use managers, using legislated planning processes to make decisions daily that impact watersheds.
- Boots on the ground who know their backyards well.

Information Gaps

- SRWA partnership secured over $500,000 in grants
- NSWA coordinated grants and consultants for 8 technical studies and 3 technical bulletins
- Municipal staff vetted reports and their implications
- All reports available on www.nswa.ab.ca