

TOWN OF STONY PLAIN

Land Use Planning Support Studies

Environmentally Significant Areas (ESA) Identification Study

Final Report

January 2026



Prepared by ISL Engineering and Land Services Ltd.

ISL Engineering and Land Services Ltd. is an award-winning full-service consulting firm dedicated to working with all levels of government and the private sector to deliver planning and design solutions for transportation, water, and land projects.

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1.0 Introduction

Over the last decade, Stony Plain has experienced significant change. Efforts to prioritize critical infrastructure investments, local and regional transportation, environmental sustainability, and diverse housing options have resulted in increased growth, business attraction and retention, and development interest.

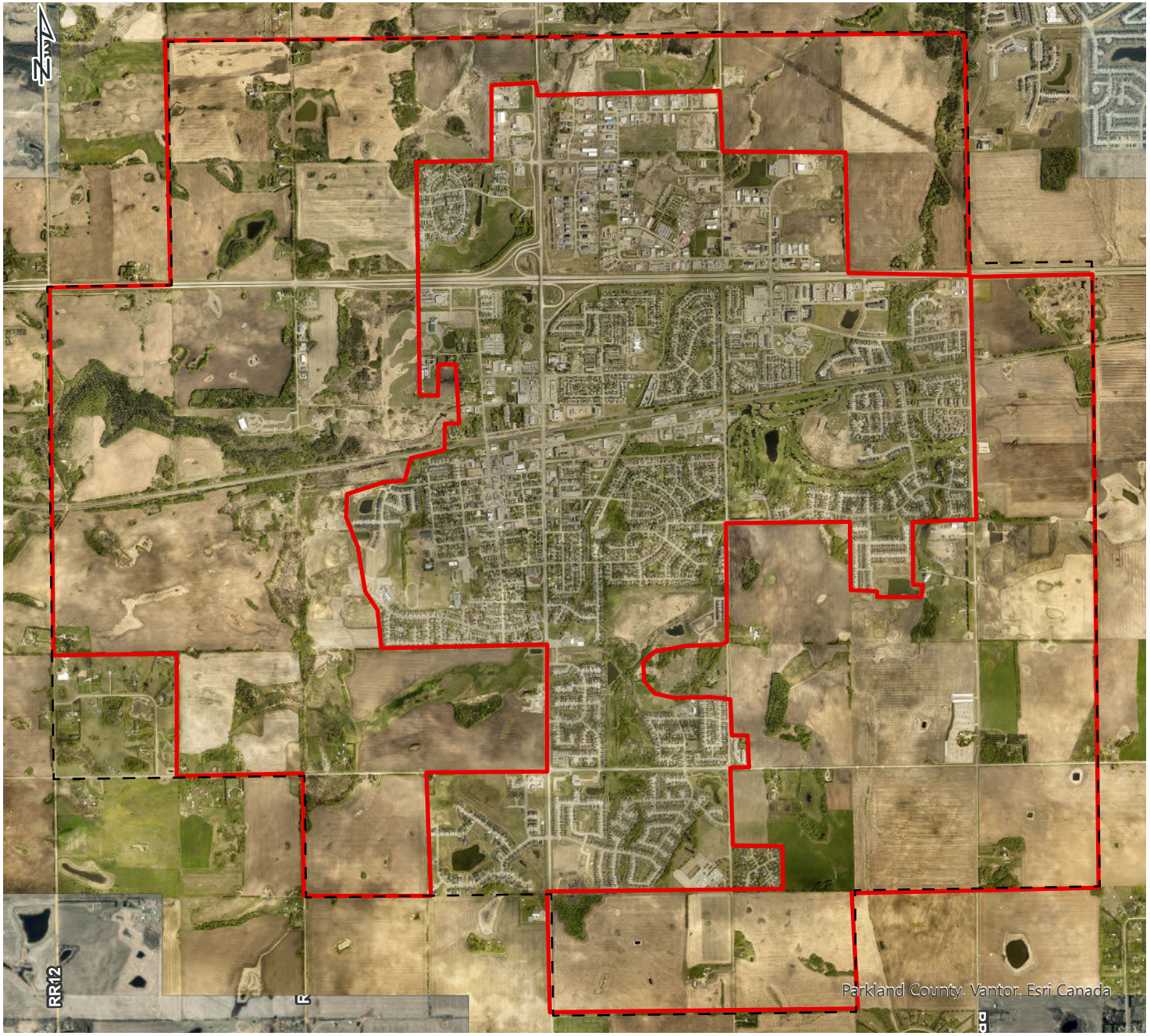
Considering these recent trends, the Town is at a pivotal point in its trajectory, where it must continue to take advantage of growth opportunities while addressing emerging and widespread issues, such as housing and climate change. This requires independent advancement as well as effective coordination of multiple resources and areas of expertise.

Land use planning plays a key role in this process, offering a framework to guide responsible growth and development in alignment with community values. Accordingly, the Town is set to undertake a review of its Municipal Development Plan (MDP) in 2026 and is also pursuing other master planning efforts that will work synergistically with the MDP. In preparation for these efforts, the Town has commissioned a series of Land Use Planning Support Studies, including:

- Land Absorption Study
- Environmentally Significant Areas (ESA) Identification Study
- Land Use Framework

This report corresponds to the Environmentally Significant Areas (ESA) Identification Study, a desktop exercise aiming to determine where environmentally significant features should be preserved by the Town as future development occurs. The study area is shown in **Map 1** and largely corresponds to the Town's unabsorbed land supply. This study will serve as a critical input for the Town to make future land use decisions that are in alignment with conservation, environmental stewardship, and climate change adaptation and mitigation goals.

This report is structured to move from a baseline understanding of the methodology employed in the identification of ESAs, to the presentation of key findings, and a set of actionable recommendations to inform the Town's forthcoming land use planning decisions. It begins with **Methods (Chapter 2)**, establishing key definitions and describing the different types of environmental features and habitats that were considered. This is followed by **Results (Chapter 3)**, which introduces the identified ESAs by type and describes their importance. The report concludes with **Recommendations (Chapter 4)** that position the study's outcomes to support the Town's broader planning and policy initiatives.



TOWN OF STONY PLAIN

Town of Stony Plain

Study Area

ISL

0 0.47 0.95 1.9

km

Environmentally Significant Area (ESA) Identification Study
Map 1: Study Area

2.0 Methods

2.1 ENVIRONMENTALLY SIGNIFICANT AREAS (ESA)

For this study, ESAs were defined as natural features that provide ecological value and should be prioritized for preservation as development occurs. The identification process focused on wetlands, remnant forested areas, watercourses, and other undisturbed natural habitats within the study area.

2.2 VEGETATION

2.2.1 Rare Plants and Rare Ecological Communities

The Alberta Conservation Information Management System (ACIMS) element occurrence[1] data was reviewed to identify known rare plant[2] and rare ecological community[3] occurrences within 2 km of the study area. These occurrences are important because they highlight areas of high conservation value.

2.2.2 Remnant Forested Areas

Remnant forested areas were mapped based on current imagery. These areas may be considered ESAs for their potential as wildlife habitat or corridors and as natural features on the landscape.

2.3 WILDLIFE

A review of the Fish and Wildlife Internet Mapping Tool (FWMIT) database (AEPA, 2023) was conducted to determine known species occurrences within a 2 km radius from the center of the study area. The wildlife present and their preferred habitat types and the potential presence of those habitat types were considered in this ESA study.

[1] Defined by ACIMS as "*Specific locations (area of land or water) where an element is or was present on the landscape. Elemental occurrences (EO) should have conservation value as evidenced by potential continued presence or reoccurrence at this location*" (ACIMS 2022a).

[2] Defined by Alberta Native Plant Council as plants that "*exist in low numbers, live in restricted habitats, or may be threatened by such things as habitat destruction, invasive species, or climate change*" (Alberta Native Plant Council, 2024).

[3] Defined by ACIMS as plant community types that are uncommon or have a limited distribution in Alberta (ACIMS, 2022b).

2.4 WETLANDS

To delineate wetlands, a desktop review was conducted using a combination of data sources including:

- available information from the Alberta Merged Wetland Inventory (AMWI) (AEP, 2017),
- Parkland county ESA and wetland inventories (Parkland County, 2013, 2022),
- Parkland county orthophotos (AEPA, 2025),
- Google Earth imagery (Google Earth Pro, 2025), Google Street View, and its contour elevation data; and
- recent satellite imagery (ESRI, 2025).

Wetlands were assessed for their potential to be Crown-claimed (i.e., semi-permanent and permanent). While some wetlands may function as complexes[4]; however, for the purposes of this report, only those with permanent and semi-permanent portions are distinguished due to their potential to be Crown-claimed under the *Public Lands Act*. Wetlands associated with watercourses were assumed to be Crown claimed for the purposes of this report.

2.5 SETBACKS FOR WETLANDS AND WATERCOURSES

To reflect potential Environmental Reserve (ER) requirements and protect sensitive ecological features, setback buffers were applied to all delineated wetlands and watercourses. A 30-metre setback was assigned to potential Crown-claimed wetlands, riparian wetlands and watercourses. This is consistent with the Town of Stony Plain Land Use Bylaw (Section 3.2.0), which requires a 30-metre distance to manage flood risk and protect flood fringe areas. Waterbodies with the greatest potential to be crown-owned or with flood potential have a 30-metre setback applied to ensure avoidance during planning stages of projects. All other wetlands received a 10-metre setback, which reflects the Town's standard practice for development planning and is considered sufficient for the planning objectives of this study area.

Setbacks can be implemented through various planning tools and land management strategies to ensure long-term protection of sensitive areas. Common approaches include dedicating land as ER, combining ER with Municipal Reserve (MR) where appropriate, or applying restrictive covenants to private parcels to limit development within designated buffer zones. These tools can help maintain setback areas and ensure sound land management practices.

[4] A wetland area consisting of multiple wetland classes (e.g. marsh, bog, fen, swamp, shallow open water) that occur in proximity and are hydrologically and ecologically linked.

3.0 Results

3.1 VEGETATION

3.1.1 Natural Subregion

Natural Regions are the largest ecological units in Alberta, defined by patterns of vegetation, soils, and landforms that reflect climate, topography, and geology. Natural Subregions are subdivisions of these regions, distinguished by differences in vegetation, climate, elevation, and physiography. (Natural Regions Committee, 2006). The study area is primarily located within the Central Parkland Natural Subregion, with a small portion in its northwest corner extending into the Dry Mixedwood Natural Subregion (Natural Regions Committee, 2006).

The Central Parkland Natural Subregion occupies over 50,000 km² of land and most of these lands are under cultivation. Undulating till plains[5] and hummocky uplands[6] dominate the landscape. Lacustrine[7] and fluvial[8] deposits are common with some substantial eolian deposits[9] in the northern and eastern parts of the subregion.

Plains rough fescue (*Festuca hallii*) dominates the vegetation communities in the southern and eastern areas of the subregion with small aspen (*Populus tremuloides*) dominated communities occurring in moister habitats. The northern and western parts of the subregion are composed of aspen forest with grasslands restricted to the driest areas. Black Chernozem soils normally occur under grasslands while Dark Grey Chernozems and Luvisols generally occur in aspen forests (Natural Regions Committee 2006).

The Dry Mixedwood Natural Subregion is the most southern and the warmest of the Boreal Forest Subregions in Alberta. It is dominated by level to gently undulating glacial till and lacustrine plains. Hummocky uplands are prevalent in the south where Grey Luvisols are the dominant soil type. Gleysols and Organic soils dominate wetland areas. Aspen (*Populus tremuloides*) forests with understories dominated by rose (*Rosa acicularis*), low-bush cranberry (*Viburnum edule*), beaked hazelnut (*Corylus cornuta*) and Canada buffaloberry (*Shepherdia canadensis*) are typical of the uplands. Treed, shrubby or sedge-dominated fens are common in wet areas. Jack pine (*Pinus banksiana*) typically dominates dry, well drained areas (Natural Regions Committee 2006).

[5] Broad, relatively flat landforms composed of glacial till deposited by ice sheets during glaciation.
[6] Areas with irregular, rolling terrain formed primarily by glacial deposition. These landscapes typically consist of mounds (hummocks) and depressions.
[7] Sediments deposited in lake environments, typically fine-grained materials like clay, silt and sand.
[8] Sediments deposited by rivers and streams, often consisting of sand, gravel and silt.
[9] Materials transported and deposited by wind.

3.1.2 Rare Species

The ACIMS search identified that no rare species occurrence records are located within 2 km of the study area. The ACIMS search results are provided in Appendix A.

3.1.3 Remnant Forested Areas

Remnant forested areas were identified within the study area using recent aerial imagery. These areas represent small, isolated fragments of native or semi-natural forest that have persisted despite surrounding land use changes. **Map 2** illustrates the location and extent of remnant forested areas within the study area.

3.2 WILDLIFE

Results from the FWIMT database search within 2 km of the study area identified a total of 19 species, including 3 reptiles and amphibians, 8 avian species, 1 mammal and 7 fish species. These results are summarized in Table 3.1 below and in Appendix B.

3.2.1 Fish and Fish Habitat

Potential fish habitat within the study area is primarily associated with Atim Creek (WBID 45) and four unnamed waterbodies and watercourses (WBID 24232, WBID 24588, WBID 26296 and WBID 312810). Past records of fish presence found in the FWMIT database indicate strong potential for supporting fish species within these waterbodies and watercourses. This means Atim Creek is a significant watercourse that supports fish populations and contributes to the regional watershed network.

FWMIT results identified 7 fish species occurrences within the study area (Appendix B). A map illustrating base water features showing drainages and waterbodies is provided in Appendix C.

3.2.2 Wildlife Habitat

Forested areas and wetlands within the study area provide diverse and interconnected habitats that support a wide range of wildlife. These natural features offer essential ecological functions, including shelter, nesting sites and foraging opportunities.

Remnant forest patches serve as cover and movement corridors for terrestrial wildlife. They provide nesting sites for birds and contribute to overall habitat connectivity across the landscape.

Wetlands within the study area offer important breeding and foraging habitats for amphibians and birds and provide water sources and foraging areas for mammals. Wetlands with permanent or semi-permanent water are particularly valuable for species that depend on aquatic environments during key life stages.

Table 3.1 Wildlife Species Records Occurring within 2km of the Study Area

Common Name	Scientific Name	GSAWS[10]	SARA[11]
Mammals			
Little Brown Bat	*Myotis lucifugus*	May Be at Risk	Endangered
Reptiles and Amphibians			
Boreal Toad	*Anaxyrus boreas*	Sensitive	Not Listed
Canadian Toad	*Anaxyrus hemiophrys*	May Be at Risk	Not Listed
Red-sided Garter Snake	*Thamnophis sirtalis*	Sensitive	Not Listed
Birds			
Bank Swallow	*Riparia riparia*	Sensitive	Threatened
Black Tern	*Chlidonias niger*	Sensitive	Not at Risk
Common Yellowthroat	*Geothlypis trichas*	Sensitive	Not Listed
Eastern Kingbird	*Tyrannus tyrannus*	Sensitive	Not Listed
Pileated Woodpecker[12]	*Dryocopus pileatus*	Sensitive	Not Listed[3]
Short-eared Owl	*Asio flammeus*	May Be at Risk	Threatened
Sora	*Porzana carolina*	Sensitive	Not Listed
Western Wood-pewee	*Contopus sordidulus*	May Be at Risk	Not Listed
Fish			
Brook Stickleback	*Culaea inconstans*	Secure	Not Listed
Fathead Minnow	*Pimephales promelas*	Secure	Not Listed
Finescale Dace	*Phoxinus neogaeus*	Undetermined	Not Listed
Lake Chub	*Couesius plumbeus*	Secure	Not Listed
Pearl Dace	*Margariscus margarita*	Undetermined	Not Listed
Spottail Shiner	*Notropis hudsonius*	Secure	Not Listed
White Sucker	*Catostomus commersoni*	Secure	Not Listed

[10] General Status of Alberta Wild Species (Government of Alberta 2020).
[11] SARA status retrieved from Species at Risk Registry (Government of Canada 2025).
[12] Some species, such as the Pileated Woodpecker (*Dryocopus pileatus*), are afforded additional nest protection provisions under the Migratory Bird Regulation (ECCC 2022). They nest in the cavities of trees.

3.3 WETLANDS

A total of 481 wetland features were identified and delineated within the study area. The identified features include 8 artificial features and 11 wetlands that have potential to be claimed by the Crown. For the purposes of this report, wetlands associated with watercourses were assumed to be Crown-claimed. Table 3.2 summarizes the results of the desktop review within the study area.

Existing inventories, including AMWI and Parkland County's ESA and wetland datasets (**Maps 3 and 4**), were reviewed to identify potential wetlands. The delineation of wetland features was based on the most recent available ESRI satellite imagery, Parkland County orthophotos, and Google Earth Imagery.

Map 5 illustrates the spatial distribution, locations, and sizes of delineated features within the study area. **Map 6** depicts permanent or semi-permanent wetlands within the study area that are potentially Crown claimable.

Desktop Wetland Assessment Results[13]

Wetland Class	Number Likely to be Crown Claimed[14]	Number of Features	Area (ha)	Number of Wetlands with Suggested 10 m Environmental Reserve Buffer/Setback[15]	Number of Wetlands with Suggested 30 m Environmental Reserve Buffer/Setback[16]
Artificial[17]	-	8	4	-	-
Riparian Wetland and/or Watercourse	15	15	80	-	15
Wetlands	-	461	244	461	-
Wetlands with the potential to be Crown claimed[18]	11	11	52	-	11
Total:	**26**	**495**	**370**	**461**	**26**

[13] Table 3.2 is an estimate of wetland and water body numbers via a desktop review. Overlap in numbers will occur in cases where fringe wetland areas are associated with watercourses. Fieldwork by a qualified professional is required for confirmation of all water bodies including wetland areas and locations.

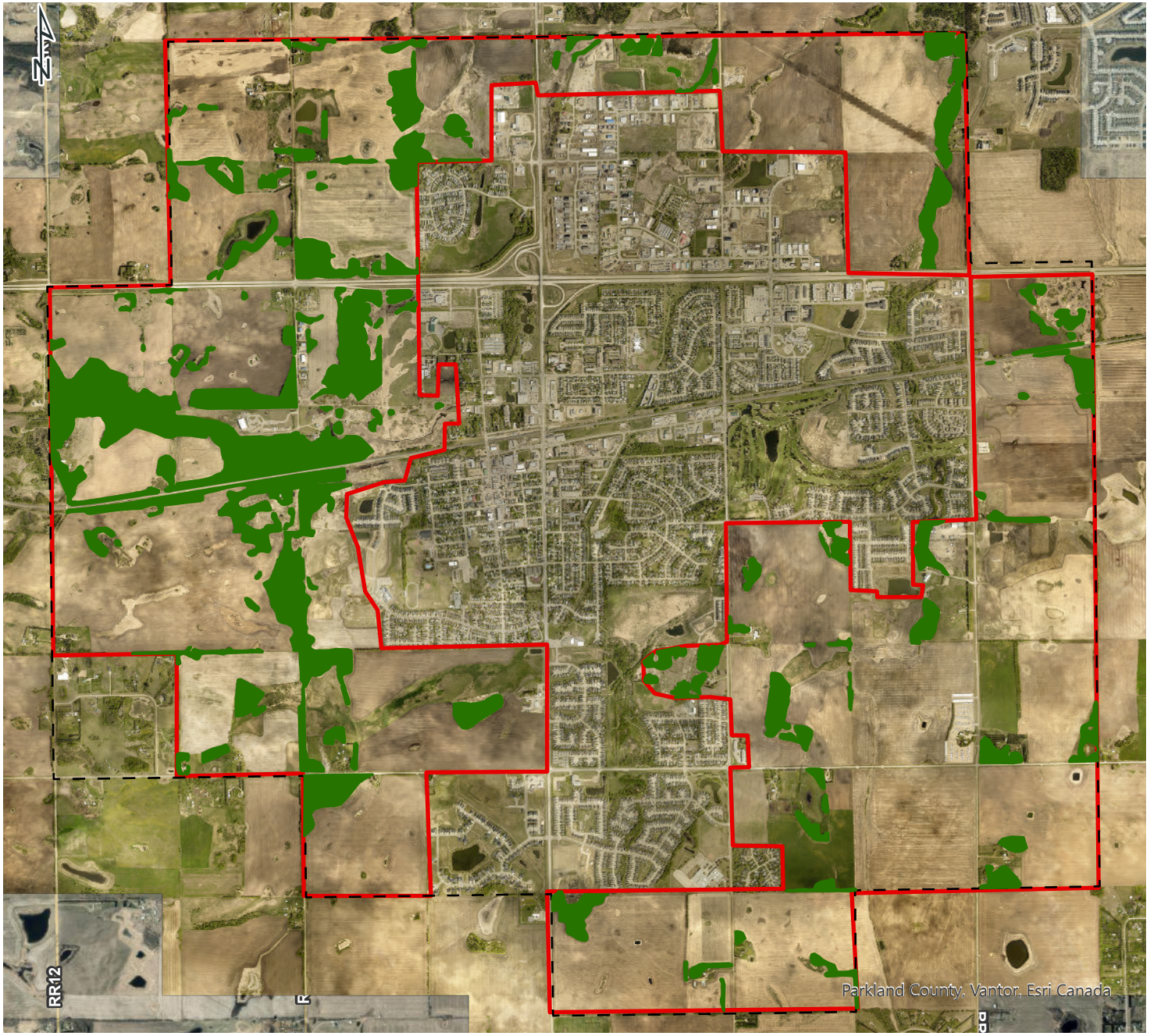
[14] This is an estimate of Crown claimability. Riparian wetlands and watercourses are generally assumed to be Crown claimed.

[15] See Sections 2.5 for details on wetland setbacks.

[16] Some wetlands may be considered complexes. Those with semi-permanent or permanent portions are shown as having potential to be Crown claimed.

[17] Artificial wetlands are not Crown claimable. However, they may still require *Water Act* approval for activities within them.

[18] Potential Crown-claimed wetlands located along the study area boundary were delineated in full, and their total area was included in the calculations for this report, even where portions extended beyond the study area.



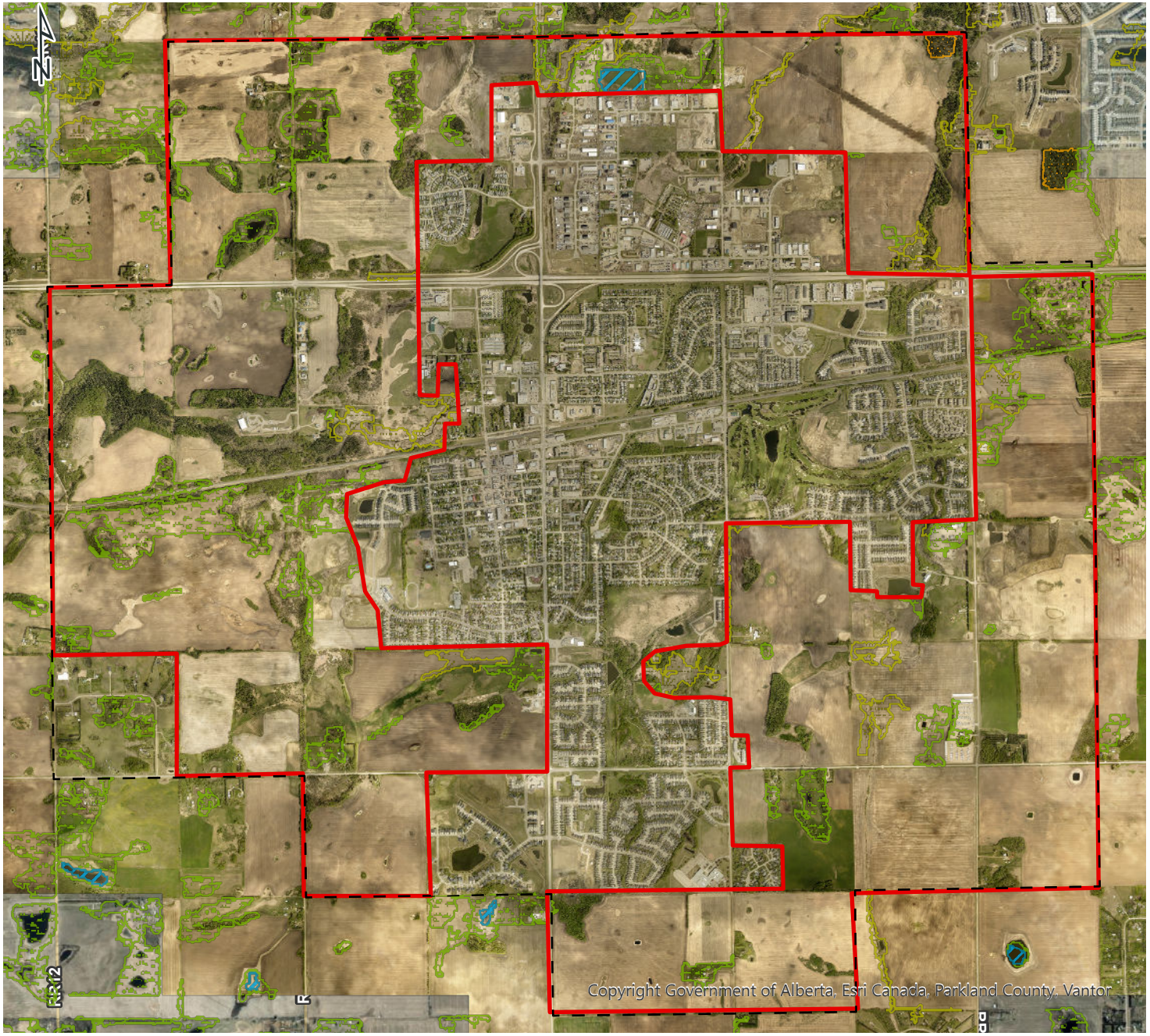
TOWN OF STONY PLAIN

Town of Stony Plain
Study Area
Forested

ISL

0 0.47 0.95 1.9
km

Environmentally Significant Area (ESA) Identification Study
Map 2: Forested Areas



TOWN OF STONY PLAIN

Town of Stony Plain

Study Area

Alberta Merged Wetland Inventory Class

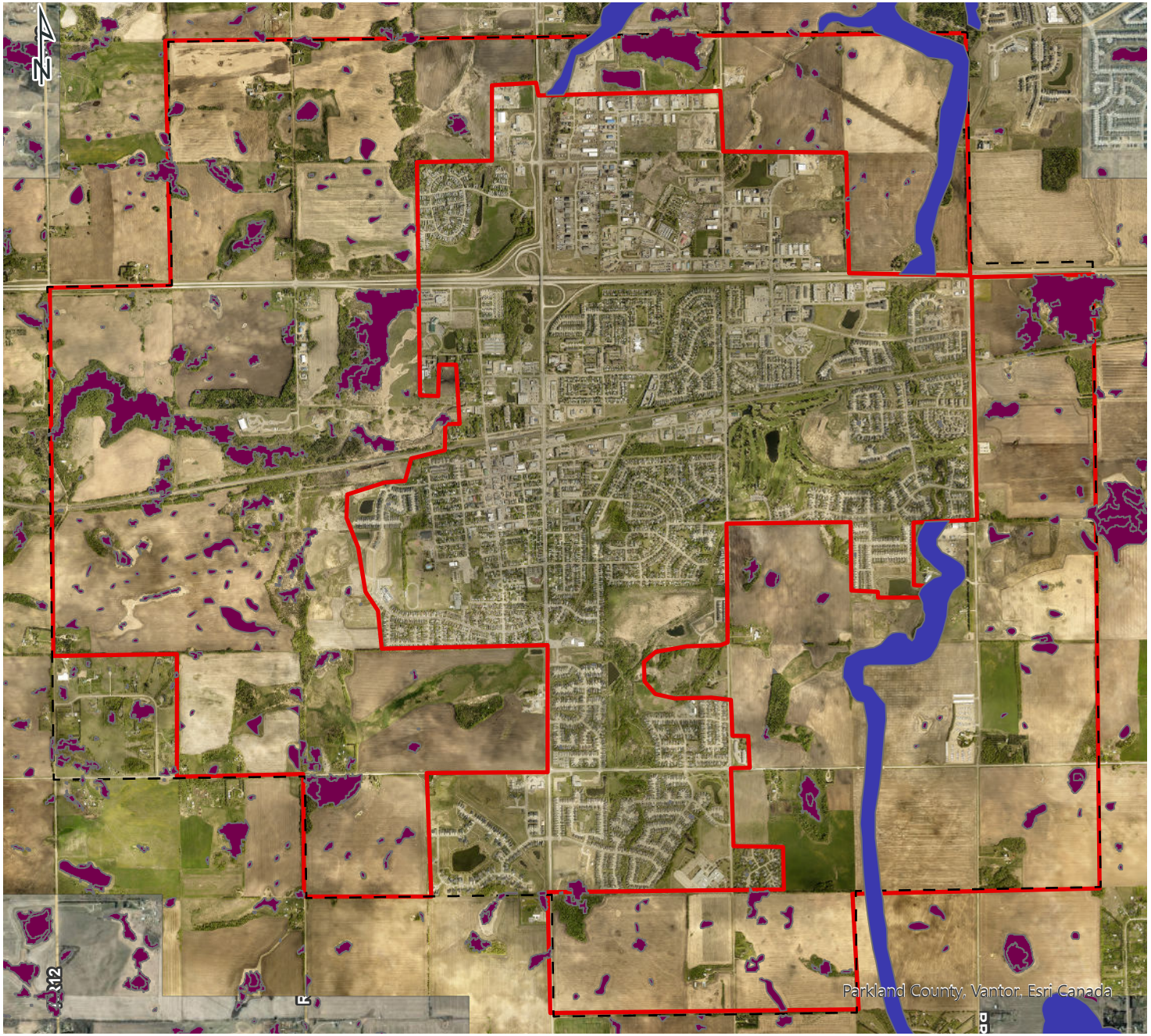
Canadian Wetland Classification System Class

- Bog
- Fen
- Marsh
- Open Water
- Swamp

ISL

0 0.47 0.95 1.9 km

Environmentally Significant Area (ESA) Identification Study
Map 3: AMWI



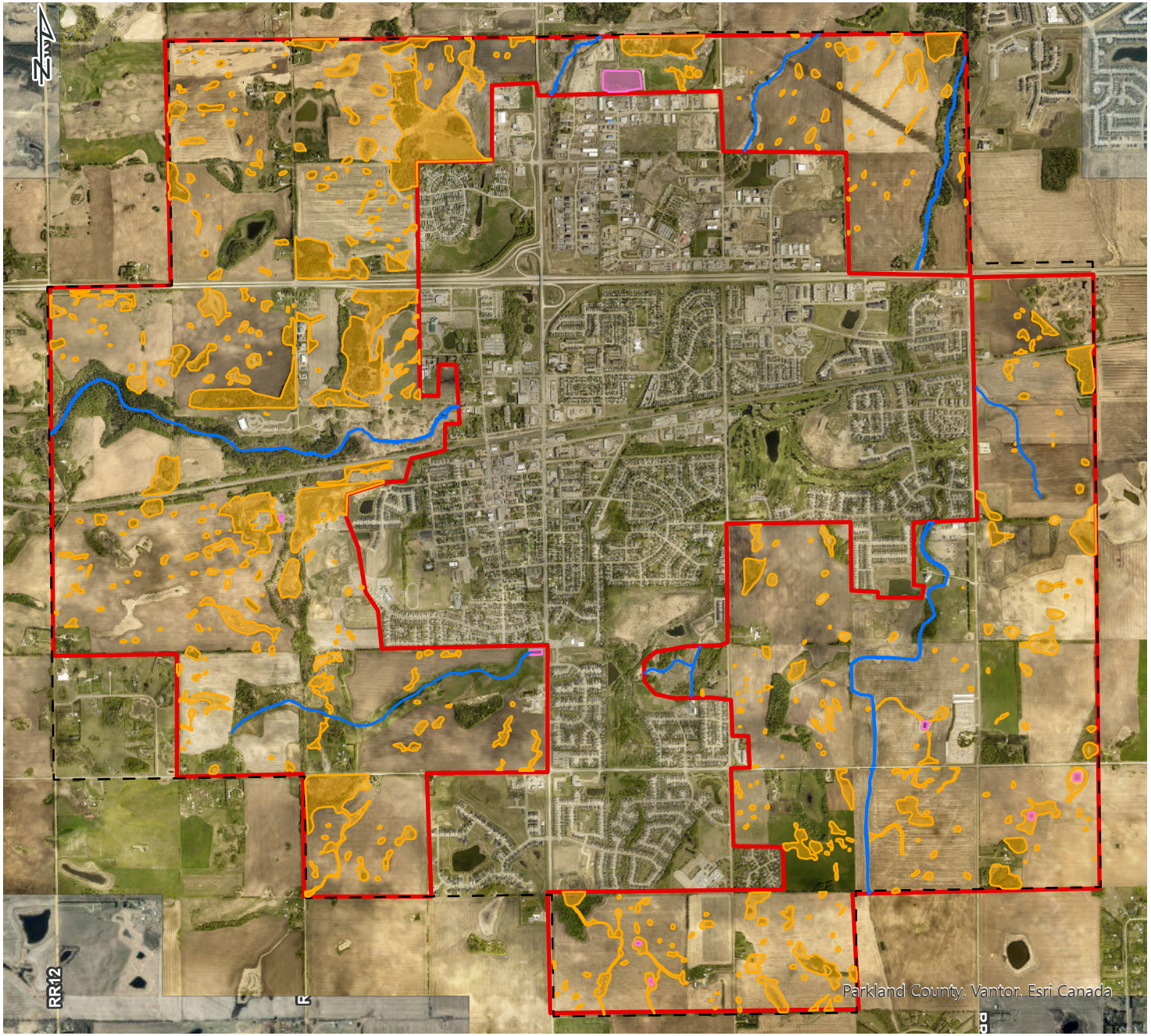
TOWN OF STONY PLAIN

- Town of Stony Plain
- Study Area
- Ecologically Significant Areas (Parkland County Dataset)
- Current Wetland Inventory 2013 (Parkland County Dataset)

ISL

0 0.47 0.95 1.9 km

Environmentally Significant Area (ESA) Identification Study
Map 4: Parkland County Datasets



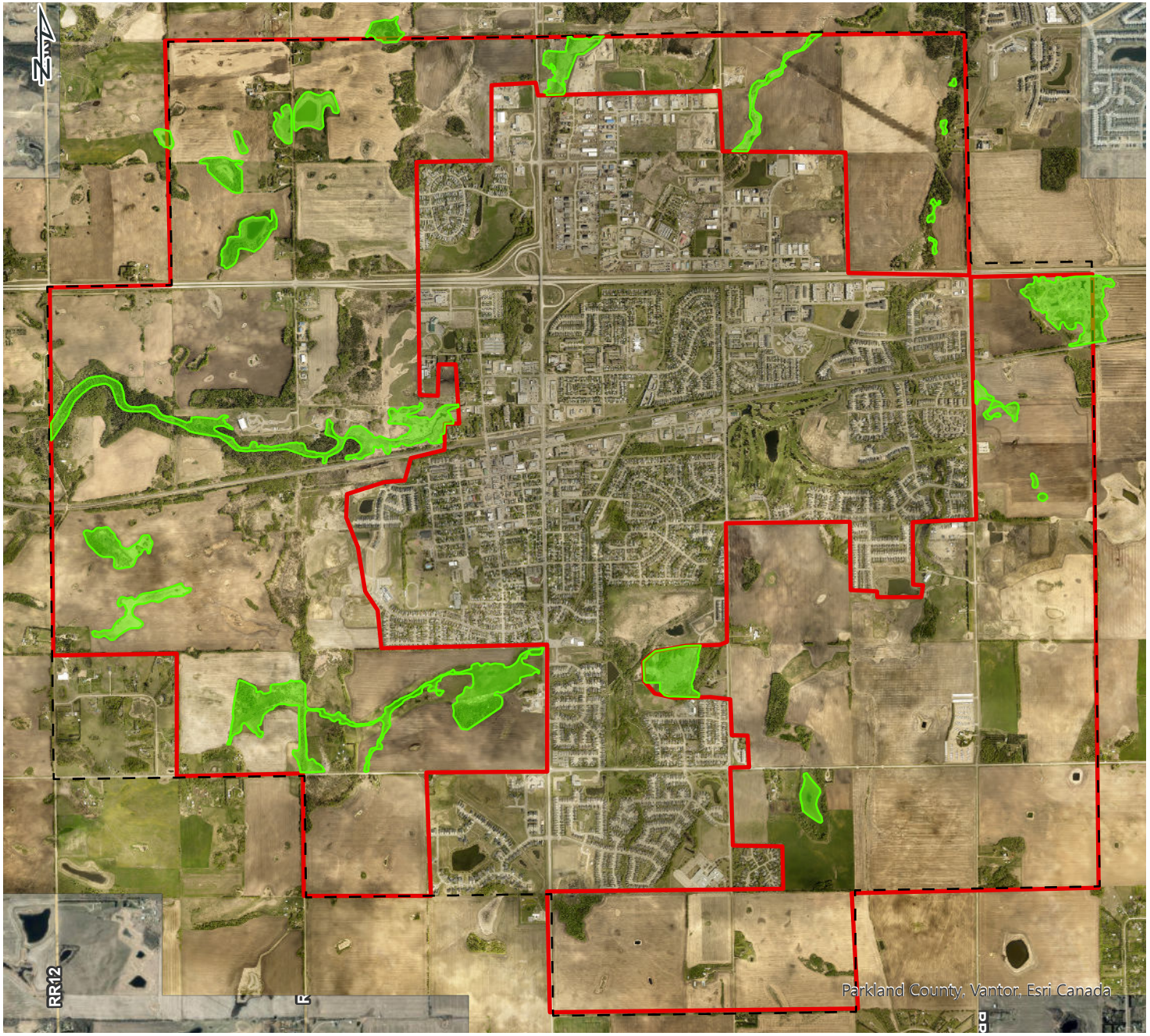
TOWN OF STONY PLAIN

- Town of Stony Plain
- Study Area
- Wetlands
- Watercourses
- Artificial

ISL

0 0.47 0.95 1.9 km

Environmentally Significant Area (ESA) Identification Study
Map 5: Wetlands, Waterbodies, and Watercourses



TOWN OF STONY PLAIN

Town of Stony Plain
Study Area
Potential Crown-claimed Wetlands

ISL

0 0.47 0.95 1.9
km

Environmentally Significant Area (ESA) Identification Study
Map 6: Potential Crown-claimed Wetlands

4.0 Recommendations

This Environmentally Significant Area Identification Study provides a detailed evaluation of ecological features within the study area. Through a desktop-based analysis, the assessment identified wetlands, watercourses, waterbodies, remnant forested areas, and other natural habitats, along with recommended setbacks and ESA designation priorities. These findings ensure that development planning can incorporate measures to protect sensitive areas while minimizing environmental impacts to lands the Town wishes to designate as ESAs.

By integrating ecological considerations early in the planning process, the study area is positioned to maintain natural systems that provide essential ecosystem services, such as water management, wildlife habitat, and improved water quality. Recommendations for setbacks from areas recommended as ESAs such as Crown-claimed wetlands and connected watercourses, and remnant forested areas will help guide sustainable development. This proactive approach demonstrates a commitment to balancing growth with environmental stewardship, ensuring that natural features continue to contribute to ecological health and community livability for the long term. This report is intended as a planning guideline; its recommendations provide a framework for decision-making and should be refined through detailed, site-specific studies during subsequent planning stages.

4.1 WETLANDS, WATERCOURSES AND WATERBODIES

Wetlands provide essential ecological functions, including flood attenuation, sediment and nutrient filtration, and wildlife habitat. Similarly, watercourses and waterbodies contribute to hydrological and ecological connectivity across landscapes. Within the study area, seasonal and temporary wetlands occur as smaller landscape features, many of which have been historically disturbed by agricultural cultivation.

4.1.1 Setbacks

Setbacks are an important consideration during planning, subdivision, and development approvals. Setbacks provide a buffer of vegetation to help filter water and other inputs, provide connective or stepping stone habitat for wildlife, and help protect a wetland, waterbody or watercourse from disturbance. A 30-metre setback was assigned to potentially Crown-claimable wetlands, riparian wetlands and watercourses (**Map 7**), while all other wetlands received a 10-metre setback (**Map 8**). The 30-metre standard aligns with the Town of Stony Plain Land Use Bylaw (Section 3.2.0), which addresses flood risk and flood fringe protection. Waterbodies with Crown ownership potential or flood risk were assigned this distance to ensure avoidance during early planning.

Future neighborhood-level studies will be needed to refine ESA boundaries, including considerations for flood fringe and flood hazard areas. All recommended setbacks for wetlands and watercourses are guidelines rather than requirements and are subject to refinement through further site-specific studies that may be required by the Town at the subdivision and/or development approval stage.

4.2 FORESTED AREAS

Forested areas within the study area provide important ecological functions as terrestrial wildlife habitat and contribute to overall landscape connectivity. The majority of the remaining forested areas within the study area are associated with wetlands or watercourses and are recommended for designation as ESAs. These remnant forested areas are illustrated in **Map 2**.

4.3 PRIORITY AREAS RECOMMENDED FOR ESA DESIGNATION

Designation of potential Crown-claimed wetlands and watercourses as priority ESAs with a 30 m setback is highly recommended, as these features may be considered Public Lands[19]. Additionally, they provide ecological functions such as water storage, flood attenuation and wildlife habitat. It is recommended that intact or mostly intact large wetlands be included as priority ESAs with a 10 m setback, as these wetlands provide critical ecological functions and serve as core natural areas that maintain landscape connectivity.

Designation of remnant forested areas, especially those associated with wetlands and waterbodies, or those with potential to provide wildlife habitat is also strongly recommended. These remnant forested areas offer multiple benefits, including improved water management, enhanced water quality, and provision of wildlife habitat.

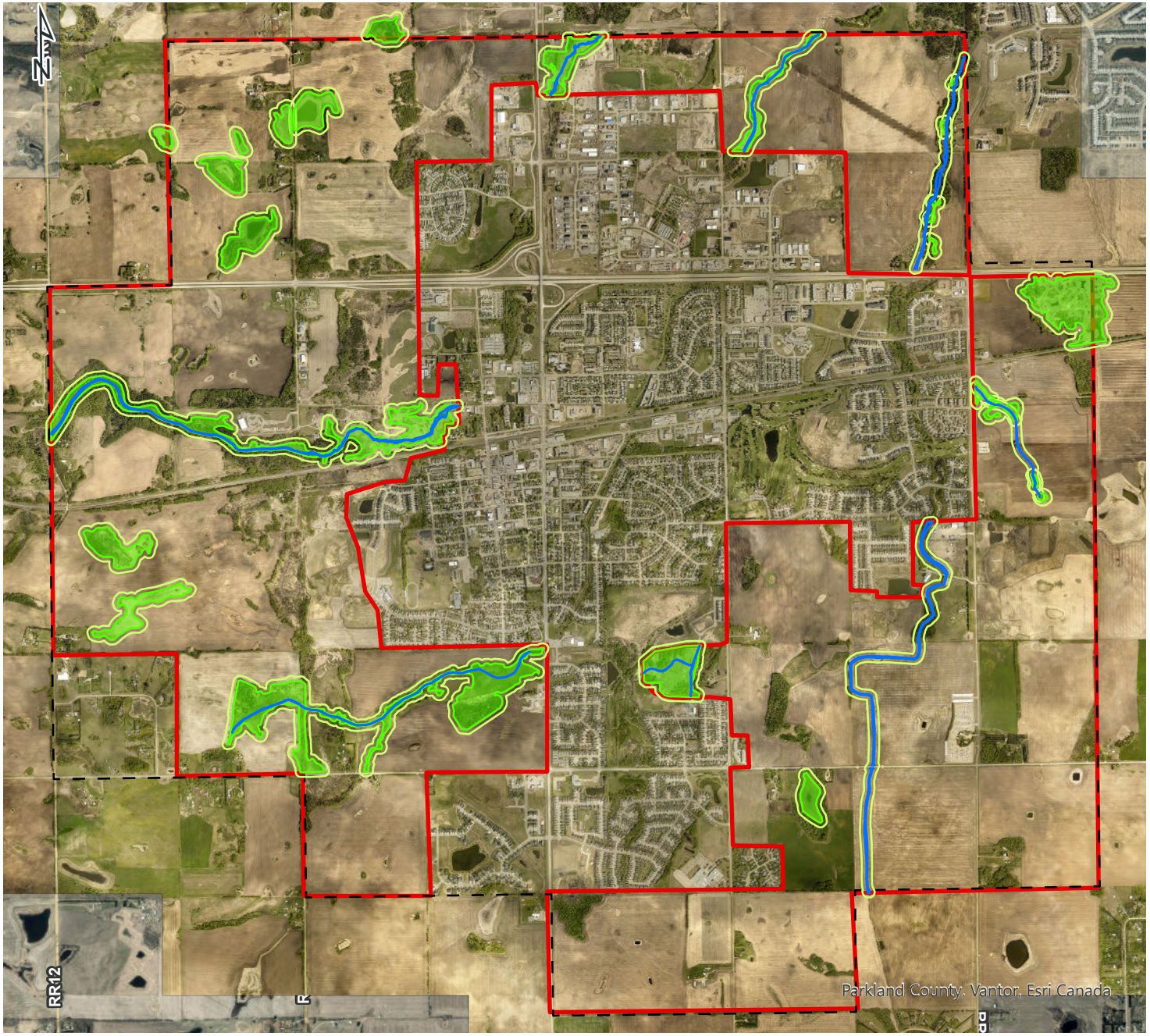
Map 9 displays all areas that are recommended for classification as ESAs within the study area, which includes:

- Potential crown-claimed wetlands and riparian wetlands with a 30-metre setback,
- watercourses with a 30-metre setback,
- all other wetlands with a 10-metre setback, and
- all forested areas.

Map 10 features a subset of the ESAs shown in **Map 9**, which should be prioritized for environmental protection efforts. These include:

- Areas already designated as ESAs by Parkland County
- Potential crown-claimed wetlands and riparian wetlands with a 30-metre setback,
- watercourses with a 30-metre setback,
- larger wetlands that are intact or mostly intact with a 10-metre buffer, and
- forested areas connected to water features or with potential to provide habitat for protected wildlife species.

[19] Defined by the Public Lands Act as "*land of the Crown in right of Alberta*" (GOA, 2000).



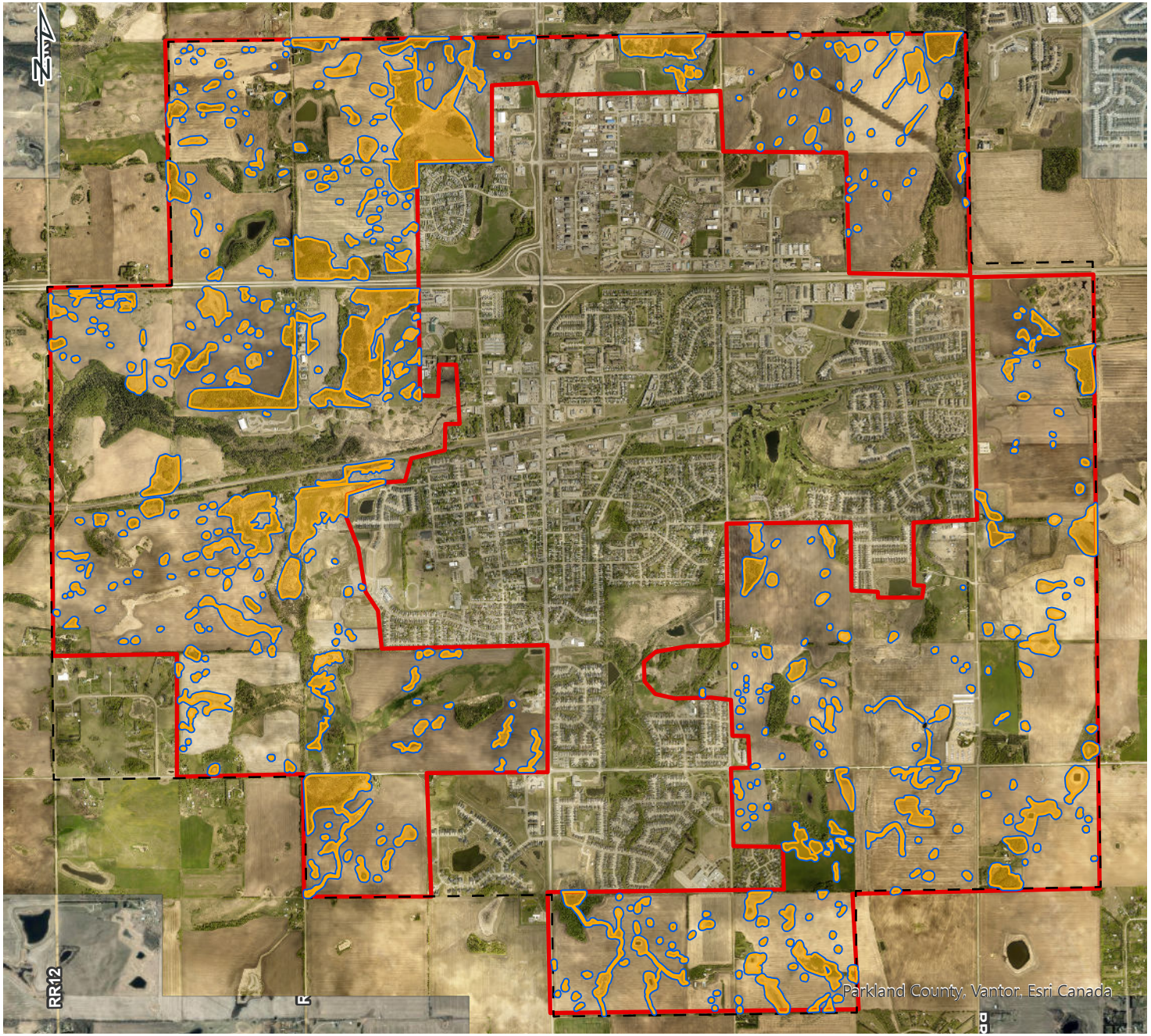
TOWN OF STONY PLAIN

- Town of Stony Plain
- Study Area
- Potential Crown-claimed Wetlands
- Watercourses
- 30m Setback

ISL

0 0.47 0.95 1.9 km

Environmentally Significant Area (ESA) Identification Study
Map 7: Potential Crown-claimed Wetland and Watercourse Setbacks



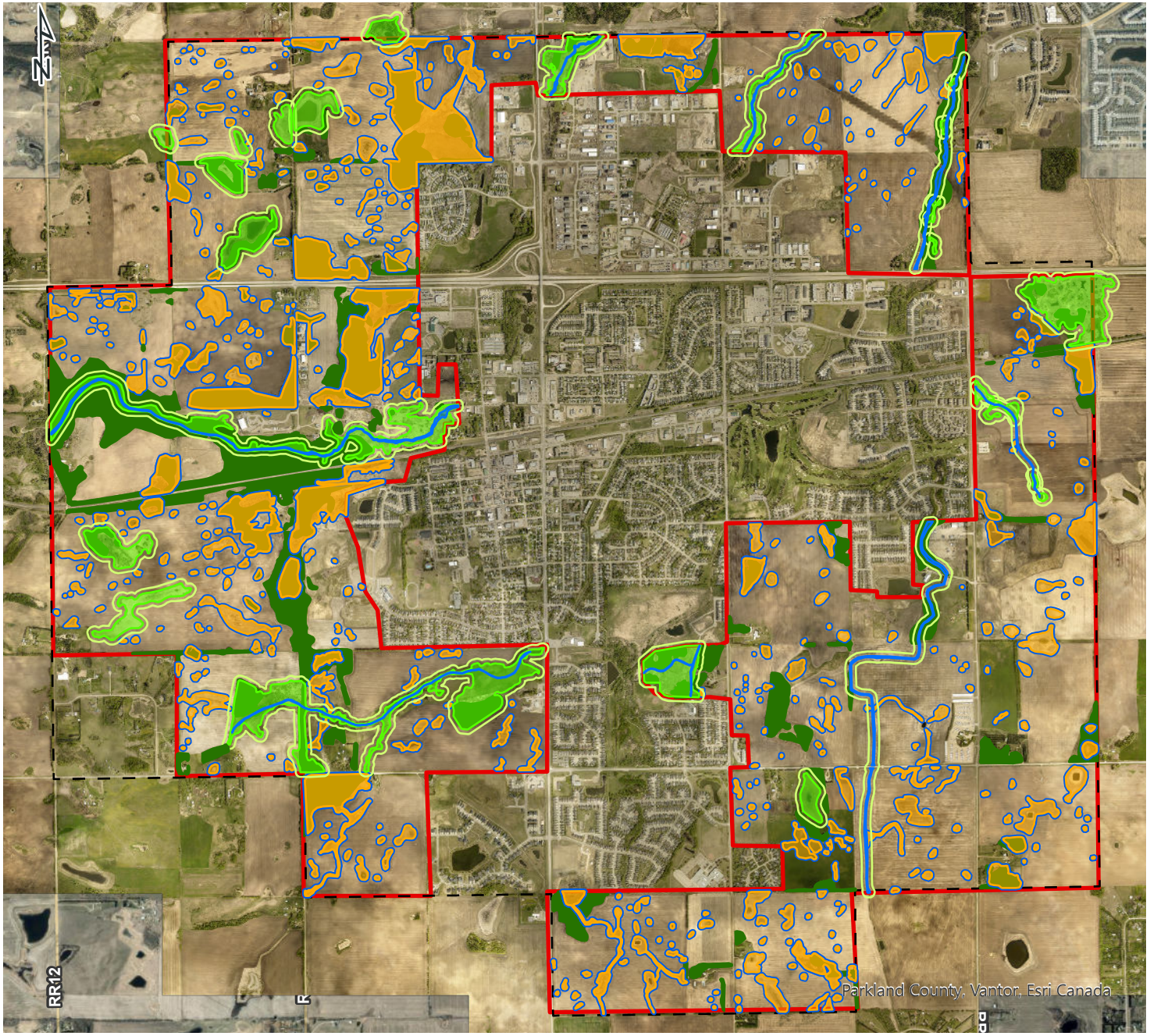
TOWN OF STONY PLAIN

- Town of Stony Plain
- Study Area
- Wetlands
- 10m Setback

ISL

0 0.47 0.95 1.9 km

Environmentally Significant Area (ESA) Identification Study
Map 8: Wetland Setbacks



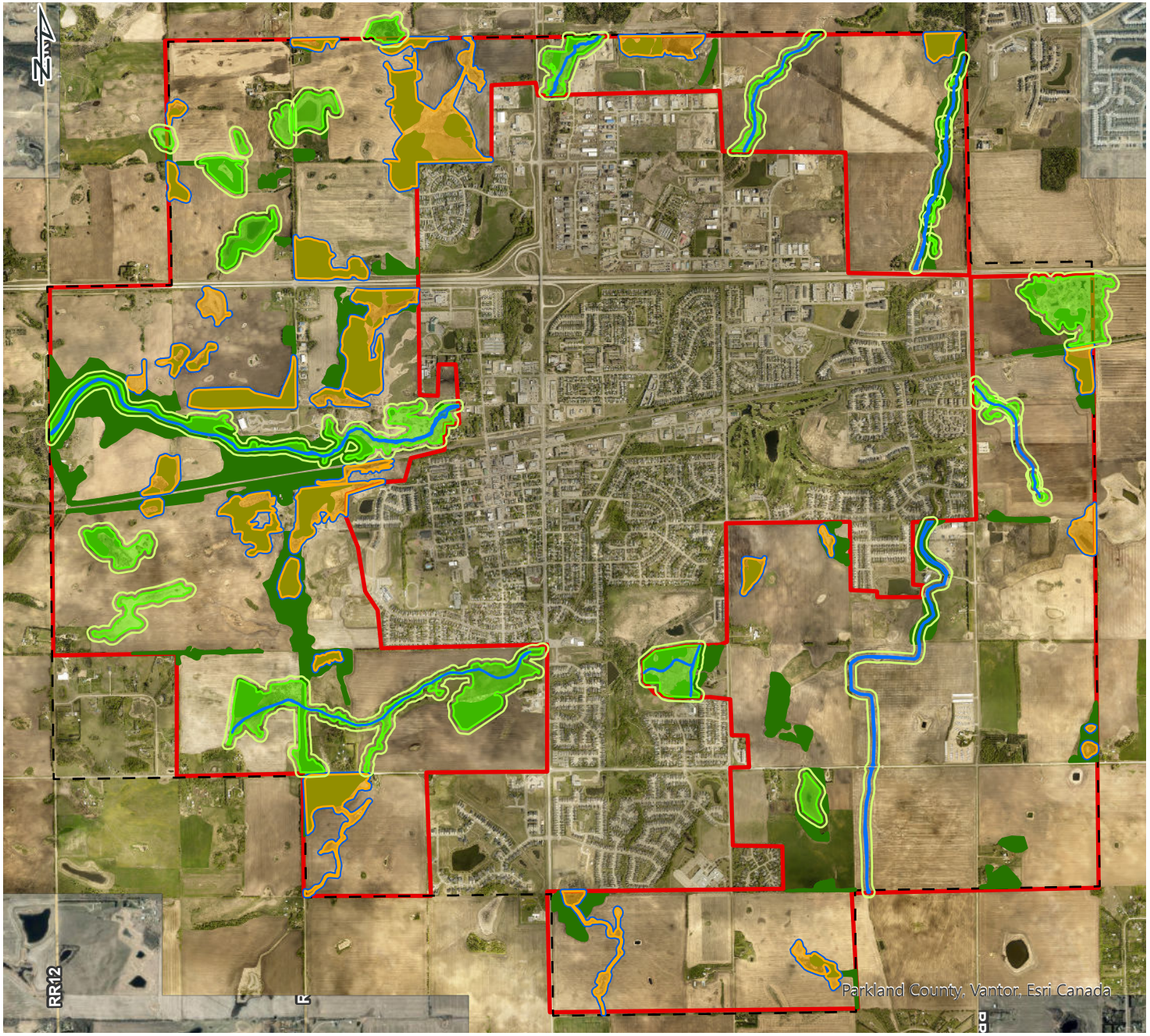
TOWN OF STONY PLAIN

- Town of Stony Plain
- Study Area
- Wetlands
- Potential Crown-claimed Wetlands
- Watercourses
- Forested
- 30m Setback
- 10m Setback

ISL

0 0.47 0.95 1.9 km

Environmentally Significant Area (ESA) Identification Study
Map 9: All Potential ESAs



TOWN OF STONY PLAIN

- Town of Stony Plain
- Study Area
- Wetlands
- Potential Crown-claimed Wetlands
- Watercourses
- Forested
- 30m Setback
- 10m Setback

ISL

0 0.47 0.95 1.9 km

Environmentally Significant Area (ESA) Identification Study
Map 10: Priority ESAs

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APPENDIX A

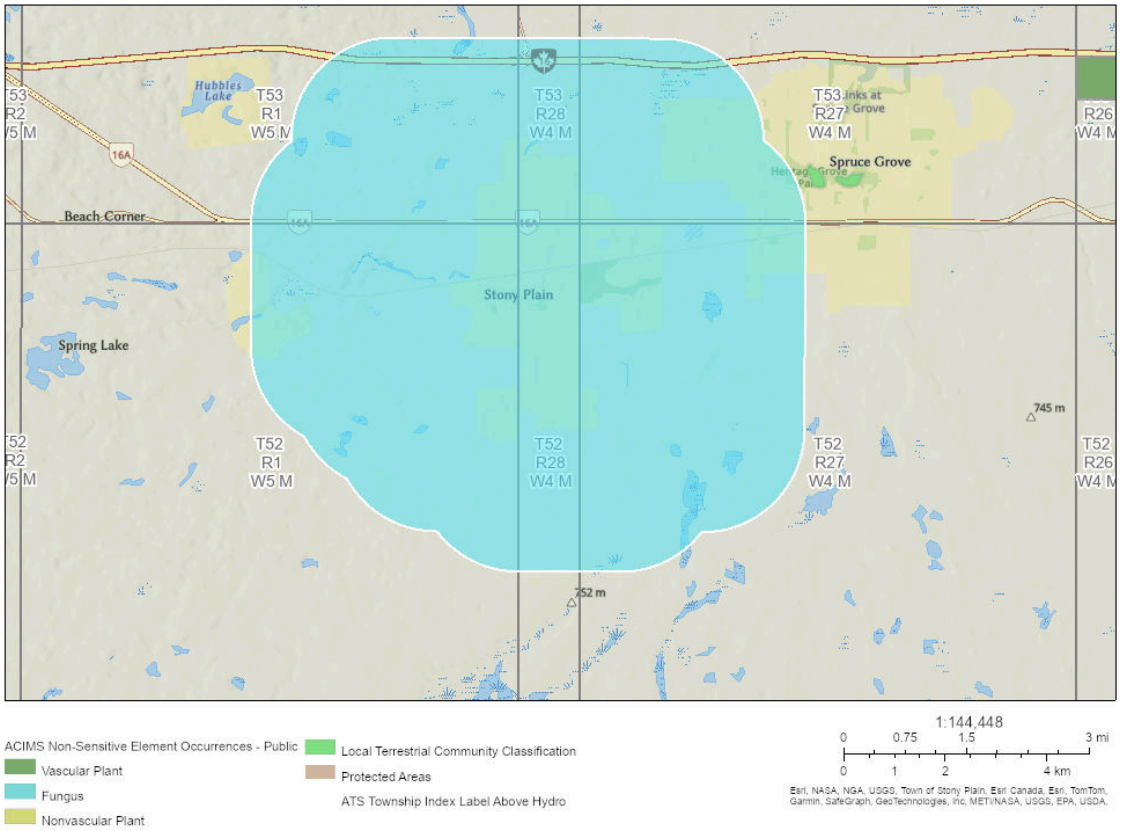
Alberta Conservation Information Management System (ACIMS) Report

ACIMS Data Screening Report

Area of Interest (AOI) Information

Area : 97,956,297.89 m²

Dec 10 2025 13:23:43 Mountain Standard Time



Summary

Name	Count	Area(m^2)	Length(m)
Sensitive EO	0	0	N/A
Non Sensitive EO	0	0	N/A

While every effort has been made to ensure that the information accessible from this dataset is complete, accurate, and current, the Government of Alberta, their agents and employees are not liable for any loss or damage arising directly or indirectly from the possession, publication, or use of, or reliance on, that information. This information is provided "as is" without expressed or implied warranty.

APPENDIX B

Fish and Wildlife Internet Mapping Tool (FWIMT) Species Summary Report

Fish and Wildlife Internet Mapping Tool (FWIMT)

(source database: Fish and Wildlife Management Information System (FWMIS))

Species Summary Report

Report Date: 09-Dec-2025 13:18

Species present within the current extent

Fish Inventory

- BROOK STICKLEBACK
- FATHEAD MINNOW
- FINESCALE DACE
- LAKE CHUB
- PEARL DACE
- SPOTTAIL SHINER
- WHITE SUCKER

Wildlife Inventory

- BANK SWALLOW
- BLACK TERN
- BOREAL TOAD
- CANADIAN TOAD
- COMMON YELLOWTHROAT
- EASTERN KINGBIRD
- LITTLE BROWN BAT
- PILEATED WOODPECKER
- RED-SIDED GARTER SNAKE
- SHORT-EARED OWL
- SORA
- WESTERN WOOD-PEWEE

Stocked Inventory

No Species Found in Search Extent

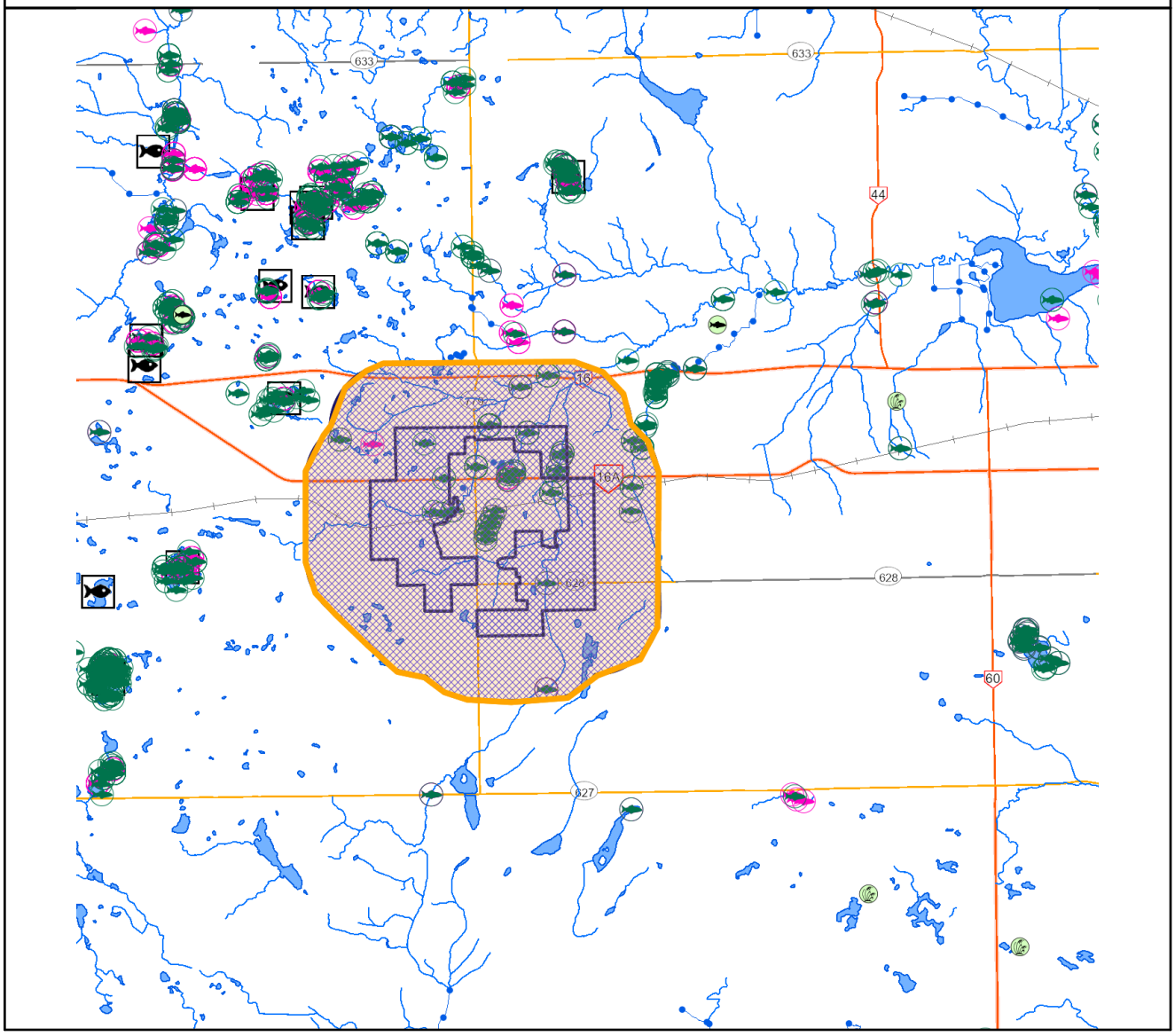
Buffer Extent

Centroid (X,Y)	Projection	Centroid (Qtr Sec Twp Rng Mer)	Radius or Dimensions
566322, 5928947	10-TM AEP Forest	SW 36 52 28 4	10892, 10510 meters

Contact Information

For contact information, please visit:
https://www.alberta.ca/fisheries-and-wildlife-management-contacts.aspx

09-Dec-2025 13:18 **Map Results**

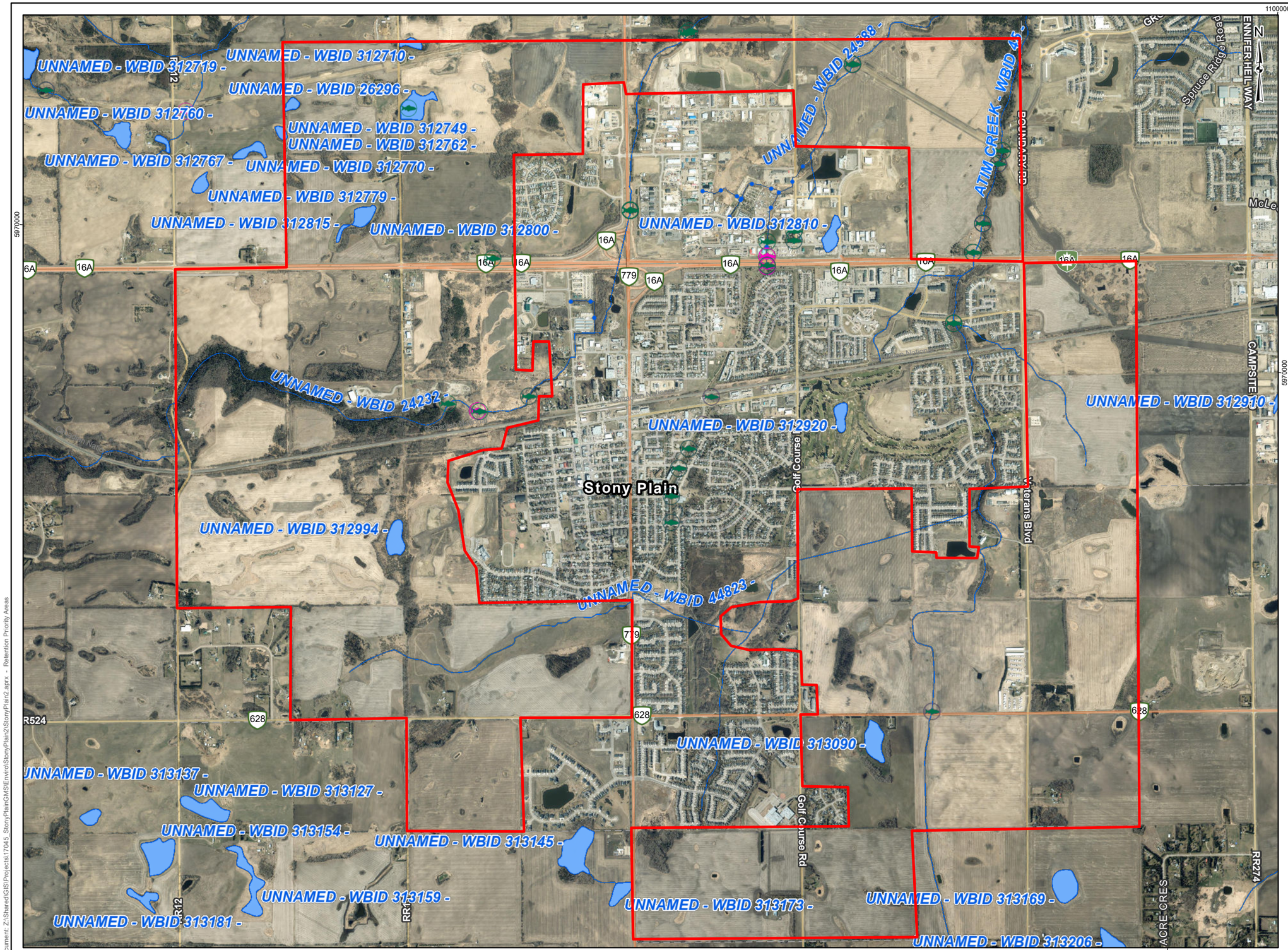


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APPENDIX C

Base Water Features



LEGEND

Study Area

TITLE

BASE WATER FEATURES

PROJECT

ENVIRONMENTALLY SIGNIFICANT AREA (ESA) IDENTIFICATION STUDY

CLIENT

TOWN OF STONY PLAIN

DATA SOURCES

- Topographic Map:Copyright Government of Alberta, Parkland County, Vantor, Esri Canada

PROJECTION

NAD 1983 10TM AEP Forest

0 0.35 0.7

1:27,000 KM

FIGURE	C
DATE	12/12/2025
PROJECT NO.	17045
AUTHOR	hletwin

Document: Z:\Shared\GIS\Projects\17045_StonyPlain\GIS\Enviro\StonyPlain2\StonyPlain2.aprx - Retention Priority Areas