Sturgeon County Environmentally Significant Areas Technical Report - Update

Final Report

Prepared for:

Sturgeon County

Open Spaces, Community Services

Project Number EP-1034

April 2024

Prepared by:

SPENCER ENVIRONMENTAL MANAGEMENT SERVICES LTD.

Edmonton, Alberta

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Sturgeon County
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09 April 2024
EP-1034

Dear Ms. Drabik,

Re: Sturgeon County Environmentally Significant Areas Technical Report – Update Final Report

We are pleased to submit the above-noted report to the County. We trust that it will serve as a useful resource and as a springboard for other conservation and planning initiatives. It has been a pleasure working with the County and we thank you and other County personnel for assistance, guidance and resources provided along the way.

Sincerely,

Spencer Environmental
Management Services Ltd.

Lynn Maslen, M.Sc. P.Biol.
President

This report was prepared by the following Spencer Environmental personnel: Teresa Chung, MGIS, GISP; Andrew Forrest, M.Sc. P. Biol.; Stephanie Jean, M.Sc. P. Biol.; Lynn Maslen, M.Sc. P. Biol.

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1.0 INTRODUCTION

1.1 Background

Sturgeon County (the County), located in central Alberta and a participating municipality of the Edmonton Metropolitan Region Board (Figure 1.1), has a population of 20,061 (Statistics Canada 2021) and is experiencing growth. The County's Municipal Development Plan (MDP; 2014) recognizes that with increased growth pressures, careful consideration of natural resources, ecosystem health and potential development impacts on the County's most valued natural features is required. An accurate inventory of the most valued natural features is central to success in that regard. The last County-wide inventory of natural areas, then identified as Environmentally Sensitive Areas (ESAs), was completed 34 years ago (InfoTech Services and Associates 1989). That inventory and associated technical report has served the County well as an essential planning tool. However, the County has identified a need for a more current inventory using more contemporary methods that reflects existing conditions, current societal values and supports the County's environmental priorities. The updated inventory is intended to provide scientifically defensible results that can be integrated into land use decisions, serve as a technical document supporting the upcoming MDP review, and generally support the County's pursuit of excellence in environmental stewardship. In 2022, the County retained Spencer Environmental Management Services Ltd. to review and update the 1989 inventory and ESA technical report.

1.2 Study Purpose

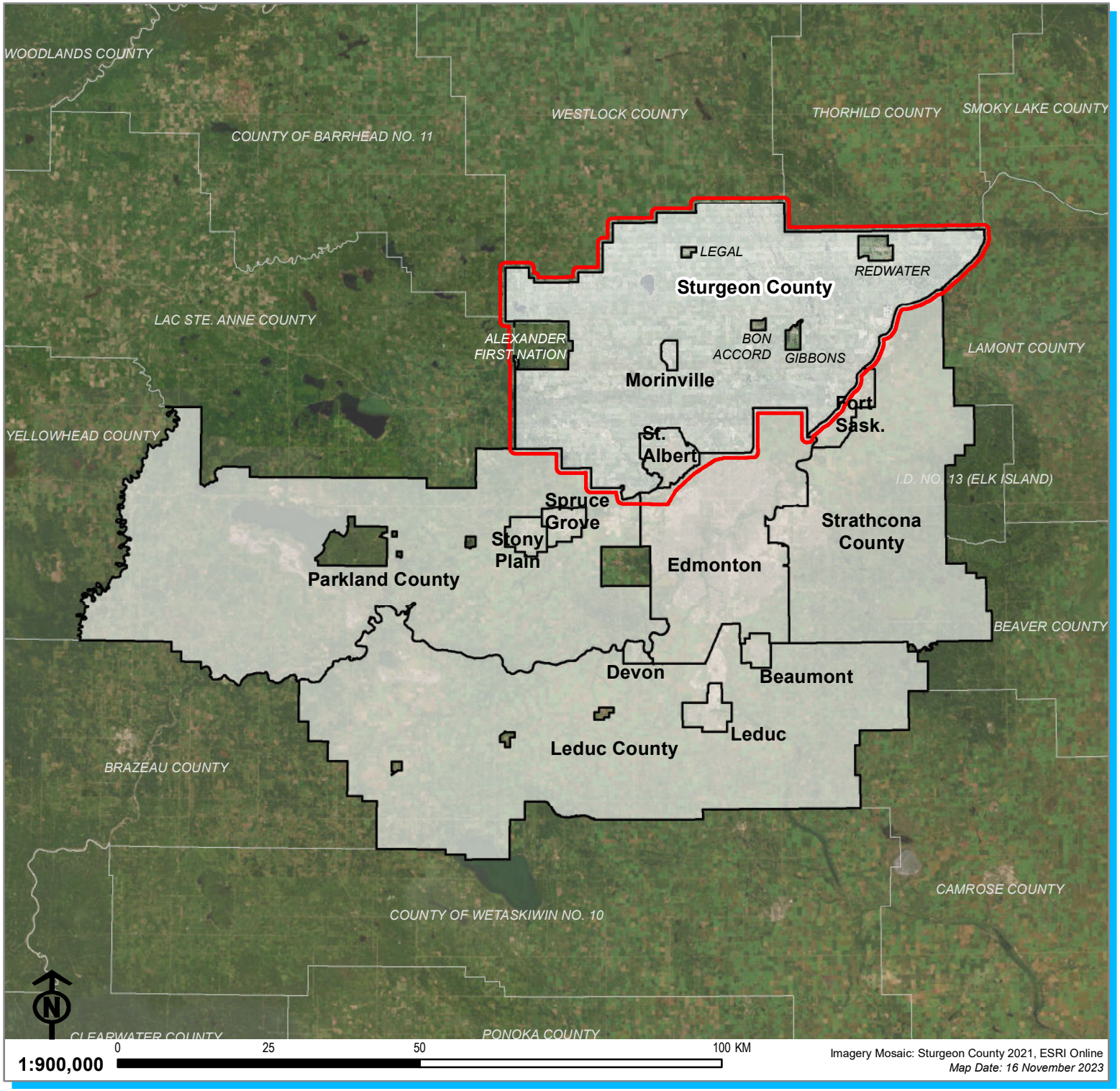
The primary purpose of the inventory update (the study), as described by the County, was to identify, inventory and assess natural areas and ecosystem components of environmental importance. Study results are to assist the County in appropriately managing ESAs and mitigating potential impacts of future development.

The study scope of work was described as:

- conduct a County-wide review of ecological systems and update the 1989 ESA Technical Report to review all public land as well as privately held lands that may qualify as Environmental Reserve, Conservation Reserve, or be candidates for conservation easements
- identify, inventory, and assess natural areas, and ecosystem components of environmental importance, across Sturgeon County
- review and assess land use planning considerations for ESA management at the local, regional, and provincial levels

The County recognizes that a County-wide inventory will necessarily consider lands under public and private ownership and that identification of ESAs does not dictate management or conservation of those lands nor does it constrain landowner rights.

Figure 1.1.
Study Area Location
Sturgeon County
Environmentally Significant
Areas Update



Legend

- Study Area
- Edmonton Metropolitan Region Board (EMRB)

Imagery Mosaic: Sturgeon County 2021, ESRI Online
Map Date: 16 November 2023

Sturgeon COUNTY

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1.3 Study Area

For this exercise, the area of primary interest was Sturgeon County, which comprise approximately 2,126 km^2. Several extra-jurisdictional parcels are situated wholly within the county. These are: the towns of Morinville, Legal, Gibbons, Bon Accord and Redwater, and the 3rd Canadian Division Support Base Edmonton (Figure 1.1.) The study area included all of the above-named extra-jurisdictional lands, at the request of Sturgeon County, in recognition of the value of data sharing with neighbours. Further, to acknowledge and illustrate that natural features do not respect administrative boundaries, the study area also extended beyond the county limits to include a narrow, variable-width buffer extending into neighbouring jurisdictions and including the whole of Alexander First Nation (Indian Reserve #134). Extending ESA mapping slightly beyond the county limits facilitates inter-jurisdictional information exchange, supports compatible conservation efforts and promotes consistent land management at the landscape level. It is also essential to effective management of individual ESAs that span jurisdictional boundaries. Importantly, as the inventory results are used by interested parties, all ESA mapping can be refined (e.g., clipped using a geographic information system) and restricted to the county boundary to respect jurisdictional boundaries as required for future planning and administrative purposes. The study area buffer width ranged from a quarter section (800 m) to 11 km. The addition of the above-noted extra-jurisdictional and buffer lands increased the study area land base from 2,126 km^2 to 2,526 km^2.

Land use within the county is primarily agricultural, with rural residential, industrial, manufacturing and commercial uses also present to varying degrees. Several significant protected areas are present. Aerial imagery indicates that areas with the most intact natural cover are concentrated in the county's northeast quadrant, along the western boundary, and along larger watercourses. Several prominent water bodies either form or straddle a county boundary.

The following sections describing the study area focus on Sturgeon County lands, the area of primary interest to County administration.

1.3.1 Natural Subregion

Sturgeon County is located within the Central Parkland and Dry Mixedwood natural subregions, with the majority of the county located within the Central Parkland and the western margins and the northeast area located within the Dry Mixedwood natural subregion (Plate 1.1.).

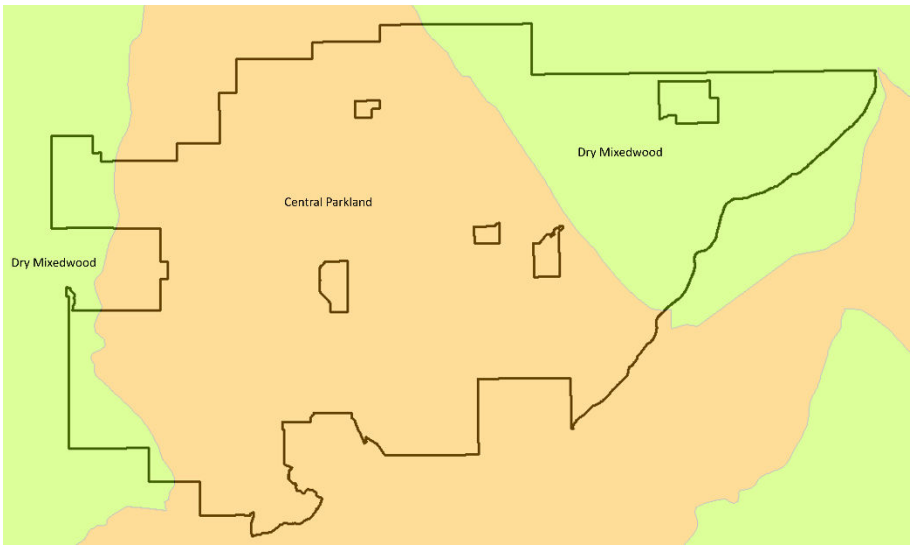


Plate 1.1. Natural Subregions of Sturgeon County; Central Parkland (orange) and Dry Mixedwood (green).

The Central Parkland Natural Subregion is intensively cultivated and heavily populated, with only about 5% of the subregion supporting native vegetation (Alberta Parks 2015), typically expressed as a mosaic of forest and grasslands. The two main Central Parkland forest types are trembling aspen on upland sites and balsam poplar on moister sites. Both are characterized by a dense, species-rich understorey. Native grassland vegetation, though uncommon, is characterized by plains rough fescue in most sites, with western porcupine grass important on south-facing slopes and on solonetzic soils. Shrub communities are more extensive in the northern portion of the subregion, which is where the County is situated, often extending outward from forest communities and often comprising buckbrush, wild rose, chokecherry, pin cherry, saskatoon and silverberry. Many small, open water bodies are scattered throughout the Central Parkland, covering approximately 2% of the area. In addition, wetlands, typically marshes, shrubby swamps and seasonal ponds cover approximately 10% of the subregion (Alberta Parks 2015). The above description is generally appropriate for the majority of remaining native vegetation in the central part of Sturgeon County.

The Dry Mixedwood Natural Subregion is defined by undulating plains, aspen-dominated forests and fens (Alberta Parks 2015). Within the central Alberta portion of the Dry Mixedwood, approximately 40-70% of the land has been cultivated and clearing is also common in the dry mixedwood areas of Sturgeon County. Native dry mixedwood vegetation consists of aspen forests with a shrub layer of rose, beaked hazelnut and low-bush cranberry, balsam poplar forests with a shrub layer of red-osier dogwood in moist areas, some white spruce forests, and jack pine forests present on dry, sandy sites with an understorey of blueberry and lichens. Water covers approximately 3% of the Dry Mixedwood. In addition, approximately 15% of the subregion is wetland, of which 10% are peatlands (Alberta Parks 2015). The above description of the Dry Mixedwood Natural Subregion is generally appropriate for the above-mapped northeast and western portions of Sturgeon County, which do support mixedwood forests, jack pine sites and fens.

1.3.2 Topography

Sturgeon County is characterized by high, flat plains and broad ravines (Sameng Inc. 2020). High areas are typically very flat, varying only a few meters over several kilometers. Ravines drop 30 m to 50 m from these flat areas into broad riparian zones and floodplains. At the Town of Gibbons, a sharp bend in the Sturgeon River marks a geologic divide. A ravine extends from the point of the river bend northwest and meets with the Redwater River. The plain west of this ravine sits approximately 50 m above the plain on the east side of the ravine (Sameng Inc. 2020).

1.3.3 Hydrology

Much of Sturgeon County is located within the North Saskatchewan River Watershed, which drains approximately 80,000 km^2 (12%) of Alberta's landmass (North Saskatchewan Watershed Alliance 2005). The watershed originates at the Saskatchewan Glacier in the Columbia Icefields of Banff National Park and flows over 1,000 km across Alberta to the Saskatchewan border. Water within the North Saskatchewan River eventually enters Hudson's Bay via the Nelson River. A small northwest corner of the county (<10km^2) drains into Barrhead County and the Athabasca River Watershed (Sameng Inc. 2020). The county can be separated into 21 smaller watersheds that share common characteristics and/or a single receiving water body (Sameng Inc. 2020). These watersheds are: Carrot Creek, Little Egg Creek, Redwater River, Heartland North, Bon Accord North, Excelsior, RR244, RR235 North, Fairy Dell Creek, Legal Drainage, River Qui Barre, Manawan Lake, TWP 55 Range 26, Sturgeon Industrial Park, Gibbons South, Heartland South, Lower Sturgeon, Redwater East, Sturgeon Valley + Namao, Upper Sturgeon and Villeneuve.

Four main watercourses are located within the county: the North Saskatchewan River, which comprises the county's eastern boundary, and three tributary watercourses - the namesake Sturgeon River, Redwater River and Riviere Qui Barre. There are a number of smaller watercourses within the county, both natural and modified.

Many lakes of different sizes are scattered throughout the county; only some are named. Larger lakes within the county include Big Lake, Sandy Lake, Manawan Lake, Deadman Lake, Gladu Lake and Lily Lake.

1.3.4 Geology/Surficial Geology

Bedrock geology within Sturgeon County is of the Horseshoe Canyon Formation, Bearpaw Formation and the Belly River Group (Prior et al. 2013):

> **Horseshoe Canyon Formation:** pale grey, fine- to very fine grained, feldspathic sandstone interbedded with siltstone, bentonitic mudstone, carbonaceous mudstone, concretionary sideritic layers, and laterally continuous coal seams; includes white, pedogenically altered sandstone and mudstone interval at top; nonmarine to locally marginal marine.
>
> **Bearpaw Formation:** dominantly dark grey to brown-grey mudstone with concretionary sideritic and bentonite concretionary layers; concretions locally yield ammonites; marine to marginal marine.

Belly River Group: fine- to coarse-grained sandstone; grey to brown carbonaceous siltstone; coal; marginal marine to nonmarine.

Surficial geology comprises glaciolacustrine deposits, ice-thrust moraine, moraine, stagnant ice moraine, fluvial deposits, colluvial deposits, eolian deposits and fluted moraine (Fenton et al. 2013):

Glaciolacustrine Deposits: Sediments deposited in or along the margins of glacial lakes; includes a) offshore sediment; rhythmically laminated to massive fine sand, silt, and clay, locally containing debris released by the melting of floating ice; and b) littoral (nearshore) sediments; massive to stratified, well-sorted silty sand, pebbly sand, and minor gravel; occurs in beaches, bars, and deltas.

Ice-Thrust Moraine: Material formed from the glaciotectonic displacement of blocks or rafts in a more or less intact state; may include syngenetic till and masses of pre-existing sediments and/or bedrock; characterized by high- to moderate relief glaciotectonic moraines; includes hill-hole pairs, rubble moraine, and thrust-block moraine.

Moraine: Diamicton (till) deposited directly by glacial ice with a mixture of clay, silt, and sand, as well as minor pebbles, cobbles, and boulders; characterized by a lack of distinctive topography. Locally, this unit may contain blocks of bedrock, stratified sediment, or lenses of glaciolacustrine and/or glaciofluvial sediment.

Stagnant Ice Moraine: Sediments resulting from the collapse and slumping of englacial and supraglacial debris due to the melting of buried stagnant ice at the glacier margin; sediment is mainly till but locally includes stratified glaciolacustrine or glaciofluvial sediments; characterized by low- to high-relief hummocky topography.

Fluvial Deposits: Sediments deposited by streams and rivers; synonymous with alluvium; includes poorly to well sorted, stratified to massive sand, gravel, silt, clay, and organic sediments occurring in channel and overbank deposits; in places, includes a significant component of colluvial deposits as these two units are inseparable at this map scale.

Colluvial Deposits: Sediments that have reached their present position as a result of direct, gravity-induced movement; commonly occurs as slope and slump deposits confined to valley sides and floors; includes bedrock and surficial materials; in places, includes a significant component of fluvial deposits, as these two units are inseparable at this map scale.

Eolian Deposits: Wind-deposited sediments comprising well-sorted, medium- to fine-grained sand and minor silt; generally massive to locally cross-bedded or ripple laminated; includes both active and vegetated dunes and sand sheets.

Fluted Moraine: Glacially streamlined sediments, mainly till; terrain varies from alternating furrows and ridges to elongated smoothed hills which parallel the inferred local ice-flow direction; includes flutes, drumlins, and drumlinoids.

1.3.5 Species of Conservation Concern

Plants/ACIMS

The Alberta Conservation Information Management System (ACIMS) (Alberta Environment and Protected Areas 2023a) contains records of 32 plant species (including both vascular and non-vascular plants) and one habitat type considered by the province to be of conservation concern, for lands in Sturgeon County (Table 1.1). ACIMS also holds records for two gastropods of conservation concern. None of the species recorded in the county are federally listed under the *Species At Risk Act*. This database is only representative of species that have been reported to the Province and, at the county scale, an absence of records should not be taken as an indication of an absence of species of conservation concern.

Table 1.1. ACIMS records of plant species, habitats and gastropods of conservation concern[1] within Sturgeon County.

Scientific Name	Common Name	Type	ACIMS Rank[2]
Bolboschoenus fluviatilis	river bulrush	Vascular Plant	S1
Corispermum pallasii	Pallas' bugseed	Vascular Plant	S2
Dichanthelium wilcoxianum	Wilcox's panicgrass	Vascular Plant	S2
Doellingeria umbellata var. pubens	flat-topped white aster	Vascular Plant	S3
Echinochloa muricata var. microstachya	rough barnyard grass	Vascular Plant	S1
Houstonia longifolia	long-leaved bluets	Vascular Plant	S3
Physostegia parviflora	false dragonhead	Vascular Plant	S1
Piptatherum canadense	Canada rice grass	Vascular Plant	S2
Viola pedatifida	crowfoot violet	Vascular Plant	S3
Conocephalum salebrosum	cat-tongue liverwort	Non-vascular Plant	S2S4
Dicranum ontariense	cushion moss	Non-vascular Plant	S1S2
Entodon concinnus	moss	Non-vascular Plant	S1S2
Entodon schleicheri	Schleicher's silk moss	Non-vascular Plant	S2S3
Haplocladium virginianum	moss	Non-vascular Plant	S1S2
Lepraria lobificans	fluffy dust lichen	Non-vascular Plant	S2
Leskea gracilescens	moss	Non-vascular Plant	S2
Leskea polycarpa	moss	Non-vascular Plant	S1
Limprichtia cossonii	moss	Non-vascular Plant	SU
Phaeophyscia cernohorskyi	shadow lichen	Non-vascular Plant	S2
Physcia dimidiata	rosette lichen	Non-vascular Plant	S2
Physcomitrium hookeri	bladder-cap moss	Non-vascular Plant	S2
Physcomitrium pyriforme	urn moss	Non-vascular Plant	S2
Physconia isidiigera	frost lichen	Non-vascular Plant	S2
Pseudocampylium radicale	campylium moss	Non-vascular Plant	S3
Ramalina farinacea	dotted ramalina	Non-vascular Plant	S3
Rhodobryum ontariense	Ontario Rhodobryum moss	Non-vascular Plant	S1S2
Riccia cavernosa	liverwort	Non-vascular Plant	S2S4
Riccia fluitans	liverwort	Non-vascular Plant	SU
Ricciocarpos natans	liverwort	Non-vascular Plant	SU

Scientific Name	Common Name	Type	ACIMS Rank[2]
Rinodina orculata	pepper-spore lichen	Non-vascular Plant	SU
Thuidium philibertii	moss	Non-vascular Plant	S1S2
Trichodon cylindricus var. cylindricus	narrow-fruited fork moss	Non-vascular Plant	S1
Populus balsamifera / Viburnum opulus / Matteuccia struthiopteris forest	balsam poplar / high-bush cranberry / ostrich fern forest	Habitat	S1S2
Ferrissia fragilis	Fragile Ancylid	Gastropod	SU
Ferrissia rivularis	Creeping Ancylid	Gastropod	SU

[1] considered to be species of conservation concern; [2] ACIMS Rank definitions are as follows: S5 = Secure, S4 = Apparently Secure, S3 = Known from 100 or fewer occurrences in the Province, S2 = Known from 20 or fewer occurrences in the Province, S1 = known for 5 or fewer occurrences in the province; SU = Taxon is currently unrankable due to lack of information or substantially conflicting information. ACIMS considers S1 and S2 to be rare species.

Wildlife/FWMIS

The Alberta Fish and Wildlife Management Information System (FWMIS) (Alberta Environment and Protected Areas 2023b) database holds records of 49 wildlife species considered to be of conservation concern for lands within Sturgeon County (Table 1.2). The FWMIS database includes only species that have been reported to Alberta Environment and Protected Areas (AEPA). Information for species in several areas throughout the County could be deficient due to lack of study and/or public access and/or reporting to AEPA. Sturgeon County also intersects with four FWMIS mapped wildlife sensitivity layers: Sharp-tailed Grouse Survey Area, Colonial Nest Buffer and Sensitive Raptor Range for bald eagle, and, for peregrine falcon (Plate 1.2). The Sharp-tailed Grouse survey layer has been developed for the purpose of informing industrial operators and government departments where lek surveys are recommended prior to undertaking activities (Alberta Environment and Parks 2013). Sharp-tailed Grouse require open spaces for displaying, and areas of open grassland and low shrubs for nesting and brood rearing. The Colonial Nest Buffer layer uses buffered known point locations of great blue heron and American white pelican nesting colonies. The purpose is to provide industrial operators and government departments information regarding the location of colonial nesting birds for the application of appropriate wildlife surveys (Alberta Environment and Parks 2010a). The one record for colonial nesting birds within Sturgeon County is for great blue heron. The sensitive raptor range for bald eagle has been delineated based on observations from relevant databases in Alberta. The sensitive raptor range for peregrine falcon has been derived from known nesting locations on natural features. The purpose of the sensitive raptor range layers is to provide industrial operators and government departments information regarding the location of sensitive raptor ranges for the application of appropriate wildlife surveys (Alberta Environment and Parks 2010b).

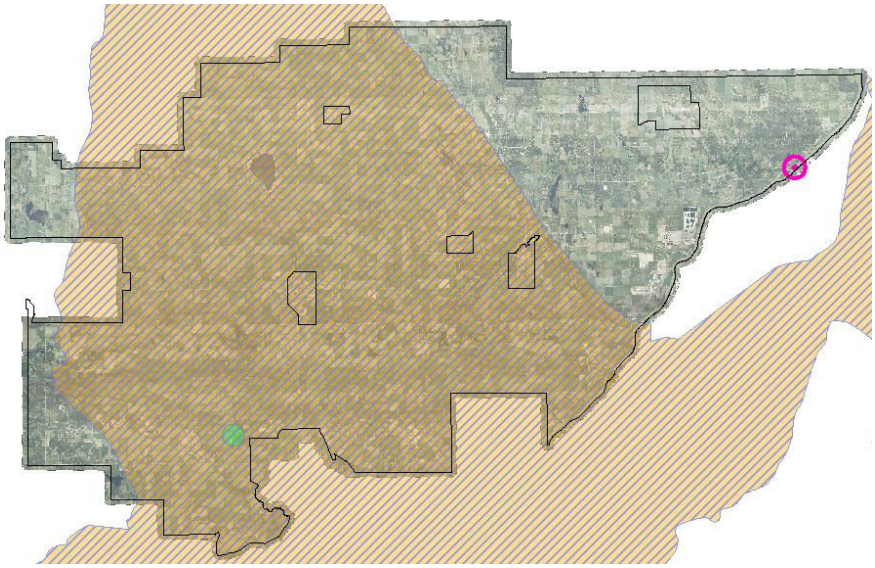


Plate 1.2. Wildlife Sensitivity layers within Sturgeon County: Sharp-tailed Grouse Survey Area (hatching), Colonial Nest Buffer (pink), Sensitive Raptor Range - bald eagle (brown/beige) and peregrine falcon (green).

FWMIS also maps some areas in the eastern portions of the county as within a Key Wildlife Biodiversity Zone (KWBZ) that is centered on the North Saskatchewan River, Redwater River and part of the Sturgeon River and thus extends into the centre of the county (Plate 1.3). KWBZs are considered key winter ungulate habitat and have high habitat potential for biodiversity (Alberta Development and Sustainable Resource Development 2015).

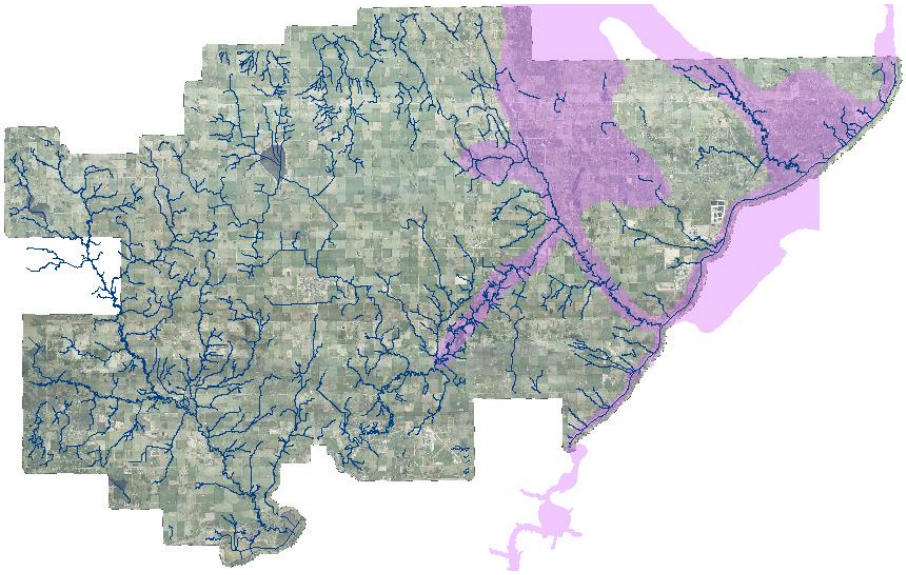


Plate 1.3. Key Wildlife Biodiversity Zone (pink) within Sturgeon County.

Table 1.2. Wildlife species of conservation concern* recorded as present in Sturgeon County (FWMIS).

Common Name	Scientific Name	Provincial Status	Wildlife Act Designation	SARA Designation
American Bittern	*Botaurus lentiginosus*	Sensitive		
American Kestrel	*Falco sparverius*	Sensitive		
American White Pelican	*Pelecanus erythrorhynchos*	Sensitive		
American Badger	*Taxidea taxus taxus*	Sensitive		Schedule 1 (Special Concern)
Bald Eagle	*Haliaeetus leucocephalus*	Sensitive		
Baltimore Oriole	*Icterus galbula*	Sensitive		
Bank Swallow	*Riparia riparia*	Sensitive		Schedule 1 (Threatened)
Barn Swallow	*Hirundo rustica*	Sensitive		Schedule 1 (Threatened)
Barred Owl	*Strix varia*	Sensitive	Special Concern	
Black Tern	*Chlidonias niger*	Sensitive		
Blackburnian Warbler	*Setophaga fusca*	Sensitive		
Black-crowned Night-Heron	*Nycticorax nycticorax*	Sensitive		
Black-Throated Green Warbler	*Setophaga virens*	Sensitive	Special Concern	
Western Toad	*Anaxyrus boreas*	Sensitive		Schedule 1 (Special Concern)
Broad-winged Hawk	*Buteo platypterus*	Sensitive		
Canadian Toad	*Anaxyrus hemiophrys*	May Be At Risk		
Common Nighthawk	*Chordeiles minor*	Sensitive		Schedule 1 (Threatened)
Common Yellowthroat	*Geothlypis trichas*	Sensitive		
Eared Grebe	*Podiceps nigricollis*	Sensitive		
Eastern Kingbird	*Tyrannus tyrannus*	Sensitive		
Eastern Phoebe	*Sayornis phoebe*	Sensitive		
Fisher	*Pekania pennanti*	Sensitive		
Forster's Tern	*Sterna forsteri*	Sensitive		
Grasshopper Sparrow	*Ammodramus savannarum*	Sensitive		
Great Blue Heron	*Ardea herodias*	Sensitive		

Common Name	Scientific Name	Provincial Status	Wildlife Act Designation	SARA Designation
Great Gray Owl	*Strix nebulosa*	Sensitive		
Grizzly Bear	*Ursus arctos*	At Risk	Threatened	Schedule 1 (Special Concern)
Horned Grebe	*Podiceps auritus*	Sensitive		Schedule 1 (Special Concern)
Least Flycatcher	*Empidonax minimus*	Sensitive		
Lesser Yellowlegs	*Tringa flavipes*	Secure		COSEWIC (Threatened)
Little Brown Myotis	*Myotis lucifugus*	May Be At Risk	Endangered	Schedule 1 (Endangered)
Long-tailed Weasel	*Mustela frenata*	May Be At Risk		
Northern Goshawk	*Accipiter gentilis atricapillus*	Sensitive		
Northern Leopard Frog	*Lithobates pipiens*	At Risk	Threatened	Schedule 1 (Special Concern)
Peregrine Falcon	*Falco peregrinus anatum/tundrius*	At Risk	Threatened	Schedule 1 (Special Concern)
Pied-billed Grebe	*Podilymbus podiceps*	Sensitive		
Pileated Woodpecker	*Dryocopus pileatus*	Sensitive		
Prairie Falcon	*Falco mexicanus*	Sensitive	Special Concern	
Purple Martin	*Progne subis*	Sensitive		
Eastern Red Bat	*Lasiurus borealis*	Sensitive		COSEWIC (Endangered)
Common Garter Snake	*Thamnophis sirtalis*	Sensitive		
Sandhill Crane	*Antigone canadensis*	Sensitive		
Sedge Wren	*Cistothorus stellaris*	Sensitive		
Short-eared Owl	*Asio flammeus*	May Be At Risk		Schedule 1 (Special Concern)
Sora	*Porzana carolina*	Sensitive		
Sprague's Pipit	*Anthus spragueii*	Sensitive	Special Concern	Schedule 1 (Threatened)
Western Grebe	*Aechmophorus occidentalis*	At Risk	Threatened	Schedule 1 (Special Concern)
Western Tanager	*Piranga ludoviciana*	Sensitive		
Western Wood-pewee	*Contopus sordidulus*	May Be At Risk		

*Defined here as species assigned any provincial status other than Secure, or having a *Wildlife Act* or *Species at Risk Act* (*SARA)* designation

Fisheries/FWMIS

There are many named and unnamed fish-bearing watercourses and water bodies within Sturgeon County. Some of the most important fish-bearing watercourses include the North Saskatchewan River, Sturgeon River, Riviere Qui Barre, Redwater River, Carrot Creek, Atim Creek, Little Egg Creek and Fairydell Creek. Fish records specific to the watercourse reaches within Sturgeon County were not readily available, therefore a table specific to the county was not generated. However, examination of wider records for named watercourses indicated that the North Saskatchewan River is the only named watercourse in the county with a history of supporting fish species of conservation concern. Further, FWMIS records indicate that the North Saskatchewan River reach in Sturgeon County holds potential to support four fish species of conservation concern (Table 1.3).

Table 1.3. Species of conservation concern potentially present in the North Saskatchewan River, in Sturgeon County.

Common Name	Scientific Name	Provincial Status (General Status of AB Wild Species 2020)	Wildlife Act Designation	COSEWIC Designation	SARA Designation
Lake Sturgeon	*Acipenser fulvescens*	Undetermined	Threatened	Endangered	No Schedule/ no status
Northern Redbelly Dace	*Chrosomus eos*	Sensitive			
Sauger	*Sander canadense*	Sensitive			
Spoonhead Sculpin	*Cottus ricei*	May Be At Risk			

FWMIS holds records of fish species presence in only three of the County's named lakes: Sandy Lake, Big Lake and Manawan Lake. None of the five recorded species are of conservation concern (Table 1.4). It should be noted that other lotic and lentic environments within the County have potential to be fish-bearing; however, for many of these the potential remains either unassessed or unreported.

Table 1.4. Fish records within named water bodies in Sturgeon County.

Common Name	Scientific Name	Water Body Record
Brook Stickleback	*Culaea inconstans*	Sandy Lake
Fathead Minnow	*Pimephales promelas*	Sandy Lake
Northern Pike	*Esox lucius*	Sandy Lake; Big Lake; Manawan Lake
Yellow Perch	*Perca flavescens*	Sandy Lake
Burbot	*Lota lota*	Big Lake

1.3.6 Protected Areas

Four provincial protected areas are located within the study area, all on or near the margins of Sturgeon County: Lois Hole Centennial Provincial Park (LHCPP), Riverlot 56 Natural Area, Redwater Provincial Recreation Area and Opal Natural Area (Plate 1.4). Riverlot 56 Natural Area and the Opal Natural Area are located wholly outside of the county. In addition, Sturgeon County's Land Use Bylaw provides for an Environmental Protection (EP) district intended to protect and preserve environmentally significant lands recognized as such by the County and/or Province. The district includes Crown lands and lands designated as Environmental Reserve through the *Municipal Government Act*. These parcels are scattered through the County, and range in area from small ER lots at the scale of rural residential subdivisions to ~ 167 ha (Sandy Lake Wilderness Area). The Edmonton and Area Land Trust also has one conservation property within the County - Boisvert's GreenWoods, which comprises 80 ha of mature deciduous forest east of Manawan Lake.

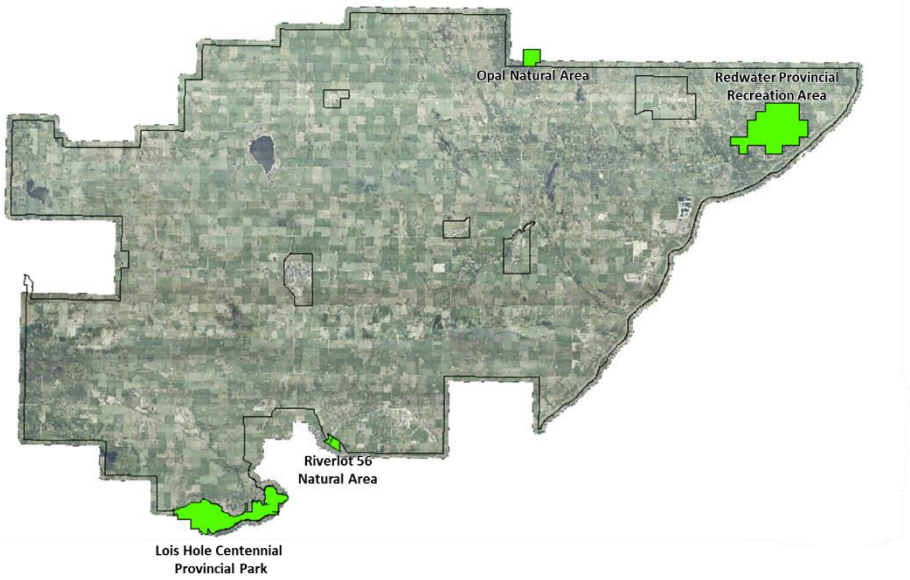


Plate 1.4. Provincial protected areas within or near the boundary of Sturgeon County: Lois Hole Centennial Provincial Park, Riverlot 56, Redwater Provincial Recreation Area and Opal Natural Area.

2.0 METHODS

2.1 Terminology

Foundational to the inventory update, was a review of ESA-related terminology used in the 1989 ESA inventory; other, more current Sturgeon County planning documents; and, recent ESA documents prepared for other jurisdictions, with a view to updating Sturgeon County inventory terms as required, for standardization or clarity purposes.

Based on our review, we dropped the 1989 term Environmentally Sensitive Area (ESA) in favour of the term Environmentally Significant Area (ESA). The use of 'significant' represents the current industry standard and more accurately reflects the County's purpose to identify ecologically important areas/features. This study defines an ESA as follows:

> **Environmentally Significant Area (ESA)**: Natural landscape elements/areas that have important and/or unique environmental characteristics that are essential to the long-term maintenance of biological diversity, surface water quality, or other natural processes, at multiple scales within and beyond Sturgeon County.

2.2 Geographic Information System (GIS) Analysis

Plate 2.1 outlines the GIS process employed to update the 1989 Sturgeon County ESA inventory. Subsequent subsections elaborate on each process step.

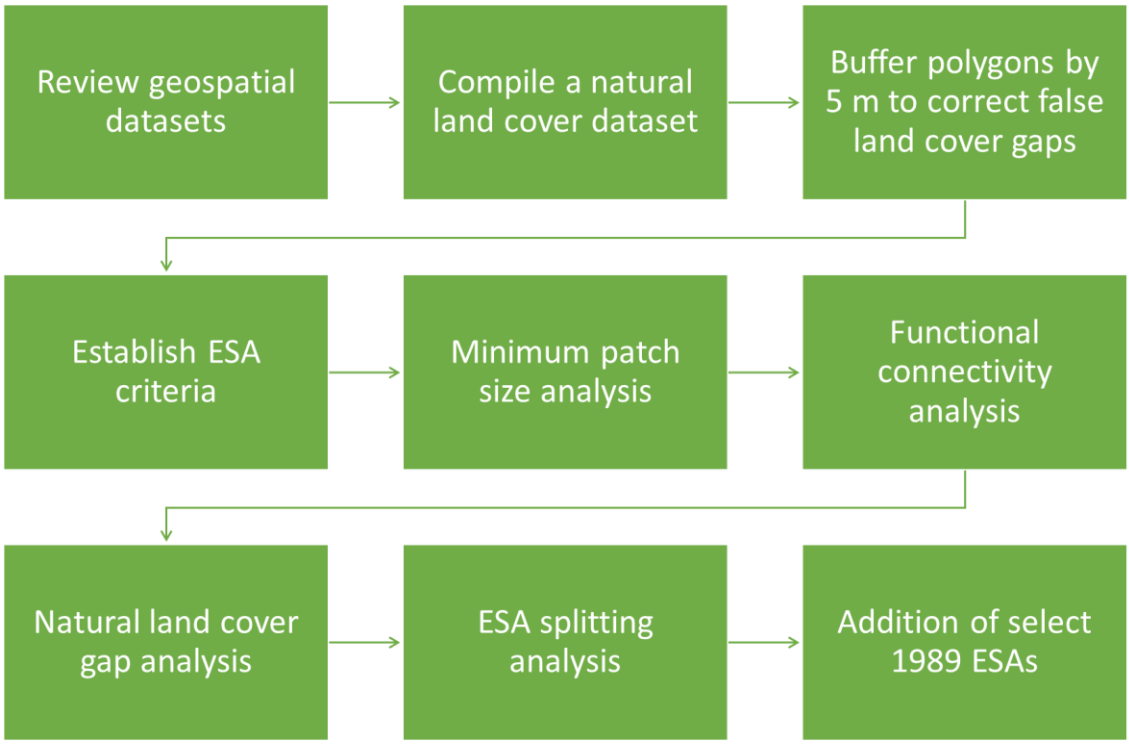


Plate 2.1. GIS analyses employed.

2.2.1 Data Review

While the County's 1989 ESA inventory considered environmental, cultural, and historic features, as was standard for the time, this study adopted an ecological approach only, in keeping with the County's study purpose and contemporary standards and methods used in other recent similar inventories. We did not consider historical and cultural datasets/aspects. This study was founded on fundamental principles of landscape and conservation ecology, focusing on the four key patterns found in a functioning ecological landscape that, if protected, will sustain biodiversity and ecological function (Forman 1995):

- a few large patches of natural cover/vegetation that can serve as core areas
- naturally vegetated corridors along major watercourse(s) - important for aquatic and overland connectivity
- connectivity between large patches - wide corridors or a series of stepping stones – (aka linkages); these can be naturally occurring or designed green/open spaces
- a heterogenous mixture of smaller natural cover/vegetation patches across the landscape (stepping stones)

This ESA inventory update was designed to identify three of these four key patterns: large and smaller patches and naturally vegetated riparian corridors. To analyze for the presence of those components within the county, it was first necessary to identify a dataset that would provide this information. Several recently generated, ecological/biophysical datasets covering the entire study area were identified as candidates and our data review focussed on those and determining their utility for ESA identification and analysis. The key reviewed datasets were:

- Land Cover NSWA dataset [Fiera Biological Consulting (Fiera) 2021a]
- Central Parkland Vegetation Inventory (Alberta Environment and Parks 2012)
- Alberta Environmentally Significant Areas (Fiera 2014)
- Alberta Merged Wetland Inventory (Alberta Environment and Parks 2020)
- Alberta Biodiversity Monitoring Institute Wetland Inventory (2021)
- Sturgeon County vegetation mapping from Drainage Master Plan (Sameng Inc. 2020)
- Sturgeon County Environmental Sensitive Areas (InfoTech Services and Associates 1989)
- North Saskatchewan Watershed Alliance Riparian Intactness (Fiera 2021b)

Review consisted of overlaying the above datasets on the Sturgeon County 2021 orthorectified aerial photography mosaic for the study area and evaluating for accuracy in identification and delineation of natural areas (cover and features).

Additional datasets were then examined, looking for additive value:

- open source glacial landform datasets (2018)
- provincial FWMIS (2019) and Altalis (1996) hydrology mapping

- location specific FWMIS wildlife records for species of conservation concern (2022)
- FWMIS wildlife sensitivities layers (2010-2013)
- FWMIS fish records (2019)
- ACIMS Element Occurrences (2022)
- Sturgeon County Land Use Bylaw Overlays (2017)

A table summarizing the geospatial data reviewed for its relevance to identifying important natural features within Sturgeon County is located in Appendix A.

After consideration of all available datasets, the Land Cover NSWA (2021) dataset was selected as the best single dataset to function as the basis from which to build the ecological-based GIS analysis on the strength of its comprehensive coverage of the county, differentiation between natural and non-natural land cover types, inclusion of wetlands as a land cover type and relatively high level of accuracy. Some of the additional datasets were later used to characterize identified ESAs (see section 3.1).

2.2.2 Compile Natural Land Cover Dataset

The Land Cover NSWA (2021) dataset provided complete coverage for all lands in the study area and differentiated between natural and non-natural land cover types. The dataset comprised a pixel size (or minimum mappable unit) of 6 m x 6 m and, as a result, provided a high level of detail. Dataset natural land cover types identified as appropriate for inclusion in our ESA analysis included forest, wetland, open water and natural grassland (Table 2.1). Natural bare ground was found to be inaccurately identified in many of the locations where it was present and was excluded as a natural land cover type for that reason. All other dataset land cover types - agriculture, agricultural depression, built up/exposed, disturbed vegetation and natural bare ground - were excluded from ESA analysis.

The four selected natural land cover types from the Land Cover NSWA (2021) dataset were extracted to comprise a refined dataset restricted to natural land cover types and were merged into a single natural land cover type. Fine-scale examination of this dataset compared against the Sturgeon County 2021 orthorectified aerial photography mosaic revealed the presence of numerous small, false gaps in mapped natural land cover. Most of the identified false gaps were classified as very small, with many measuring just one pixel across, particularly along narrow features such as watercourses and shelterbelts. Some larger false gaps were also noted - these are acknowledged and considered later in our ESA analyses. As a means of removing the many small false gaps, the merged natural land cover dataset was buffered by 5 m to extend the natural land cover mapping across gaps of a single pixel in any direction. Use of a 5 m buffer was identified as wide enough to correct the identified false gaps but narrow enough to maintain larger gaps that reflected true breaks in natural land cover on the landscape.

For clarity, during the above exercise, we included natural land cover polygons extending beyond county boundaries and into the buffer lands portion of the study area to indicate extension beyond the county.

Table 2.1. Land cover classes used to derive natural land cover polygons

Level 1	Level 2	Description
Forest	Coniferous	Coniferous trees (needle-leaf) cover greater than 75% of treed area.
	Deciduous	Broadleaf trees covering greater than 75% of treed area.
	Shrub	Vegetation cover that is at least 1/3 shrub (low/short woody plants), with little or no presence of tress (<10% tree crown closure). Includes upland shrub and riparian shrub (e.g., shrub on gravel bars, shrub around marshes).
Natural Grassland	Natural Grassland	Naturally grassy areas with <1/3 shrub cover and <10% tree cover.
Open Water	Open Water	Any open water (lakes, permanent wetlands, standing water) and flowing water. Includes artificial waterbodies (e.g., dugouts and reservoirs).
Wetland	Marsh	Low lying areas dominated by emergent or graminoid vegetation and depressional areas adjacent to streams/creeks and lakes.
	Swamp	Depressional areas dominated by deciduous tree or shrub cover.
	Bog	Areas that appear to be dominated by black spruce cover where no water flow is apparent.
	Woody Fen	Depressional areas dominated by woody vegetation cover (trees or shrubs) where surface water flow is apparent.
	Graminoid Fen	Depressional areas dominated by graminoid vegetation cover where surface water flow is apparent.

**taken from Fiera (2021)*

2.2.3 Establish ESA Criteria

Having established that a suitable natural land cover dataset, buffered by 5 m, was available for this exercise and referring to landscape ecology principles (e.g., Forman et al. 2003; and Riva and Fahrig 2022), we identified the following criteria for lands to be considered an ESA:

- a mappable area of continuous natural land cover, situated within Sturgeon County, and possibly extending beyond county boundaries; and
- meeting a minimum patch size criterion

Natural Land Cover

We prioritized continuous areas of natural land cover (habitat patches) as the primary indicator of potential conservation value and environmental significance in the predominantly rural landscape at the scale of Sturgeon County. It was recognized that this approach represented a significant departure from the 1989 study, which also considered other environmental features such as landforms and site-specific information from interviews and field surveys. The focus on habitat patches was favoured because it more closely aligned with widely used current methods and available technology and was highly efficient.

Minimum Patch Size

Establishing a scale appropriate minimum patch size is key to any natural area inventory. Determining a suitable minimum patch size for this inventory required some additional analysis and was an iterative process to ensure that the identified threshold was suitable for county purposes and supported by scientific literature. The following steps were taken:

- Calculate the size of each discrete natural land cover patch (habitat patch) and quantify the number of patches meeting minimum size thresholds as follows: ≥ 10 ha, >25 ha, >50 ha, >75 ha, >100 ha or >200 ha. Patches smaller than 10 ha were excluded from further analysis at this point, as a first cutoff required to be considered as an ESA for a county-wide inventory. That cutoff notwithstanding, this exercise recognized that all natural areas in Sturgeon County, including those not recognized by this inventory, can and should be considered in future, smaller scale planning and conservation exercises.

- Analyze the number of polygons meeting the different minimum size thresholds as one means of assessing suitability for a minimum patch size and select ≥ 50 ha for further testing.

- Analyse the natural land cover dataset focusing on patches ≥ 50 ha. Use of 50 ha as a minimum size threshold resulted in a high positive correlation (overlap) with the original 1989 identified Sturgeon County ESAs (i.e., at least partial overlap with 22 of 30 previously identified ESAs). The County had identified a desire to retain all 1989 ESAs that met the 2023 definition of ESAs. The high positive correlation in this test was, therefore, considered indicative of a suitable threshold. Moreover, use of the 50 ha threshold aligned well with statements in other recent, similarly sized county ESA inventories, regarding what constitutes a high-value patch size.

The scientific literature indicates that the minimum patch size required for conservation varies considerably among vertebrate wildlife species, ranging from less than 10 ha for smaller mammals such as small rodents and hares to several thousand hectares for wide-ranging species such as bears and cougars (Environmental Law Institute 2003). For the purposes of this study and considering the scale of Sturgeon County and the species of conservation concern previously recorded as present in the county (see Section 1.3.5), we sought a minimum threshold that would apply to the majority of mammalian and avian species that typically reside in the county. Mammals and birds were assumed to also serve as a surrogate for broader biodiversity. The Environmental Law Institute (2003), in considering patch size, concluded that land use planners should strive to protect and maintain habitat patches larger than 55 ha. One of the justifications for this was that the protection of habitat patches of 55 ha or more appears to capture 75 percent of most bird and mammal species requirements. Therefore, patches at least 55 ha in area were considered to be large enough to represent core habitat patches with high biodiversity value (Environmental Law Institute 2003).

For consistency with the literature, the 50 ha minimum patch area threshold tested earlier was refined to a final minimum natural land cover patch size of 55 ha. The analysis was rerun and a preliminary inventory generated.

2.2.4 Connectivity Analysis

To capture the importance of functional connectivity in conserving biodiversity and ecological processes across the landscape (e.g., Forman 1995, Keeley et al. 2021), mapped results of all natural land cover patches measuring at least 55 ha in area were then examined through the lens of functional connectivity. Visual examination of the preliminary inventory indicated that many of the delineated ≥ 55 ha patches were situated in very close proximity to each other, or were close enough to other, smaller patches *and* separated only by permeable land cover types, such that some degree of functional ecological connectivity was assumed.

To capture the potential for high functional connectivity to contribute to ecological function and increased conservation value of ESAs, we completed a proximity analysis to capture all patches ≥25 ha situated within 30 m of a mapped ≥ 55ha patch. Resultant areas were amalgamated into one habitat patch complex. Selection of ≥25 ha as a threshold for this analysis was based on publications regarding occurrence of area-sensitive bird species in habitat patches. For example, Environment Canada (2013) concluded that few to no area-sensitive birds are anticipated in forest patches less than 20 ha, however, patches between 20 ha and 50 ha may support *some* area-sensitive species. Use of a proximity distance of 30 m accounted for many of the low-traffic volume, rural road rights-of-way located throughout the County that measure roughly 30 m in width that are known to be permeable to many species and were observed to be severing natural habitat patches. A 30 m proximity distance was also supported by several scientific studies (e.g., Tremblay and St. Clair 2009; Bélisle and Desrochers 2002). Note: the 30m buffer was achieved by combining the original 5 m buffer applied during natural land cover dataset creation with a new 25 m buffer. The resulting functionally connected habitat patch complexes formed the refined preliminary inventory of ESAs.

2.2.5 ESA Gap Analysis

Despite the earlier steps taken to remove small false gaps from the natural land cover dataset used as the basis for ESA identification, a review of the refined preliminary ESA inventory revealed a small number of instances of false gaps where the initial NSWA land cover mapping was not sufficiently accurate in its mapping of natural land cover. This was particularly problematic along narrow landscape features such as riparian corridors. Because of this, some ESAs near each other were mapped as separate features despite the presence of a natural structural connection along a watercourse that was evident through review and interpretation of the Sturgeon County 2021 orthorectified aerial photography mosaic. To resolve this issue, we relied on data from the North Saskatchewan Watershed Alliance Riparian Intactness (2021). This dataset presents the results of a GIS analysis that inventoried and assessed the ecological condition of riparian areas along shorelines in the Sturgeon sub-watershed. This dataset was reviewed to determine the condition of riparian connections showing in our analysis as gaps between nearby ESAs, as follows:

- If the entire length of the connective reach between two ESAs had been assigned a score of at least low intactness or higher (i.e., excluding reaches scoring very low) in the NSWA intactness dataset, and this occurred along both sides of the connective reach of the watercourse, the two ESAs were connected and merged as one.
- If the connective watercourse reach included a section with very low intactness at the same location on both sides of the watercourse, the ESAs remained disconnected.
- If, during the course of this analysis, nearby ESAs located along a watercourse were also separated by a road with a width of 30 m or greater, they were not connected regardless of the riparian intactness score.

Where valid riparian connections were identified to resolve existing gaps in the natural land cover dataset, a 50 m buffer polygon from the centerline of the assessed watercourse was created as a connective riparian corridor and merged with the preliminary ESAs.

2.2.6 ESA Splitting Analysis

Once ESAs were identified using the above-described GIS analyses, review of the resultant ESA inventory revealed several ESAs that were extremely large. In many cases, the very large ESAs were a result of the functional connectivity exercise that amalgamated two or more habitat patches, often through narrow connecting features. It was determined that there would be some benefit to the County from a management, land ownership or other perspective to assess the most sprawling ESAs for opportunities to split them into two or more smaller ESAs. Splitting was implemented if one or both of the following conditions was present:

- An ESA comprised riparian corridors along a named watercourses *and* incorporated adjacent lands that independently met the definition of an ESA. In that case, the ESA was split into two: the riparian corridor and the adjacent lands. This type of split was implemented along the North Saskatchewan River, Sturgeon River, Redwater River and Rivière Qui Barre and accounted for the majority of splits.
- An ESA comprised multiple large component parts that independently met the definition of an ESA, were connected by only one or two narrow connections and, when considered at a landscape level, appeared more suited for management as separate features. This type of split was limited to only a few ESAs.

Where splits were identified as required, we used roads, quarter section lines, land use bylaw overlay boundaries or other existing boundaries to effect the split, to the extent possible. Where this was not possible, ESAs were split at narrow pinch points or in a manner that minimized the length of the split between adjacent ESAs.

2.3 1989 Inventory Reconciliation

The County continues to recognize the value of the 1989 ESA inventory and the site-specific research that took place to identify those ESAs. At their request, and as a final

step in the 2023 ESA analysis, we reviewed all 1989 ESAs that were not captured by the above analysis (typically owing to an area <55 ha and a more isolated location) to determine if they met the criterion of supporting natural cover to merit inclusion in the 2023 inventory. If the criterion was met, the ESA was added back in and the 1989 boundaries were refined to match the 2021 natural land cover mapping in a manner consistent with the remainder of the identified 2023 ESAs. If the original ESA did not meet the foundational 2023 inventory natural cover criterion, the ESA was dropped from the inventory.

2.4 ESA Map Notes

The above exercise resulted in ESAs located wholly within Sturgeon County, ESAs located in the county and straddling county boundaries; and three (3) ESAs situated wholly outside of the county (i.e., only within the study area buffer lands). Those three sites were excluded from the updated inventory and are not shown on inventory maps.

In addition, buffering employed during GIS analysis (see section 2.2.4) to identify and map ESAs resulted in the delineation of some ESAs extending up to 25m beyond the study area limit. These few instances are evident in individual ESA maps.

2.5 ESA Significance Levels

ESA inventories are typically analysed to assign relative significance levels, which enables recognition of areas that are rare, or contain resources formally recognized at or managed/owned at a particular jurisdictional level. This has proven to be a useful tool during land use planning exercises, in particular as it acknowledges previous recognitions/investigations and potential existing and future stakeholders. Therefore, this practice, adopted in the 1989 inventory was carried forward here, albeit with some revisions. All 2023 ESAs were assigned a significance level using the following definitions:

> ***National:*** ESAs intersecting with lands that have been recognized by a national or international organization as meriting protection or special consideration during land use planning.
>
> ***Provincial:*** ESAs that intersect with provincially protected lands, lands recognized in 2014 as an ESA by the Government of Alberta (AB ESA) or lands previously identified as provincially significant in the Sturgeon County 1989 inventory.
>
> ***County:*** The remainder of the ESA inventory.

2.6 ESA Intersection Analysis and Datasheet Preparation

Once the ESA inventory was finalized, individual datasheets were prepared for each ESA. Datasheets include a map zoomed to the focal ESA, as well as data that broadly describe the site and relevant management considerations. Those data were collected by completing an intersection analysis of relevant GIS data layers with each mapped ESA. Intersection

analysis included the full mapped ESA area, i.e., extending beyond county boundaries. Data sources used during intersection analysis are provided in Appendix A. Datasheet planning and management considerations were developed through review of intersection analysis and conditions shown on zoomed-in maps. The purpose of this section was to capture high-level considerations not otherwise captured by the forms' site-specific data.

Some interpretation notes are warranted in support of close examination of datasheet maps. Examination at a finer scale underlines the need for individual site boundary verification or refinement during future site-specific inventory use. Some perceived mapping inaccuracies may be the result of the desktop nature and scale of the inventory. In addition, for some ESAs, the 25m buffer applied during our functional connectivity analysis manifests, on some margins, as a band of cultivated lands. In those cases, that 25 m buffer also serves as a de facto buffer to be refined at a later date or retained as appropriate during future planning and management exercises. Finally, datasheet users must be cognizant of the dynamic nature of a landscape, versus the snapshot/point-in-time nature of analyses and presentation of results in the form of maps. Over time, and as the county population continues to grow and natural systems naturally change, the need to ground truth ESA conditions will also grow.

2.7 Notes on ESA Inventory Use

The primary intended use of this ESA inventory is to inform land use planning, policy development and land management approach options for the County and for current and future landowners. When proposed development intersects with an identified ESA, appropriate ecological studies should be conducted to facilitate sound land use planning and conservation decisions and protection of ecologically important landscape features (e.g., wetlands, important wildlife corridors, large intact patches of native vegetation) within a proposed development area, according to County policy. The inventory can also be used for proactive conservation planning or land stewardship initiatives by any party. The inventory will also assist all decision-makers in remaining compliant with environmental legislation.

The identification of ESAs did not consider current or future management or conservation schemes at the ESA level. ESAs do not represent government policy, do not imply any level of current protection and do not imply the requirement for future legal protection. They are intended to serve as an information tool that complements other information sources to inform land-use planning within the county.

This ESA inventory and technical report does not replace other indicator-specific mapping and planning tools, such as wetland inventories and species at risk recovery plans. These more detailed information sources must be consulted when planning for projects that may impact specific environmental resources, particularly when dealing with regulatory requirements. ESA identifications and assigned significance levels are not intended to be used in the regulatory context.

Importantly, all natural areas in Sturgeon County, including those not recognized by this inventory, should be considered in planning and conservation exercises. Scale is an

important consideration in inventory exercises and in later planning exercises. This inventory was undertaken at the scale of the county. Most planning decisions are executed at a much finer scale. This inventory used a minimum patch size and subsequent methodological decisions that excluded smaller areas that may be environmentally significant when considered at a more site-specific, local level.

3.0 RESULTS

3.1 2023 Updated ESA Inventory

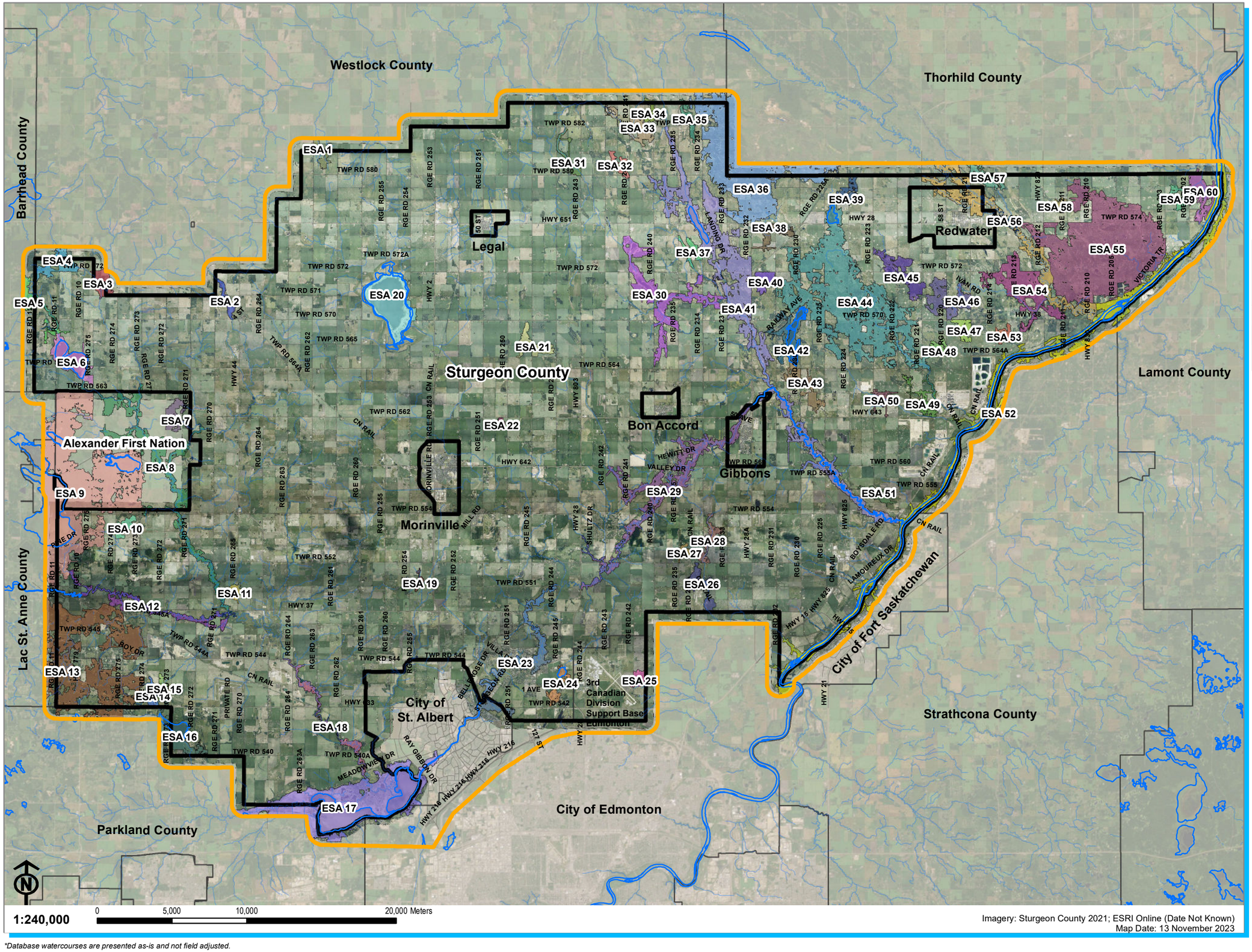
The 2023 ESA inventory exercise mapped 60 ESAs in total and assigned each a simple unique identifier from ESA 1 to ESA 60. Figure 3.1 presents the entire inventory, at the study area scale and illustrates that ESAs are not evenly distributed across the county. ESAs are concentrated in the county's northeast, largely east of the Sturgeon River, and along the western and southern county boundary; several smaller ESAs are scattered throughout central Sturgeon County. There are many linear ESAs containing major watercourses and several others that encompass lakes of various sizes. Details for individual ESAs are provided in Appendix B in the form of a compendium of 60 datasheets, each consisting of a finer-scale ESA map and select ESA metrics.

In total, approximately 42,954 ha (17%) of the study area was mapped as ESAs. Individual ESA total areas ranged from 32.55 ha to 4,432.62 ha (Appendix C). Some ESAs that extend beyond the county boundary appear to be part of an even larger area that extends beyond the study area boundary. The most obvious examples of this are major watercourses, but this is also true of some tableland sites. The base imagery used for individual map sheets provides some visual indication of when this occurs. This is an important consideration when examining the value of an ESA in the broader, regional landscape.

Figure 3.1 also illustrates that the study area supports several of the key ecological patterns required in a high-functioning network. Our methods ensured that the ESAs represent the county's largest habitat patches and Figure 3.1 and Table 1, Appendix C, illustrate that many ESAs are very large (>1000 ha or 10 km^2). In fact, all but four ESAs, when clipped to the county boundaries, meet our theoretically established threshold of 55 ha for a biodiversity core area. Many of the ESAs, however, are highly irregular in shape and include narrow extensions that are essentially ecotonal or edge habitat. Although these areas may contribute to ecological connectivity, the most important areas within the mapped ESA inventory that might function as biodiversity core areas are the more intact, contiguous areas (i.e., blockier portions roughly round or square) that possess more interior habitat and less edge. Applying this theory, all identified ESAs having a blocky core/central area greater than 55 ha could be considered a biodiversity core area until proven otherwise by more study. These ESAs are not identified as such in this report, but individual datasheets do note if an ESA is likely to have interior forest, defined as large areas of contiguous forest that are unfragmented and at least 100m from forest edge (LandOwner Resource Centre 2000). There are likely also wetlands in some ESAs that are similarly buffered from external disturbances and provide wetland habitat suitable for disturbance-sensitive wildlife. Other, smaller ESAs are assumed to function as important habitat patches, integral to ecological processes on the landscape.

The ESA inventory also identified the most important ecological corridors in the county – the long, linear ESAs, including riparian corridors. Figure 3.1 clearly illustrates the connectivity value of those linear ESAs. They provide riparian (and aquatic) links between waterways and other nearby ESAs. Those ESAs also traverse large portions of the county and cross municipal boundaries. The county-scale map also shows relative distances

Figure 3.1.
Overview of
2023 Sturgeon County ESAs
Sturgeon County
Environmentally Significant
Areas Update



Legend

- Sturgeon County Environmentally Significant Area (2023)
- Study Area
- County Boundary
- Hydrology (Altalis 1996)

Sturgeon COUNTY

SPENCER ENVIRONMENTAL MANAGEMENT SERVICES LTD.

*Database watercourses are presented as-is and not field adjusted.

between ESAs and in doing so visually indicates areas of the county where functional connectivity may be present between non-riparian ESAs and where more significant gaps occur. Finally, Figure 3.1 shows frequent ESA occurrence straddling Sturgeon County boundaries identifying, at a coarse level, lands potentially of interest for intermunicipal conservation planning.

Figure 3.1 also illustrates areas of the county where biodiversity may be lower and ecological function is less apparent. There are relatively few ESAs in the more central, roughly two-thirds of the county land base, and there are relatively large distances between the few ESAs that are present. Those lands generally correspond to area of the county within the Central Parkland Natural Subregion, supporting the statistic that nearly all of the natural land cover in this subregion has been converted to other land uses. The inventory captured very few of the many minor, lower-order seasonal or ephemeral watercourses that occur throughout the central county, again, reflecting a paucity of natural land cover associated with those features. However, because of the need to establish a minimum area threshold, this study by design did not capture the more isolated, smaller habitat patches that were evident in the full dataset of natural land cover polygons. At least some of those polygons represent the smaller habitat patches that, in a permeable or semi-permeable landscape matrix such as agricultural Sturgeon County, can function as effective stepping stones for wildlife species and ecological processes, such as plant dispersal. All natural habitat patches too small to be captured by this study also have inherent value as natural areas and should be considered in their own right during future land use management/development initiatives.

Figure 3.1 also illustrates that the northeast quadrant of the county is rich in ESAs. That area has the highest ESA density and contains 7 of the ten largest ESAs. Much of the northeast quadrant is also mapped by the province as part of a KWBZ. Plate 3.1 illustrates the high degree of overlap in the northeast between the KWBZ and 2023 ESAs. Nineteen (32%) of all ESAs intersect with the KWBZ (Table 3.1). This overlap underlines the ecological importance of those ESAs and as part of a KWBZ and the importance of inter-municipal planning with jurisdictions to the north (Thorhild County) and south (Strathcona County).

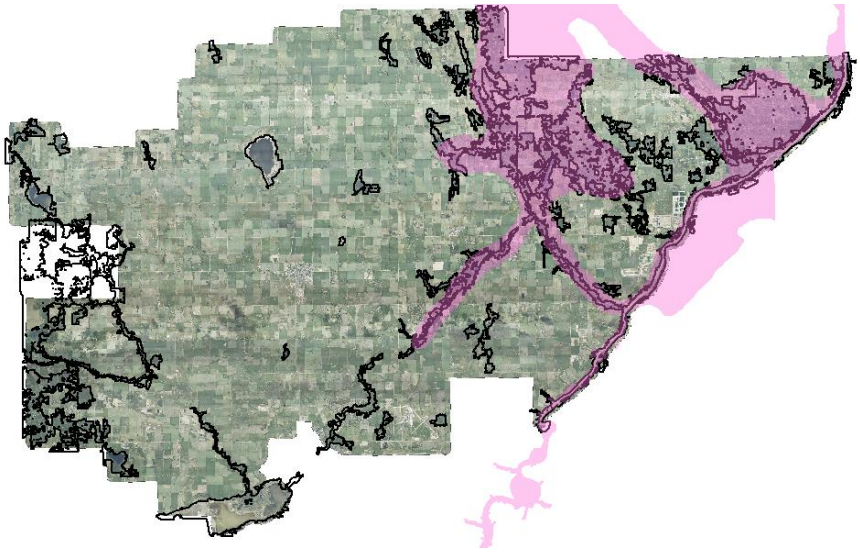


Plate 3.1 Key Wildlife Biodiversity Zone and ESA overlap.

Table 3.1. ESA intersections with known sensitive environmental sensitivities

Environmental Sensitivity	Number of ESAs (%*)
Forest	60 (100)
Open Water	48 (80)
Wetlands	60 (100)
Natural Grassland	55 (92)
Fish-bearing Water Body/Watercourse	15 (25)
Fish Species of Conservation Concern	1 (2)
Wildlife Species of Conservation Concern	17 (28)
Sharp-tailed Grouse Survey Area	30 (50)
Sensitive Raptor Range – Peregrine Falcon	0 (0)
Colonial Nest Buffer – Great Blue Heron	2 (3)
Key Wildlife Biodiversity Zone	19 (32)
Plant Species/Habitat of Conservation Concern	13 (22)
Provincial Protected Area	5 (8)
County Protected Area (EP)	20 (33)
AB ESA (2014)	26 (43)

Adopting a finer-scale perspective, the ESAs identified by this study can be broadly characterized as sizeable natural areas that support continuous or nearly continuous natural land cover and comprise a variety of landforms. Datasheet review indicates that no ESA comprised solely one land cover/habitat type. In fact, all 60 mapped ESAs support a mosaic of forest and wetlands and nearly all ESAs also support some natural grasslands and open water features (i.e., lakes, watercourses or open-water wetlands) (Table 3.1). Across all ESAs the four land cover types occur in widely varying proportions, with the lowest value being 0.5% and the highest, in a very few cases, approaching 100%. For very large ESAs, 0.5% cover of a particular land cover type can still comprise a notable presence from a

management perspective at a more local level (i.e., 0.5% of a very large area can still comprise a meaningful area from a management perspective). For most ESAs, records of biota (fish, wildlife, plants) are thought to be deficient. This is assumed to be the result of lack of study or lack of reporting and a reflection of private landownership. Table 3.1 provides an indication of the number of ESAs currently documented as supporting a named, fish-bearing water body, wildlife and plant species of conservation concern. Although a land ownership layer was not included in our analysis, a visual scan of land use in the County and intersection analysis with protected areas (Table 3.1) indicates that most ESAs overlap with or wholly comprise privately owned lands. Fewer than half of ESAs intersect with either provincial or county protected areas (Table 3.1) and in most cases the intersections comprise a small portion of the ESA (Figure 1.1 and see individual datasheets for a site-specific metric). The 2023 inventory does intersect with all four (4) "Provincial Environmentally Sensitive Areas" recognized in the EMRB growth plan as occurring in Sturgeon County (Edmonton Metropolitan Region Board 2020): North Saskatchewan River riparian corridor (ESA 52); LHCPP (ESA 17); a natural area at the north county boundary and in the KWBZ (ESA 36) and a natural area in the southwest corner of the county (ESA 13).

When ESAs are clipped to the county limits, the total ESA area reduces to approximately 33,130 ha (~16%) of the county land base (with areas ranging from 3 ha to 4,182 ha) (Appendix C). With such a wide range in area, ESAs (clipped to county limits) were placed in size categories by natural breaks, for further insight (Figure 3.2). Not shown via natural breaks analysis is that clipping ESAs to county boundaries results in four ESAs that are smaller than the minimum 55 ha patch size (Appendix C). This anomaly is the result of one of the following circumstances: exclusion of the ESA portions that extend beyond the county boundary (in some instances a significant portion, particularly near the Alexander Indian Reserve); the ESA splitting analysis; inclusion of 1989 ESAs too small to be captured by our analysis but meeting the criterion to be carried forward into this inventory.

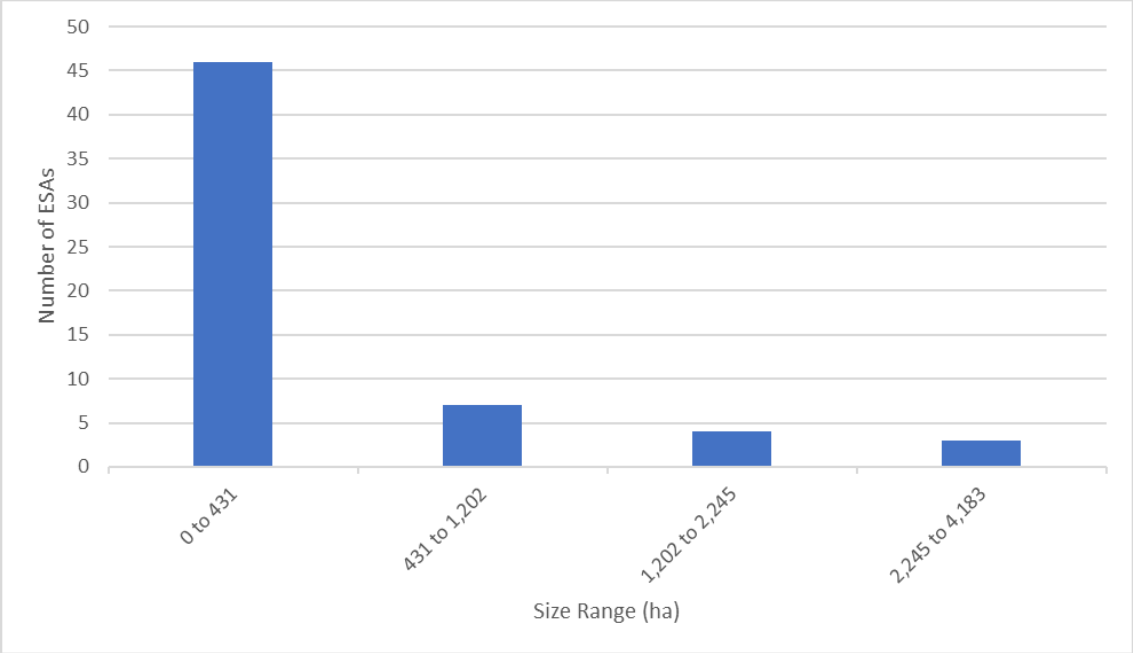


Figure 3.2. Area of ESAs within county limits, by natural breaks (Jenks).

3.2 ESA Significance

One ESA (ESA 17, incorporating LHCPP (Big Lake)) met the criterion for national significance and 27 met at least one criterion for provincial significance, leaving 32 ESAs significant at the County level (see Table 1, Appendix C for significance level, by site). The count of provincially significant ESAs (nearly half of all sites) draws attention to the high relative value or potential value of the ESA resource and also invites further examination of those sites. Provincial level significance was typically the result of intersection with one or more quarter sections mapped in 2014 as an AB ESA (i.e., 26 of 27 provincially significant ESAs) and/or with a provincial protected area (Table 3.1). The 2014 provincial inventory, like this 2023 county inventory, relied solely on desktop analysis and was undertaken at a province-wide scale. That study recognized that finer-scale use would require further investigation.

3.3 Changes to 1989 ESA Inventory

In aggregate, the 2023 ESA update increased total ESA area in the county by 11,571 ha relative to 1989 (2023 ESA area = 33,130 ha; 1989 ESA area = 21,559). Most (26) of the 30 ESAs mapped in 1989 were visible as present on the 2021 base imagery and in the land cover dataset, indicating strong ESA conservation performance in Sturgeon County since 1989. Each of those 26 ESAs were captured in this inventory update and they now have a new unique ESA identifier using 2023 inventory protocols. Two of those 26 sites (L32 and L33, now ESA 22 and 19) were too small to be captured by our inventory minimum patch criterion, but upon review were added back in as they met the natural land cover criterion. Unlike in 1989, 2023 ESAs were not assigned place names. Where applicable, ESA

datasheets cross-reference captured 1989 ESAs. The updated mapping expanded the area of most individual 1989 ESAs (Table 3.2).

Four 1989 ESAs were not carried forward in the 2023 inventory owing to a near absence of natural land cover (Table 3.2). Specifically, 1989 ESA 11 comprises the Villeneuve Gravel Pits, which generally supports anthropogenic cover except for a sliver of riparian vegetation, which was incorporated into 2023 ESA 18. These lands were considered ESAs in 1989 because of their socio-economic value. The ESA definition used in this update does not include lands of socio-economic value. Similarly, 1989 ESAs 37 and 38 comprised the Cardiff and Star Key Mines, which do not contain natural cover. These lands were considered ESAs in 1989 due to their historic value and potential to have interpretive value. These values were not considered in the updated ESA definition. The 1989 ESA 39 was mapped because it is an example of an esker, a glacial landform. However, the esker does not currently support natural cover, rather, it is highly cultivated. All four dropped ESAs were relatively small. Three were situated centrally in the county, one was in the southwest quadrant.

Table 3.2. Summary of 1989 ESA (n=30) changes

Parameter	Number of 1989 ESAs
Included in the 2023 update mapping	26
Now part of a larger ESA	24
Now part of a smaller ESA	2
Increase in significance level	20
Reduction in significance level	0
No change in significance level*	6

***** *i.e., includes ESAs formerly significant at regional or local level, now significant at the level of the new category of County*

Table 3.2 also summarizes changes in ESA significance level. Of the 30 ESAs in the 1989 inventory, three were identified as provincially significant, 12 as regionally and 15 as locally significant. In 2023, 20 of the captured 1989 ESAs were incorporated into an ESA having a higher significance level. This included promotion of Big Lake (1989 ESA 1; 2023 ESA 17) to national significance, in recognition of Big Lake as an Important Bird Area (Birds Canada 2023) for its abundant and diverse bird populations. In 1989, Big Lake did not have this national/international recognition. Nineteen of the 1989 ESAs that were mapped as regionally or locally significant met this study's criteria for significance at the provincial level. Manawan Lake ESA (1989 ESA 2; 2023 ESA 20) and North Saskatchewan River ESA (1989 ESA 3; 2023 ESA 52;) were the only other provincially significant ESAs in the 1989 report. Both remained provincially significant in 2023. All other captured 1989 ESAs were incorporated into ESAs identified as significant at the county scale.

4.0 LAND USE PLANNING AND MANAGEMENT CONSIDERATIONS

4.1 ESA Protection Tools

This inventory update has identified and mapped Environmentally Significant Areas (ESAs) across Sturgeon County. As part of the ESA identification process, this study has considered key environmental features and landscape patterns that are known to support a functioning ecological landscape. Based on this and the fact that this study relied on the NSWA (2021) land cover dataset, it can be concluded that the ESAs identified in this study were integral components of the county's ecological landscape in 2021, i.e., at the time the land cover dataset was compiled. This study has also acknowledged that most ESAs in the county overlap with or wholly comprise privately owned lands and, as such, those lands, and others, do not benefit from any formal protection. Because of this, the future fate of many of these sites, particularly the non-regulated forested and grassland components, is at the discretion of individual landowners. As the county considers the identified ESAs and their ecological values as part of land use planning and policy decisions, action (or inaction) around retention and protection of these areas into the future will be important.

There are four key tools available to the County for conserving ESAs on the landscape: taking of Municipal Reserve (MR) or Environmental Reserve (ER) at the time of subdivision; zoning County-owned lands Environmental Protection; and establishment of Conservation Reserve (CR) through purchase of lands. Transfer of Development Credits (TDCs), pursuant to the *Land Stewardship Act,* may also be an available tool under certain circumstances. For ESA lands not owned or turned over to the County, two main tools are available to landowners to formally and legally protect ESAs: sale or donation of land to a stewardship organization; and establishment of a Conservation Easement (CE), in partnership with the County and/or a land conservation organization or other public body.

At time of writing, one third of the 60 ESAs include some County protected lands (Table 3.1). Other than provincial lands, much of this protection has been achieved through country residential subdivisions as ER or EP parcels. In most cases, these protected parcels are associated with some open water or wetland elements or encompass ravines or floodplains and associated watercourses that qualify them as ER. Despite this, many ESAs also contain features that would qualify as ER as part of future land subdivisions.

The large size, habitat complexity, functional connectivity and private ownership of many ESAs suggests that most ESAs will require additional protective/retention mechanisms to secure larger portions of the site. To that end, many ESAs support lands that would be suitable candidates for purchase by the County as CR or for establishment of CE. The individual datasheets included in this study provide information useful for initial screening of ESAs, or portions thereof, for potential as ER, CR and CE.

In addition, private landowners wishing to maintain or enhance biodiversity on ESA lands that they own can avail themselves of established educational and funding programs designed to assist with land stewardship and restoration projects on private lands. These programs are typically not linked to a change in land ownership and are typically offered

in collaboration with the County. The programs aim to encourage landowners to recognize, value and improve natural resources and ecosystem services that their properties support. These programs are important means of perpetuating natural conditions on lands comprising the ESA inventory. Examples of programs available at the time of writing include: Green Acreages, sponsored by the Land Stewardship Centre; Government of Alberta Wetland Replacement Program; and ALUS Sturgeon (i.e., Alternative Land Use Services).

4.2 Planning Considerations

The 2023 ESA inventory and technical report is intended to function as an environmental planning tool for the County. More specifically, inventory update results can support the following planning tasks, as the County identifies a need:

- Development of long-term ESA conservation goals and objectives.
- Identification/mapping of a formal ecological network to serve as an ESA management framework and a proposed development review tool. The concept of ecological networks is increasingly adopted by agencies managing lands, generally with the broad aim of maintaining the integrity of ecological processes on human-impacted landscapes. Ecological networks, at least in theory, comprise a system of ecologically important areas that are functionally connected to counteract the effects of landscape fragmentation and conserve biodiversity. They can be scaled to match any jurisdictional landscape. Broadly described, Sturgeon County's ecological network would have three key components: core areas (ESAs in this case), connecting features in the form of ecological corridors, and, stepping stones. Other components, such as greenways and buffer zones may be identified. Formal identification of an ecological network would be consistent with the current MDP and would support the County in realizing their Environmental Stewardship Guiding Principles including outcome ES 4.1.10. The ecological network should include identification of smaller natural areas not captured in this ESA study that function as stepping stones throughout the central county.
- Development of criteria for parcels to be considered for CR – e.g., size, location, ecological network role, contribution to climate change mitigation (for example through carbon sequestration, as measured by land cover type).
- Identification of a short-list of parcels having potential for ER or CR. The spatial distribution of the full inventory and ESA datasheets will allow for consideration at the county and site scale.
- Collaborative environmental planning with neighbouring jurisdictions to promote strong regional ecological connectivity, the highest return on future ESA protection efforts and compatible ESA management approaches.
- Biophysical impact assessments undertaken by proponents in support of development plans, and subsequent mitigation planning.
- Regulatory compliance for County development projects. For example, when a County project, such as road widening, is expected to intersect with an ESA, use ESA datasheets as a first-filter for environmental regulatory approval requirements, and incorporate those needs into request for proposals and project scheduling.

- More effective ESA protection during development planning. When proposed development is expected to reduce or fragment an ESA, use ESA datasheets during early planning, to proactively establish the least ecologically damaging means of doing so. This decision is often left to later stages which then reduces options available to maximize the value of a retained natural area.
- Campaigns to increase awareness amongst County administration, Councillors and residents regarding Sturgeon County's ESA natural capital, the extent of protection these areas currently have and the County's ESA goals.
- Site selection for County Wetland Replacement Program projects. If all other key factors such as County ownership and wetland degradation are in place, choosing sites within or near ESAs could increase ecological gains associated with a wetland restoration project.
- Establishment of optimal buffers when protecting wetlands. ESA datasheets can assist with selection of effective buffer widths that incorporate adjacent uplands vital to wetland function.
- For County owned lands, site selection for upland restoration projects or establishment of designed greenway linkages.
- Review and update of the Environmental Stewardship principles promoting natural systems (ESA) conservation, management, protection and impact reduction, as needed, during the next MDP renewal. While the current MDP provides all the high level guidance needed to protect ESAs, MDP renewals provide an opportunity to explore nuanced modifications and ensure alignment of all components.

4.3 Management Considerations

Following are some high-level ESA management approaches and strategies that the County or other landowners can consider when managing ESA lands:

- Manage ESAs according to the guiding principle of promoting the continuation of natural, ecological processes.
- For publicly accessible lands, manage ESAs to prioritize reducing risks to human safety and property.
- Collaborate with neighbouring municipality to manage ESAs that straddle county boundaries.
- Focus conservation lands acquisition and restoration efforts on portions of ESAs that comprise interior habitats and are therefore more likely to be less disturbed and able to support sensitive species. These types of habitats are typically less common in ESAs situated in rural or industrial landscapes.
- Investigate sizeable, relatively undisturbed natural grasslands for the presence of native prairie, a relatively rare habitat type in central Alberta. Several stewardship agencies and clubs can offer needed expertise.
- Consider arranging for reputable naturalists or nature-focussed organizations holding relevant expertise to inventory ESA resources in support of establishment of specific management objectives. This concept may be attractive to the County and some private lands owners.
- For ESA lands owned by the County:

- look for opportunities to promote meaningful community stewardship events that give the public the opportunity to directly improve ecosystem health (e.g., weed pulls, clean-up days, tree/shrub planting etc.) of ESAs.
- use the inventory to identify areas that can be used for recreational purposes. In addition to providing public amenities, this directly demonstrates the social and environmental benefits/services of ESAs and the natural features contained within them and can assist in securing support for future conservation.

Related to management, study results can also be used by the County in the following ways:

- As a foundation/justification to explore new ways to support and promote private landowner ESA conservation efforts.
- As a resource for administration to assist landowners aiming to steward their lands for conservation purposes.
- As a baseline against which to track long-term ESA conservation performance.
- Consider creating a simple management guideline document for use by private landowners.

Additional, site-specific planning and management considerations are provided in ESA datasheets.

5.0 SUMMARY

This inventory has identified 60 ESAs. These areas are considered to be the most important natural areas in Sturgeon County. The relatively large area of most ESAs, the inclusion of 26 of the 30 1989 ESAs, the identified overlap with existing protected areas, the intersection of lands that others, including the EMRB, have identified as provincially or nationally significant, all support the conclusion that this study has identified the most important ESAs. The inventory identified many ESAs that are likely to function as regional biodiversity core areas and several important riparian corridors. In combination these features are important to the county's function as an ecological landscape. The inventory identified northeast Sturgeon County and much of the county's west margins as rich in ESAs and the central county lands as supporting significantly fewer ESAs. In addition, two ESAs largely demarcate the County south boundary. ESA spatial distribution illustrates the importance of collaboration with neighbouring jurisdictions to conserve and manage individual ESAs and regional ecological function. It also identifies areas of the county where smaller natural areas must be investigated further to identify stepping stones important to ecological function at the county scale. Fewer than half of ESAs intersect with either provincial or county protected areas (Table 3.1) and the percentage of intersecting ESAs that are protected is generally minor. This suggests much opportunity for additional protection of significant lands using all available tools. As with any large area inventory, future finer-scale planning will require additional finer-scale investigation, which is likely to result in refinement of ESA boundaries delineated in this study. Nonetheless, this ESA inventory can be used to support site-specific land use planning, natural area protection and related management decisions. Ultimately, this 2023 ESA inventory and technical report is intended to function as an environmental planning tool that will support the County in realizing the environmental stewardship principles and outcomes set out in their MDP.

6.0 REFERENCES

Alberta Biodiversity Monitoring Institute. 2021. ABMI Wetland Inventory. https://abmi.ca/home/data-analytics/da-top/da-product-overview/Advanced-Landcover-Prediction-and-Habitat-Assessment--ALPHA--Products/Predictive-Landcover-3.0.html.

Alberta Environment and Parks. 2010a. Colonial Nesting Birds Metadata. https://extranet.gov.ab.ca/srd/geodiscover/srd_pub/LAT/FWDSensitivity/ColonialNestingBirds.zip

Alberta Environment and Parks. 2010b. Sensitive Raptor Range Metadata. https://extranet.gov.ab.ca/srd/geodiscover/srd_pub/LAT/FWDSensitivity/SensitiveRaptorRange.zip

Alberta Environment and Parks. 2012. Central Parkland Vegetation Inventory. https://open.alberta.ca/opendata/gda-351dd940-9110-4218-9cc9-cb159a9ac20a#detailed

Alberta Environment and Parks. 2013. Sharp-tailed Grouse Survey Metadata. https://extranet.gov.ab.ca/srd/geodiscover/srd_pub/LAT/FWDSensitivity/Sharp-tailedGrouseSurvey.zip

Alberta Environment and Parks. 2020. Alberta Merged Wetland Inventory.

Alberta Environment and Protected Areas. 2023a. Alberta Conservation Information Management System (ACIMS). https://www.albertaparks.ca/albertaparksca/management-land-use/alberta-conservation-information-management-system-acims/search-acims-data/

Alberta Environment and Protected Areas. 2023b. Fish and Wildlife Management Information System. https://geospatial.alberta.ca/FWIMT_Pub/?TermsOfUseRequired=true&Viewer=FWIMT_Pub

Alberta Environment and Sustainable Development. 2015. Recommended Land Use Guidelines: Key Wildlife and Biodiversity Zones. https://open.alberta.ca/dataset/5c6e2826-50ab-4d2a-a673-9d703d6b5c52/resource/d8d1b2e9-3a72-471d-9479-56db5ee68210/download/keywildlifebiodiversityzones-apr08-2015.pdf.

Alberta Parks. 2015. Natural Regions and Subregions of Alberta. A Framework for Alberta Parks. Alberta Tourism, Parks and Recreation. Edmonton, Alberta.

Bélisle, M. and Desrochers, A. 2002. Gap-crossing decisions by forest birds: an empirical basis for parameterizing spatially-explicit, individual-based models. Landscape Ecology 17, 219–231.

Birds Canada. 2023. Important Bird Area – Big Lake (AB068). https://www.ibacanada.com/site.jsp?siteID=AB068

Edmonton Metropolitan Region Board. 2020. Edmonton Metropolitan Region Growth Plan. https://www.dropbox.com/s/a6jy9e9zp9akufq/EMRB%20Growth%20Plan%20%282020%29.pdf?dl=0

Environment Canada. 2013. How Much Habitat is Enough? Third Edition. Environment Canada, Toronto, Ontario.

Environmental Law Institute. 2003. Conservation Thresholds for Land Use Planners. Washington, D.C.

Fenton, M.M., Waters, E.J., Pawley, S.M., Atkinson, N., Utting, D.J. and Mckay, K. 2013. Surficial geology of Alberta; Alberta Energy Regulator, AER/AGS Map 601

Fiera Biological Consulting. 2014. Environmentally Significant Areas in Alberta: 2014 Update. https://www.albertaparks.ca/media/5425575/2014-esa-final-report-april-2014.pdf

Fiera Biological Consulting. 2021a. Creation of a Land Cover Dataset for the North Saskatchewan & Battle River Watersheds – Final Report. Prepared for the North Saskatchewan Watershed Alliance & Battle River Watershed Alliance.

Fiera Biological Consulting. 2021b. Riparian Area Assessment of the North Saskatchewan & Battle River Watersheds Final Report. Prepared for North Saskatchewan Watershed Alliance & Battle River Watershed Alliance.

Forman, R.T.T., Sperling, D., Bissonette, J.A., Clevenger, A.P., Cutshall, C.D., Dale, V.H., Fahrig, L., France, R., Goldman, C.R., Heanue, K, Jones, J.A., Swanson, F.J., Turrentine, T, Winter, W. 2003. Road Ecology: Science and Solutions. Island Press. Washington D.C.

Forman, R.T.T. 1995. Land Mosaics. The Ecology of Landscapes and Regions. Cambridge University Press, Cambridge.

InfoTech Services and Associates. 1989. Environmental Sensitive Areas: County of Strathcona and M.D. of Sturgeon Technical Report. Prepared for: Edmonton Metropolitan Region Planning Commission. Edmonton, Alberta.

Keeley, A., P. Beier and J. Jenness. 2021. Connectivity metrics for conservation planning and monitoring. Biological Conservation: 255.

LandOwner Resource Centre. 2000. Conserving the forest interior: A threatened wildlife habitat. Manotick, Ontario.

North Saskatchewan Watershed Alliance. 2005. State of the Watershed Report.

Prior, G.J., Hathway, B., Glombick, P.M., Pană, D.I., Banks, C.J., Hay, D.C., Schneider, C.L., Grobe, M., Elgr, R. and Weiss, J.A. 2013. Bedrock geology of Alberta; Alberta Energy Regulator, AER/AGS Map 600

Riva, F. and Fahrig, L. 2022. The disproportionately high value of small patches for biodiversity conservation. Conservation Letters: A Journal of the Society for Conservation Biology. 15:3.

Sameng Inc. 2020. Sturgeon County Drainage Master Plan 2019 – Final Report. Prepared for Sturgeon County, Alberta.

Statistics Canada. 2021. Sturgeon County Census Profile, 2021 Census Population. https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?Lang=E&SearchText=Sturgeon%20County&DGUIDlist=2021A00054811059&GENDERlist=1,2,3&STATISTIClist=1&HEADERlist=0

Tremblay, M. and C. C. St. Clair. 2009. Factors affecting the permeability of transportation and riparian corridors to the movements of songbirds in an urban landscape. Journal of Applied Ecology 46: 1314–1322.

Appendix A: Geospatial Metadata

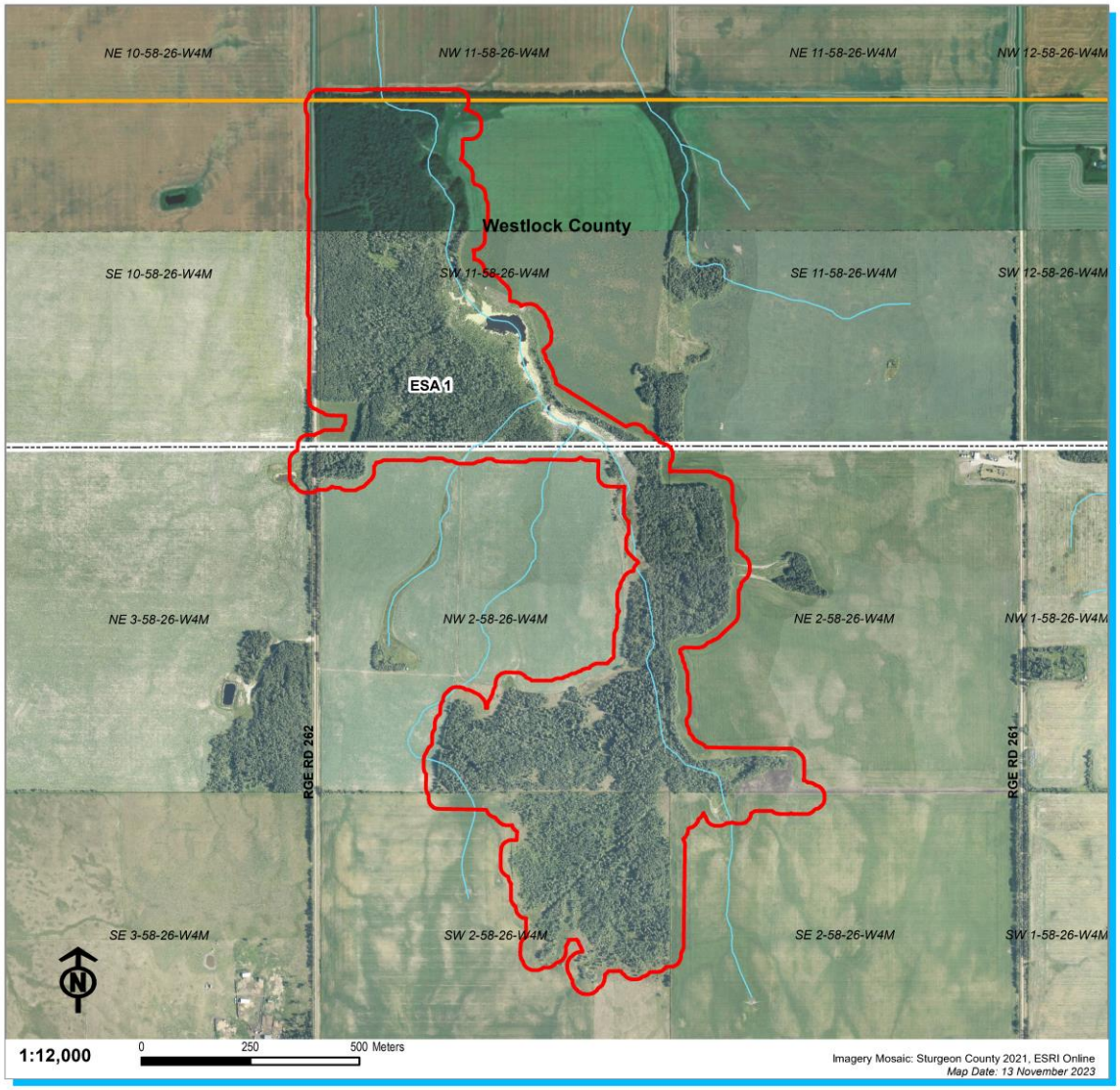
Table 1. Geospatial Metadata

Geospatial Data	Source	Most Recent Date Downloaded	Public Link
ABMI Wetland Inventory	Alberta Biodiversity Monitoring Institute (2021)	April 2021	https://abmi.ca/home/data-analytics/da-top/da-product-overview/Advanced-Landcover-Prediction-and-Habitat-Assessment--ALPHA--Products/ABMI-Wetland-Inventory.html
ACIMS Element Occurrences	Alberta Environment and Protected Areas (2022)	October 2023	https://www.albertaparks.ca/albertaparksca/management-land-use/alberta-conservation-information-management-system-acims/download-data/
Alberta ESAs	Fieral Biological Consulting Ltd. (2014)	2018	https://www.albertaparks.ca/albertaparksca/library/environmentally-significant-areas-report/
Alberta Merged Wetland Inventory	Alberta Environment and Parks (2020)	September 2022	https://geodiscover.alberta.ca/GDA/Viewer/?Viewer=GDA
Central Parkland Vegetation Inventory	Alberta Environment and Parks (2012)	August 2018	https://open.alberta.ca/opendata/gda-351dd940-9110-4218-9cc9-cb159a9ac20a#detailed
FWMIS Special Status Wildlife Species (2000-2021 records)	Alberta Environment and Protected Areas (2022)	November 2022	https://www.alberta.ca/access-fwmis-data
FWMIS Wildlife Sensitivities Layers	Alberta Environment and Parks (2010 - 2013)	October 2023	https://www.alberta.ca/wildlife-sensitivity-maps
Glacial Landforms	Alberta Energy Regulator (2018)	December 2022	https://ags.aer.ca/publication/dig-2014-0022
North Saskatchewan Watershed Alliance Riparian Intactness	Fieral Biological Consulting Ltd. (2021)	June 2023	N/A
NSWA Landcover Data	Fieral Biological Consulting Ltd. (2021)	October 2022	N/A
Provincial Hydrology Mapping	FWMIS (2019) and Altalis (1996)	July 2022	https://www.altalis.com/ ; https://www.alberta.ca/access-fwmis-data
Provincial Protected Areas	Alberta Parks (2023)	July 2023	https://www.albertaparks.ca/albertaparksca/management-land-use/alberta-conservation-information-management-system-acims/download-data/
Sturgeon County 1989 ESA Inventory	InfoTech Services and Associates (1989)	September 2023	N/A
Sturgeon County Land Use Bylaw Environmental Protection & Preservation Ares and Land Use Bylaw Overlays	Sturgeon County (2017)	October 2022	N/A
Sturgeon County Vegetation Mapping - Drainage Master Plan	Sameng Inc. (2020)	October 2022	N/A
Surficial Geology	Alberta Energy Regulator (2016)	June 2023	https://open.alberta.ca/opendata/gda-dig_2013_0002

Appendix B: ESA Data Sheets

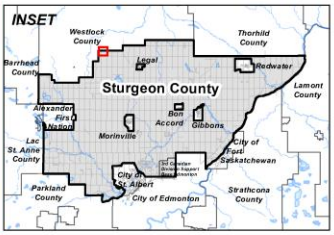
ESA 1

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

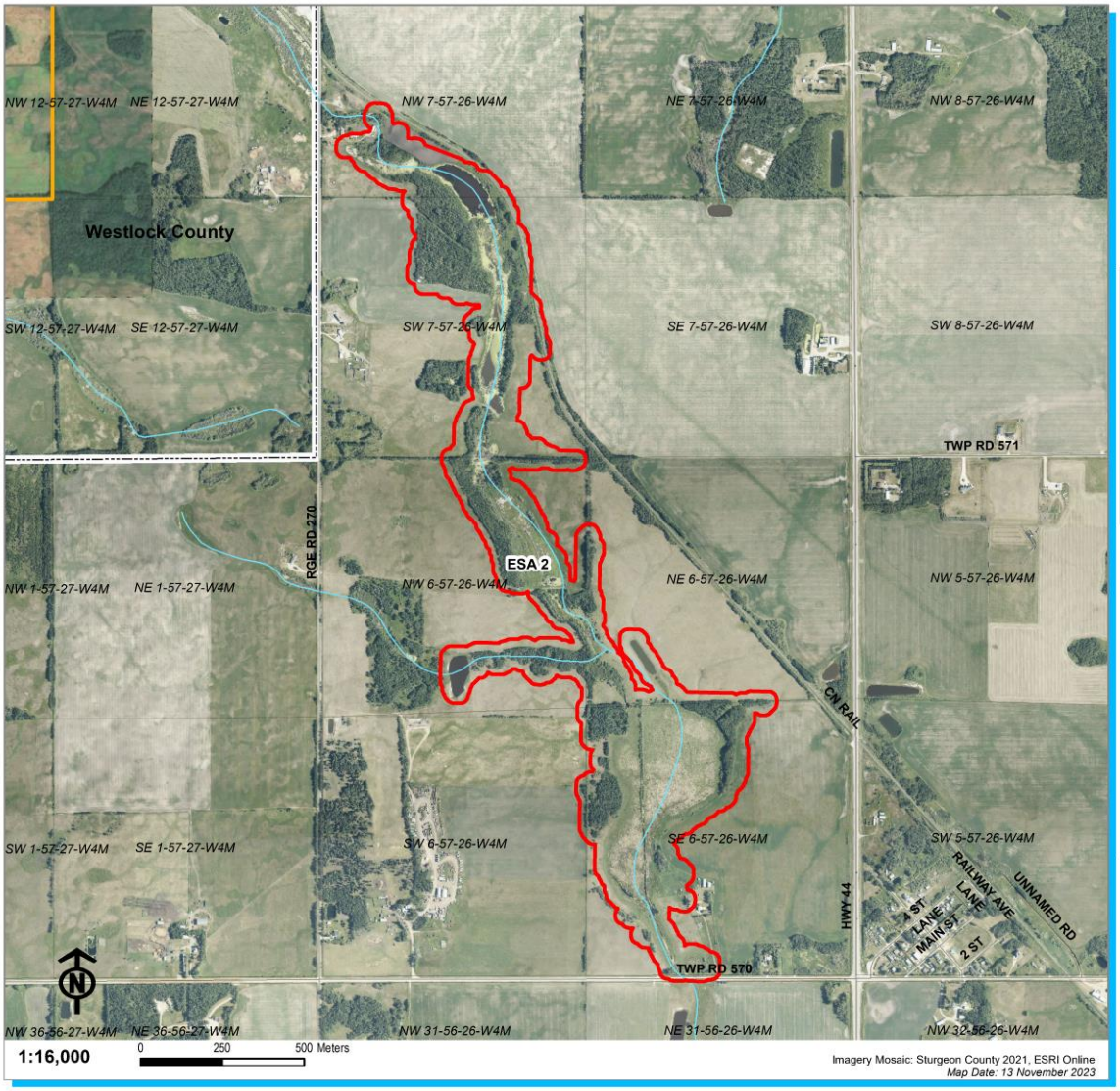


MAPPED ESA AREA[1] (ESA 1)	93.67 ha
LAND COVER TYPES (%)	Forest (79%); Natural Grassland (2%); Open Water (<0.5%); Wetland (18%)
LANDFORMS	Crevasse Filling, Groove, Moraine Ridge
SURFICIAL GEOLOGY	Moraine, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Significant portion of ESA is located outside of County; regulated water bodies (watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks; interior forest habitat likely present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

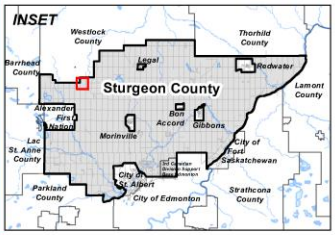
ESA 2

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

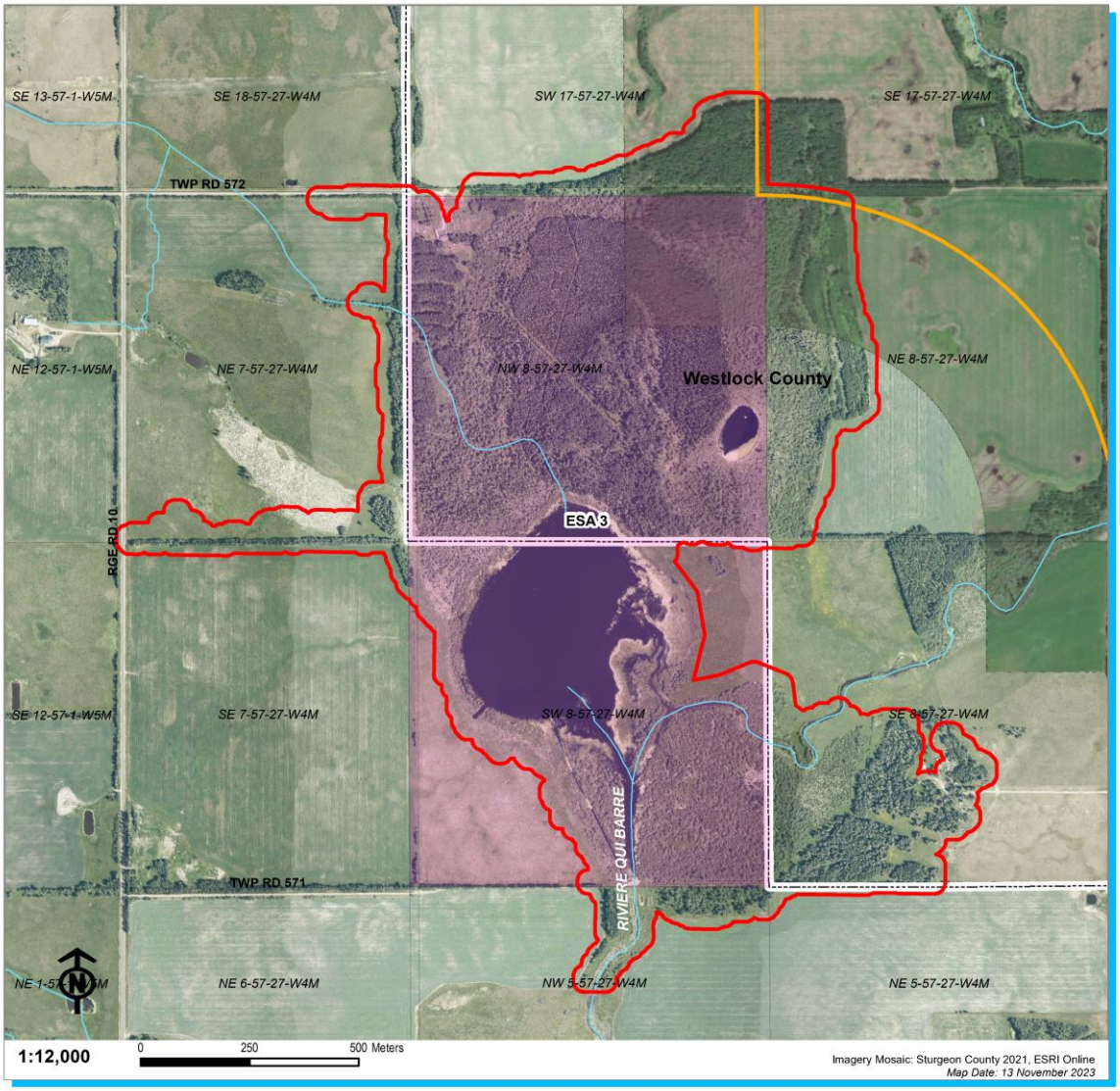


MAPPED ESA AREA[1] (ESA 2)	85.14 ha
LAND COVER TYPES (%)	Forest (51%); Natural Grassland (1%); Open Water (3%); Wetland (45%)
LANDFORMS	Crevasse Filling, Minor Meltwater Channel
SURFICIAL GEOLOGY	Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

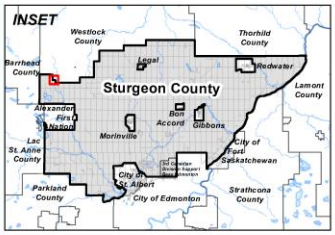
ESA 3

Significance Level: Provincial



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

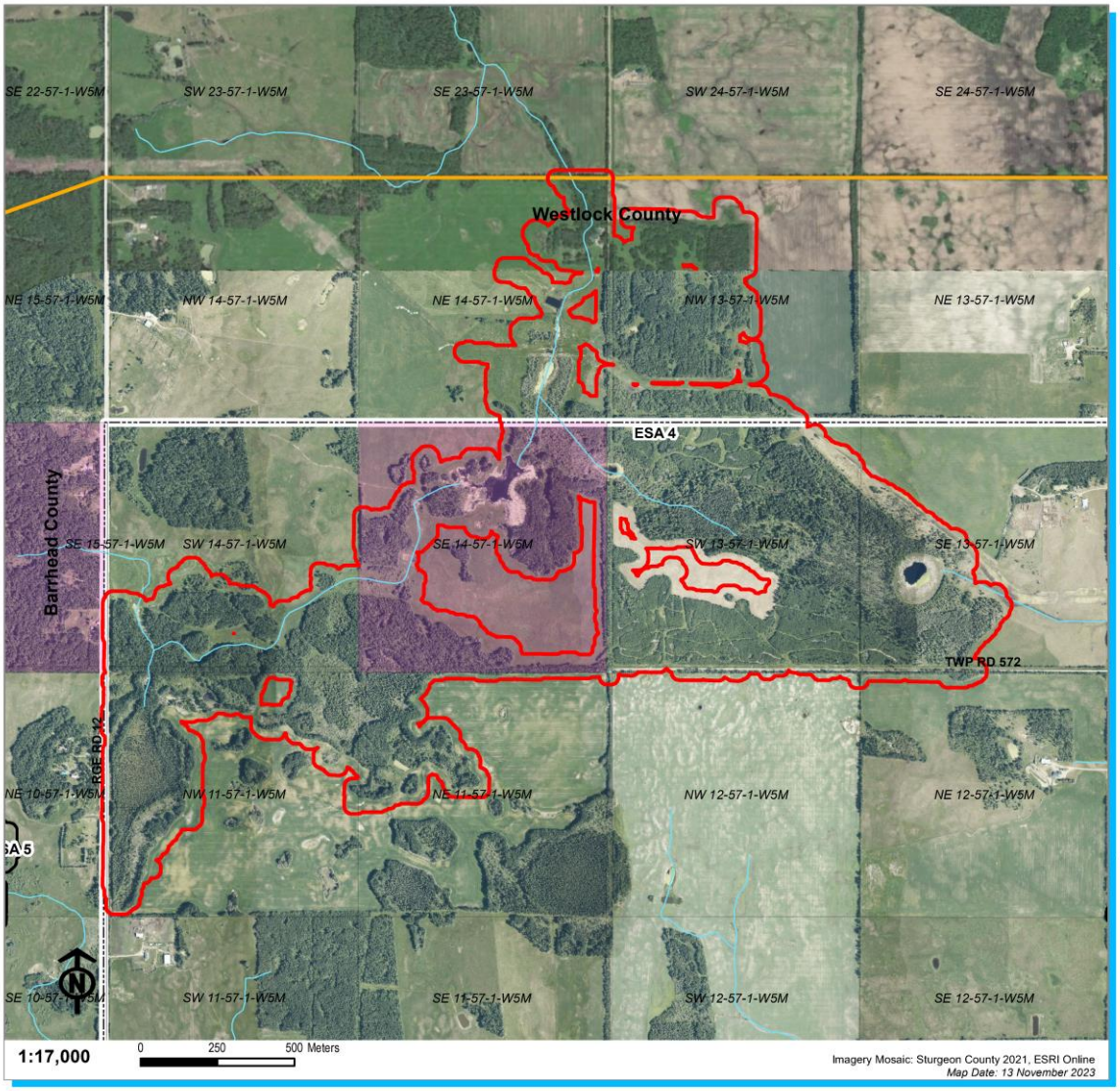


MAPPED ESA AREA[1] (ESA 3)	177.47 ha
LAND COVER TYPES (%)	Forest (19%); Natural Grassland (<0.5%); Open Water (5%); Wetland (76%)
LANDFORMS	Drumlinoid or Streamlined Landform, Esker
SURFICIAL GEOLOGY	Glaciolacustrine Deposits, Moraine
FISHERIES SENSITIVITIES[2]	Fish-bearing water body (Riviere Qui Barre)
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Significant portion of ESA is located outside of County; regulated water bodies (lakes, watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat likely present; Federal *Fisheries Act* applies to all fish-bearing waters

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

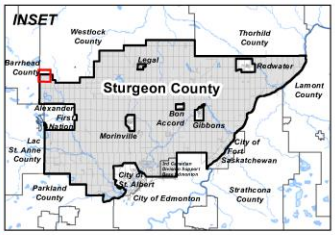
ESA 4

Significance Level: Provincial



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

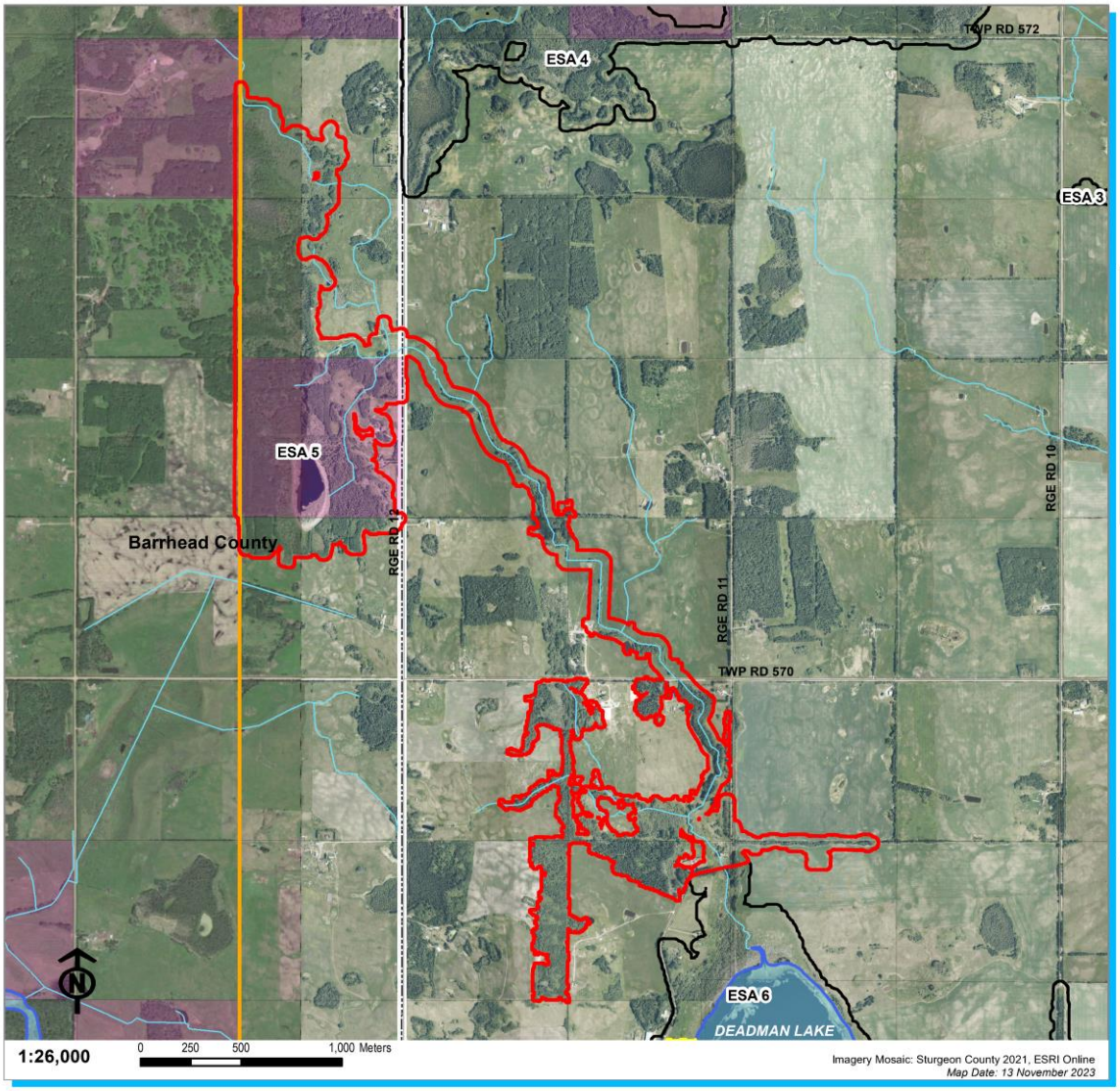


MAPPED ESA AREA[1] (ESA 4)	263.64 ha
LAND COVER TYPES (%)	Forest (57%); Natural Grassland (<0.5%); Open Water (<0.5%); Wetland (43%)
LANDFORMS	Ice-Thrust Ridge, Moraine Ridge
SURFICIAL GEOLOGY	Moraine, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat likely present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

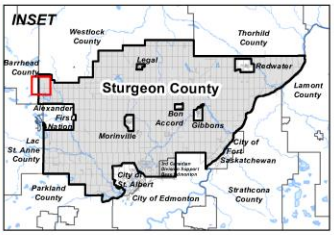
ESA 5

Significance Level: Provincial



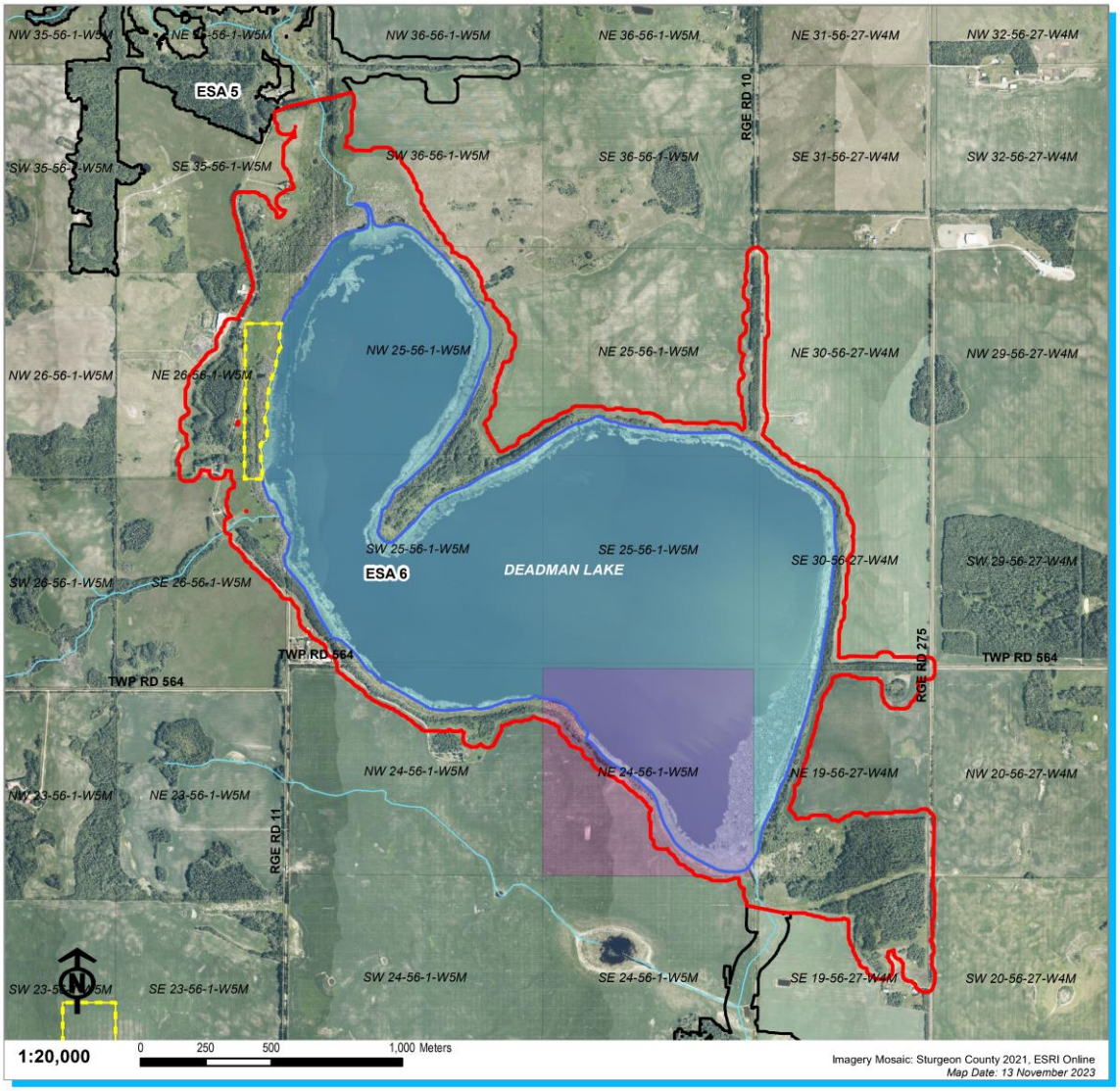
Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area



MAPPED ESA AREA[1] (ESA 5)	239.16 ha
LAND COVER TYPES (%)	Forest (51%); Natural Grassland (<0.5%); Open Water (1%); Wetland (48%)
LANDFORMS	Moraine Ridge
SURFICIAL GEOLOGY	Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Significant portion of ESA is located outside of County; regulated water bodies (watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat likely present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

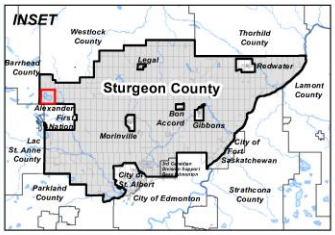


ESA 6

Significance Level: Provincial

Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

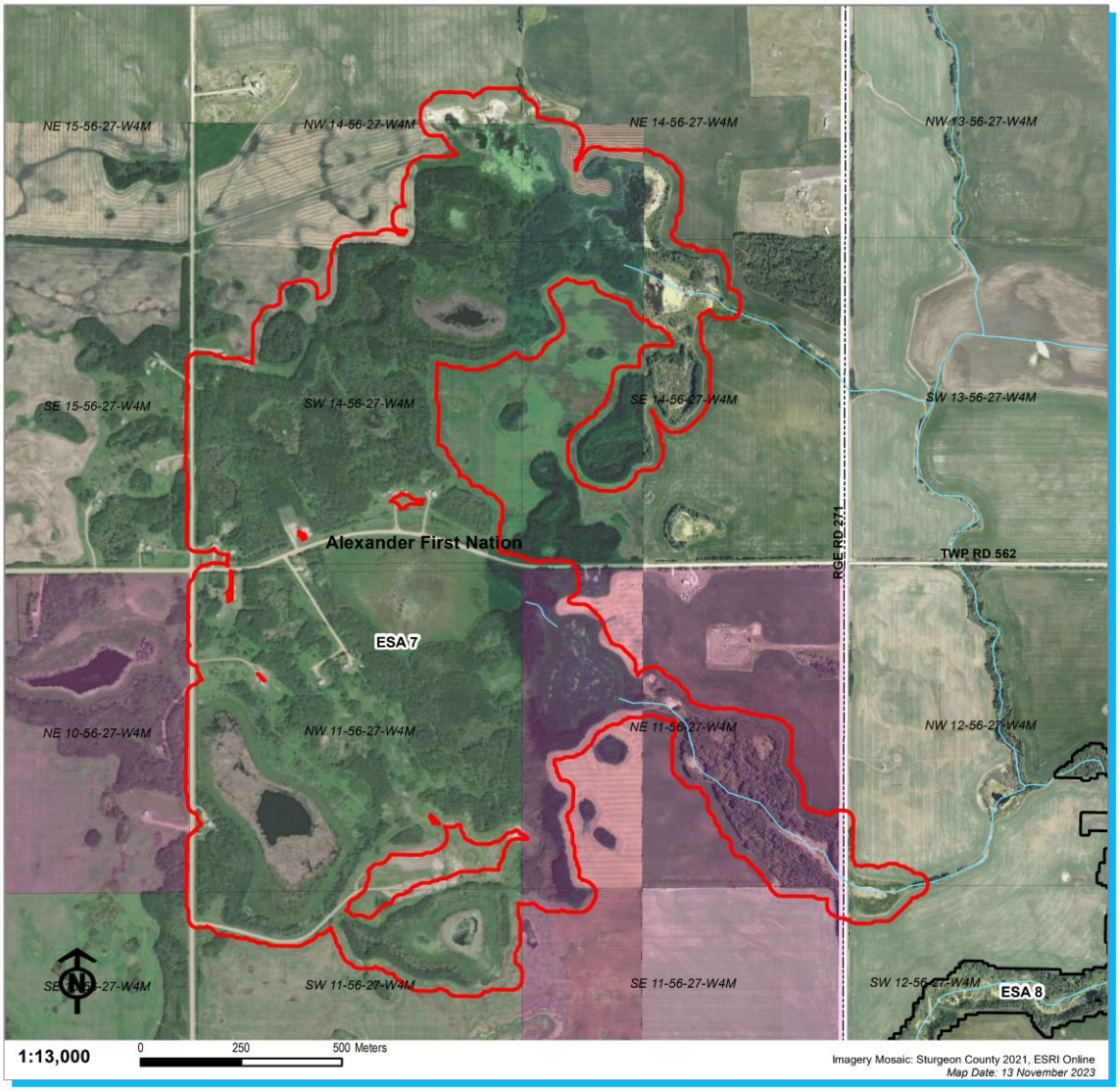


MAPPED ESA AREA[1] (ESA 6)	430.29 ha
LAND COVER TYPES (%)	Forest (11%); Natural Grassland (<0.5%); Open Water (48%); Wetland (41%)
LANDFORMS	Moraine Ridge
SURFICIAL GEOLOGY	Ice-thrust moraine, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Deadman Lake (R8)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (5.73 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (lakes, watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; manage ESA lands adjacent to protected parcels as a natural buffer to increase the sustainability and value of protected areas; restoration opportunities may be present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

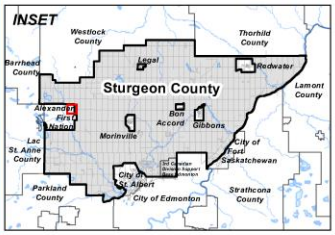
ESA 7

Significance Level: Provincial



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

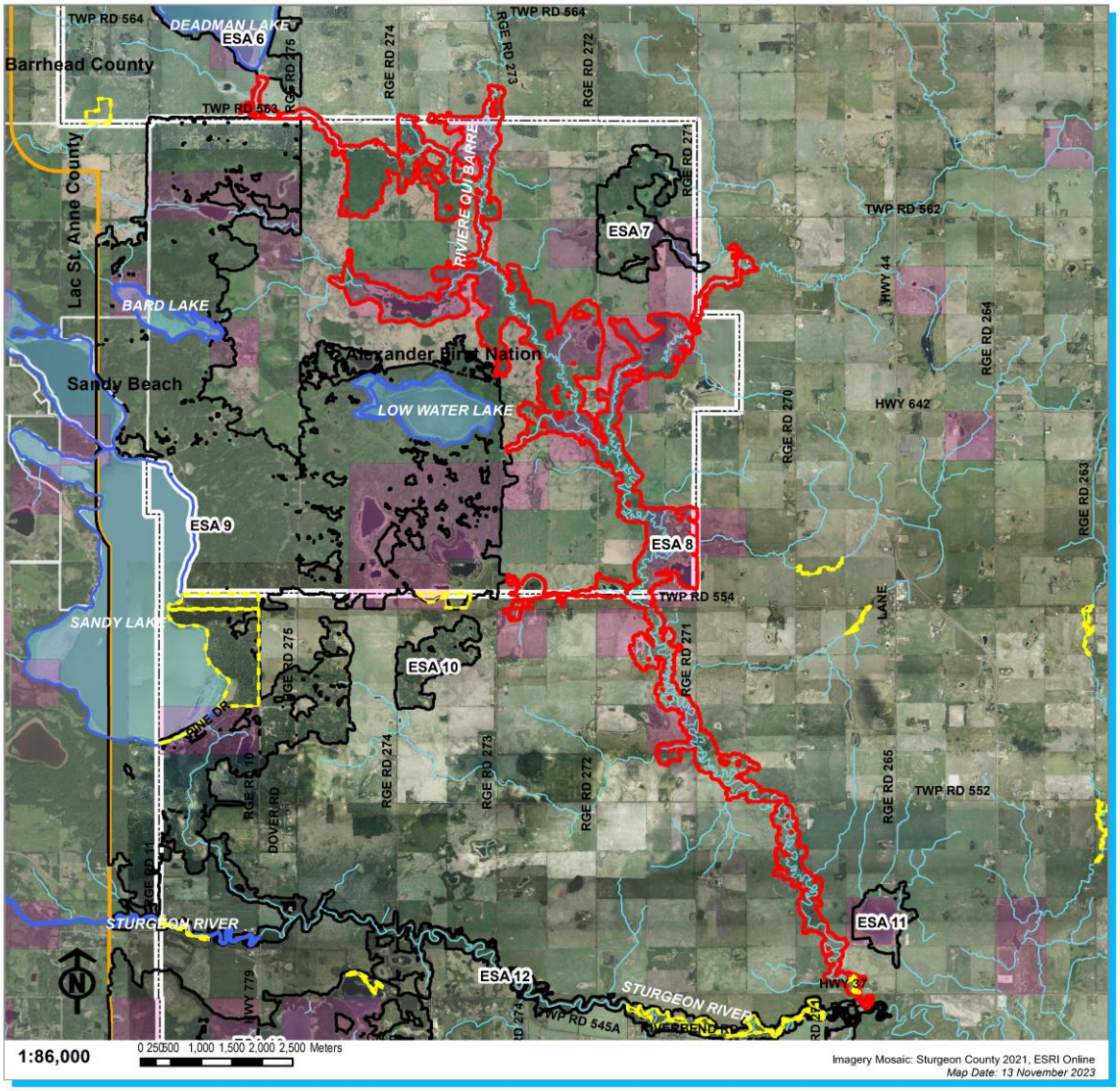


MAPPED ESA AREA[1] (ESA 7)	202.64 ha
LAND COVER TYPES (%)	Forest (51%); Natural Grassland (1%); Wetland (48%)
LANDFORMS	None
SURFICIAL GEOLOGY	Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Large majority of ESA is on Alexander First Nation IR 134; regulated wetlands and watercourse may be present in portion in the County, where Alberta *Water Act*, Alberta Wetland Policy apply; grasslands may support native prairie remnants and may support sharp-tailed grouse leks; interior forest habitat may be present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

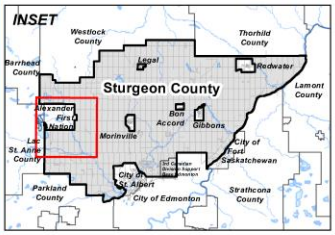
ESA 8

Significance Level: Provincial



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

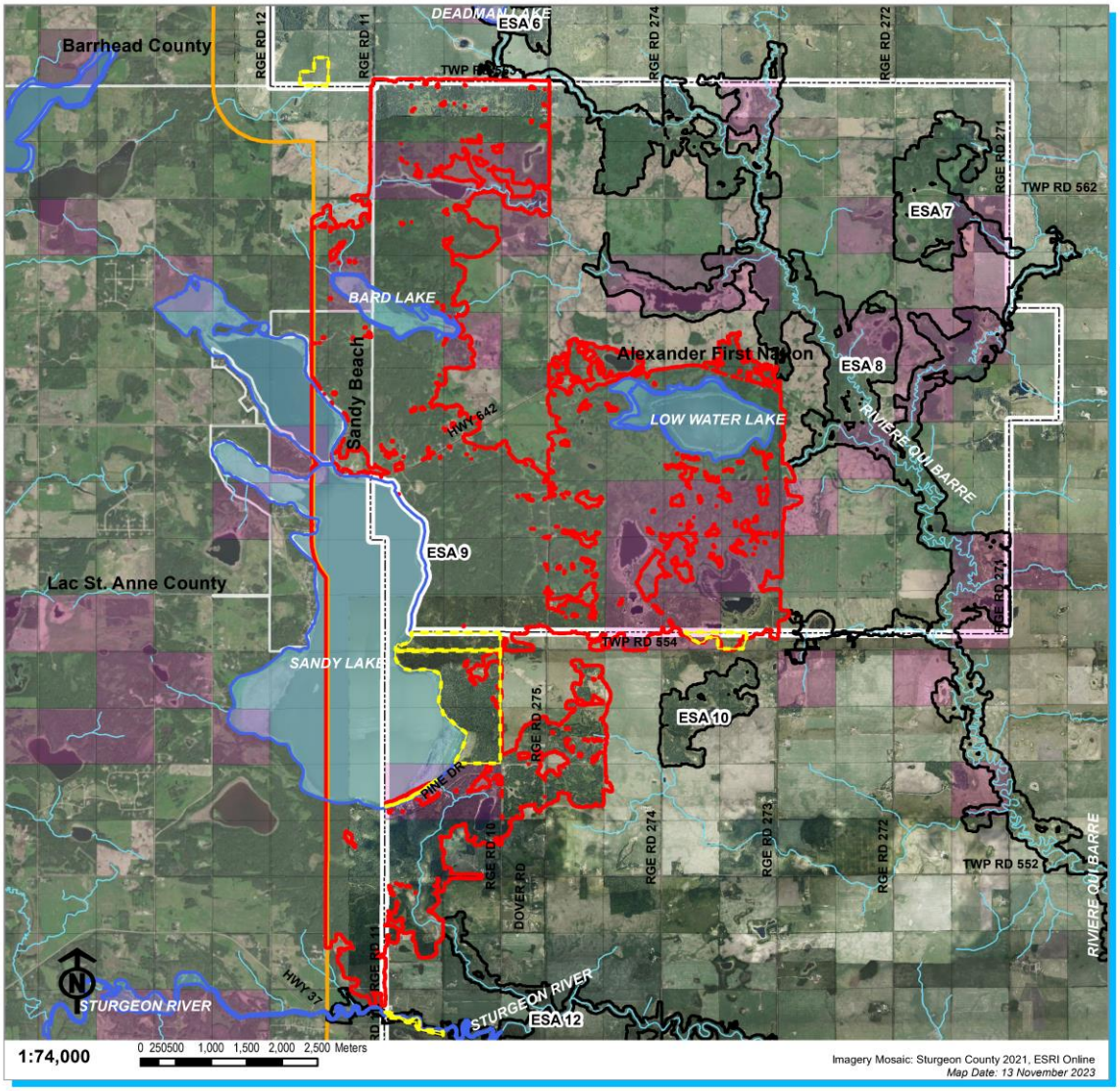


MAPPED ESA AREA[1] (ESA 8)	1398.7 ha
LAND COVER TYPES (%)	Forest (47%); Natural Grassland (4%); Open Water (3%); Wetland (47%)
LANDFORMS	None
SURFICIAL GEOLOGY	Fluvial Deposits, Glaciolacustrine Deposits, Ice-thrust moraine, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	Fish-bearing water body (Riviere Qui Barre)
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (0.54 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Significant portion of ESA is located on Alexander First Nation IR 134; regulated water bodies (watercourses and wetlands) are present - for County lands Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks; interior forest habitat likely present; federal *Fisheries Act* applies to all fish-bearing waters; aim to manage lands collaboratively with neighbouring jurisdiction

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

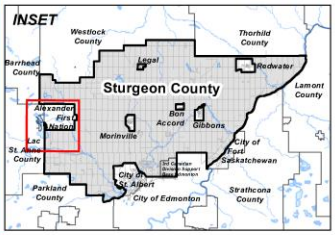
ESA 9

Significance Level: Provincial



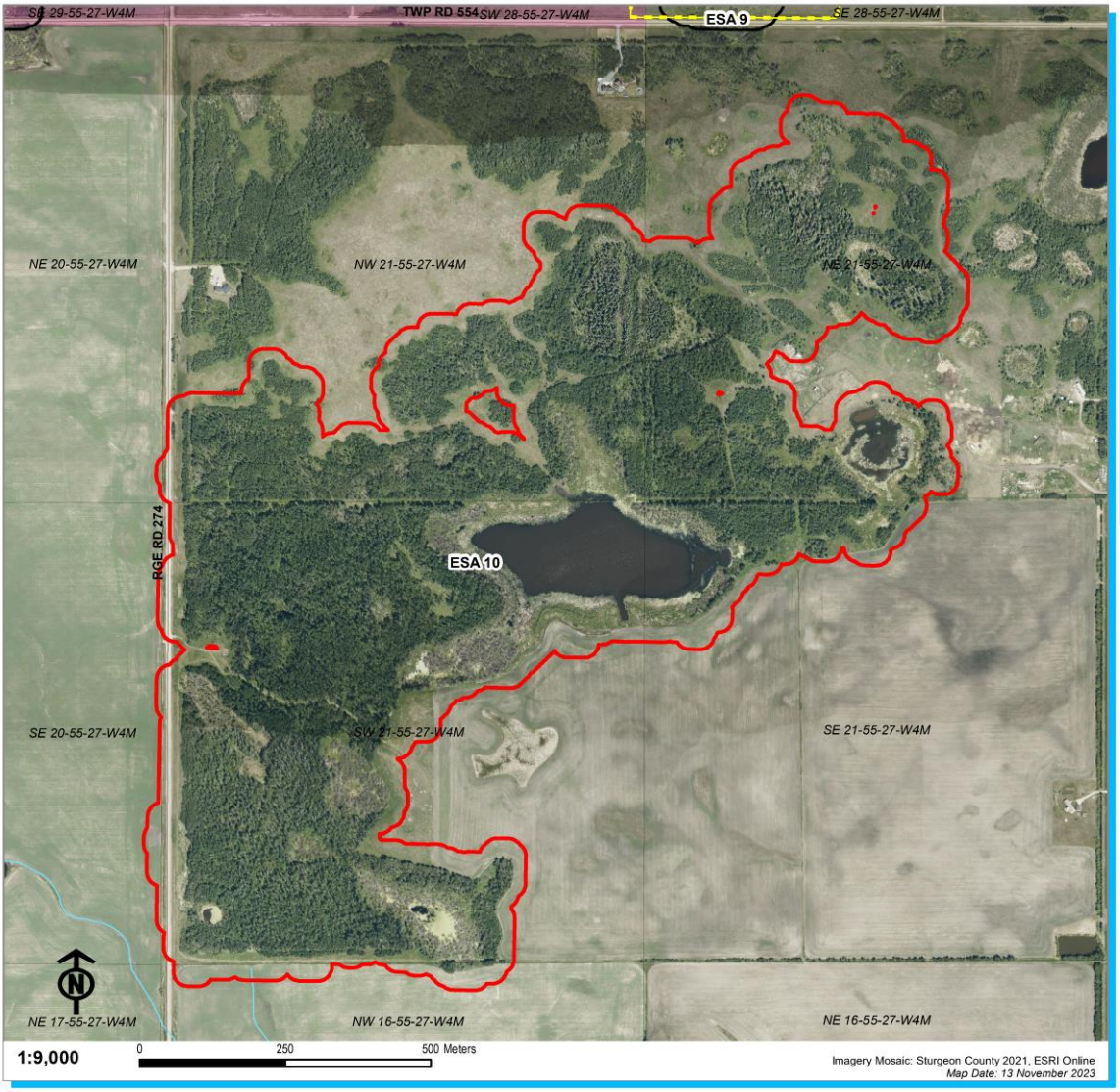
Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area



MAPPED ESA AREA[1] (ESA 9)	4432.62 ha
LAND COVER TYPES (%)	Forest (49%); Natural Grassland (2%); Open Water (19%); Wetland (30%)
LANDFORMS	Ice-Thrust Ridge
SURFICIAL GEOLOGY	Glaciolacustrine Deposits, Ice-thrust moraine, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	Fish-bearing water body (Sandy Lake)
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	Clinton's Bulrush
COUNTY 1989 ESA INVENTORY	Sandy Lake (R6)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (170.3 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Significant portion of ESA is located on Alexander First Nation IR 134; in County portions, regulated water bodies (lakes, watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks; interior forest habitat likely present; federal *Fisheries Act* applies to all fish-bearing waters; aim to manage lands collaboratively with neighbouring jurisdictions

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

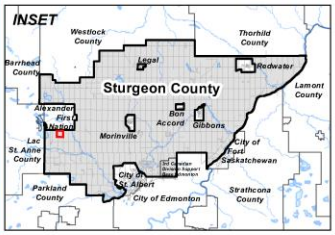


ESA 10

Significance Level: County

Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

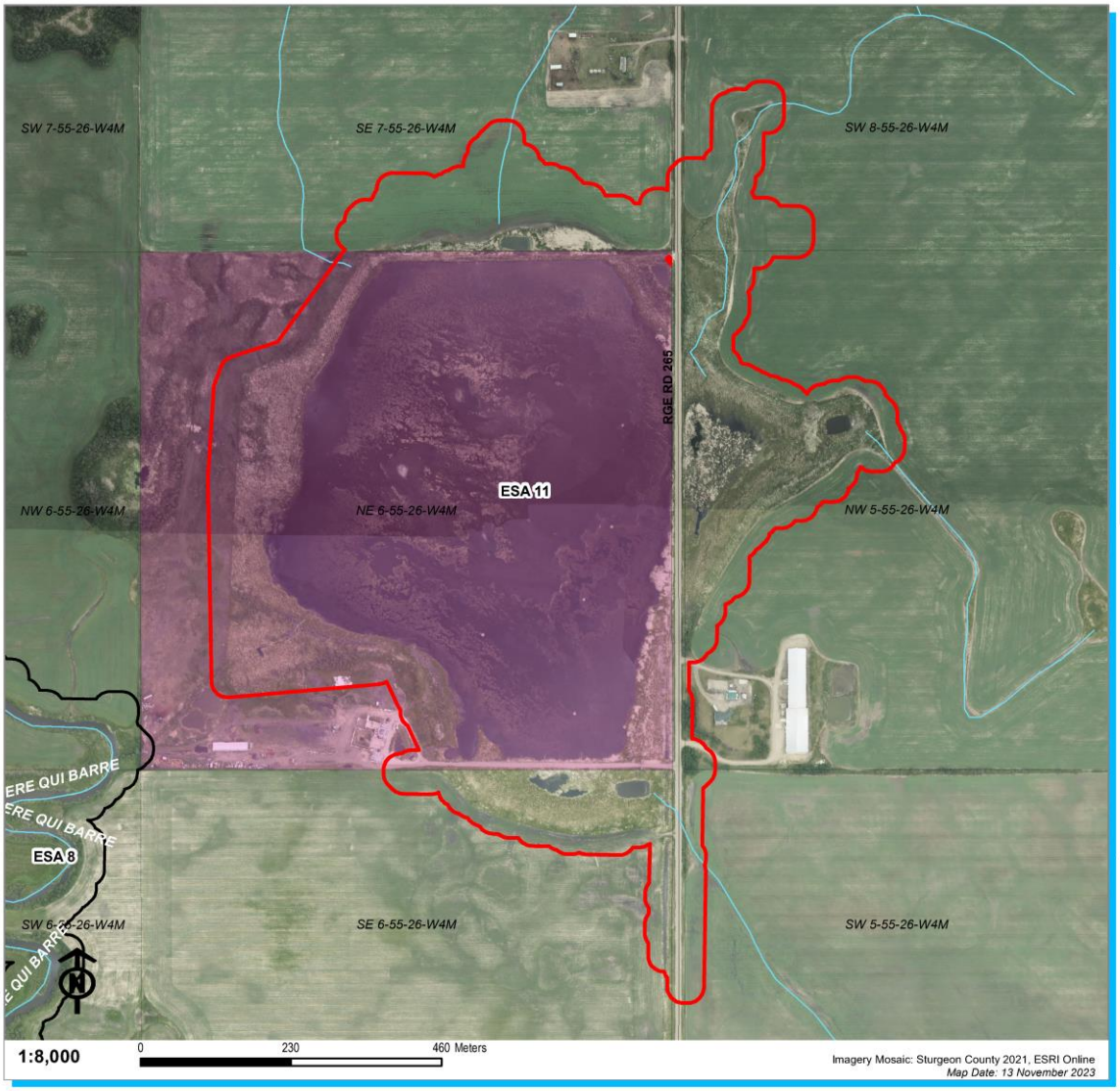


MAPPED ESA AREA[1] (ESA 10)	112.88 ha
LAND COVER TYPES (%)	Forest (48%); Natural Grassland (1%); Open Water (5%); Wetland (46%)
LANDFORMS	None
SURFICIAL GEOLOGY	Ice-thrust moraine, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (lakes and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks; interior forest habitat likely present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

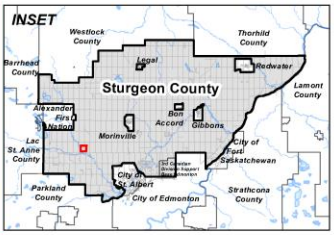
ESA 11

Significance Level: Provincial



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

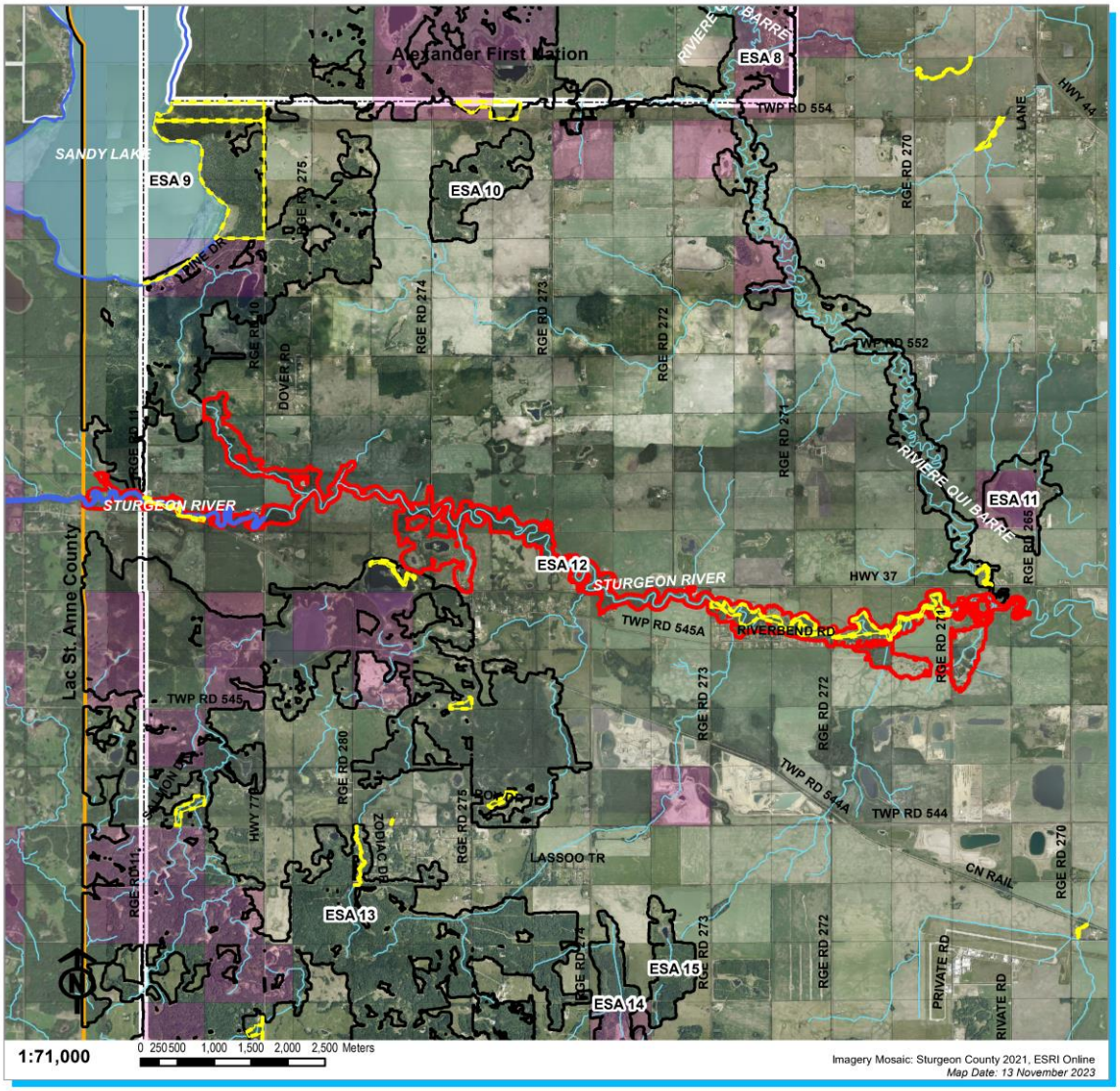


MAPPED ESA AREA[1] (ESA 11)	79.37 ha
LAND COVER TYPES (%)	Forest (<0.5%); Open Water (53%); Wetland (47%)
LANDFORMS	None
SURFICIAL GEOLOGY	Glaciolacustrine Deposits
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Riviere Qui Barre Slough (L31)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; restoration opportunities may be present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

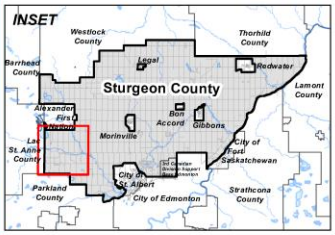
ESA 12

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

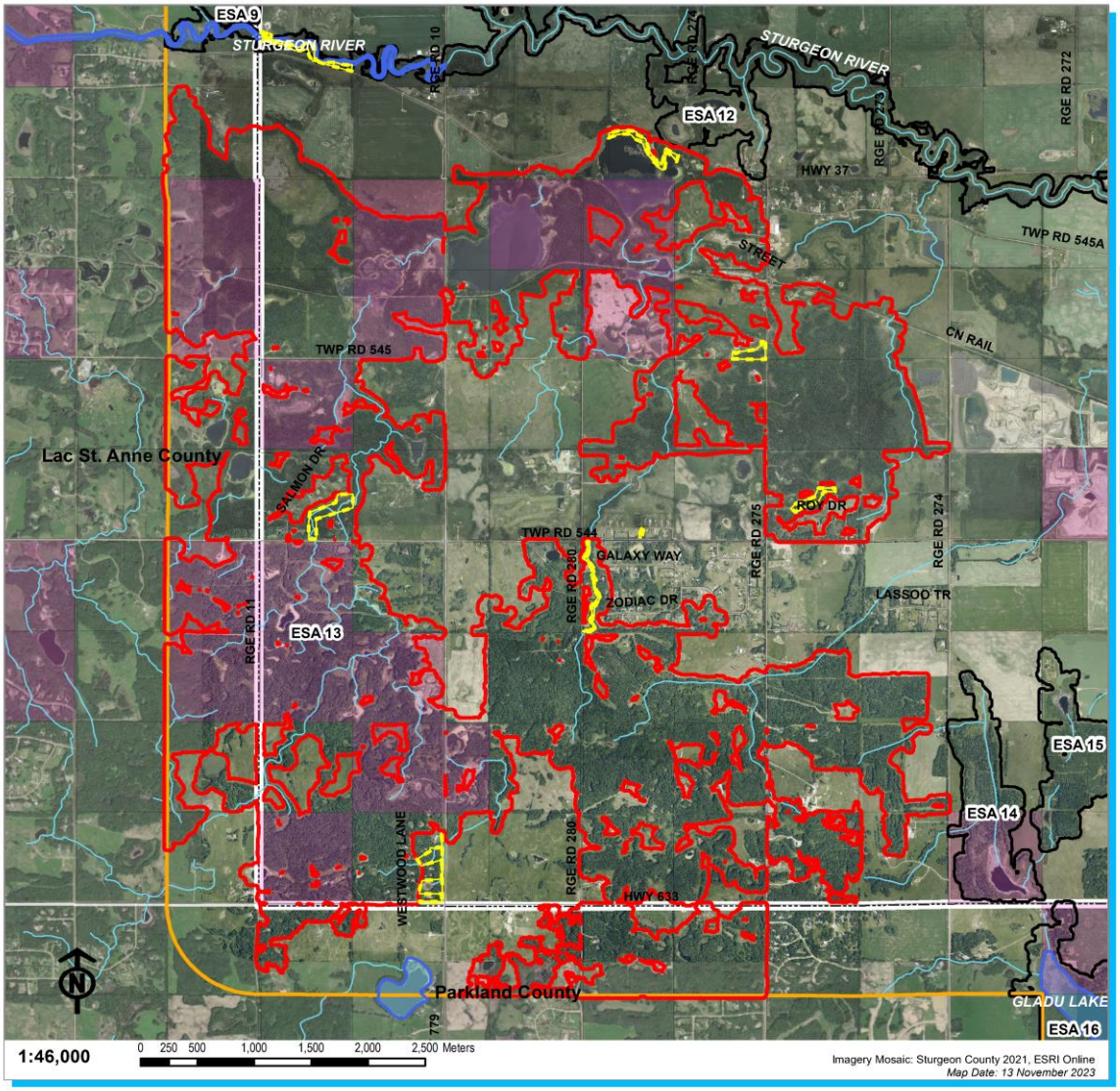


MAPPED ESA AREA[1] (ESA 12)	446.66 ha
LAND COVER TYPES (%)	Forest (42%); Natural Grassland (4%); Open Water (4%); Wetland (51%)
LANDFORMS	Minor Meltwater Channel
SURFICIAL GEOLOGY	Fluvial Deposits, Glaciolacustrine Deposits, Ice-thrust moraine, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	Fish-bearing water bodies (Sturgeon River; Riviere Qui Barre)
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Sandy Lake Southeast Shore (R7)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (31.35 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks; interior forest habitat likely present; federal *Fisheries Act* applies to all fish-bearing waters; manage ESA lands adjacent to protected parcels and riparian areas as a natural buffer to increase the sustainability and value of protected areas

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

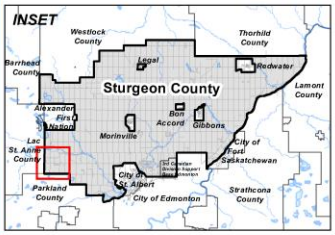
ESA 13

Significance Level: Provincial



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

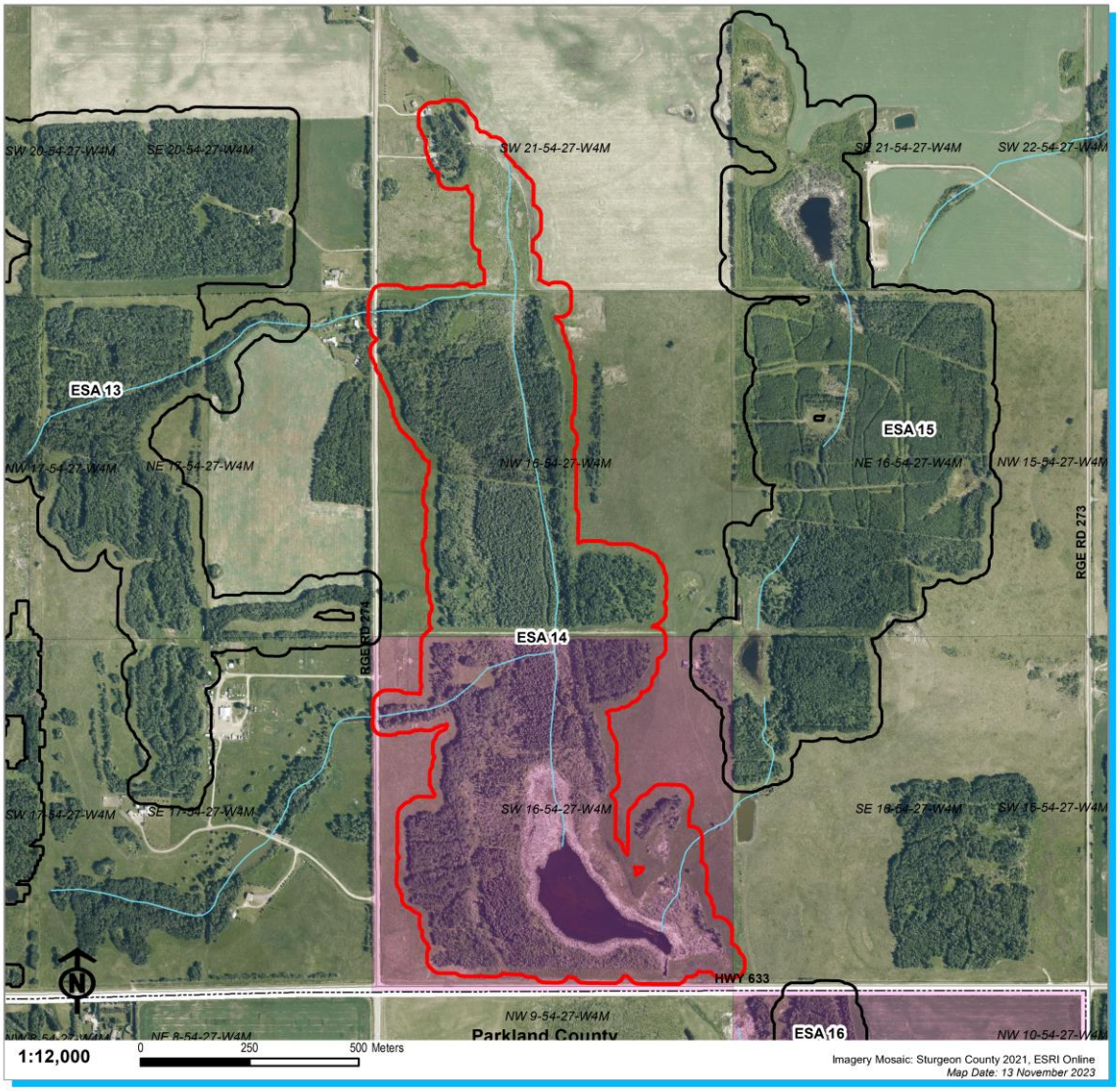


MAPPED ESA AREA[1] (ESA 13)	2856.38 ha
LAND COVER TYPES (%)	Forest (60%); Natural Grassland (1%); Open Water (3%); Wetland (36%)
LANDFORMS	Ice-Thrust Ridge, Minor Meltwater Channel
SURFICIAL GEOLOGY	Glaciolacustrine Deposits, Ice-thrust moraine, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	Baltimore Oriole
PLANT RECORDS[3] (*Species of Conservation Concern*)	Cosson's Hook Moss
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (14.47 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks; interior forest habitat likely present in some areas; manage ESA lands adjacent to protected parcels as a natural buffer to increase the sustainability and value of protected areas

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

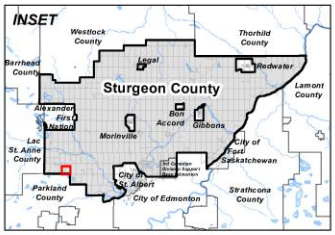
ESA 14

Significance Level: Provincial



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

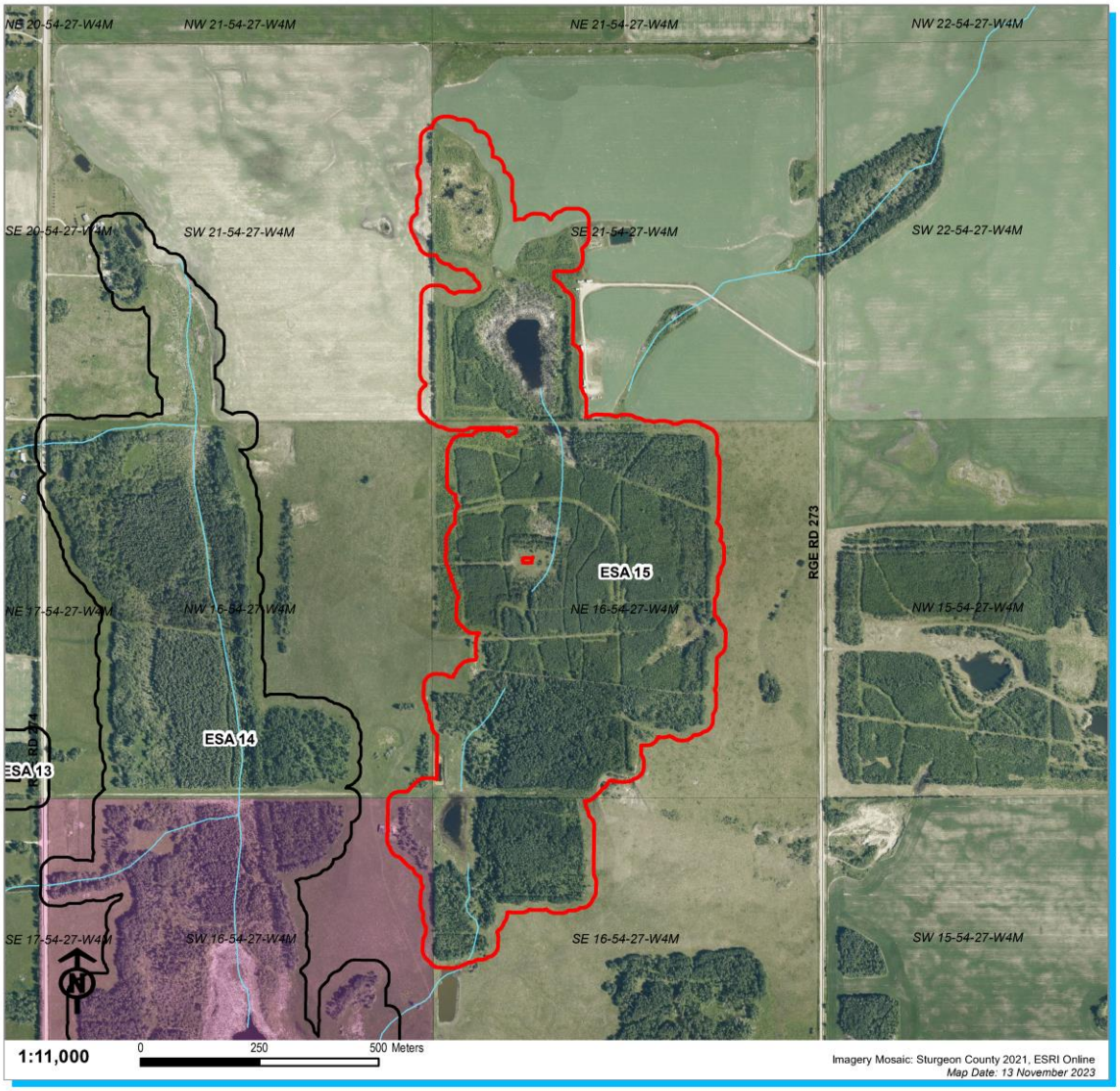


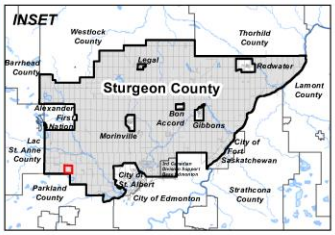
MAPPED ESA AREA[1] (ESA 14)	90.15 ha
LAND COVER TYPES (%)	Forest (40%); Natural Grassland (2%); Open Water (4%); Wetland (54%)
LANDFORMS	Minor Meltwater Channel
SURFICIAL GEOLOGY	Glaciolacustrine Deposits, Moraine, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (lakes, watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat may be present in some areas

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

ESA 15

Significance Level: Provincial



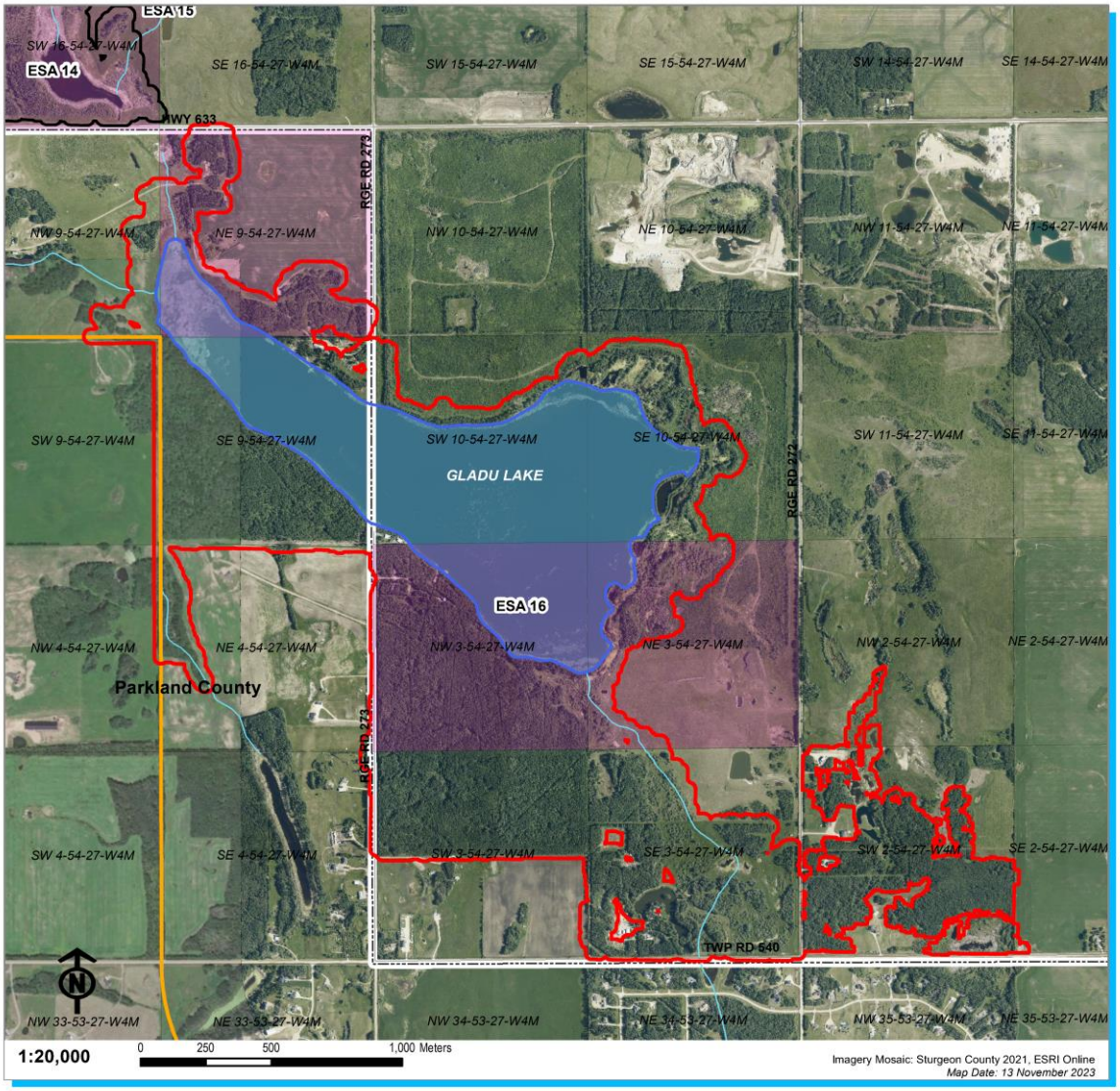


MAPPED ESA AREA[1] (ESA 15)	72.45 ha
LAND COVER TYPES (%)	Forest (70%); Natural Grassland (<0.5%); Open Water (1%); Wetland (29%)
LANDFORMS	None
SURFICIAL GEOLOGY	Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (watercourses (potentially) and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat may be present in some areas, although cutlines are numerous; restoration opportunities are present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

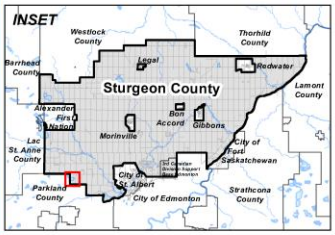
ESA 16

Significance Level: Provincial



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

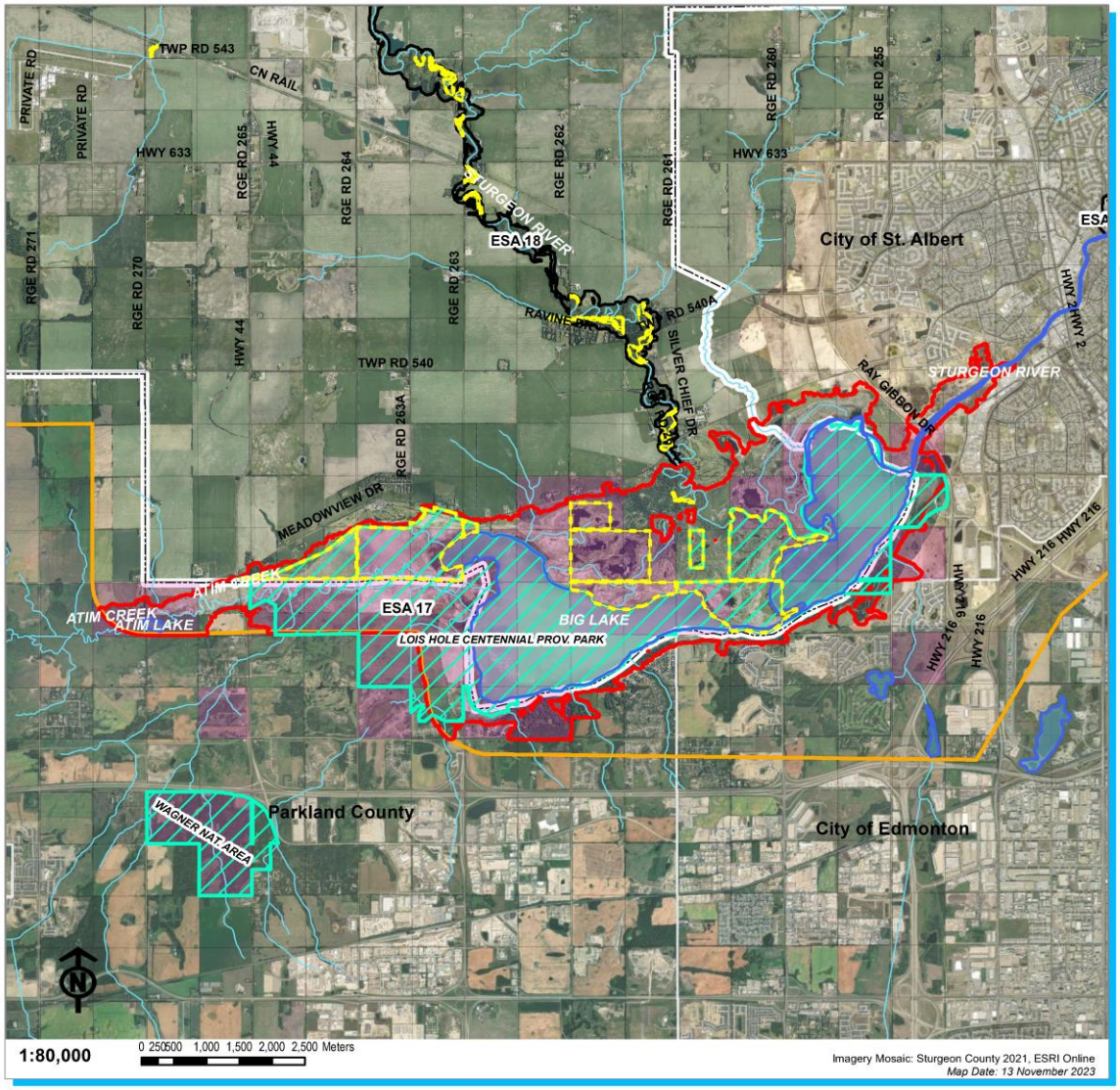


MAPPED ESA AREA[1] (ESA 16)	421.9 ha
LAND COVER TYPES (%)	Forest (45%); Natural Grassland (2%); Open Water (9%); Wetland (44%)
LANDFORMS	Minor Meltwater Channel
SURFICIAL GEOLOGY	Moraine, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Calahoo Upland (R9), Gladu Lake Upland (R10)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (lakes, watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks; interior forest habitat may be present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

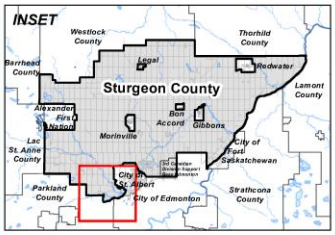
ESA 17

Significance Level: National



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

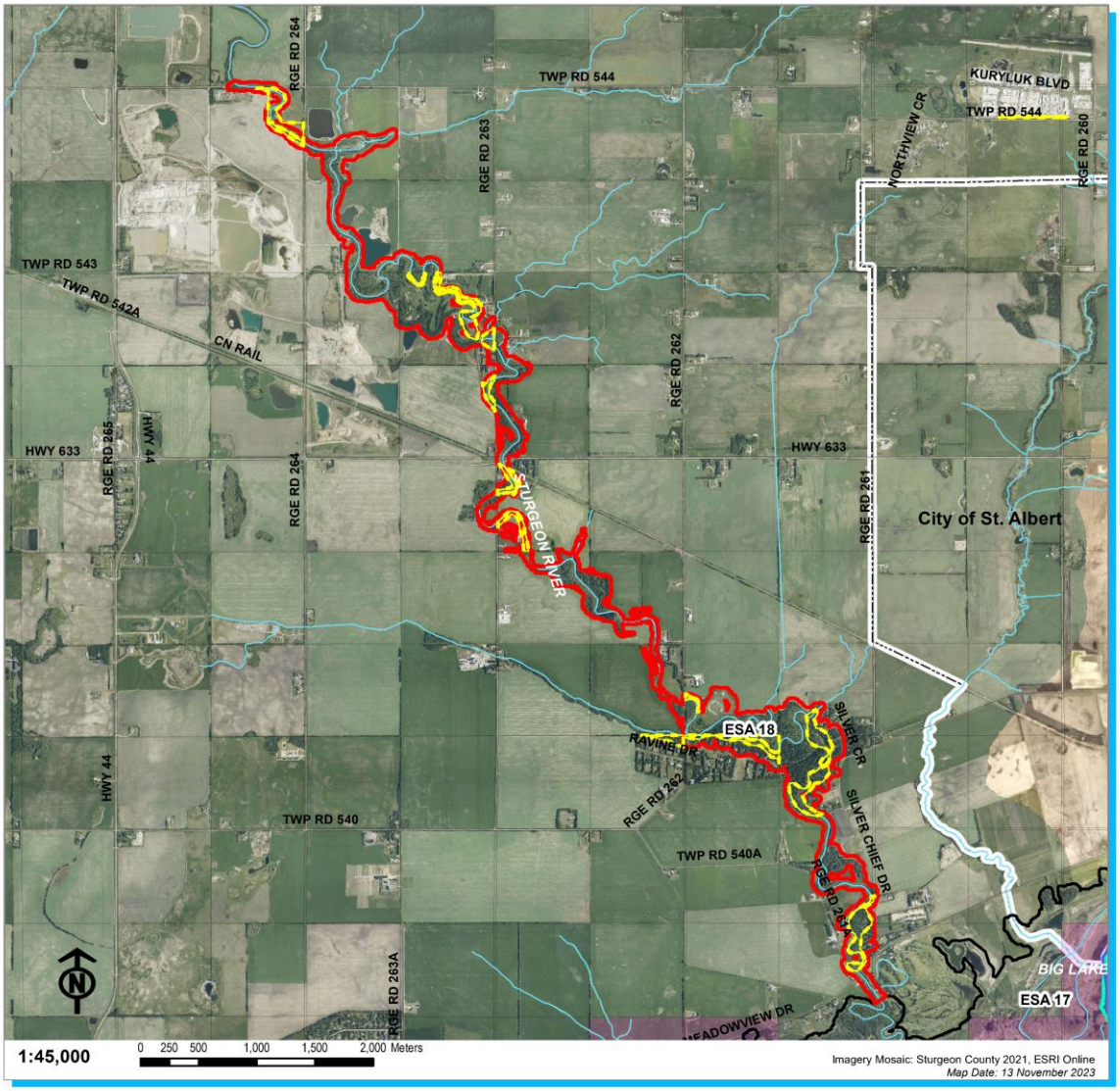


MAPPED ESA AREA[1] (ESA 17)	2932.95 ha
LAND COVER TYPES (%)	Forest (6%); Natural Grassland (1%); Open Water (36%); Wetland (58%)
LANDFORMS	Major Meltwater Channel
SURFICIAL GEOLOGY	Glaciolacustrine Deposits
FISHERIES SENSITIVITIES[2]	Fish-bearing water bodies (Sturgeon River; Atim Creek; Carrot Creek; Big Lake)
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	Black-Crowned Night-Heron, Boreal Toad, Eared Grebe, Great Blue Heron, Western Grebe
PLANT RECORDS[3] (*Species of Conservation Concern*)	Many-Fruited Leske's Moss, Purple-Fringed Riccia, River Bulrush, Smooth Sweet Cicely; Rare Habitat: Balsam Poplar / High-Bush Cranberry / Ostrich Fern Forest
COUNTY 1989 ESA INVENTORY	Big Lake (P1)
PROVINCIAL PROTECTED AREA	Lois Hole Centennial Provincial Park
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (543.49 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Significant portion of ESA is Lois Hole Centennial Provincial Park which includes an Important Bird Area; significant portions are protected by County; regulated water bodies (lakes, watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; federal *Fisheries Act* applies to all fish-bearing waters; manage ESA lands adjacent to protected parcels as a natural buffer to increase the sustainability and value of protected areas

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

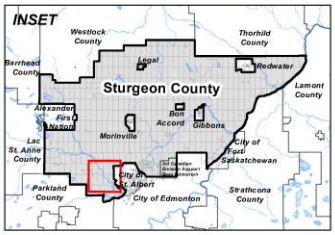
ESA 18

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

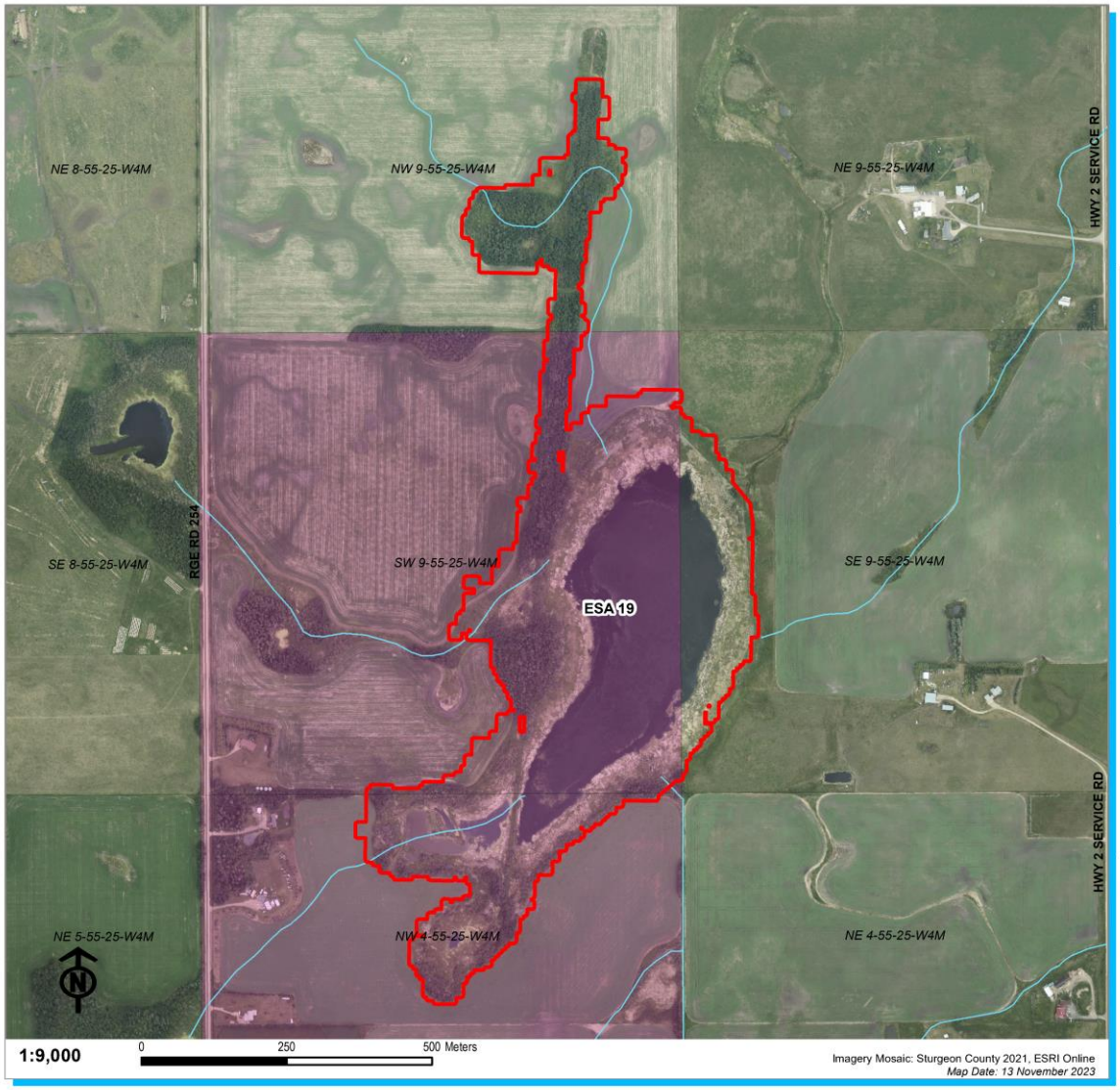


MAPPED ESA AREA[1] (ESA 18)	265.54 ha
LAND COVER TYPES (%)	Forest (42%); Natural Grassland (14%); Open Water (5%); Wetland (39%)
LANDFORMS	Drumlinoid or Streamlined Landform
SURFICIAL GEOLOGY	Fluvial Deposits, Glaciolacustrine Deposits
FISHERIES SENSITIVITIES[2]	Fish-bearing water body (Sturgeon River)
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	Least Flycatcher
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Villeneuve Gravel Pits (R11)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (37.78 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks; federal *Fisheries Act* applies to all fish-bearing waters; manage ESA lands adjacent to protected parcels and riparian areas as a natural buffer to increase the sustainability and value of protected areas

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

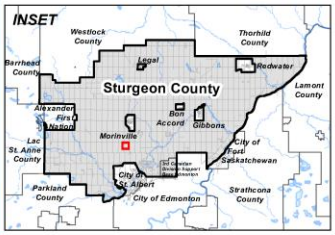
ESA 19

Significance Level: Provincial



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

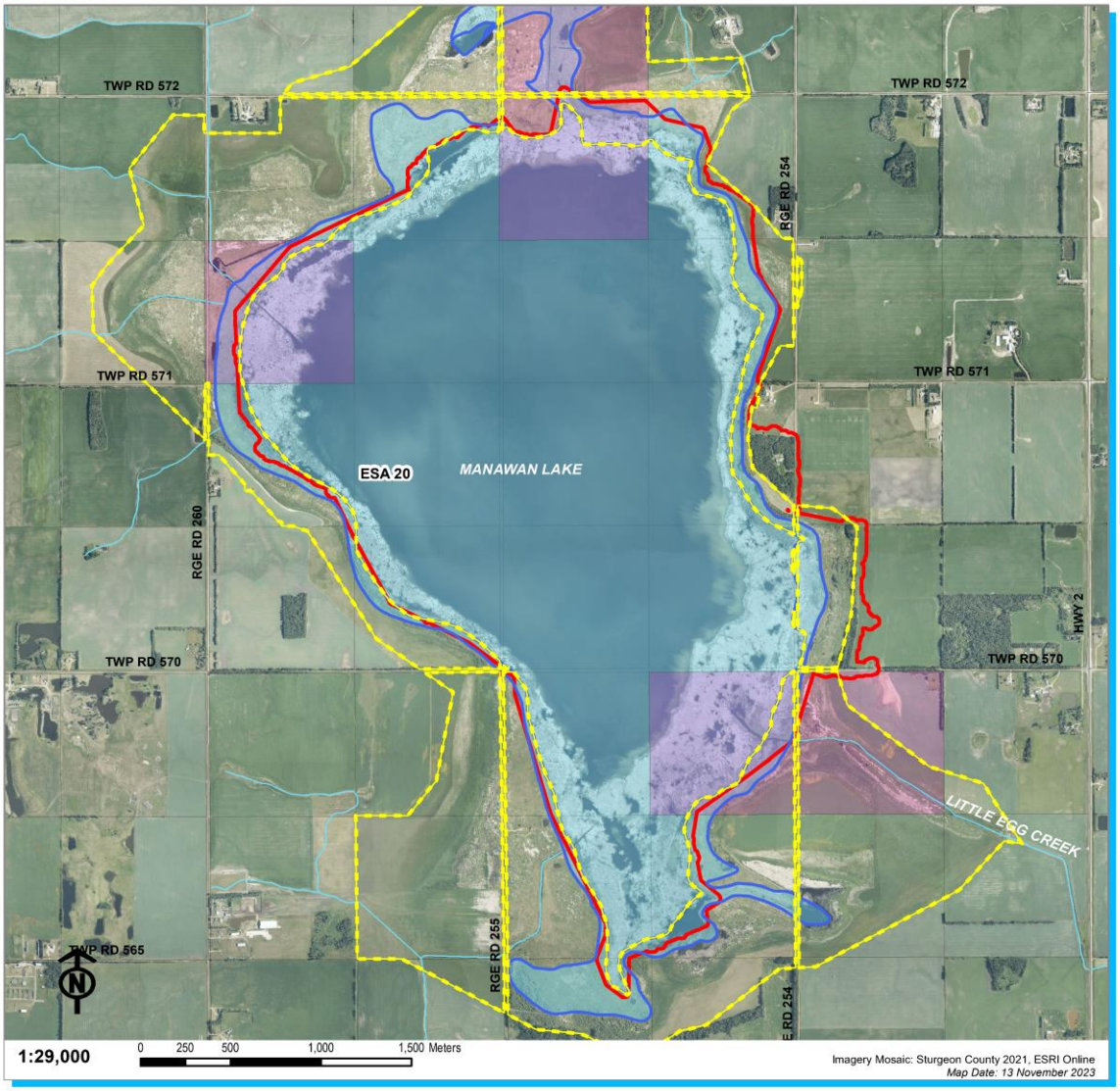


MAPPED ESA AREA[1] (ESA 19)	41.78 ha
LAND COVER TYPES (%)	Forest (8%); Open Water (4%); Wetland (89%)
LANDFORMS	None
SURFICIAL GEOLOGY	Glaciolacustrine Deposits, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	Fish-bearing water body (Carrot Creek)
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Morinville South Slough (L33)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; federal *Fisheries Act* applies to all fish-bearing waters

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

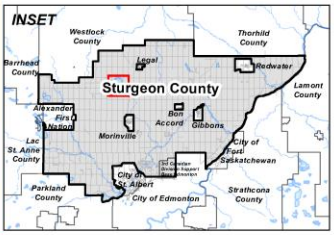
ESA 20

Significance Level: Provincial



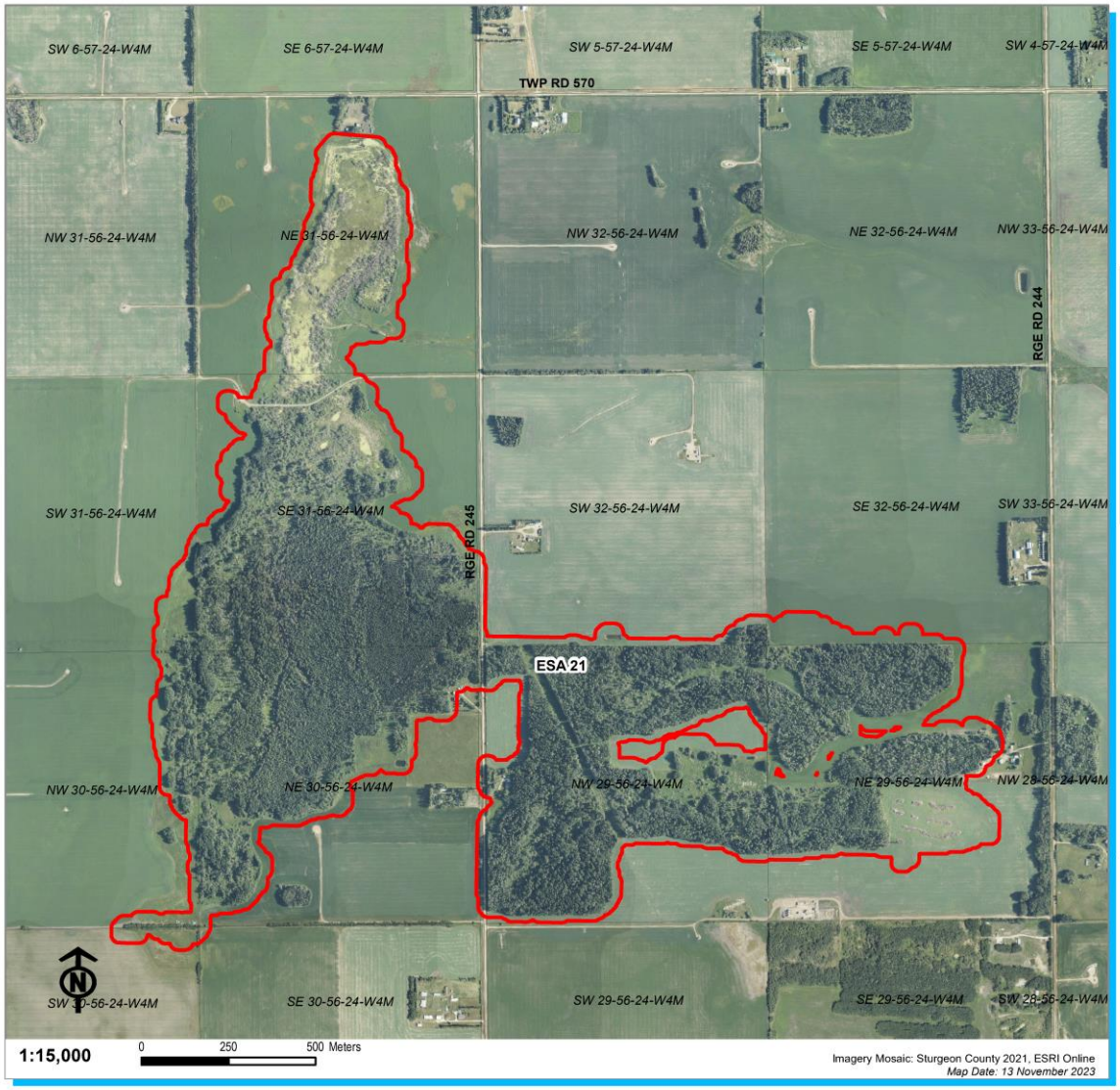
Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area



MAPPED ESA AREA[1] (ESA 20)	948.58 ha
LAND COVER TYPES (%)	Forest (1%); Natural Grassland (<0.5%); Open Water (52%); Wetland (47%)
LANDFORMS	None
SURFICIAL GEOLOGY	Glaciolacustrine Deposits, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	Fish-bearing water body (Manawan Lake; Little Egg Creek)
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Manawan (Egg) Lake (P2)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (104.52 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (lakes, watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks; federal *Fisheries Act* applies to all fish-bearing waters; manage ESA lands to protect wetland values adjacent; lands surrounding ESA are EP, support wetlands and are subject to flooding. EP and ESA lands should be managed similarly to protect resource values

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

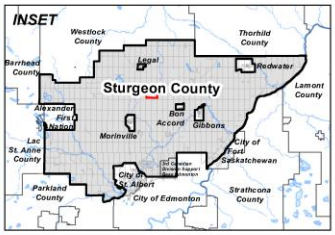


ESA 21

Significance Level: County

Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area



MAPPED ESA AREA[1] (ESA 21)	215.83 ha
LAND COVER TYPES (%)	Forest (33%); Natural Grassland (<0.5%); Wetland (67%)
LANDFORMS	Moraine Ridge
SURFICIAL GEOLOGY	Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	Barn Swallow
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for wetlands with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks; interior forest habitat likely present; restoration opportunities may be present

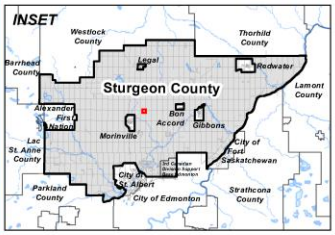
*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

ESA 22

Significance Level: County

Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

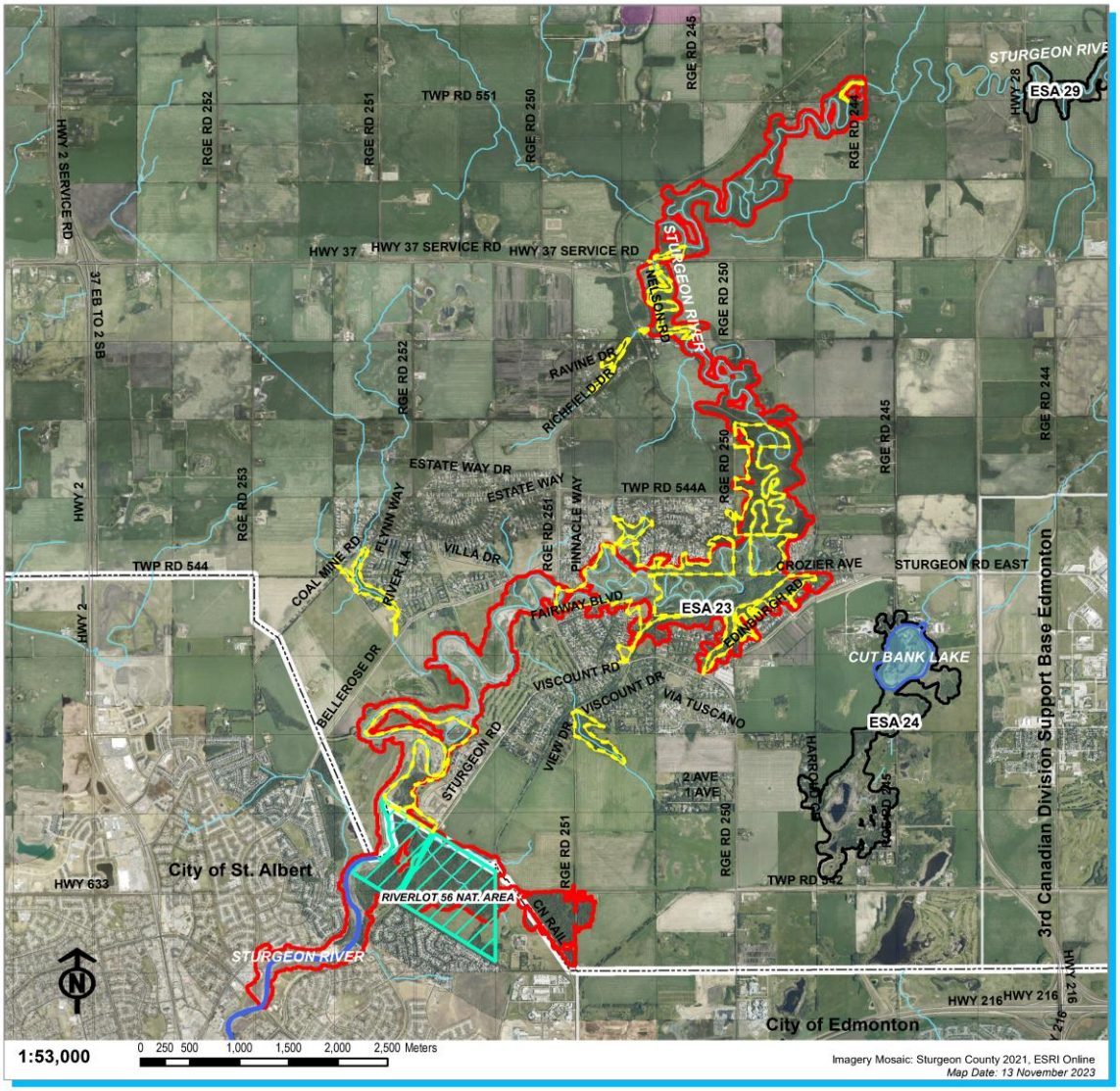


MAPPED ESA AREA[1] (ESA 22)	32.55 ha
LAND COVER TYPES (%)	Forest (<0.5%); Natural Grassland (<0.5%); Open Water (8%); Wetland (91%)
LANDFORMS	None
SURFICIAL GEOLOGY	Glaciolacustrine Deposits, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Morinville East Slough (L32)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy and potentially *Public Lands Act* applies; restoration opportunities may be present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

ESA 23

Significance Level: Provincial

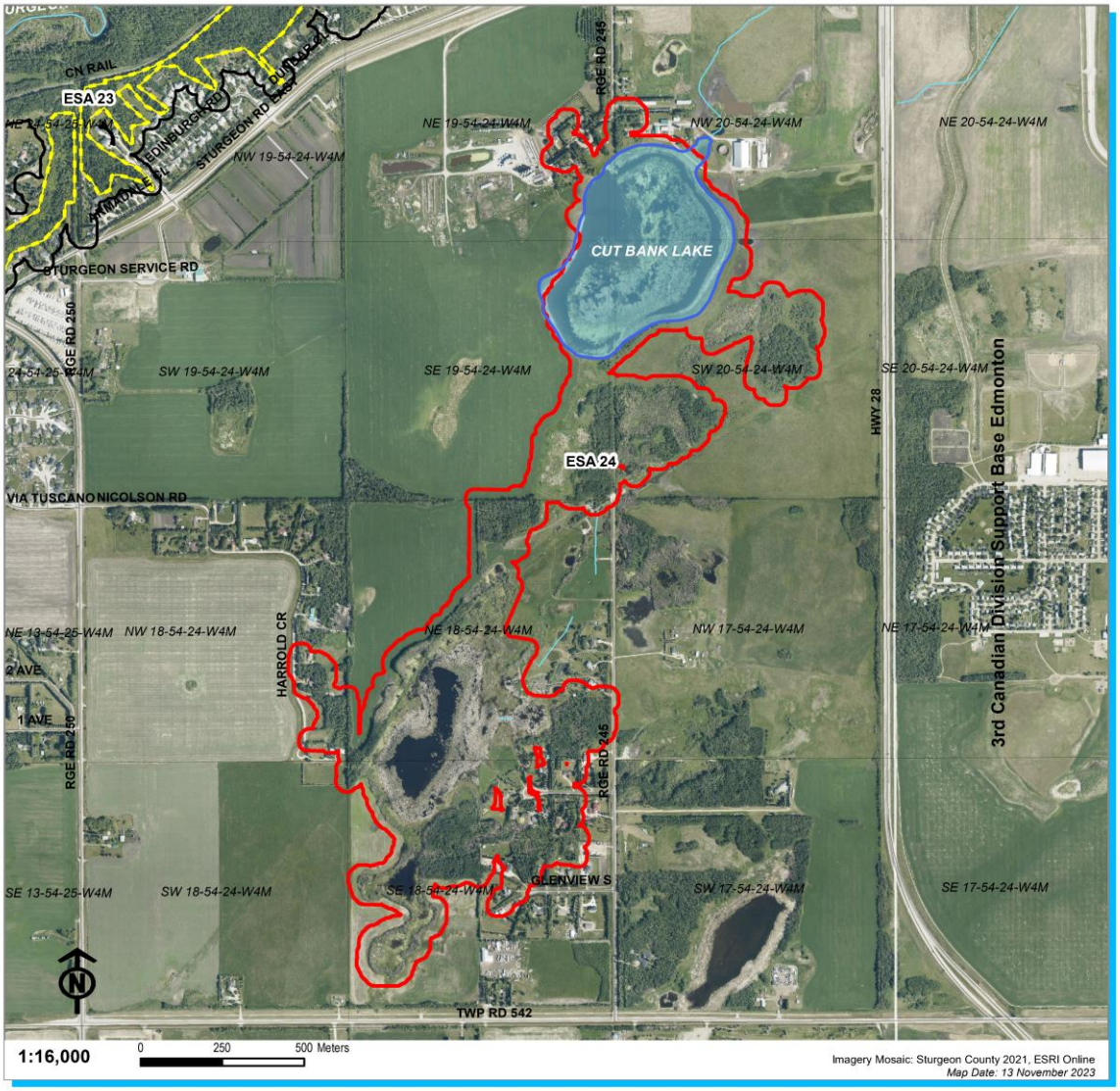


MAPPED ESA AREA[1] (ESA 23)	713.98 ha
LAND COVER TYPES (%)	Forest (54%); Natural Grassland (13%); Open Water (<0.5%); Wetland (33%)
LANDFORMS	Drumlinoid or Streamlined Landform, Major Meltwater Channel
SURFICIAL GEOLOGY	Fluvial Deposits, Glaciolacustrine Deposits
FISHERIES SENSITIVITIES[2]	Fish-bearing water body (Sturgeon River)
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	Flat-Topped White Aster
COUNTY 1989 ESA INVENTORY	Riverlot 56 Natural Area (L69), Sturgeon Valley Namao (L34)
PROVINCIAL PROTECTED AREA	Riverlot 56 Natural Area
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (148.95 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and in lower reaches may support sharp-tailed grouse leks; federal *Fisheries Act* applies to all fish-bearing waters; manage ESA lands adjacent to protected parcels and riparian areas as a natural buffer to increase the sustainability and value of protected areas

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

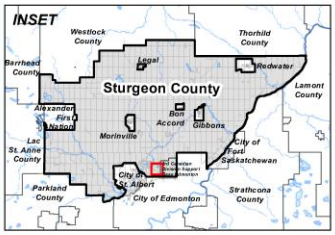
ESA 24

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

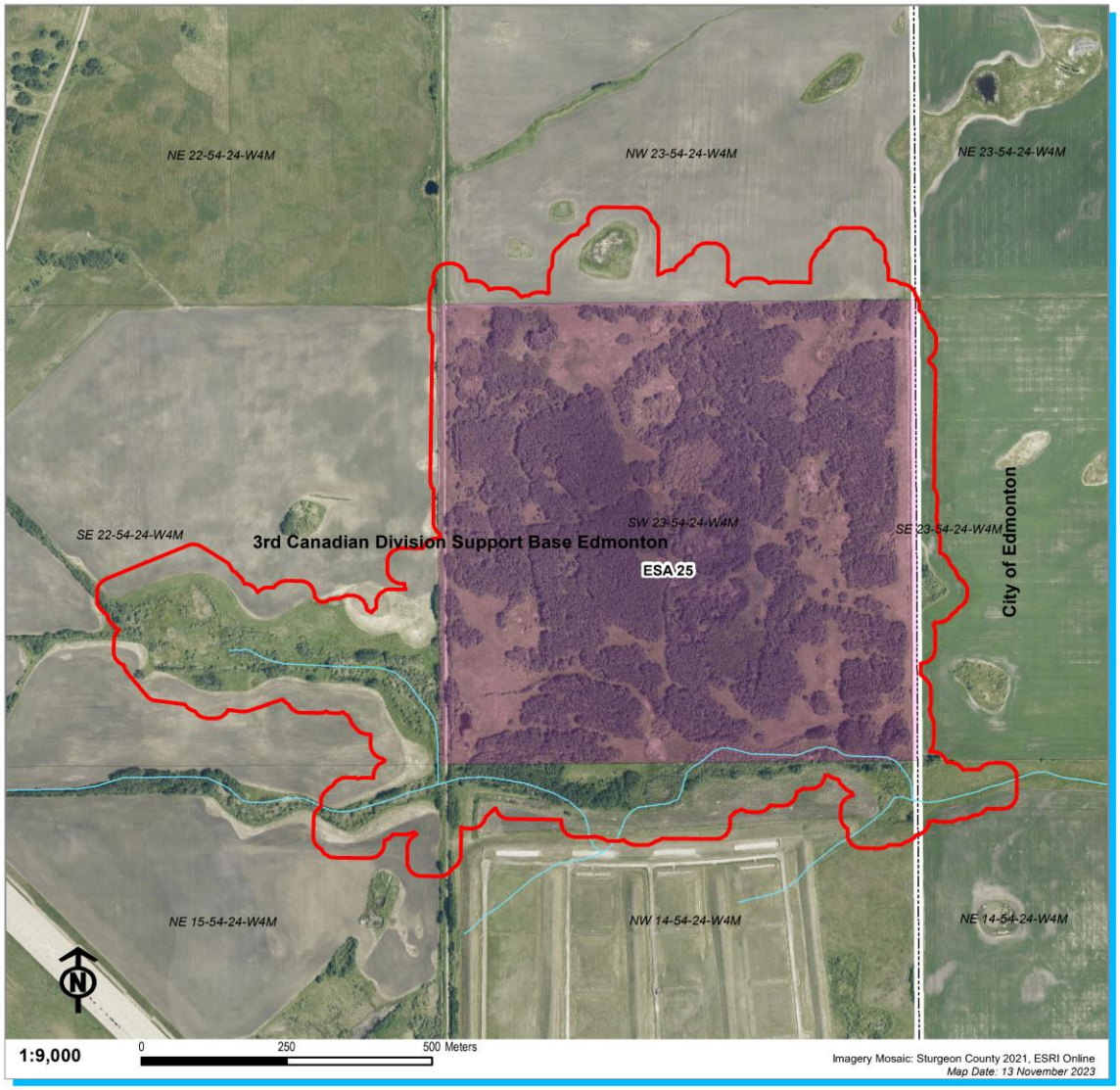


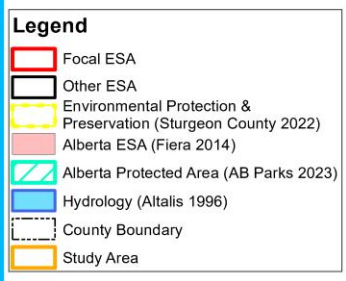
MAPPED ESA AREA[1] (ESA 24)	131.9 ha
LAND COVER TYPES (%)	Forest (8%); Natural Grassland (2%); Open Water (3%); Wetland (87%)
LANDFORMS	Drumlinoid or Streamlined Landform
SURFICIAL GEOLOGY	Glaciolacustrine Deposits
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Lancaster (Cutbank) Lake (L35)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants

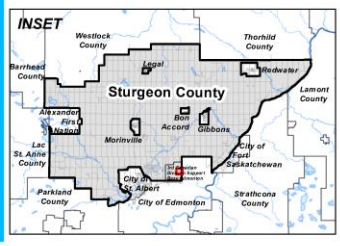
*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

ESA 25

Significance Level: Provincial





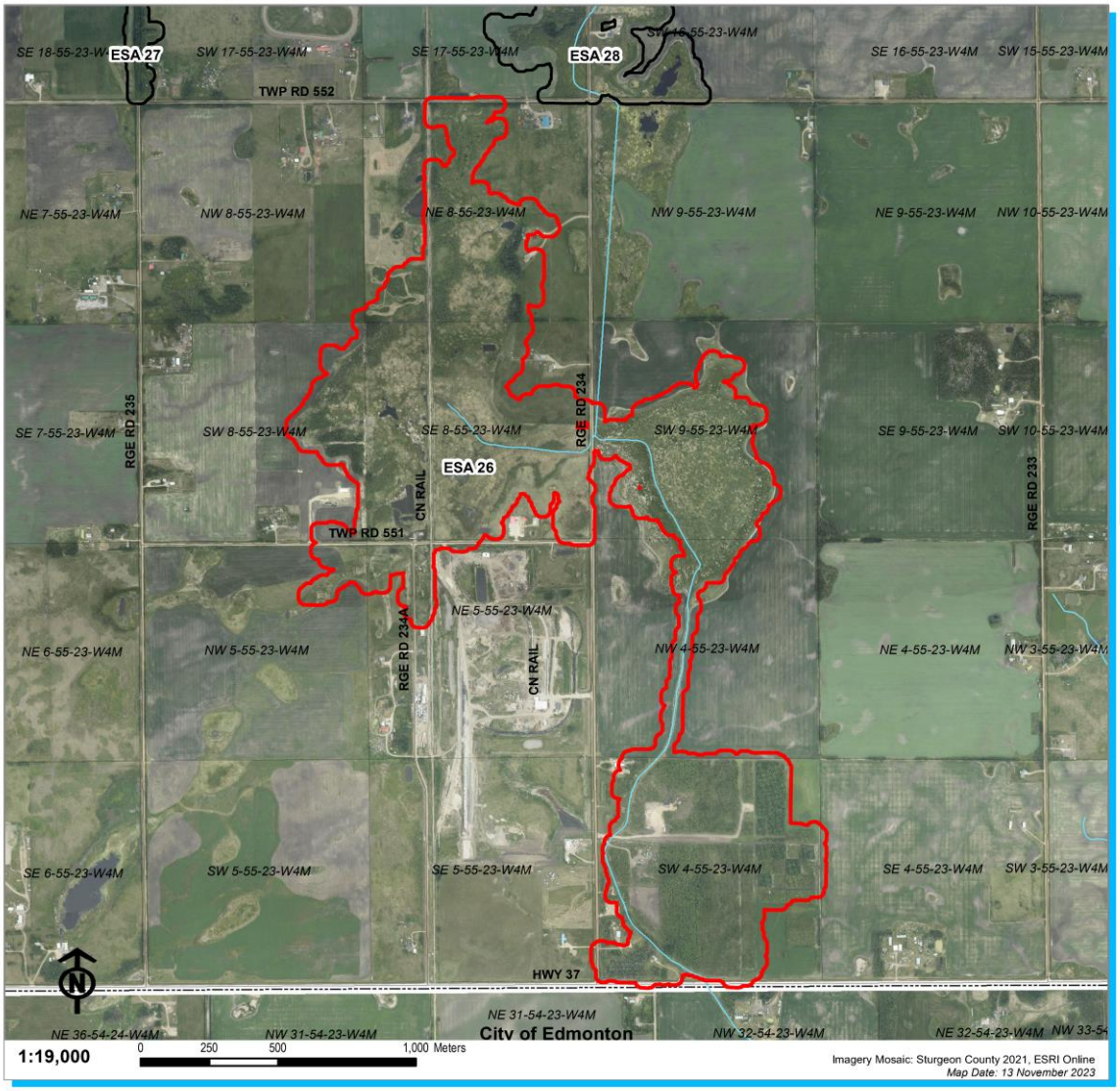


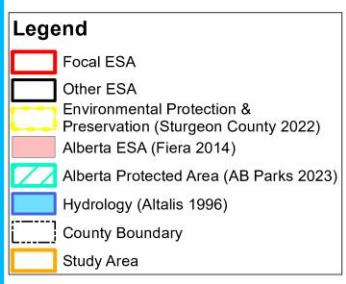
MAPPED ESA AREA[1] (ESA 25)	104.27 ha
LAND COVER TYPES (%)	Forest (40%); Natural Grassland (18%); Wetland (43%)
LANDFORMS	Groove
SURFICIAL GEOLOGY	Glaciolacustrine Deposits
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Although this ESA is within the boundaries of the County, the majority of the ESA is on 3rd Canadian Division Support Base Edmonton and the remainder is in City of Edmonton; despite this, the presence of this ESA can be considered during management of adjacent County lands; regulated wetlands are present - federal Wetland Policy applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks

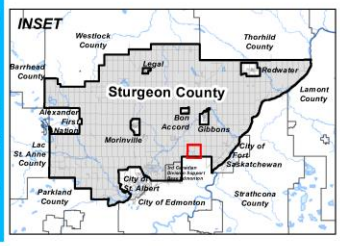
*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

ESA 26

Significance Level: County







MAPPED ESA AREA[1] (ESA 26)	205.41 ha
LAND COVER TYPES (%)	Forest (29%); Open Water (<0.5%); Wetland (70%)
LANDFORMS	Groove
SURFICIAL GEOLOGY	Glaciolacustrine Deposits
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (watercourses (potentially) and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies

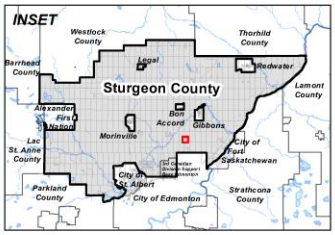
*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

ESA 27

Significance Level: County

Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

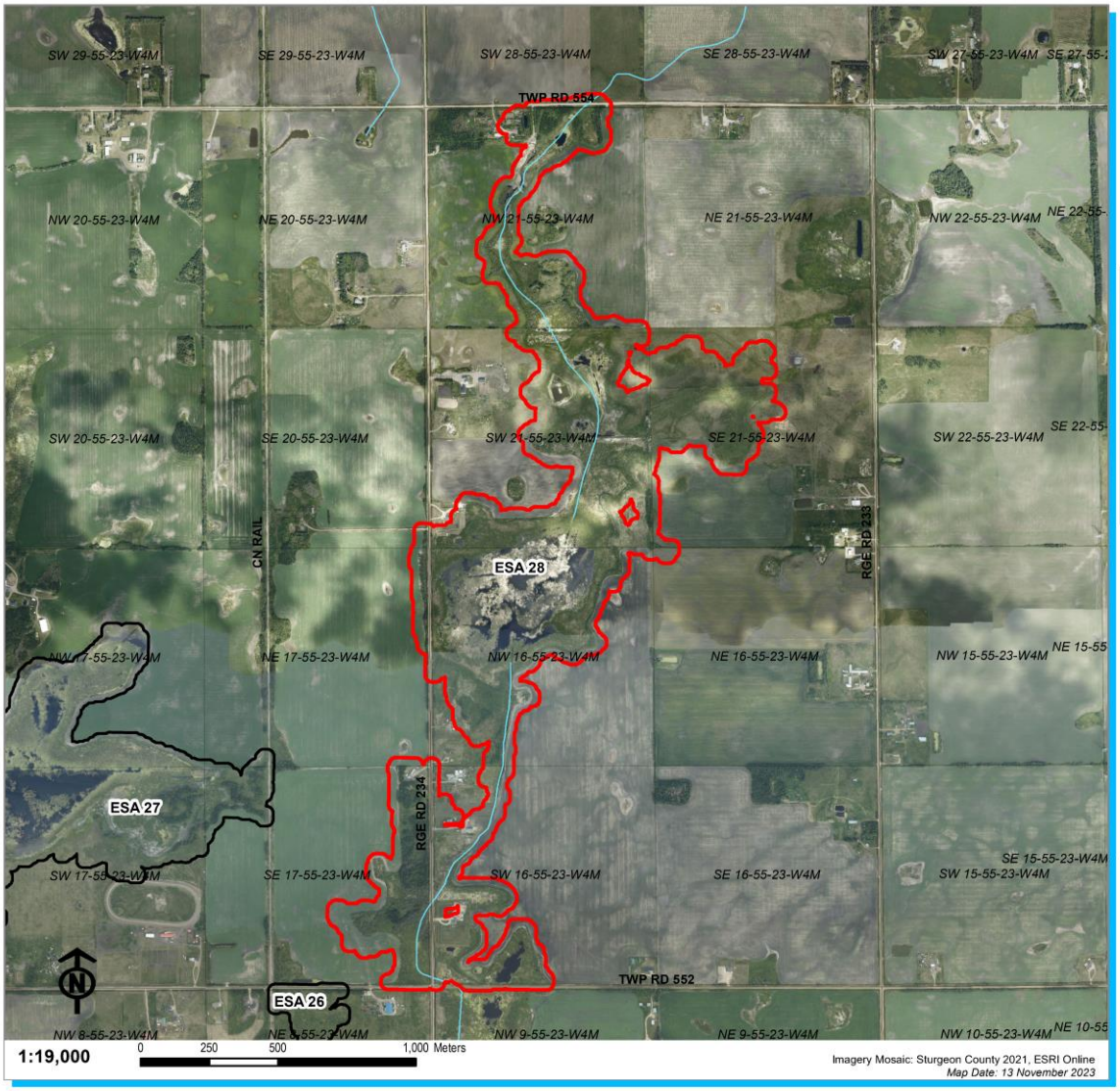


MAPPED ESA AREA[1] (ESA 27)	73.55 ha
LAND COVER TYPES (%)	Forest (3%); Open Water (<0.5%); Wetland (96%)
LANDFORMS	None
SURFICIAL GEOLOGY	Glaciolacustrine Deposits
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; restoration opportunities are present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

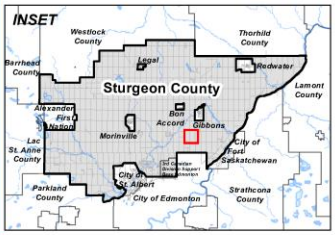
ESA 28

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

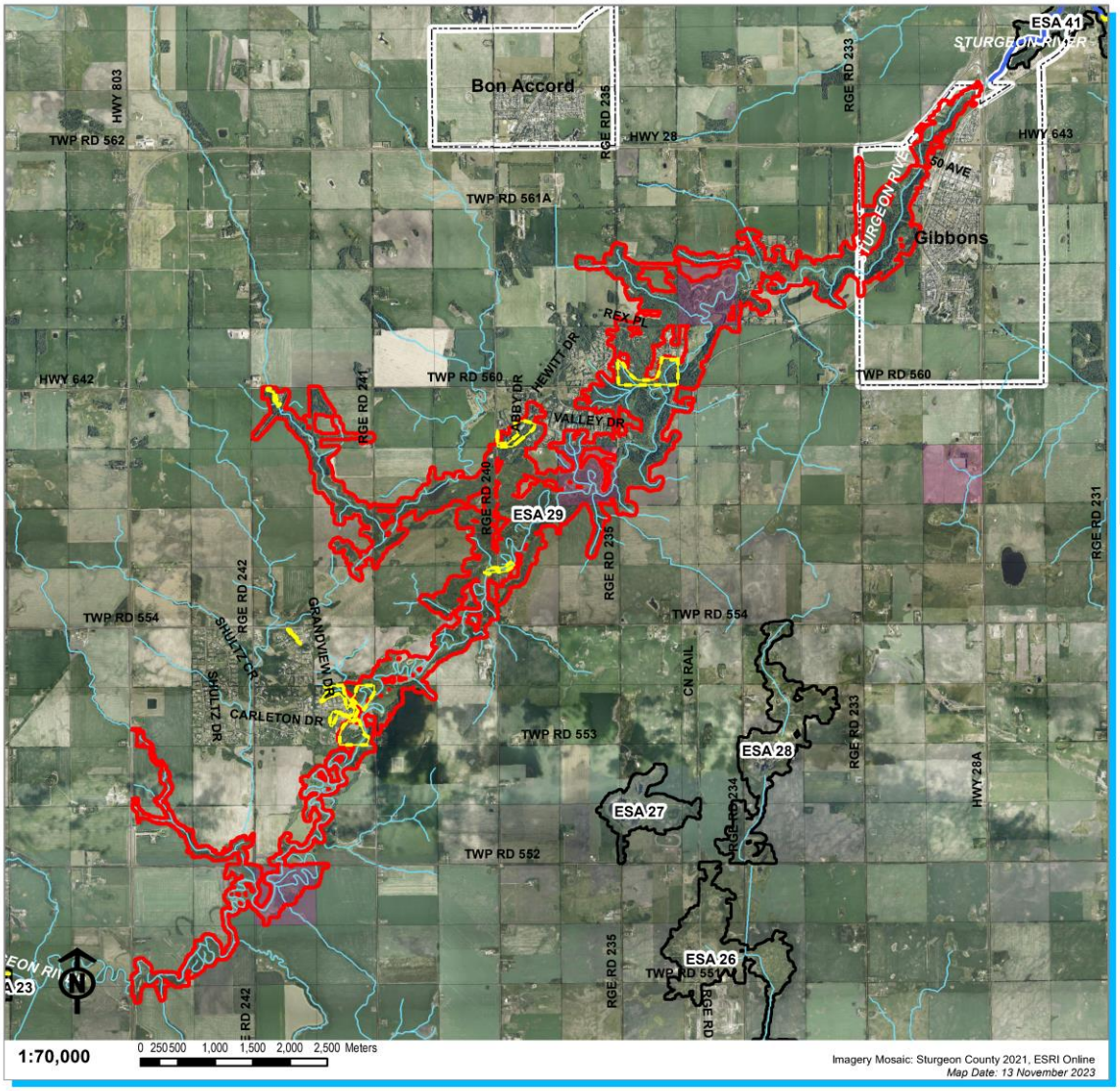


MAPPED ESA AREA[1] (ESA 28)	158.49 ha
LAND COVER TYPES (%)	Forest (3%); Natural Grassland (1%); Open Water (1%); Wetland (95%)
LANDFORMS	Groove
SURFICIAL GEOLOGY	Glaciolacustrine Deposits, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	Common Yellowthroat
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

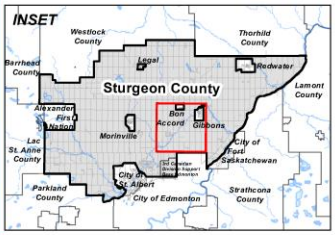
ESA 29

Significance Level: Provincial



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

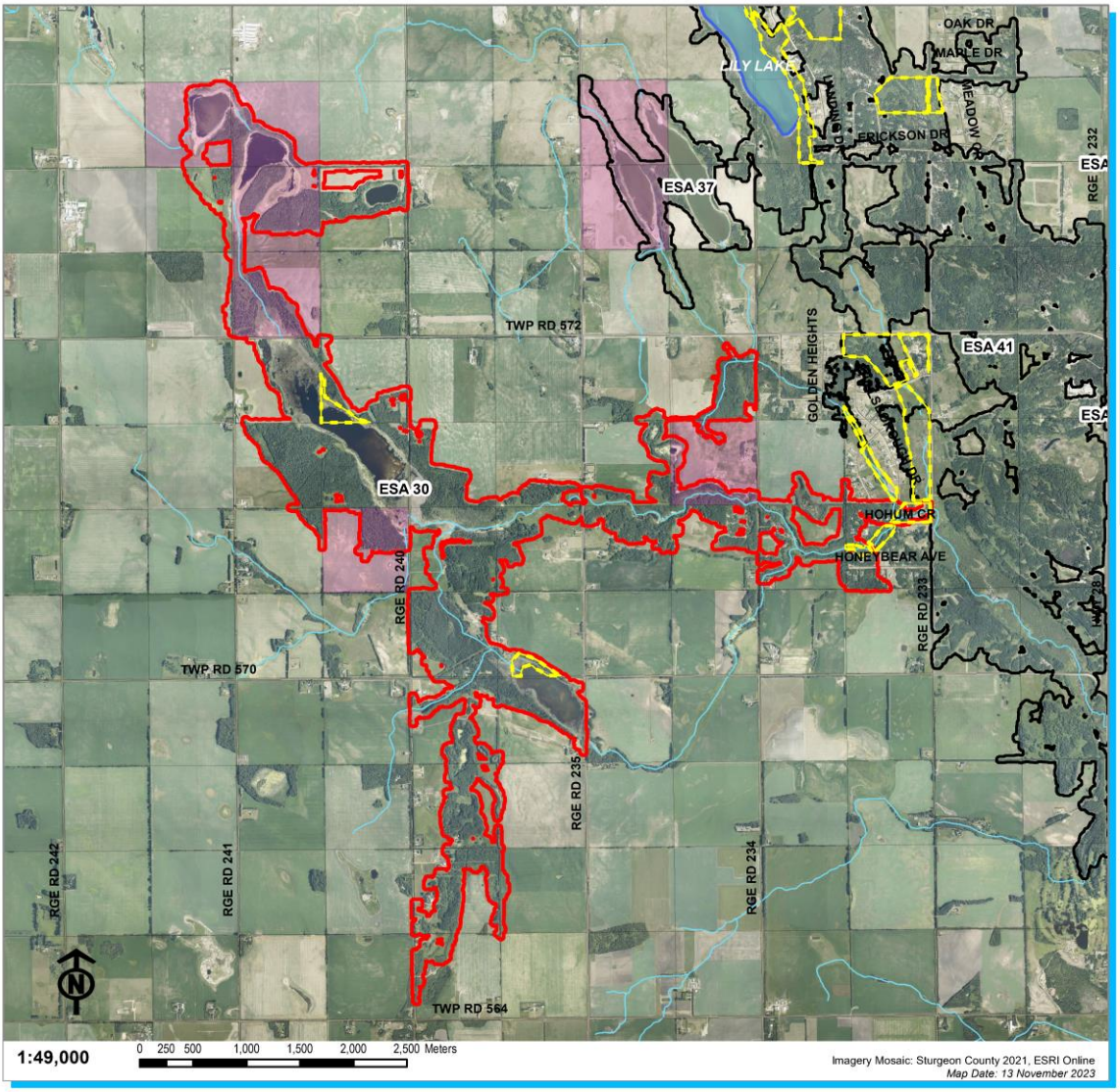


MAPPED ESA AREA[1] (ESA 29)	1311.95 ha
LAND COVER TYPES (%)	Forest (71%); Natural Grassland (3%); Open Water (1%); Wetland (26%)
LANDFORMS	Drumlinoid or Streamlined Landform, Esker, Major Meltwater Channel, Minor Meltwater Channel, Moraine Ridge
SURFICIAL GEOLOGY	Colluvial Deposits, Fluvial Deposits, Glaciolacustrine Deposits, Moraine
FISHERIES SENSITIVITIES[2]	Fish-bearing water body (Sturgeon River)
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	Baltimore Oriole, Eastern Phoebe, Great Blue Heron, Least Flycatcher, Pileated Woodpecker
PLANT RECORDS[3] (*Species of Conservation Concern*)	Crowfoot Violet, Many-Fruited Leske's Moss
COUNTY 1989 ESA INVENTORY	Sturgeon River Valley, Bon Accord South (R12)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (41.02 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks; federal *Fisheries Act* applies to all fish-bearing waters; manage ESA lands adjacent to protected parcels and riparian areas as a natural buffer to increase the sustainability and value of protected areas

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

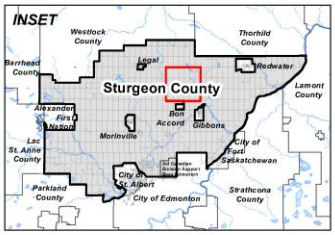
ESA 30

Significance Level: Provincial



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

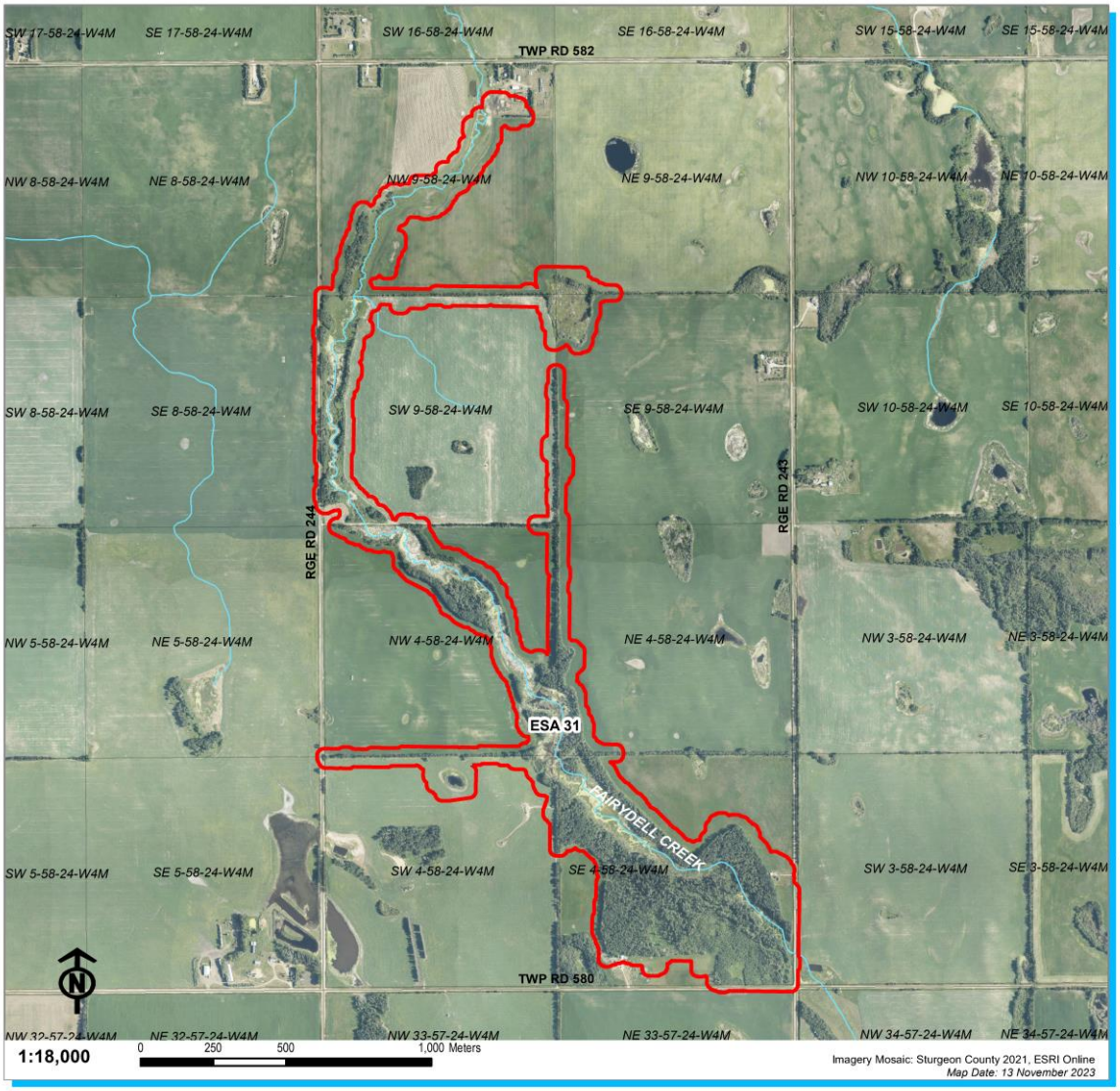


MAPPED ESA AREA[1] (ESA 30)	963.15 ha
LAND COVER TYPES (%)	Forest (48%); Natural Grassland (1%); Open Water (8%); Wetland (43%)
LANDFORMS	Drumlinoid or Streamlined Landform, Esker, Minor Meltwater Channel, Overridden Moraine
SURFICIAL GEOLOGY	Fluvial Deposits, Glaciofluvial Deposits, Glaciolacustrine Deposits, Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	Fragile Ancylid (From ACIMS 2022)
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Bon Accord North (R14)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (16.13 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat may be present in some areas; manage ESA lands adjacent to protected parcels as a natural buffer to increase the sustainability and value of protected areas

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

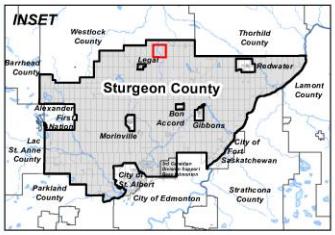
ESA 31

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

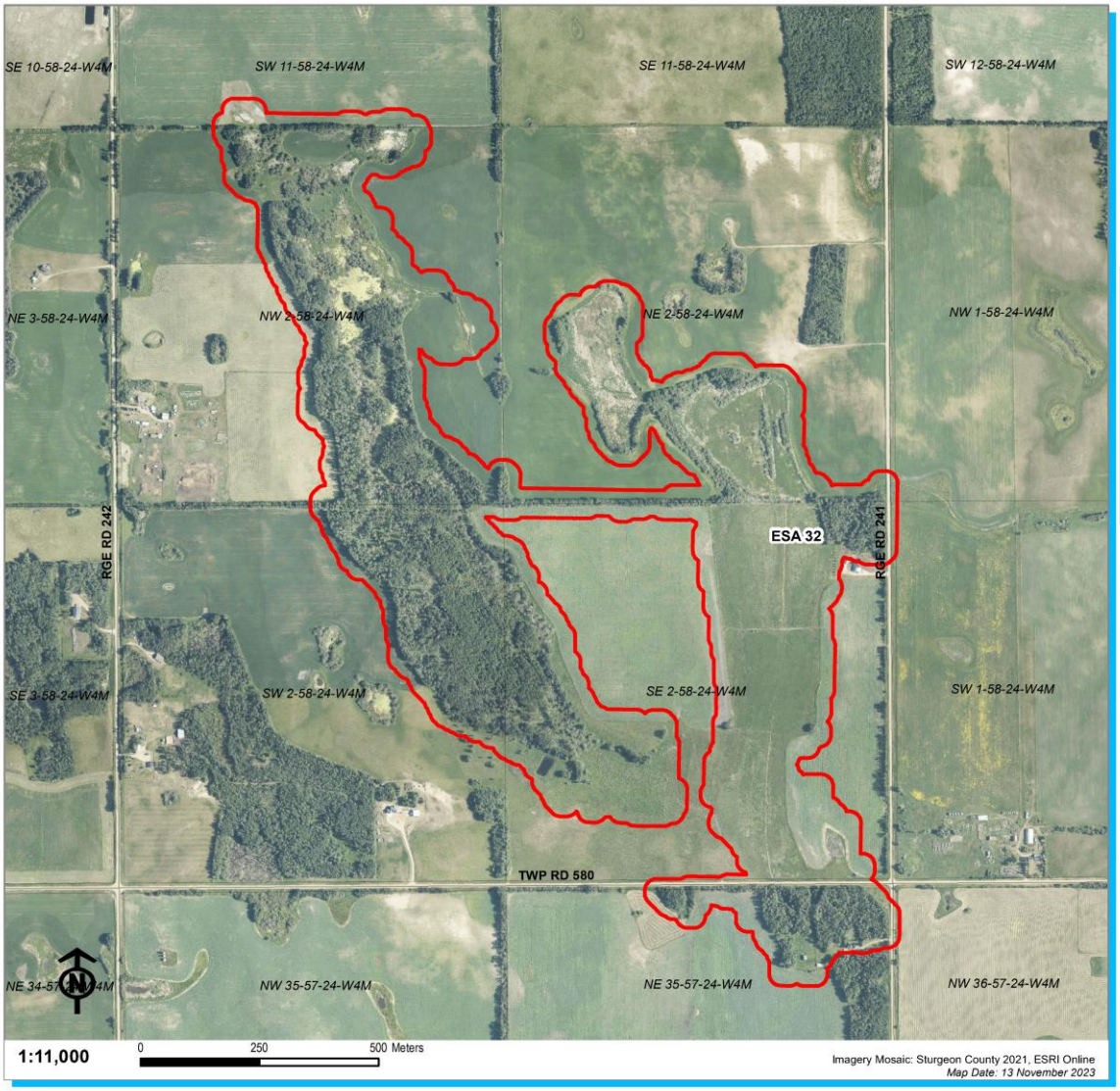


MAPPED ESA AREA[1] (ESA 31)	119.3 ha
LAND COVER TYPES (%)	Forest (63%); Natural Grassland (5%); Wetland (32%)
LANDFORMS	Groove, Minor Meltwater Channel
SURFICIAL GEOLOGY	Glaciolacustrine Deposits
FISHERIES SENSITIVITIES[2]	Fish-bearing water body (Fairydell Creek)
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Legal Northeast (L36)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated watercourse and wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for wetlands with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks; federal *Fisheries Act* applies to all fish-bearing waters

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

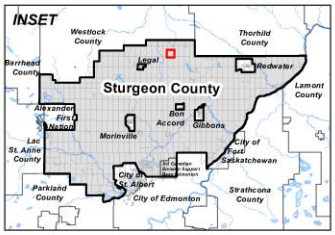
ESA 32

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

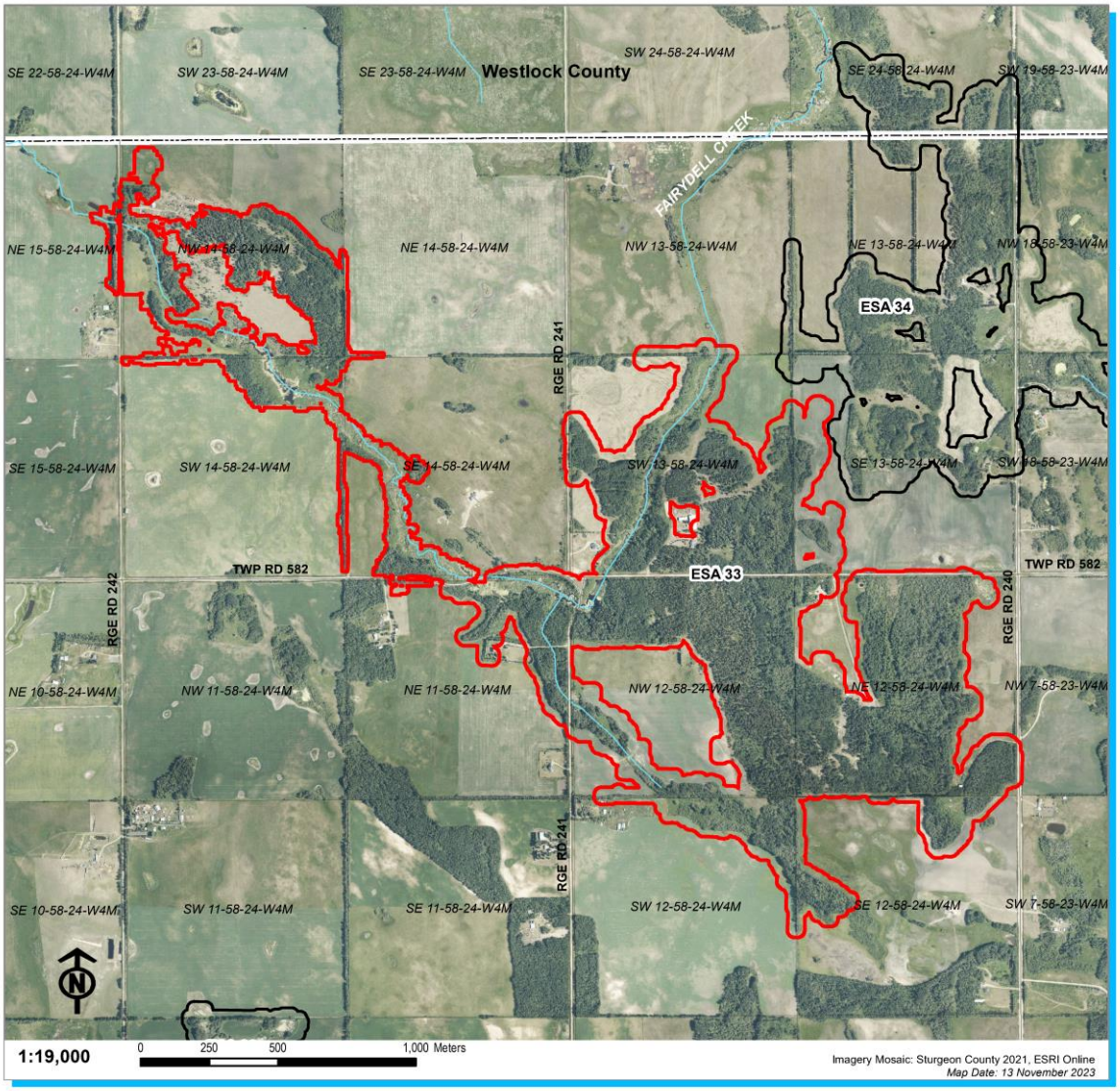


MAPPED ESA AREA[1] (ESA 32)	104.09 ha
LAND COVER TYPES (%)	Forest (40%); Natural Grassland (1%); Wetland (59%)
LANDFORMS	None
SURFICIAL GEOLOGY	Eolian Deposits, Glaciofluvial Deposits, Glaciolacustrine Deposits
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply; grasslands may support native prairie remnants and may support sharp-tailed grouse leks

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

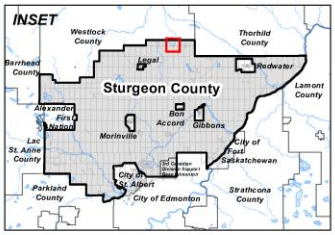
ESA 33

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

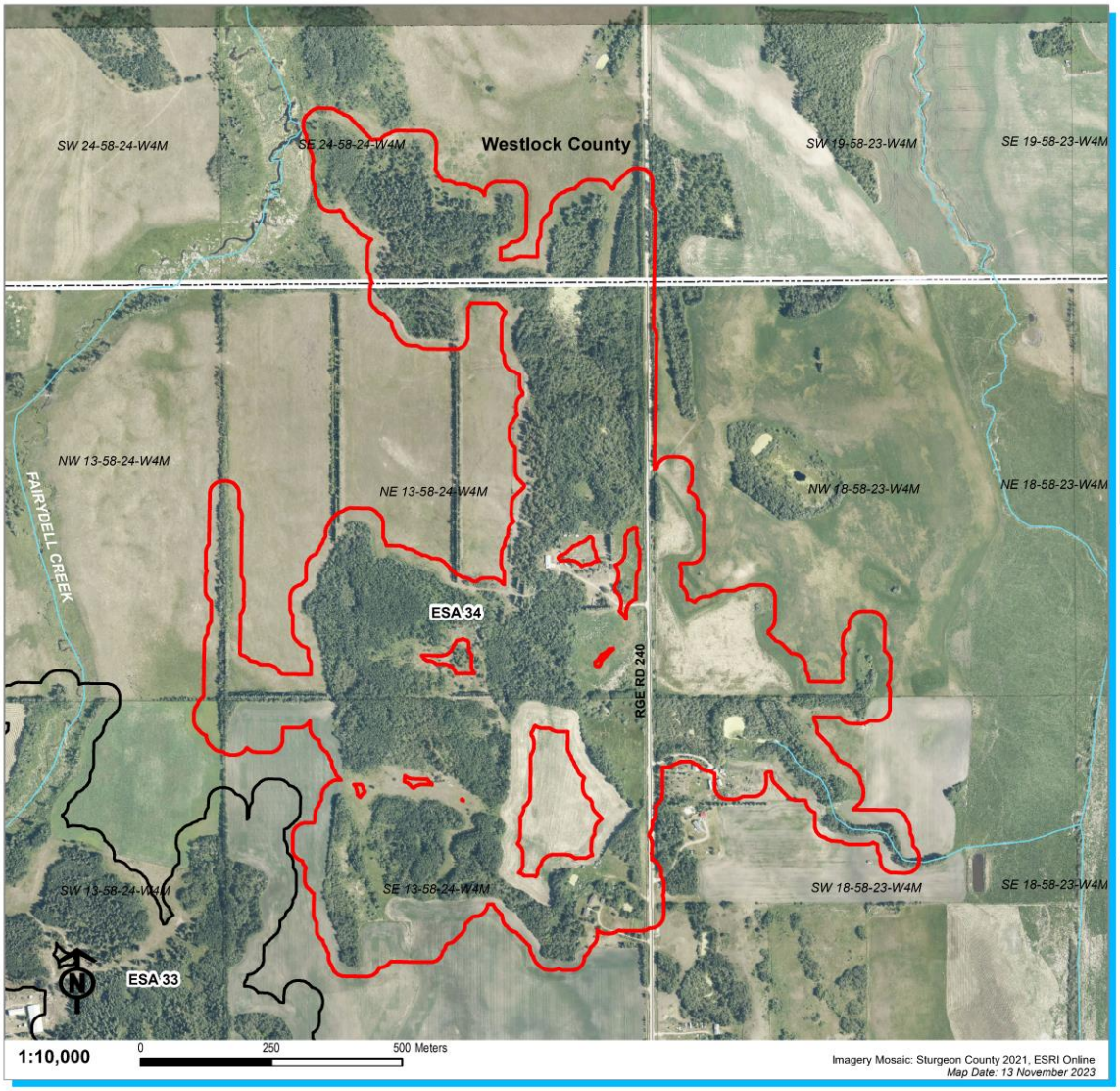


MAPPED ESA AREA[1] (ESA 33)	240.81 ha
LAND COVER TYPES (%)	Forest (56%); Natural Grassland (3%); Wetland (41%)
LANDFORMS	Drumlinoid or Streamlined Landform, Minor Meltwater Channel
SURFICIAL GEOLOGY	Glaciolacustrine Deposits, Moraine
FISHERIES SENSITIVITIES[2]	Fish-bearing water body (Fairydell Creek)
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Ephemeral watercourse may be present; regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat may be present; federal *Fisheries Act* applies to all fish-bearing waters

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

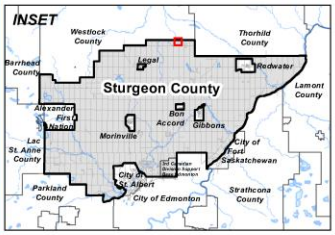
ESA 34

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

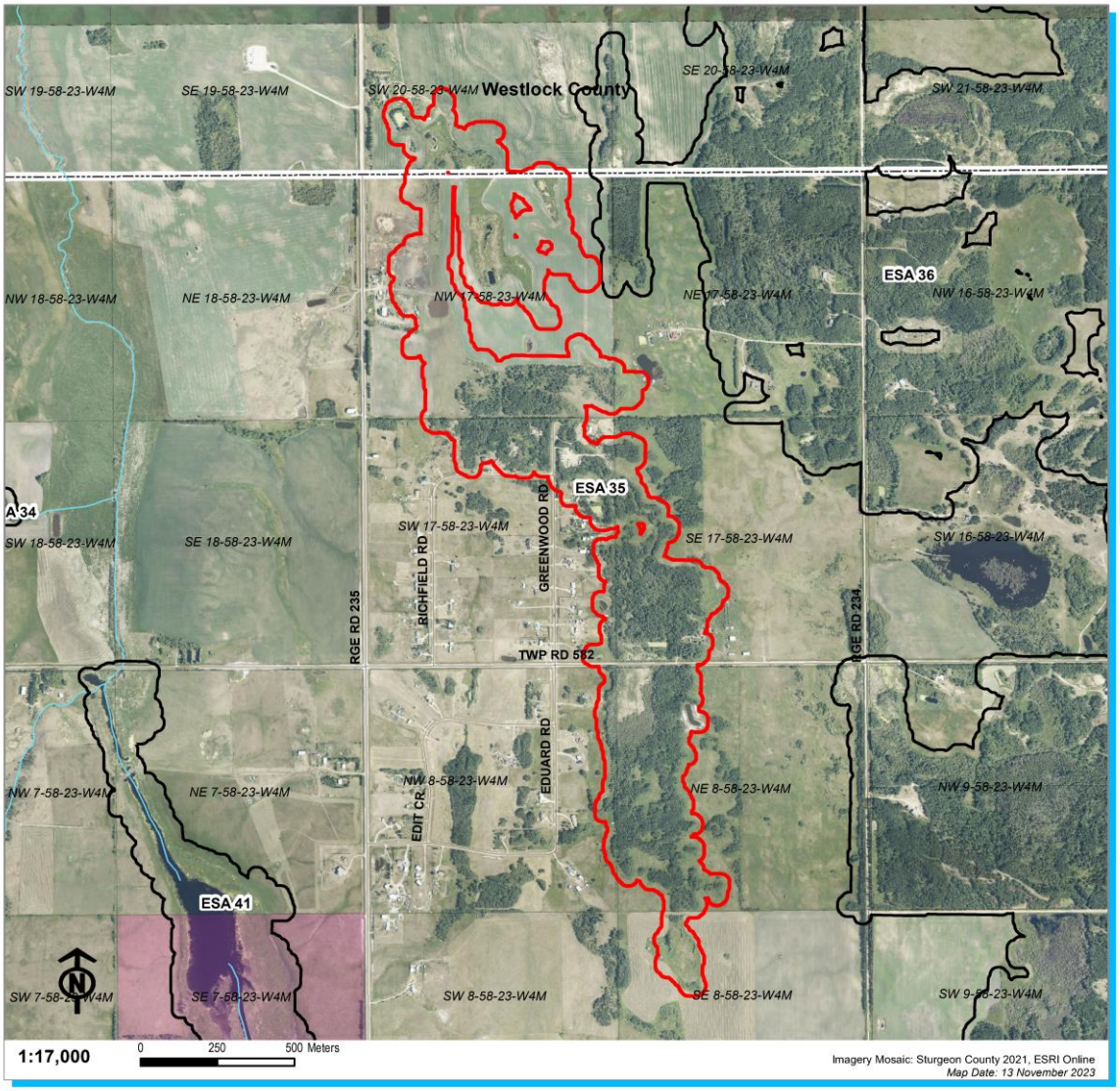


MAPPED ESA AREA[1] (ESA 34)	99.85 ha
LAND COVER TYPES (%)	Forest (51%); Natural Grassland (1%); Wetland (48%)
LANDFORMS	None
SURFICIAL GEOLOGY	Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply; grasslands may support native prairie remnants; interior forest habitat likely present; potential opportunity for restoration of interior small parcels of land currently excluded from ESA

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

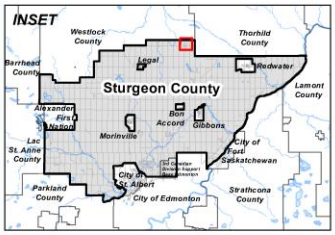
ESA 35

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

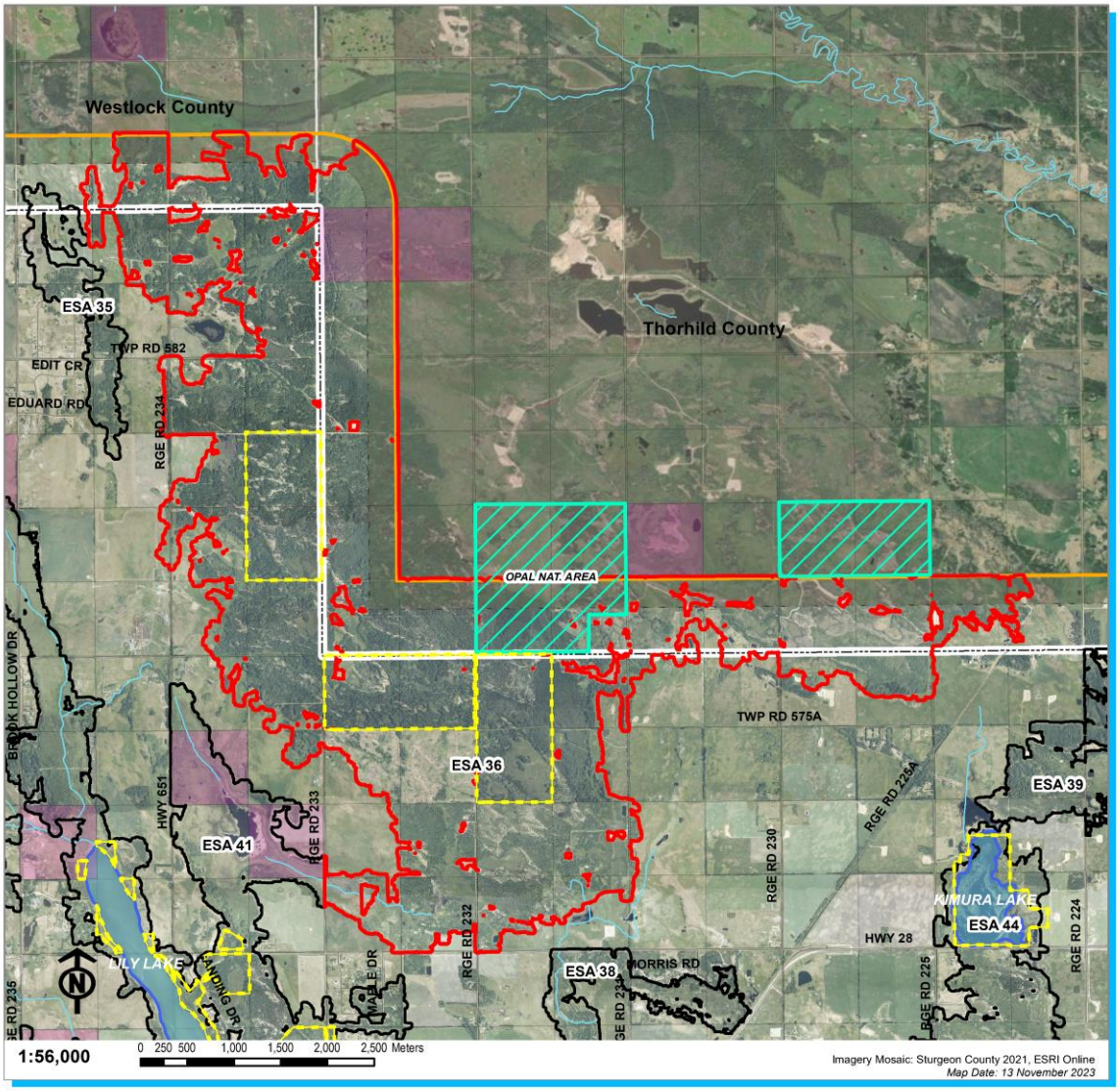


MAPPED ESA AREA[1] (ESA 35)	108.33 ha
LAND COVER TYPES (%)	Forest (36%); Natural Grassland (1%); Open Water (<0.5%); Wetland (62%)
LANDFORMS	Drumlinoid or Streamlined Landform
SURFICIAL GEOLOGY	Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; opportunities for restoration may be present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

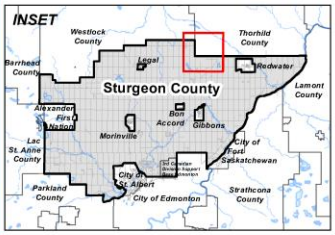
ESA 36

Significance Level: Provincial



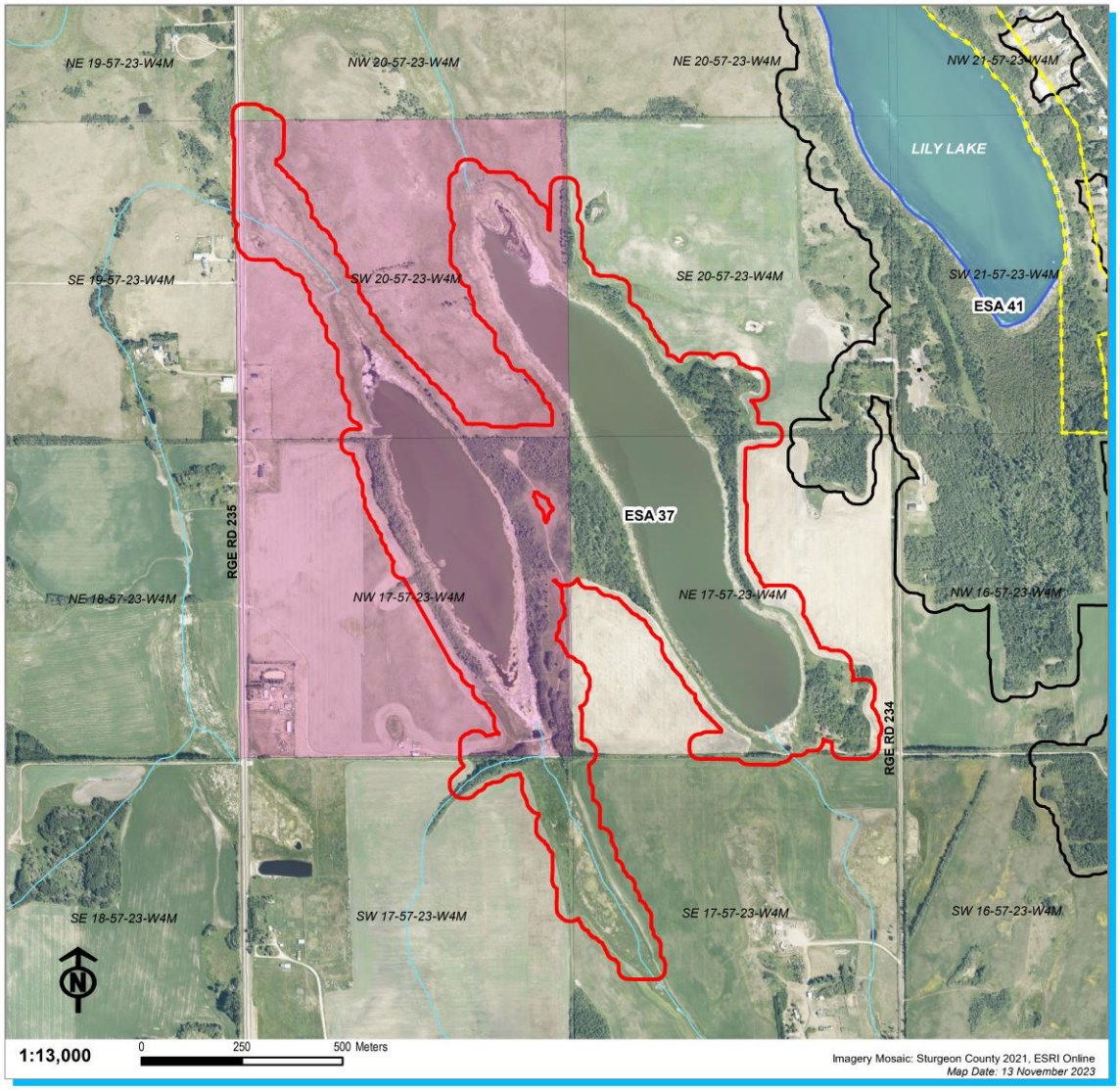
Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area



MAPPED ESA AREA[1] (ESA 36)	2790.57 ha
LAND COVER TYPES (%)	Forest (36%); Natural Grassland (6%); Open Water (<0.5%); Wetland (58%)
LANDFORMS	Drumlinoid or Streamlined Landform, Eolian Forms; Dune Ridges
SURFICIAL GEOLOGY	Eolian Deposits, Glaciofluvial Deposits, Moraine, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	Great Gray Owl, Pileated Woodpecker, Sandhill Crane
PLANT RECORDS[3] (*Species of Conservation Concern*)	Long-Leaved Bluets
COUNTY 1989 ESA INVENTORY	Lily Lake East (L42)
PROVINCIAL PROTECTED AREA	Opal Natural Area
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (385.96 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Significant portion of ESA is outside of County; regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat likely present; manage ESA lands adjacent to protected parcels as a natural buffer to increase the sustainability and value of protected areas; management should consider significant area that extends to the north of study area; landforms suggest sensitive sandy soils

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

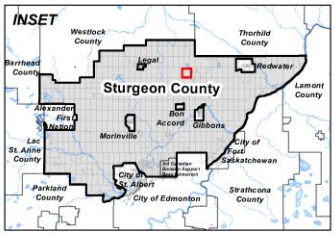


ESA 37

Significance Level: Provincial

Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

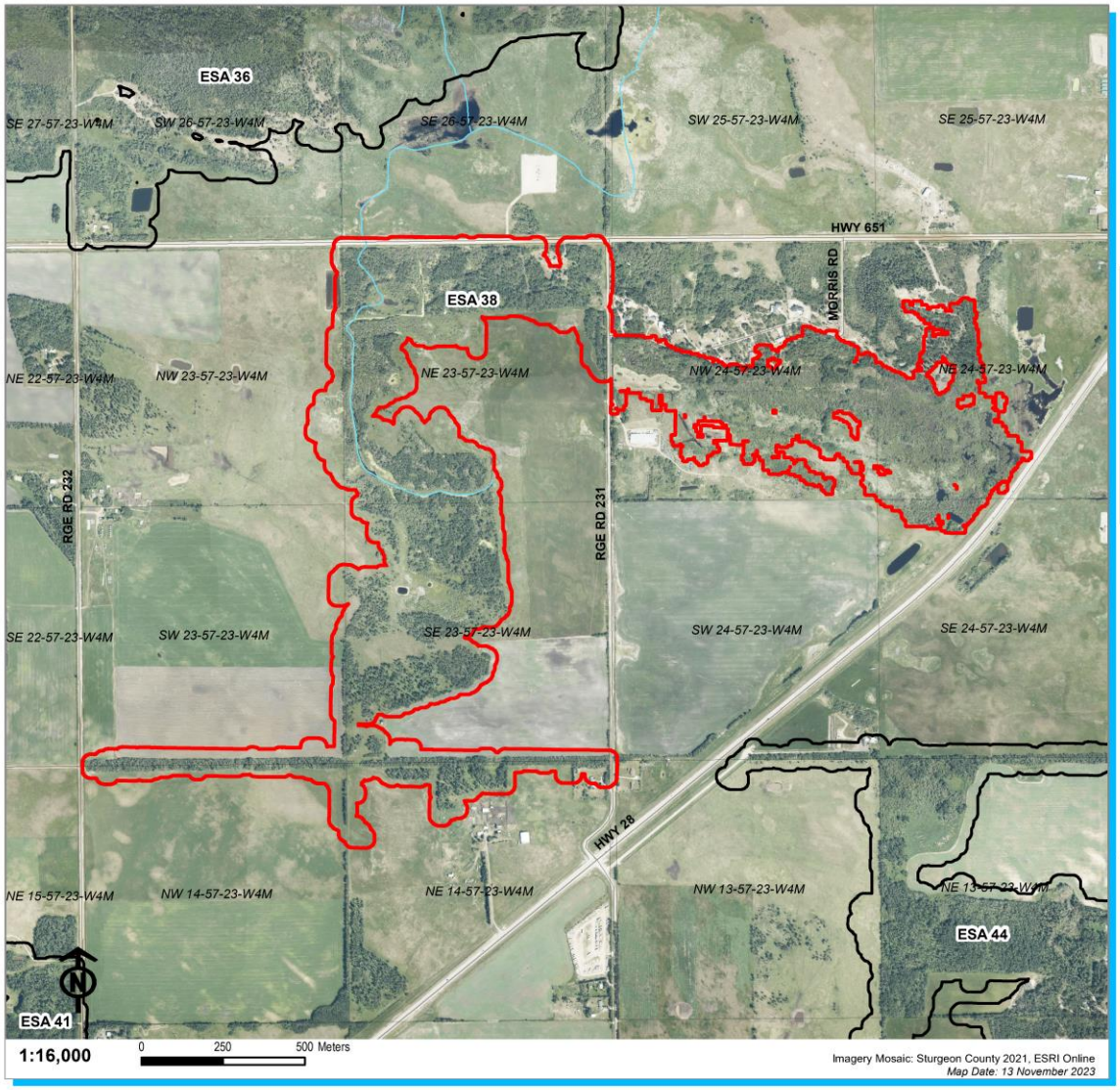


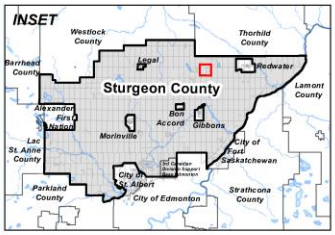
MAPPED ESA AREA[1] (ESA 37)	121.02 ha
LAND COVER TYPES (%)	Forest (25%); Natural Grassland (1%); Open Water (32%); Wetland (42%)
LANDFORMS	Drumlinoid or Streamlined Landform, Overridden Moraine
SURFICIAL GEOLOGY	Glaciofluvial Deposits, Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Waybrook Lakes (L40)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (lakes, watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

ESA 38

Significance Level: County



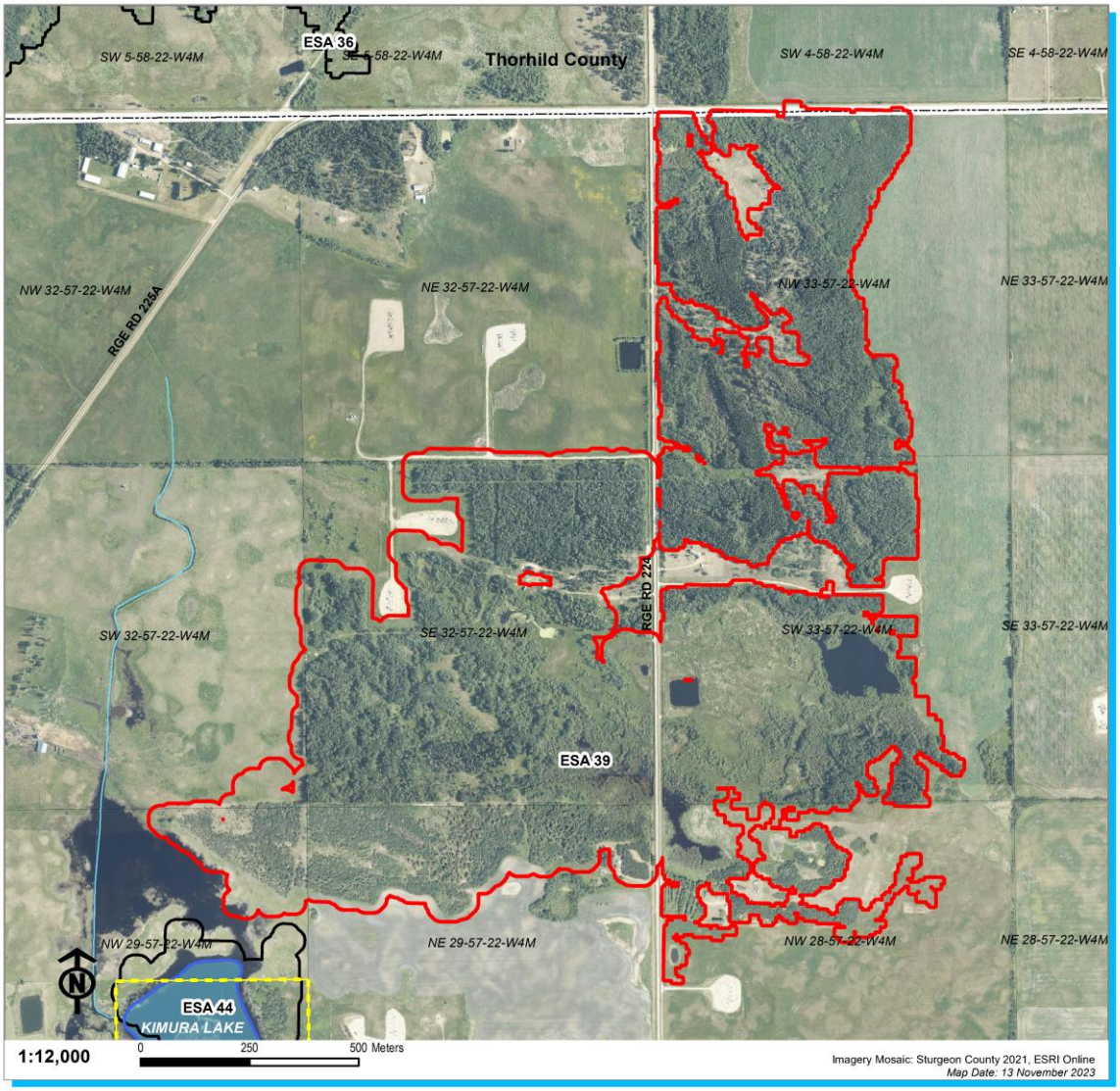


MAPPED ESA AREA[1] (ESA 38)	143.89 ha
LAND COVER TYPES (%)	Forest (16%); Natural Grassland (3%); Open Water (<0.5%); Wetland (81%)
LANDFORMS	Eolian Forms; Dune Ridges
SURFICIAL GEOLOGY	Eolian Deposits, Moraine, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; landforms suggest sensitive sandy soils are present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

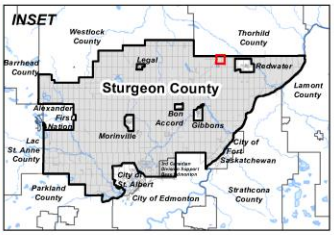
ESA 39

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

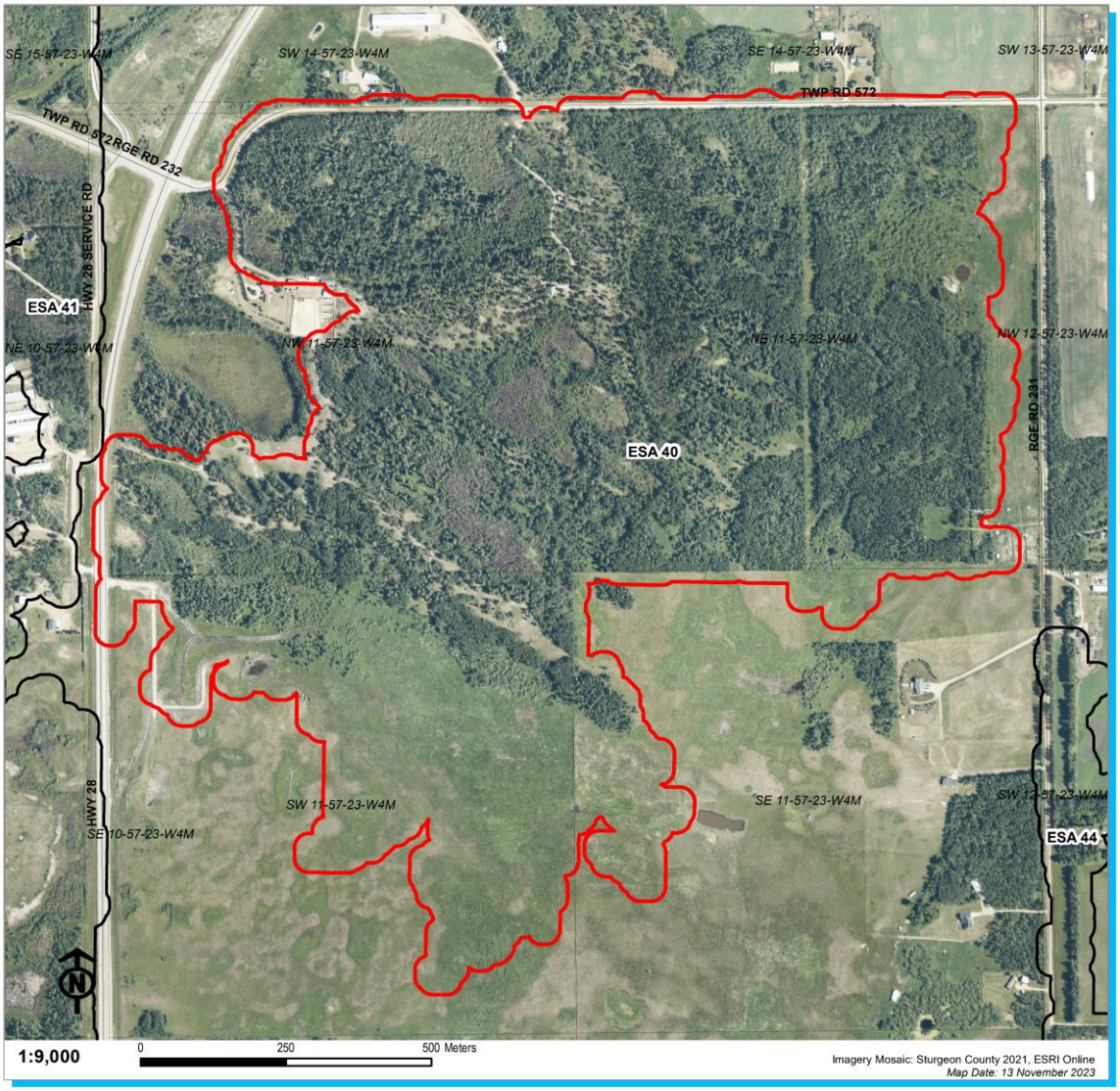


MAPPED ESA AREA[1] (ESA 39)	173.24 ha
LAND COVER TYPES (%)	Forest (40%); Natural Grassland (5%); Open Water (<0.5%); Wetland (55%)
LANDFORMS	Eolian Forms; Dune Ridges
SURFICIAL GEOLOGY	Eolian Deposits, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	Long-Leaved Bluets
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat likely present; landforms suggest sensitive sandy soils are present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

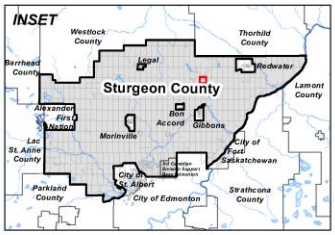
ESA 40

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

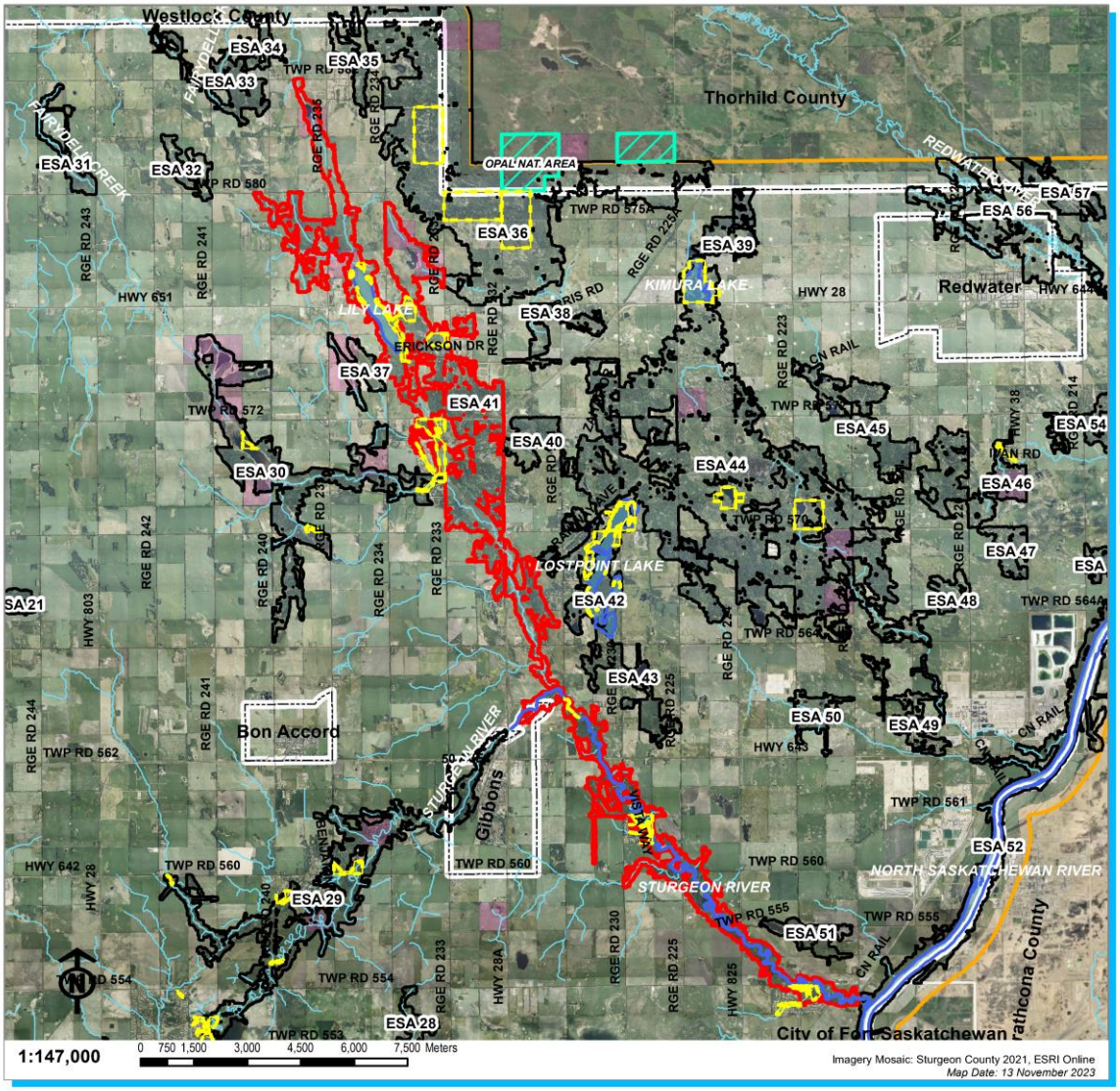


MAPPED ESA AREA[1] (ESA 40)	153.75 ha
LAND COVER TYPES (%)	Forest (40%); Natural Grassland (5%); Wetland (56%)
LANDFORMS	Eolian Forms; Dune Ridges
SURFICIAL GEOLOGY	Eolian Deposits, Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	Long-Leaved Bluets
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for wetlands with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat may be present; landforms suggest sensitive sandy soils are present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

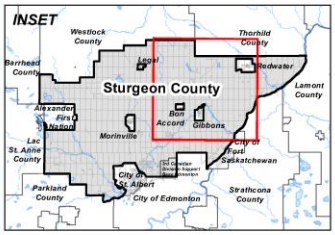
ESA 41

Significance Level: Provincial



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

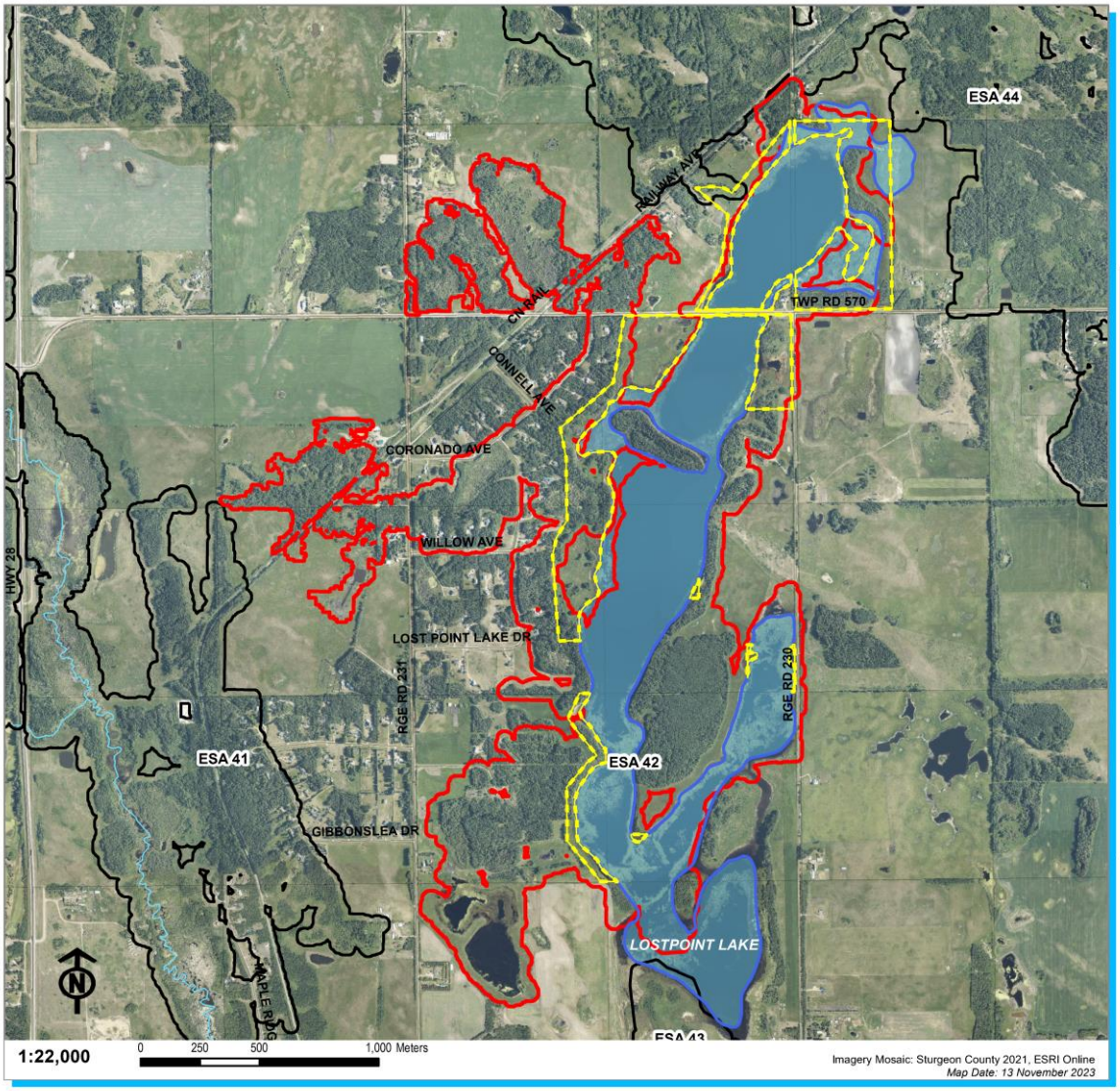


MAPPED ESA AREA[1] (ESA 41)	3054.07 ha
LAND COVER TYPES (%)	Forest (54%); Natural Grassland (2%); Open Water (4%); Wetland (40%)
LANDFORMS	Drumlinoid or Streamlined Landform, Eolian Forms; Dune Ridges, Major Meltwater Channel, Minor Meltwater Channel
SURFICIAL GEOLOGY	Colluvial Deposits, Eolian Deposits, Fluvial Deposits, Glaciofluvial Deposits, Glaciolacustrine Deposits, Moraine
FISHERIES SENSITIVITIES[2]	Fish-bearing water body (Sturgeon River)
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	Baltimore Oriole, Bank Swallow, Eastern Phoebe, Least Flycatcher
PLANT RECORDS[3] (*Species of Conservation Concern*)	Flat-Topped White Aster, Limp Pacific Woodrush, Long-Leaved Bluets, Wilcox's Panicgrass
COUNTY 1989 ESA INVENTORY	Lily Lake (R13), Lily Slough (L41)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (132.22 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks; interior forest habitat may be present in upper reaches; federal *Fisheries Act* applies to all fish-bearing waters; manage ESA lands adjacent to protected parcels and riparian areas as a natural buffer to increase the sustainability and value of protected areas

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

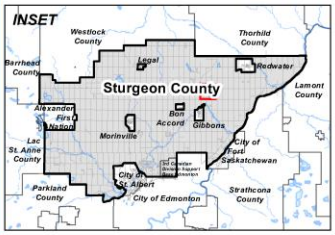
ESA 42

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

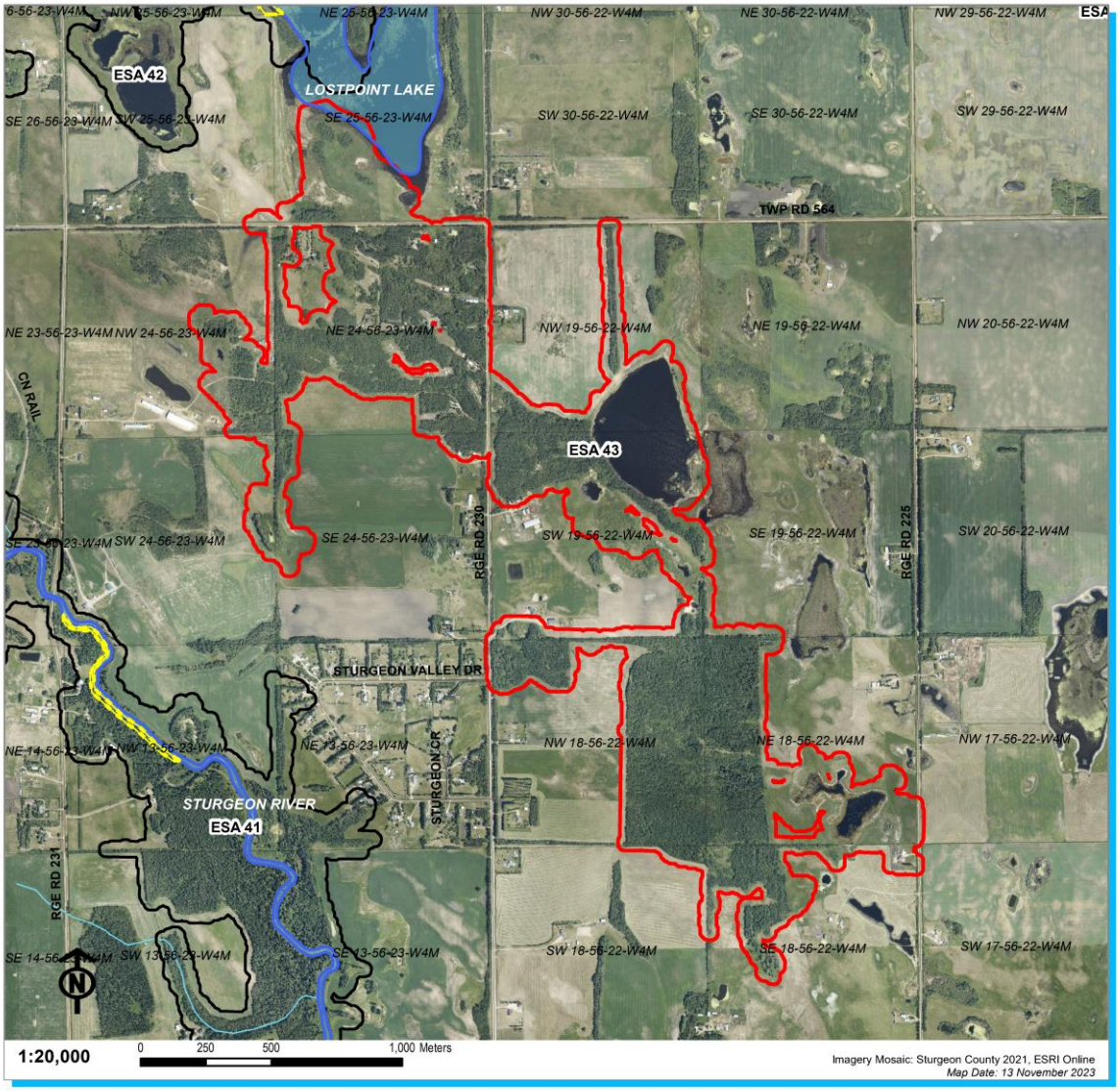


MAPPED ESA AREA[1] (ESA 42)	391.49 ha
LAND COVER TYPES (%)	Forest (33%); Natural Grassland (1%); Open Water (2%); Wetland (64%)
LANDFORMS	Drumlinoid or Streamlined Landform, Eolian Forms; Dune Ridges
SURFICIAL GEOLOGY	Eolian Deposits, Glaciolacustrine Deposits
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	Least Flycatcher
PLANT RECORDS[3] (*Species of Conservation Concern*)	Long-Leaved Bluets
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (39.57 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (lakes and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; manage ESA lands adjacent to protected parcels and riparian areas as a natural buffer to increase the sustainability and value of protected areas; landforms suggest sandy soils in localized areas; several rural subdivisions present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

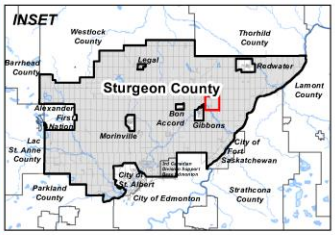
ESA 43

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

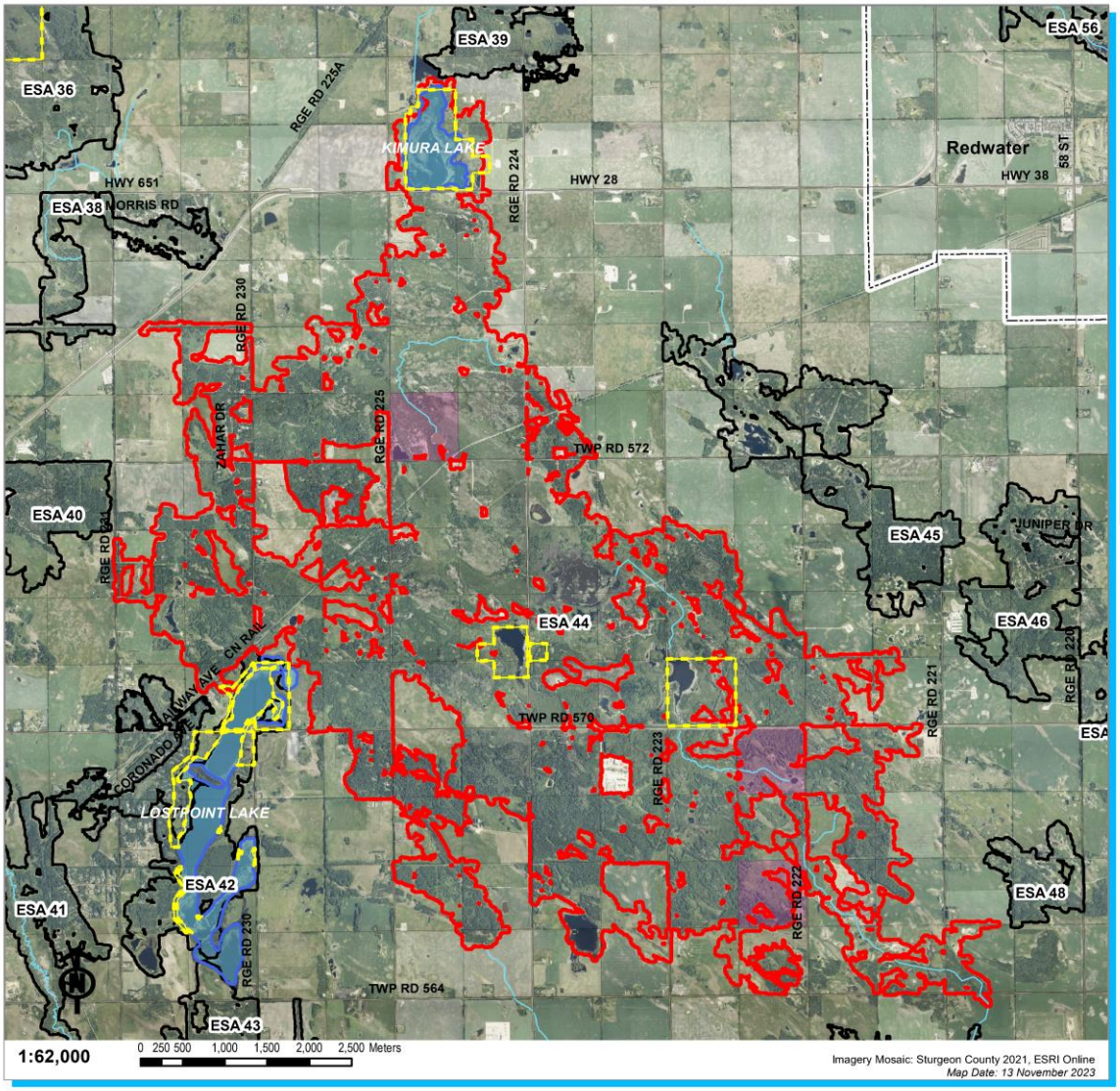


MAPPED ESA AREA[1] (ESA 43)	243.54 ha
LAND COVER TYPES (%)	Forest (52%); Natural Grassland (1%); Open Water (1%); Wetland (46%)
LANDFORMS	Drumlinoid or Streamlined Landform, Eolian Forms; Dune Ridges
SURFICIAL GEOLOGY	Eolian Deposits, Glaciolacustrine Deposits
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	American Kestrel, Sora
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Lostpoint Lake (R15)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (lakes and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat likely present in some parts; landforms suggest sandy soils in some localities

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

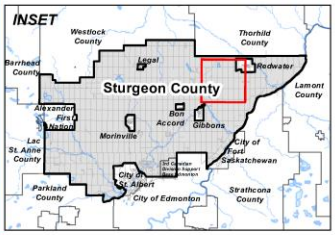
ESA 44

Significance Level: Provincial



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

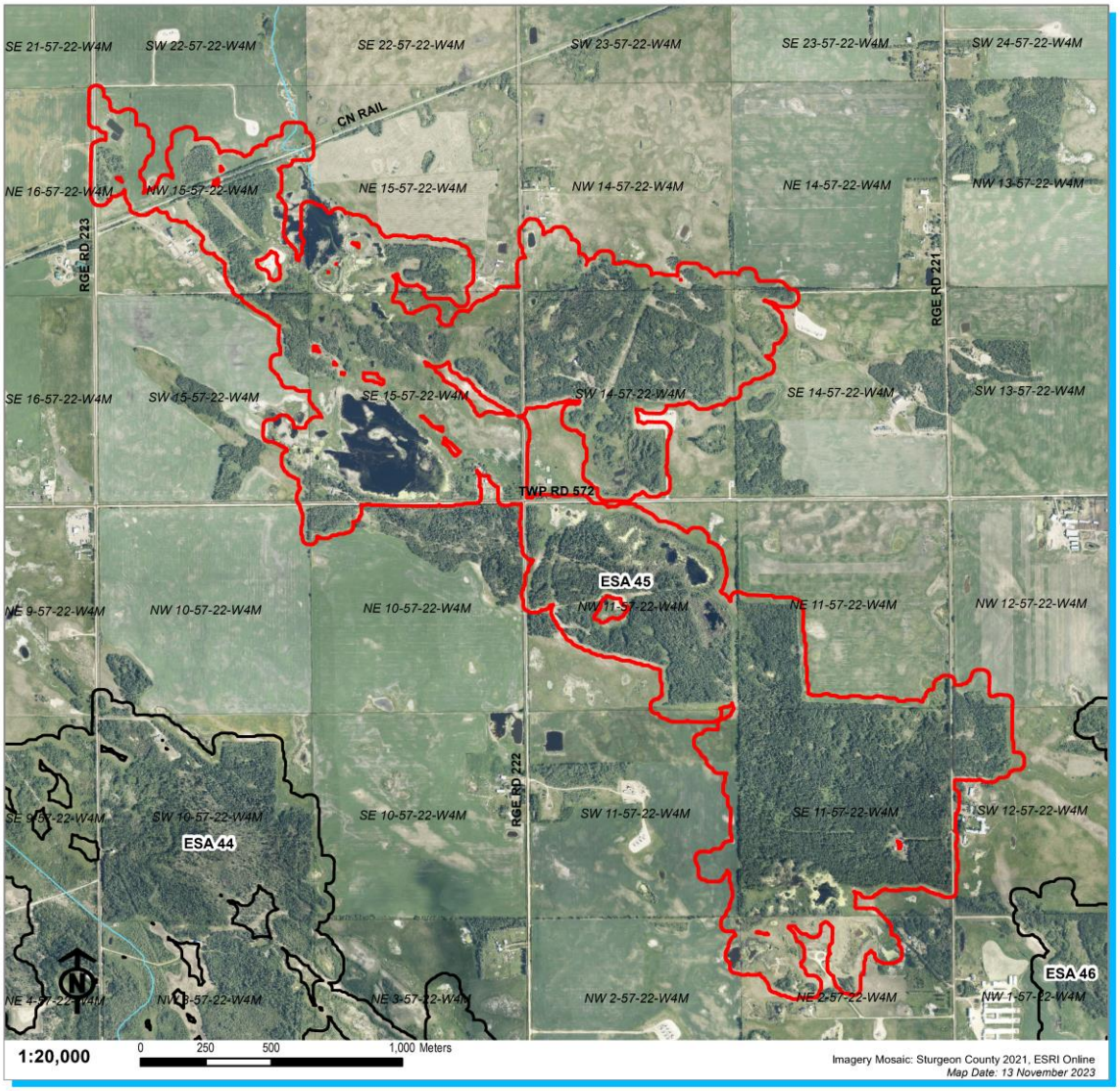


MAPPED ESA AREA[1] (ESA 44)	3961.25 ha
LAND COVER TYPES (%)	Forest (36%); Natural Grassland (5%); Open Water (1%); Wetland (58%)
LANDFORMS	Drumlinoid or Streamlined Landform, Eolian Forms; Dune Ridges
SURFICIAL GEOLOGY	Eolian Deposits, Glaciolacustrine Deposits, Moraine, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	American Kestrel, Black Tern, Broad-Winged Hawk, Common Nighthawk, Common Yellowthroat, Eared Grebe, Eastern Kingbird, Eastern Phoebe, Great Gray Owl, Least Flycatcher, Northern Leopard Frog, Pied-Billed Grebe, Short-Eared Owl, Sora
PLANT RECORDS[3] (*Species of Conservation Concern*)	Long-Leaved Bluets
COUNTY 1989 ESA INVENTORY	Coronado East (R16), Wosney Slough (L43)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (168.91 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat may be present; manage ESA lands adjacent to protected parcels as a natural buffer to increase the sustainability and value of protected areas

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

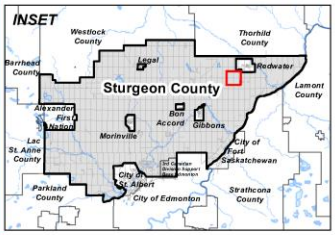
ESA 45

Significance Level: County



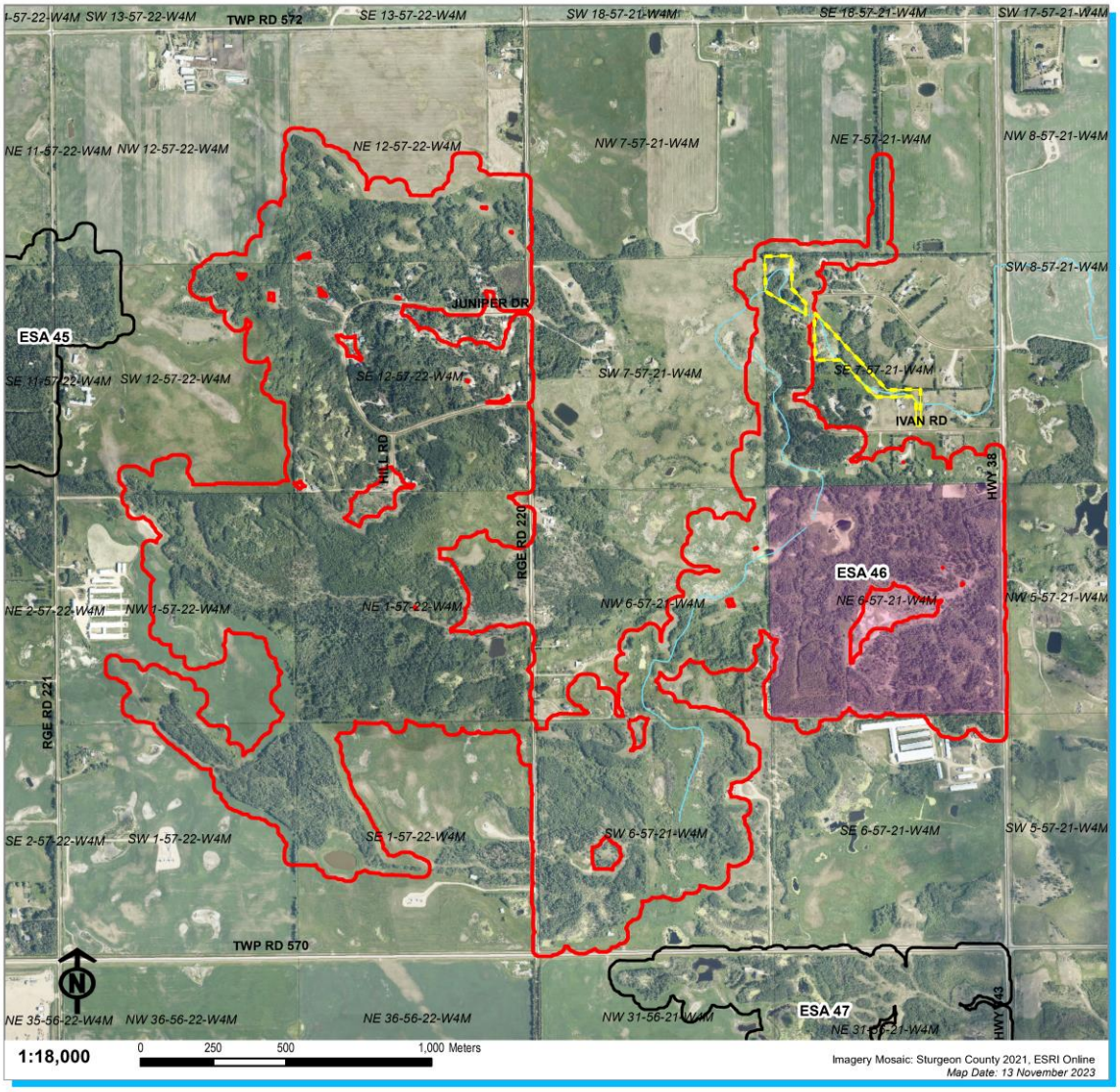
Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area



MAPPED ESA AREA[1] (ESA 45)	344.44 ha
LAND COVER TYPES (%)	Forest (46%); Natural Grassland (2%); Open Water (<0.5%); Wetland (51%)
LANDFORMS	Eolian Forms; Dune Ridges
SURFICIAL GEOLOGY	Eolian Deposits, Moraine, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	Great Gray Owl, Least Flycatcher
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat likely present; landforms suggest sandy soils in localized areas

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

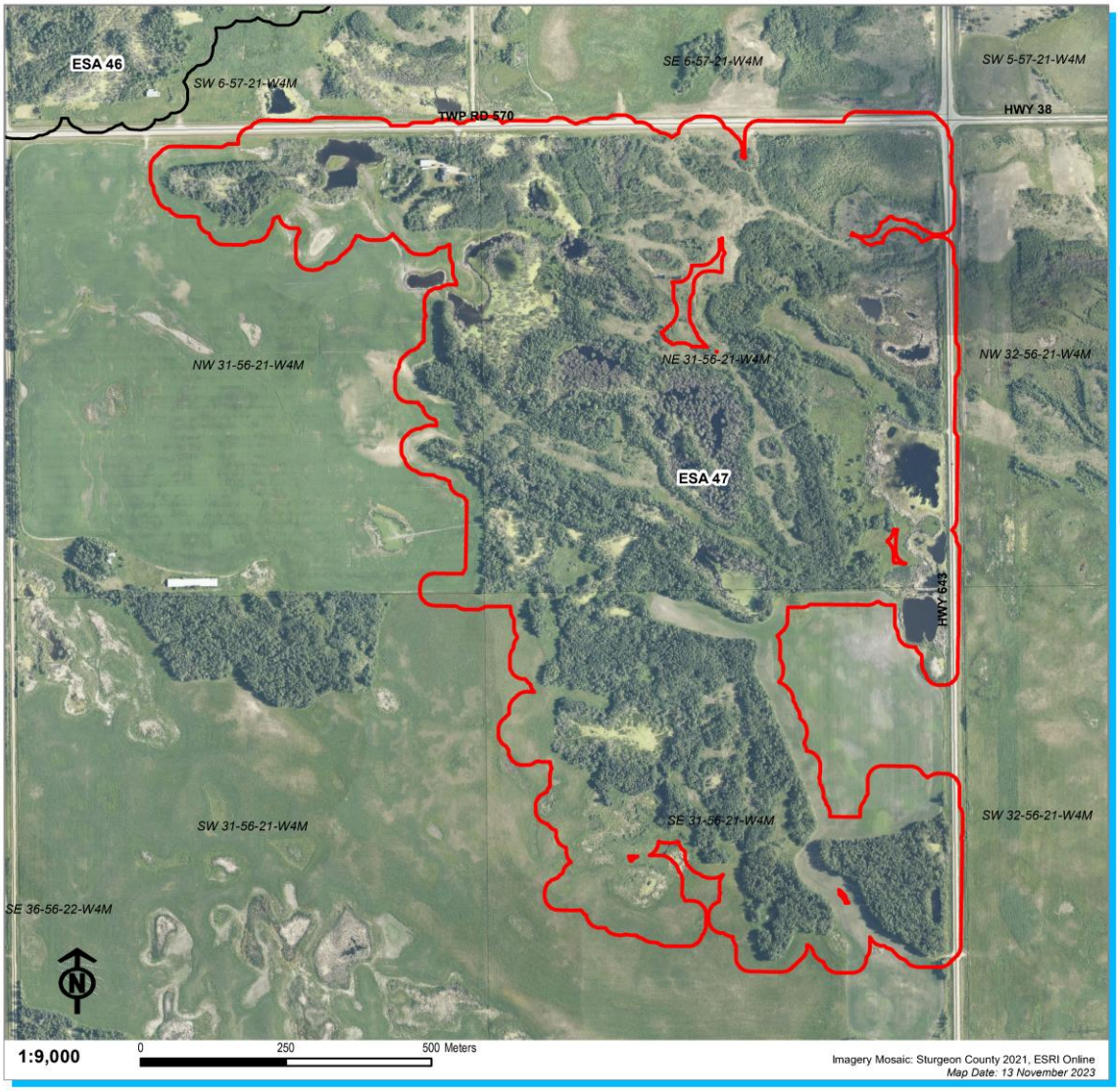


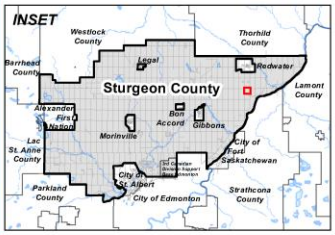
MAPPED ESA AREA[1] (ESA 46)	396.97 ha
LAND COVER TYPES (%)	Forest (41%); Natural Grassland (4%); Open Water (<0.5%); Wetland (55%)
LANDFORMS	Eolian Forms; Dune Ridges
SURFICIAL GEOLOGY	Eolian Deposits, Moraine, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (1.61 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat likely present; manage ESA lands adjacent to protected parcels as a natural buffer to increase the sustainability and value of protected areas; landforms suggest sandy soils in localized areas

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

ESA 47

Significance Level: County



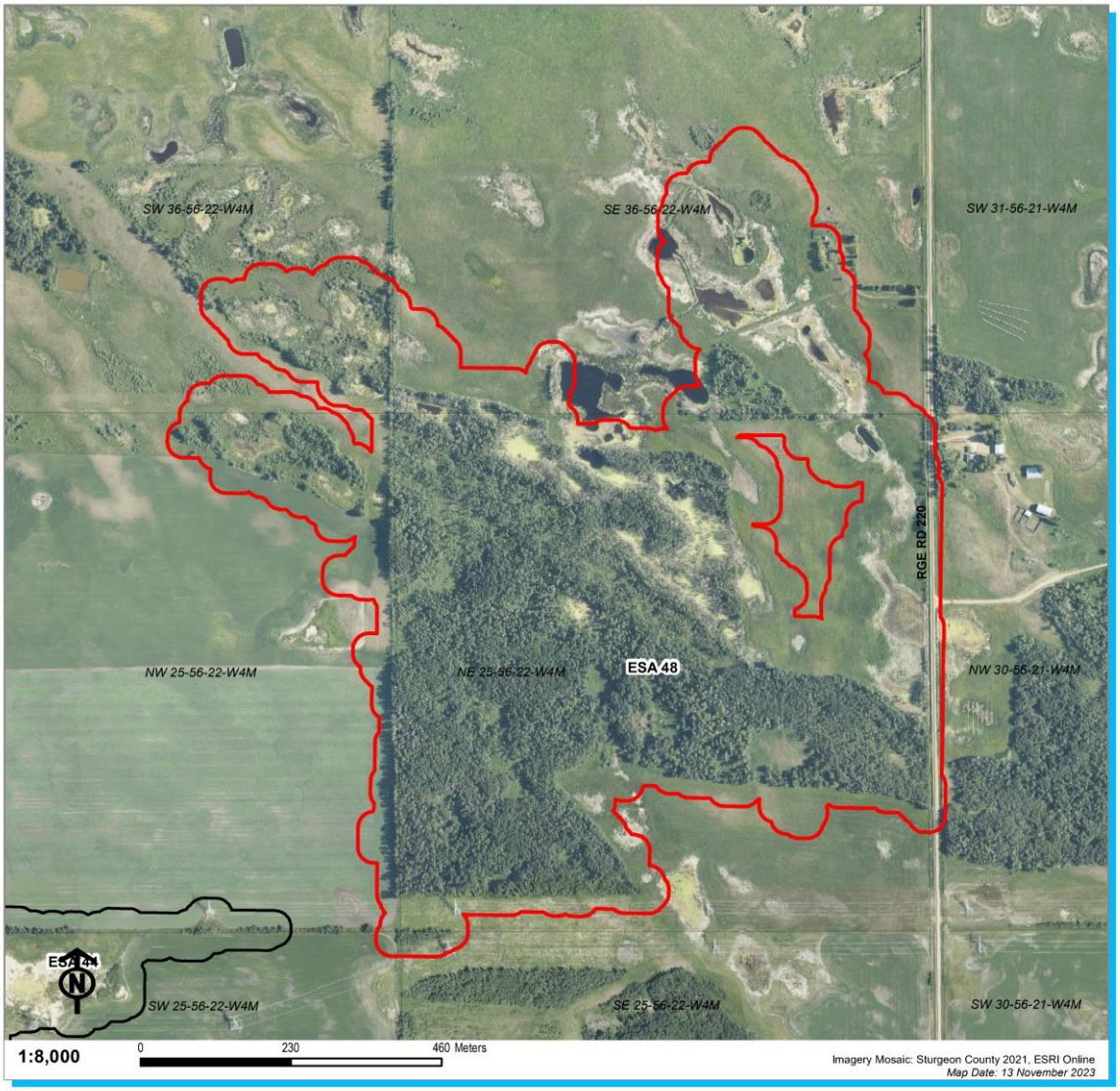


MAPPED ESA AREA[1] (ESA 47)	120.45 ha
LAND COVER TYPES (%)	Forest (46%); Natural Grassland (4%); Open Water (<0.5%); Wetland (50%)
LANDFORMS	Eolian Forms; Dune Ridges
SURFICIAL GEOLOGY	Eolian Deposits, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat may be present; landforms suggest sensitive sandy soils are present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

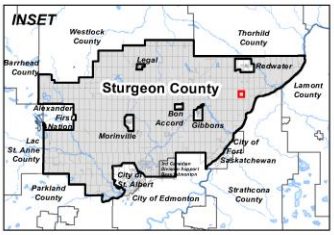
ESA 48

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

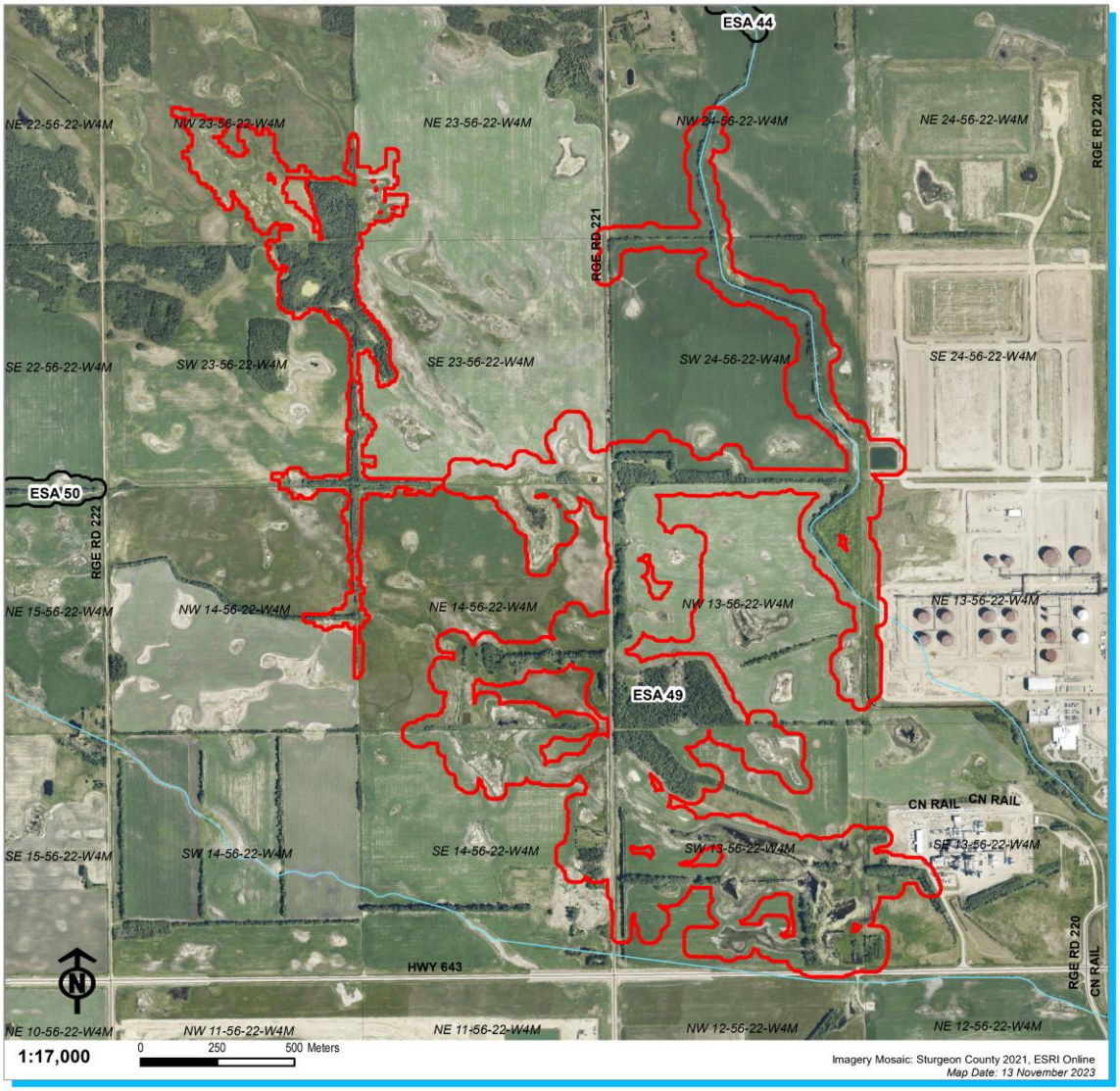


MAPPED ESA AREA[1] (ESA 48)	83.7 ha
LAND COVER TYPES (%)	Forest (49%); Natural Grassland (1%); Wetland (50%)
LANDFORMS	Eolian Forms; Dune Ridges
SURFICIAL GEOLOGY	Eolian Deposits, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for wetlands with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat may be present; landforms suggest sensitive sandy soils are present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

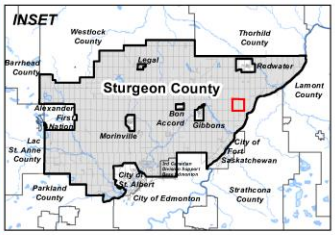
ESA 49

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

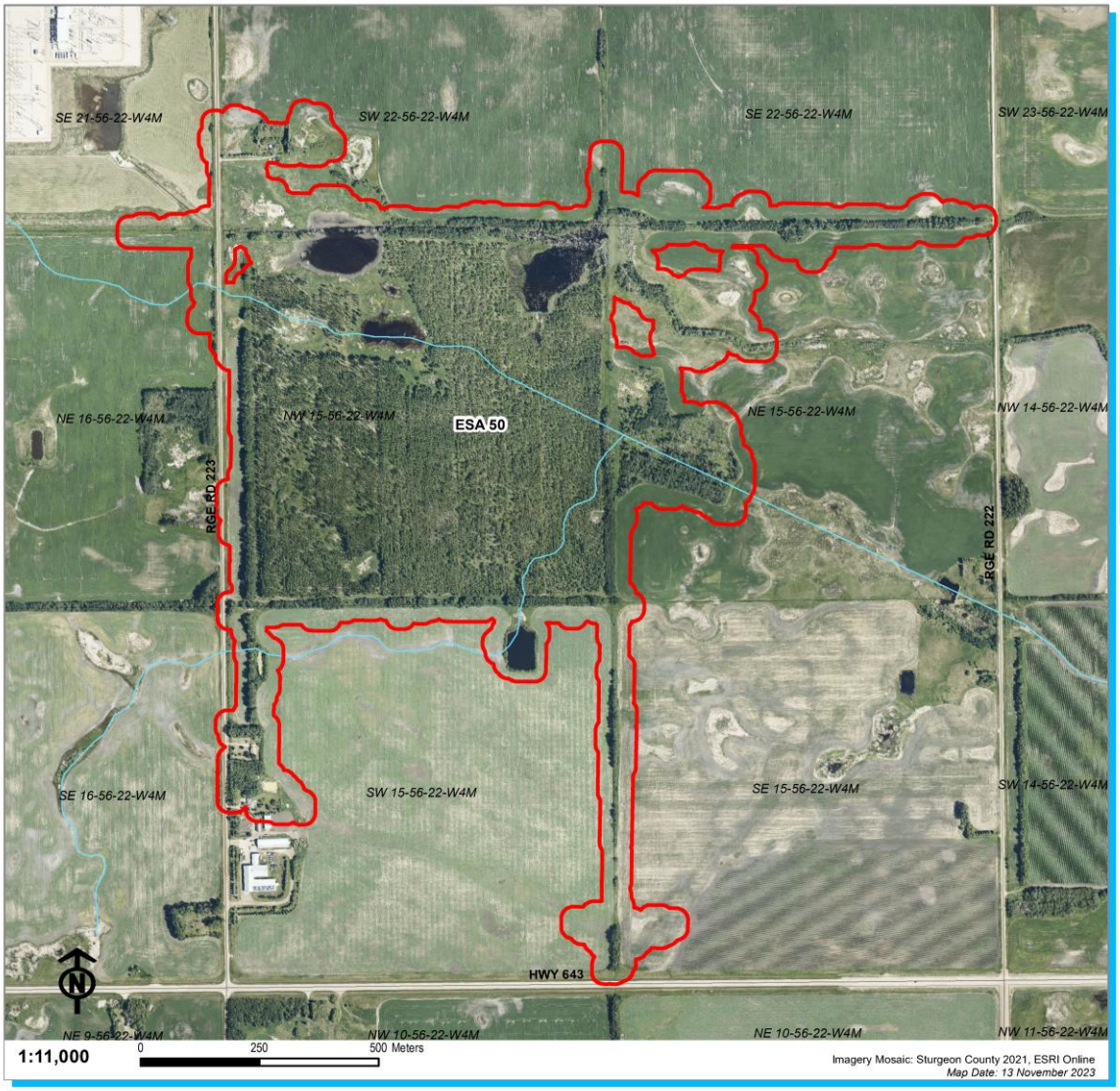


MAPPED ESA AREA[1] (ESA 49)	189.37 ha
LAND COVER TYPES (%)	Forest (31%); Natural Grassland (<0.5%); Open Water (3%); Wetland (66%)
LANDFORMS	Eolian Forms; Dune Ridges, Moraine Ridge
SURFICIAL GEOLOGY	Eolian Deposits, Glaciolacustrine Deposits, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; landforms suggest sensitive sandy soils are present; restoration opportunities may be present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

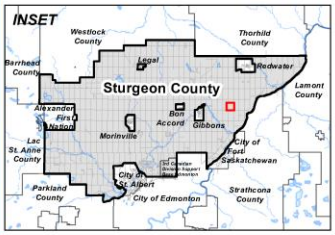
ESA 50

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

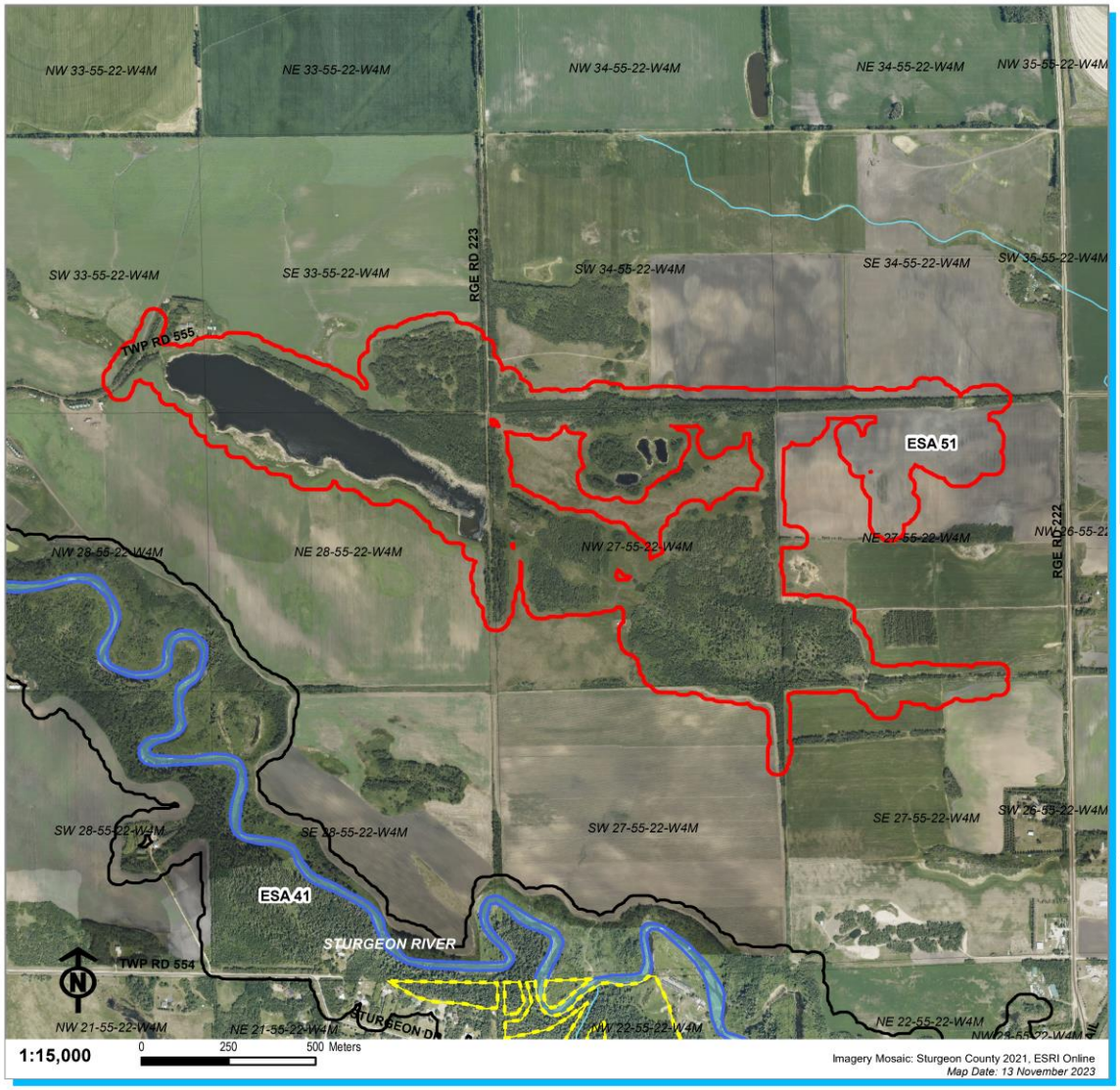


MAPPED ESA AREA[1] (ESA 50)	120.04 ha
LAND COVER TYPES (%)	Forest (58%); Open Water (3%); Wetland (39%)
LANDFORMS	Moraine Ridge
SURFICIAL GEOLOGY	Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; interior forest habitat may be present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

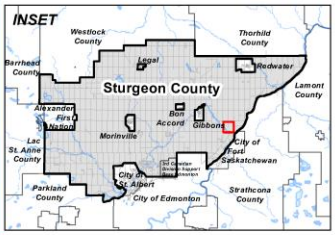
ESA 51

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

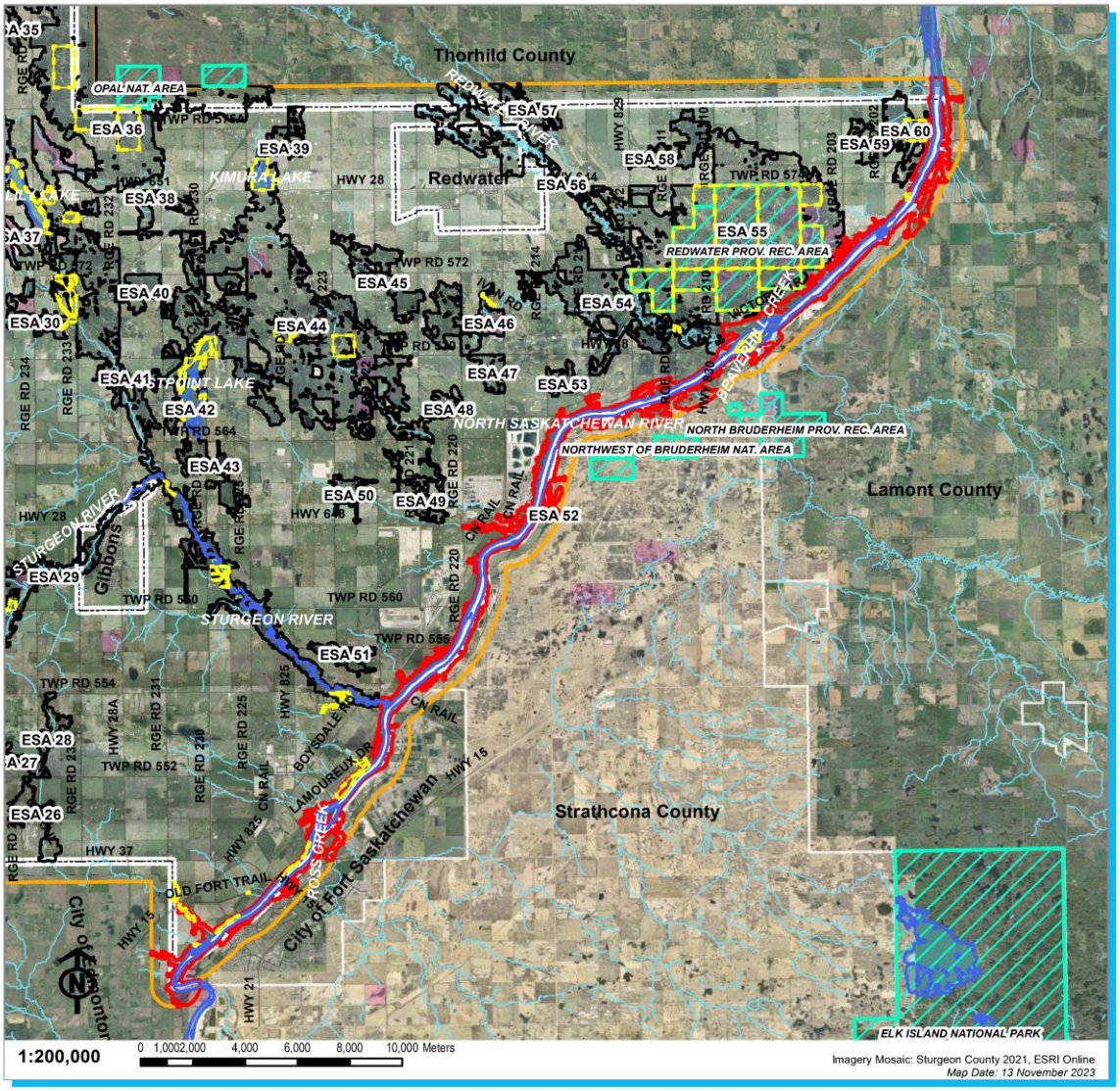


MAPPED ESA AREA[1] (ESA 51)	129.88 ha
LAND COVER TYPES (%)	Forest (49%); Natural Grassland (1%); Open Water (14%); Wetland (36%)
LANDFORMS	Moraine Ridge
SURFICIAL GEOLOGY	Glaciolacustrine Deposits
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (lakes and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks; interior forest habitat may be present; restoration opportunity may be present in central area

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

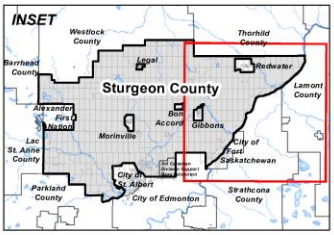
ESA 52

Significance Level: Provincial



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

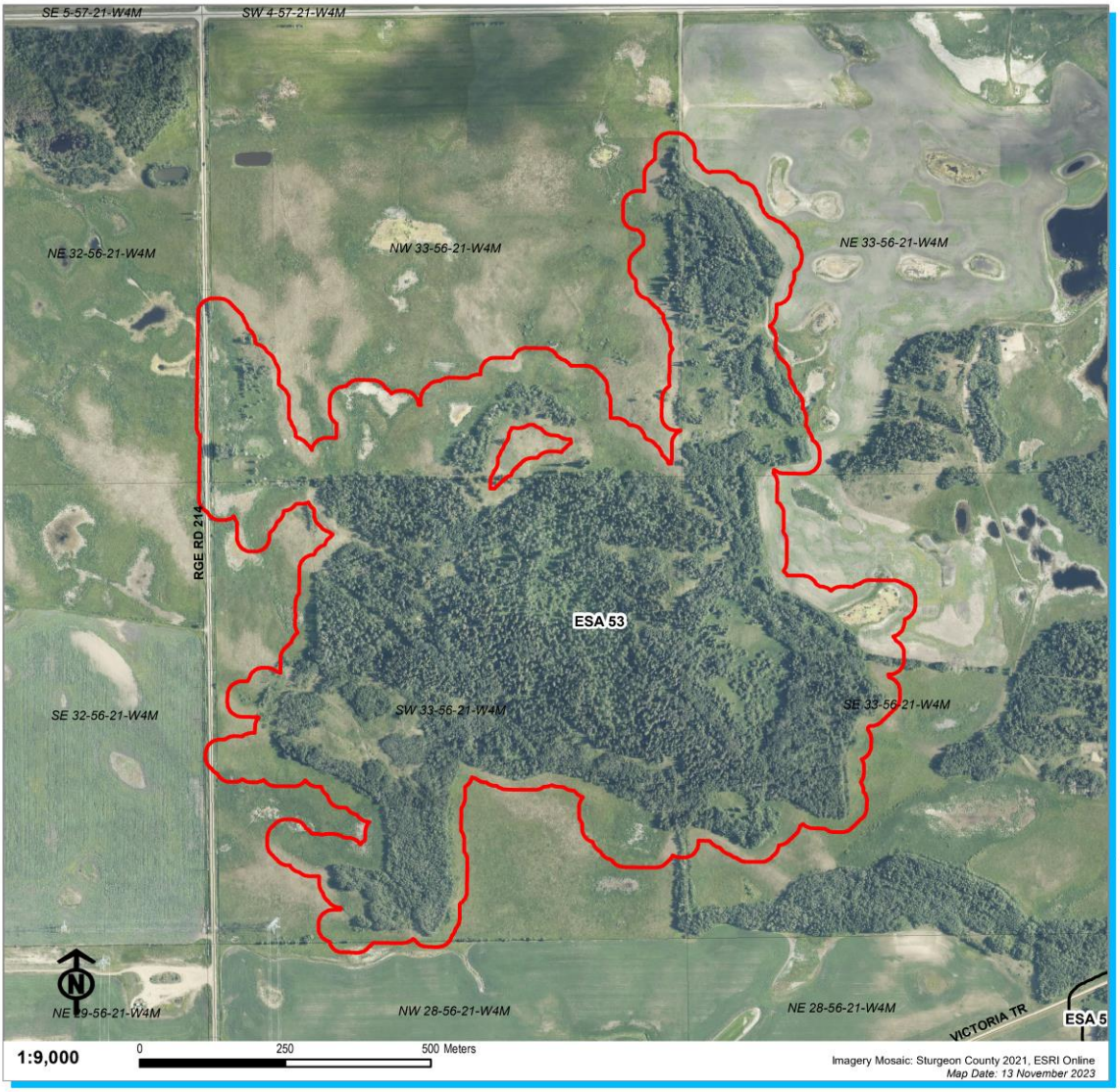


MAPPED ESA AREA[1] (ESA 52)	3343.27 ha
LAND COVER TYPES (%)	Forest (49%); Natural Grassland (2%); Open Water (41%); Wetland (8%)
LANDFORMS	Eolian Forms; Dune Ridges, Major Meltwater Channel, Minor Meltwater Channel
SURFICIAL GEOLOGY	Eolian Deposits, Fluvial Deposits, Glaciofluvial Deposits, Glaciolacustrine Deposits, Moraine, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	Fish-bearing water bodies (North Saskatchewan River; Sturgeon River; Beaverhill Creek; Redwater River; Ross Creek); North Saskatchewan River fish presence records include Species of Conservation Concern
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone; Colonial Nest Buffer (Great Blue Heron)
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	American White Pelican, Baltimore Oriole, Barn Swallow, Black-Throated Green Warbler, Common Yellowthroat, Eastern Phoebe, Great Blue Heron, Least Flycatcher, Prairie Falcon; Creeping Ancylid (From ACIMS 2022)
PLANT RECORDS[3] (*Species of Conservation Concern*)	Canada Rice Grass, Cat-Tongue Liverwort, Cavernous Crystalwort, Common Leske's Moss, Flat-Topped White Aster, Fluffy Dust Lichen, Lime Silk Moss, Long-Leaved Bluets, Narrow-Fruited Fork Moss, Philibert's Fern Moss, Schleicher's Silk Moss, Urn Moss, Virgin
COUNTY 1989 ESA INVENTORY	North Saskatchewan River Valley (P3), Redwater Sandhills (R17)
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (83.26 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Significant portion of ESA comprises the river or is in neighbouring jurisdictions; regulated water bodies (watercourse and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants and may support sharp-tailed grouse leks; protected colonial bird breeding habitat may be present; federal *Fisheries Act* applies to all fish-bearing waters; manage ESA lands adjacent to protected parcels and riparian areas as a natural buffer to increase the sustainability and value of protected areas

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

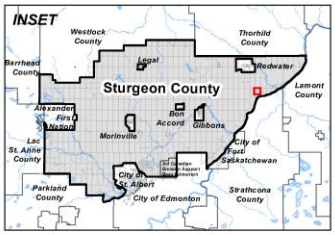
ESA 53

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

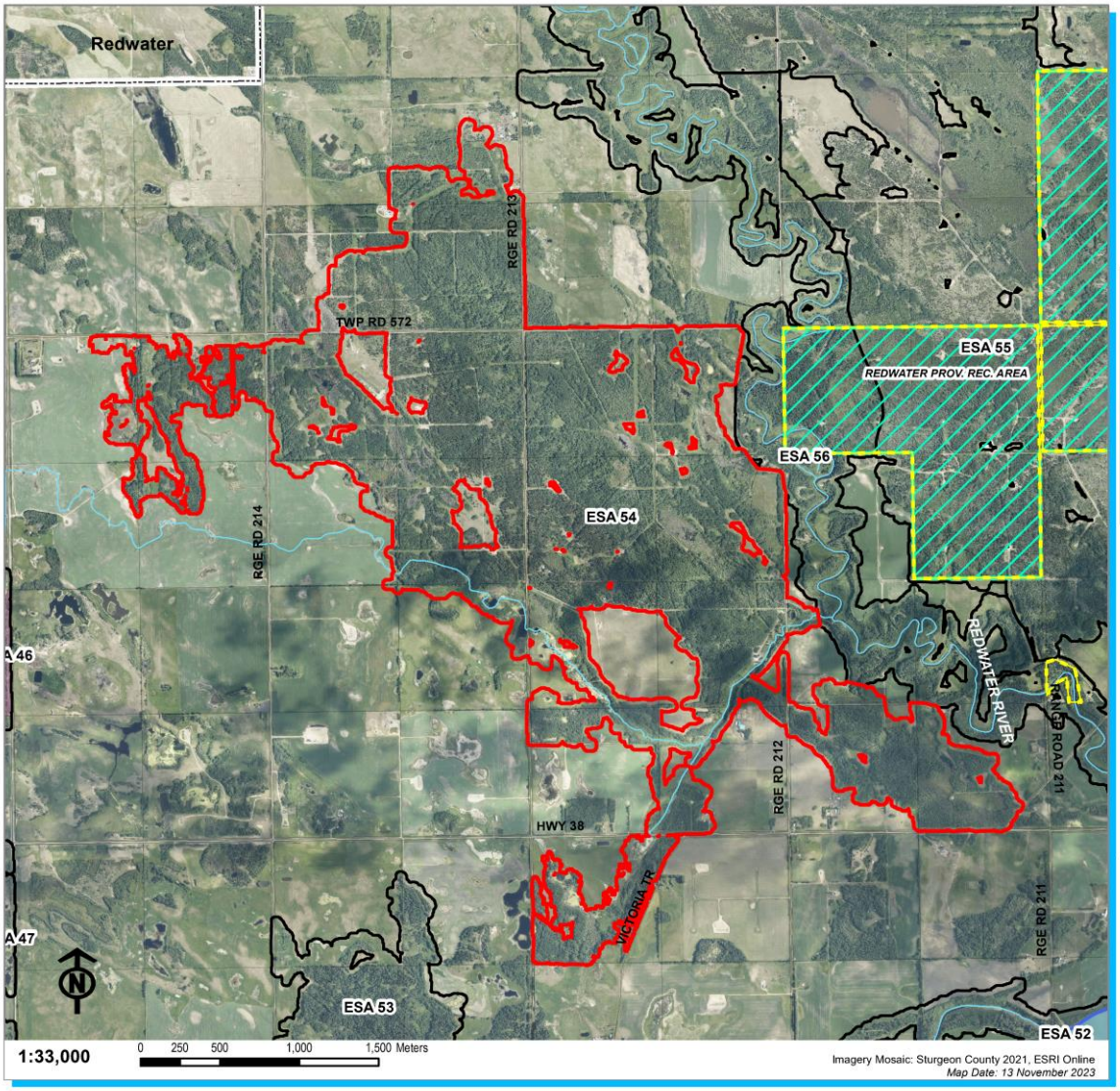


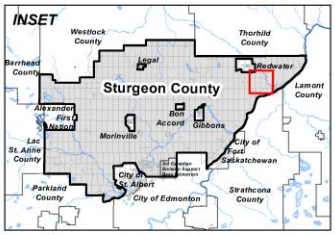
MAPPED ESA AREA[1] (ESA 53)	93.57 ha
LAND COVER TYPES (%)	Forest (58%); Natural Grassland (5%); Wetland (37%)
LANDFORMS	Eolian Forms; Dune Ridges
SURFICIAL GEOLOGY	Eolian Deposits, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	Long-Leaved Bluets, Pepper-Spore Lichen
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for wetlands with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat likely present; landforms suggest presence of sensitive sandy soils

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

ESA 54

Significance Level: County



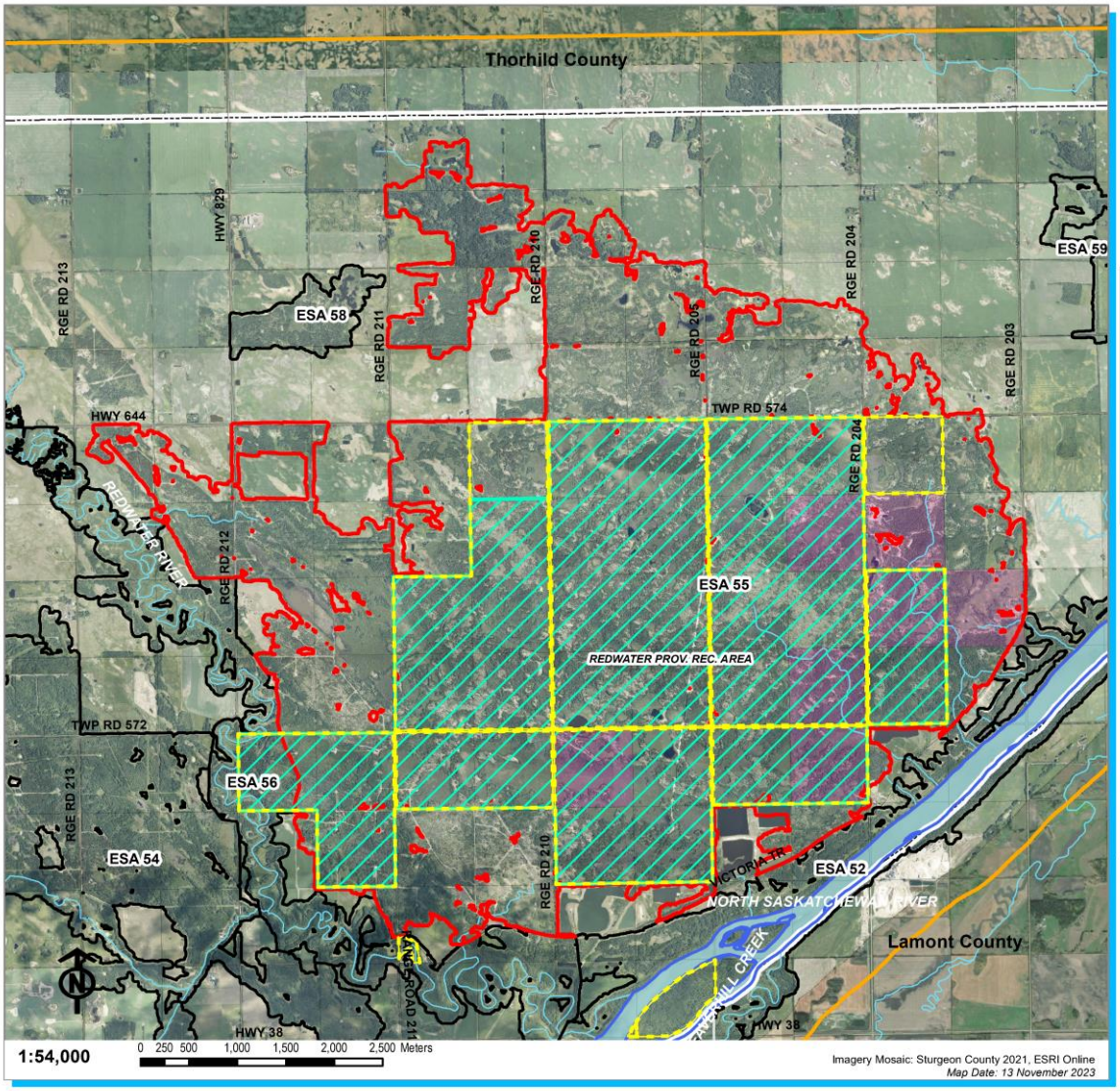


MAPPED ESA AREA[1] (ESA 54)	859.73 ha
LAND COVER TYPES (%)	Forest (49%); Natural Grassland (2%); Open Water (<0.5%); Wetland (49%)
LANDFORMS	Eolian Forms; Dune Ridges
SURFICIAL GEOLOGY	Eolian Deposits, Fluvial Deposits, Glaciofluvial Deposits, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	Peregrine Falcon
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (wetlands and potentially historic watercourses) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat may be present; evidence of oil and gas activity throughout; landforms suggest presence of sensitive sandy soils

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

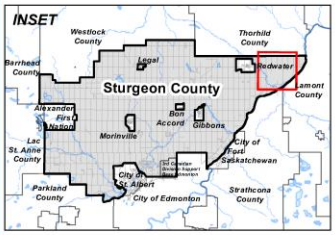
ESA 55

Significance Level: Provincial



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

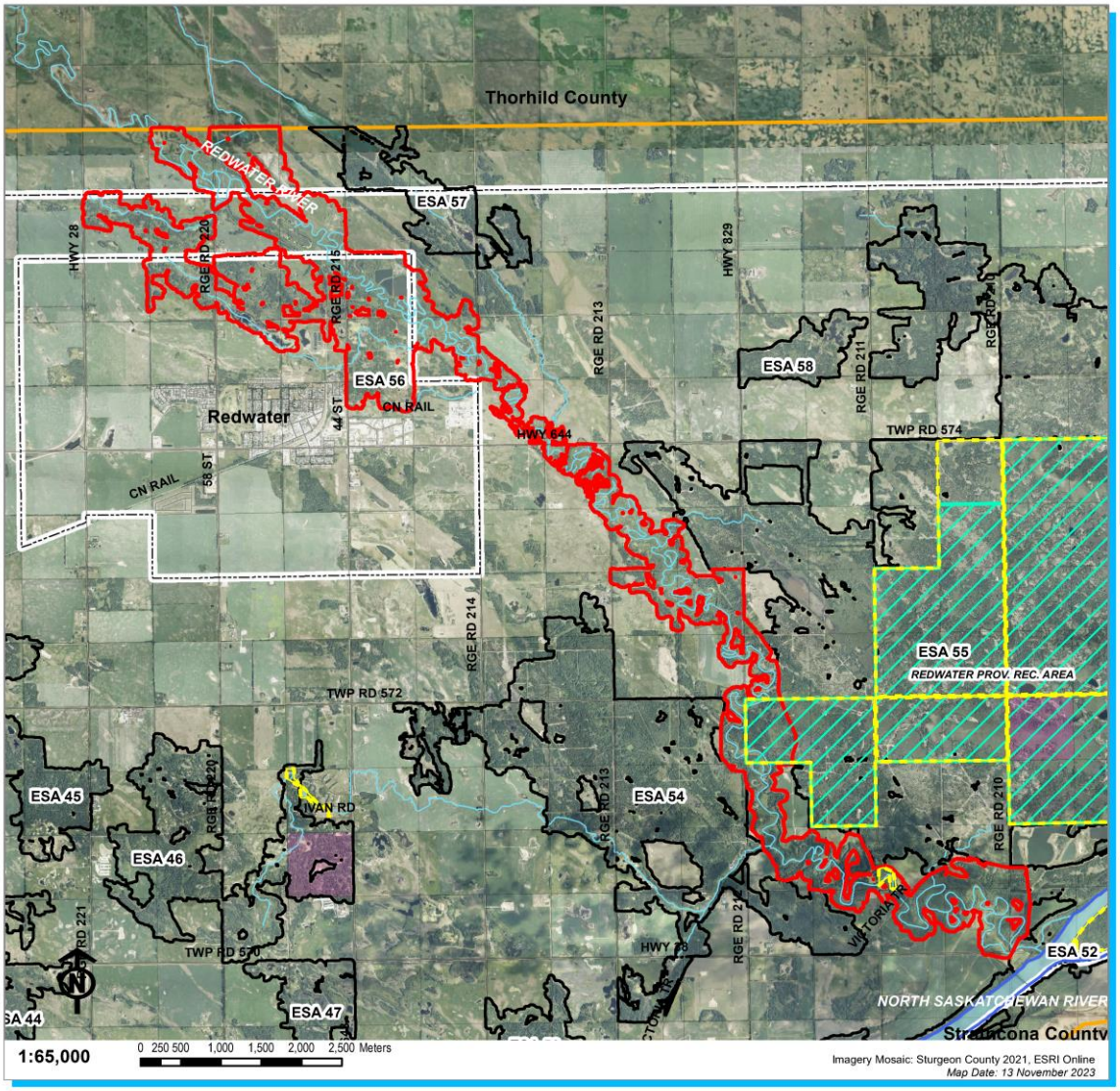


MAPPED ESA AREA[1] (ESA 55)	4182.2 ha
LAND COVER TYPES (%)	Forest (32%); Natural Grassland (10%); Open Water (<0.5%); Wetland (58%)
LANDFORMS	Crevasse Filling, Eolian Forms; Dune Ridges
SURFICIAL GEOLOGY	Eolian Deposits, Fluvial Deposits, Glaciofluvial Deposits
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone; Colonial Nest Buffer (Great Blue Heron)
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	American Kestrel, Fisher
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	Redwater Provincial Recreation Area
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (2275.45 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat may be present; protected colonial bird breeding habitat may be present; manage ESA lands adjacent to protected parcels as a natural buffer to increase the sustainability and value of protected areas; landforms suggest sandy soils in localized areas; evidence of oil and gas activity

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

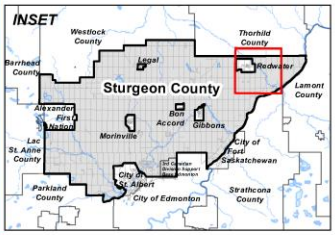
ESA 56

Significance Level: Provincial



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

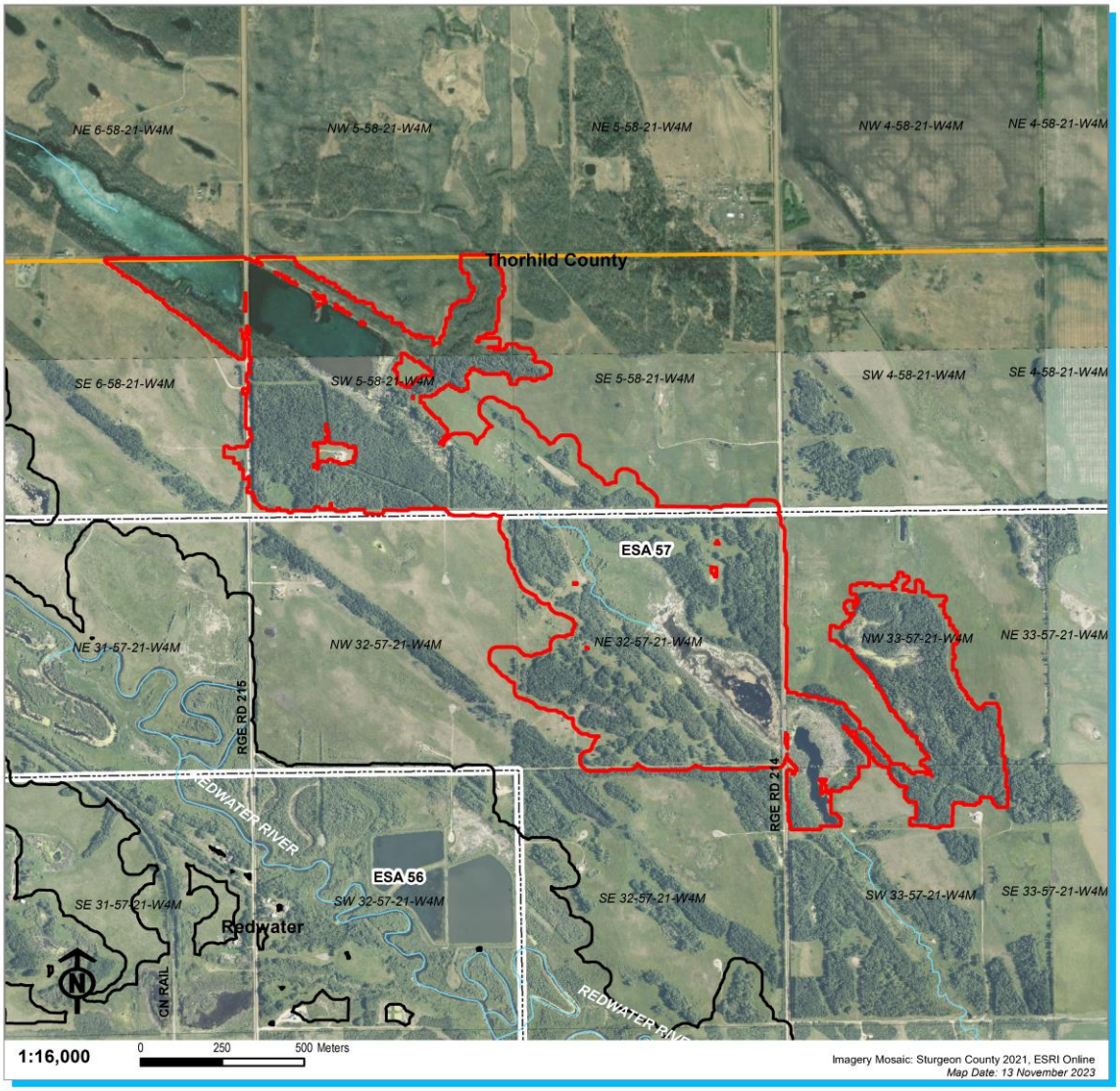


MAPPED ESA AREA[1] (ESA 56)	1213.67 ha
LAND COVER TYPES (%)	Forest (47%); Natural Grassland (3%); Open Water (4%); Wetland (46%)
LANDFORMS	Eolian Forms; Dune Ridges, Major Meltwater Channel
SURFICIAL GEOLOGY	Eolian Deposits, Fluvial Deposits, Glaciofluvial Deposits, Stagnant Ice Moraine
FISHERIES SENSITIVITIES[2]	Fish-bearing water body (Redwater River)
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	Redwater Provincial Recreation Area
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (48.13 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated water bodies (lakes, watercourses and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; federal *Fisheries Act* applies to all fish-bearing waters; manage ESA lands adjacent to protected parcels and riparian areas as a natural buffer to increase the sustainability and value of protected areas and watercourses

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

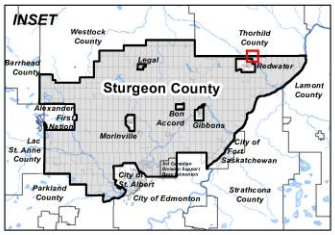
ESA 57

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

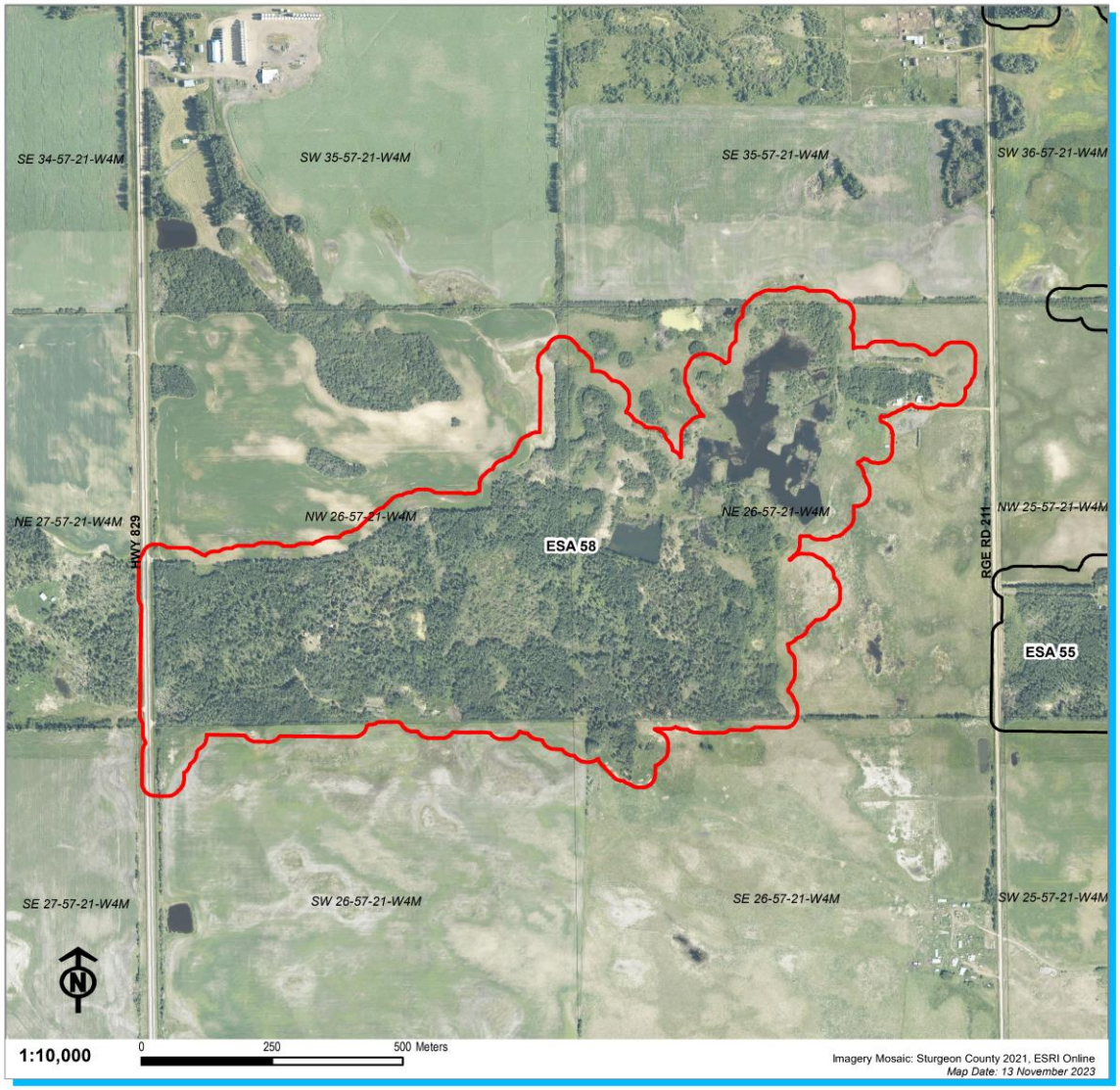


MAPPED ESA AREA[1] (ESA 57)	156.5 ha
LAND COVER TYPES (%)	Forest (58%); Natural Grassland (4%); Open Water (8%); Wetland (30%)
LANDFORMS	None
SURFICIAL GEOLOGY	Glaciofluvial Deposits
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Significant portion of ESA is outside of the County; regulated water bodies (lakes and wetlands) are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; restoration opportunities may exist

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

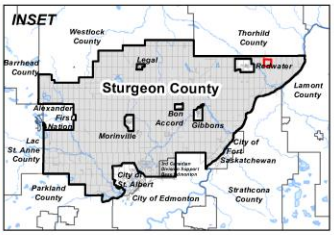
ESA 58

Significance Level: County



Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area



MAPPED ESA AREA[1] (ESA 58)	79.72 ha
LAND COVER TYPES (%)	Forest (54%); Natural Grassland (6%); Open Water (4%); Wetland (37%)
LANDFORMS	None
SURFICIAL GEOLOGY	Eolian Deposits, Glaciofluvial Deposits
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for those with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat may be present; sandy soils may be present

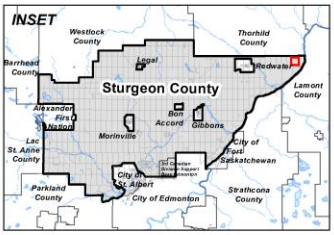
*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

ESA 59

Significance Level: County

Legend

- Focal ESA
- Other ESA
- Environmental Protection & Preservation (Sturgeon County 2022)
- Alberta ESA (Fiera 2014)
- Alberta Protected Area (AB Parks 2023)
- Hydrology (Altalis 1996)
- County Boundary
- Study Area

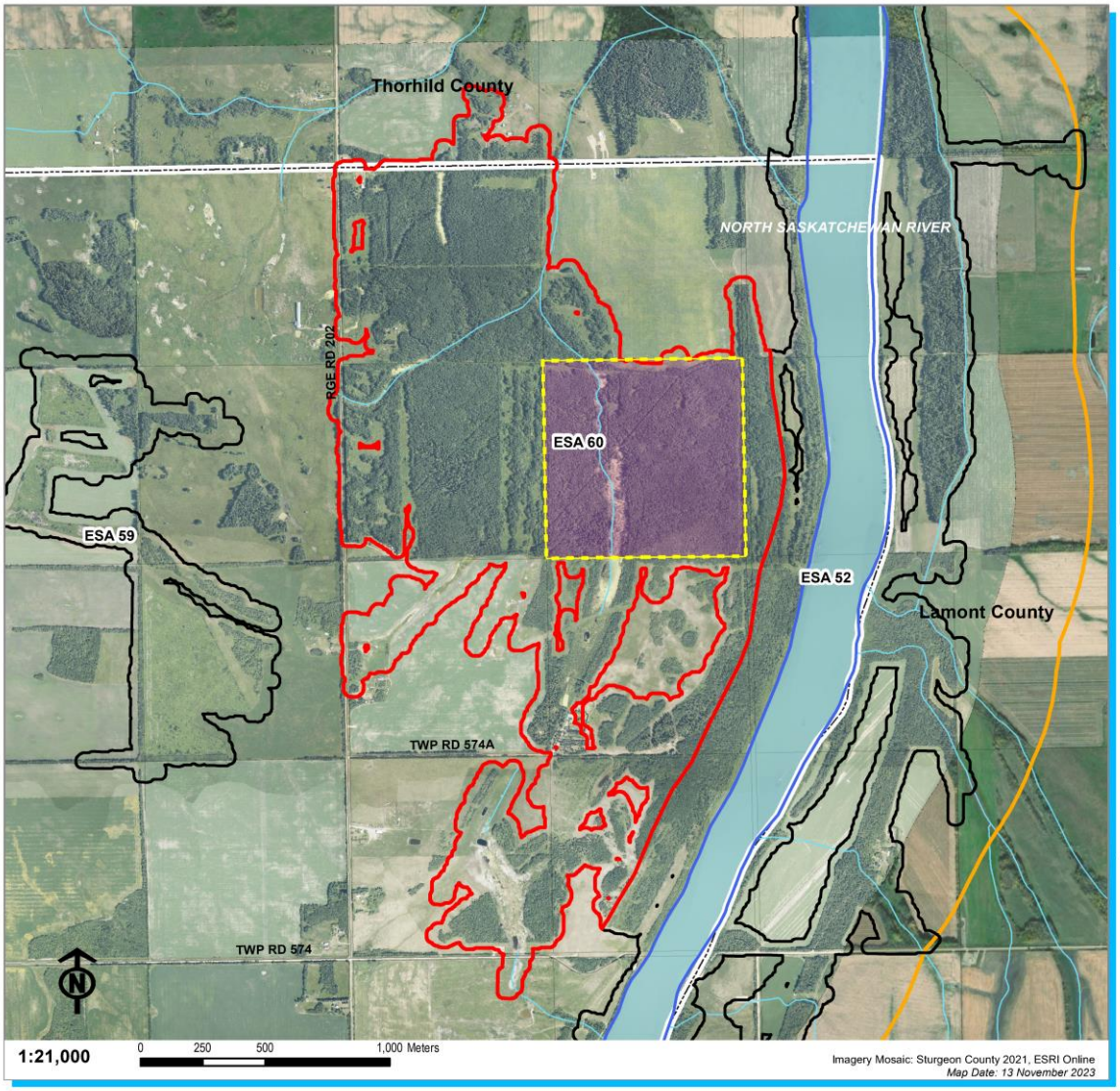


MAPPED ESA AREA[1] (ESA 59)	81.09 ha
LAND COVER TYPES (%)	Forest (54%); Natural Grassland (<0.5%); Wetland (46%)
LANDFORMS	Drumlinoid or Streamlined Landform
SURFICIAL GEOLOGY	Fluted moraine, Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	None on record
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	No records
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	None
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for wetlands with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; restoration opportunities may be present

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

ESA 60

Significance Level: Provincial



MAPPED ESA AREA[1] (ESA 60)	350.78 ha
LAND COVER TYPES (%)	Forest (76%); Natural Grassland (1%); Wetland (22%)
LANDFORMS	None
SURFICIAL GEOLOGY	Fluvial Deposits, Moraine
FISHERIES SENSITIVITIES[2]	None on record
WILDLIFE SENSITIVITIES	Key Wildlife Biodiversity Zone
WILDLIFE RECORDS[3] (*Species of Conservation Concern*)	Blackburnian Warbler
PLANT RECORDS[3] (*Species of Conservation Concern*)	No records
COUNTY 1989 ESA INVENTORY	Not Applicable
PROVINCIAL PROTECTED AREA	None
COUNTY PROTECTED AREA (EP)	Intersect EP (may include ER) (64.26 ha)
PLANNING & MANAGEMENT CONSIDERATIONS	Regulated wetlands are present - Alberta *Water Act*, Alberta Wetland Policy apply and for wetlands with Crown-claimed bed and shore *Public Lands Act* applies; grasslands may support native prairie remnants; interior forest habitat likely present; manage ESA lands adjacent to protected parcels as a natural buffer to increase the sustainability and value of protected areas

*[1]area of ESA located within Sturgeon County limits provided in main report; [2]lack of records does not indicate absence of fish or fish habitat - other named and unnamed watercourses may support fish; [3]scientific names provided in report tables; *see Appendix A for source data references*

Appendix C. ESA Summary Table

Table 1. Summary of ESA significance, location, size and integrated 1989 ESAs.

ESA ID#	Significance	County Quadrant Location	Total Area (Ha)	Area within County (Ha)	Integrated 1989 ESAs
1	County	NW	94	54	
2	County	NW	85	85	
3	Provincial	NW	177	68	
4	Provincial	NW	264	205	
5	Provincial	NW	239	102	
6	Provincial	NW	430	430	Deadman Lake (R8)
7	Provincial	NW	203	3	
8	Provincial	NW; SW	1399	372	
9	Provincial	NW; SW	4433	943	Sandy Lake (R6)
10	County	SW	113	113	
11	Provincial	SW	79	79	Riviere Qui Barre Slough (L31)
12	County	SW	447	431	Sandy Lake Southeast Shore (R7)
13	Provincial	SW	2856	2244	
14	Provincial	SW	90	90	
15	Provincial	SW	72	72	
16	Provincial	SW	422	308	Calahoo Upland (R9), Gladu Lake Upland (R10)
17	National	SW	2933	1979	Big Lake (P1)
18	County	SW	266	266	Villeneuve Gravel Pits (R11)
19	Provincial	SW	42	42	Morinville South Slough (L33)
20	Provincial	NW	949	949	Manawan (Egg) Lake (P2)
21	County	NW	216	216	
22	County	NW	33	33	Morinville East Slough (L32)
23	Provincial	SW	714	570	Riverlot 56 Natural Area (L69), Sturgeon Valley Namao (L34)
24	County	SW; SE	132	132	Lancaster (Cutbank) Lake (L35)
25	Provincial	SE	104	100	
26	County	SE	205	205	
27	County	SE	74	74	
28	County	SE	158	158	
29	Provincial	SE; NE	1312	1201	Sturgeon River Valley (P3), Bon Accord South (R12)
30	Provincial	NE	963	963	Bon Accord North (R14)
31	County	NE	119	119	Legal Northeast (L36)
32	County	NE	104	104	
33	County	NE	241	241	
34	County	NE	100	87	
35	County	NE	108	101	
36	Provincial	NE	2791	1715	Lily Lake East (L42)
37	Provincial	NE	121	121	Waybrook Lakes (L40)

ESA ID#	Significance	County Quadrant Location	Total Area (Ha)	Area within County (Ha)	Integrated 1989 ESAs
38	County	NE	144	144	
39	County	NE	173	173	
40	County	NE	154	154	
41	Provincial	SE; NE	3054	3038	Lily Lake (R13), Lily Slough (L41)
42	County	NE	391	391	
43	County	NE	244	244	Lostpoint Lake (R15)
44	Provincial	NE	3961	3961	Coronado East (R16), Wosney Slough (L43)
45	County	NE	344	344	
46	Provincial	NE	397	397	
47	County	NE	120	120	
48	County	NE	84	84	
49	County	NE	189	189	
50	County	NE	120	120	
51	County	SE	130	130	
52	Provincial	SE; NE	3343	2150	North Saskatchewan River Valley (P3), Redwater Sandhills (R17)
53	County	NE	94	94	
54	County	NE	860	860	
55	Provincial	NE	4182	4182	
56	Provincial	NE	1214	788	
57	County	NE	157	89	
58	County	NE	80	80	
59	County	NE	81	81	
60	Provincial	NE	351	342	