COUNTY OF MINBURN NO. 27

BYLAW 1291-19

BEING A BYLAW OF THE COUNTY OF MINBURN NO. 27 IN THE PROVINCE OF ALBERTA TO ADOPT THE WESTERN INDUSTRIAL PARK AREA STRUCTURE PLAN.

WHEREAS, the Council of the County of Minburn No. 27 deems it necessary to adopt, in accordance with Sections 633 and 636 of the *Municipal Government Act,* the Western Industrial Park Area Structure Plan, being Bylaw No. 1291-19, to specify policy and regulatory direction for the lands located per the attached Schedule "A".

AND WHEREAS, the Council of the County of Minburn No. 27 deems it advisable to adopt the Western Industrial Park Area Structure Plan in accordance with Schedule "A" attached and forming part of Bylaw No. 1291-19, to refine and further specify the general policy direction applicable to this area in the County of Minburn No. 27 Municipal Development Plan, being Bylaw No. 1253-16, and amendments thereto;

AND WHEREAS, the Council of the County of Minburn No. 27 deems it advisable to adopt the West Industrial Park Area Structure Plan so that it clearly and effectively serves as a basis for required amendments to the County of Minburn No. 27 Land Use Bylaw, being Bylaw #1254-16, and amendments thereto;

AND WHEREAS, notice of a public hearing for this Bylaw held on November 18, 2019 has been given in accordance with Section 692 of the *Municipal Government Act*, 2000 RSA, ch. M-26, as amended;

NOW THEREFORE, under the authority of the *Municipal Government Act*, the Council of the County of Minburn No. 27, in the Province of Alberta, duly assembled enacts as follows:

1. That Bylaw No. 1291-19, being the Western Industrial Park Area Structure Plan, attached hereto and forming part of this Bylaw, be adopted.

2. That this Bylaw be cited as the Western Industrial Park Area Structure Plan.

3. That this Bylaw becomes effective upon the date of the final passing thereof.

SEVERABILITY

If any Section or parts of this bylaw are found in any court of law to be illegal or beyond the power of Council to enact, such Section or parts shall be deemed to be severable and all other Sections or parts of this Bylaw shall be deemed to be separate and independent there from and to be enacted as such.

Read a first time this 21st day of October, 2019

Public Hearing Held on the 18th day of November, 2019 held at Vegreville, Alberta

Read a second time this 18th day of November, 2019

Read a third time and finally passed, this 18th day of November, 2019

Reeve

Chief Administrative Officer

BYLAW 1291-19

West Industrial Park
Area Structure Plan

BYLAW 1291-19

West Industrial Park
Area Structure Plan

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List of Maps

Prepared by:
Red Willow Planning

1.0 Background, Purpose & Scope

1.1 Background

The 2013 ***Town of Vegreville-County of Minburn No. 27 Intermunicipal Development Plan*** (IDP) identifies Section 16-54-14-W4, the NE 17-52-14-W4, part of SE17-52-14-W4 north of Highway 16, and part of NW and NE 9-52-14-W4 north of the CN Rail right-of-way for a joint Area Structure Plan (ASP) project.

In 2015 the Town undertook an ASP project for the SE17 which lies entirely within the Town's urban boundary and which is proposed to be fully serviced with urban services. This ASP addresses the balance of lands originally identified in the IDP for an ASP project which lie entirely within the County's jurisdiction. To the extent possible, this ASP aligns with the existing SE17 ASP to create a seamless planning context for the area.

1.2 Purpose & Scope

The purpose of this ASP (the Plan) is to provide policy direction to development and subdivision authorities on which to base future land use decisions within the Plan area. The scope of the policies addresses issues including but not limited to land use, compatibility of uses, transportation and access, servicing, development staging, screening and landscaping, wetlands, market factors and economic development, and other related matters.

TWP 524

TWP 522

HIGHWAY 16

VEGREVILLE ROAD

CN RAIL

857

16A

L

LAGOON

RGE 150

RGE 144

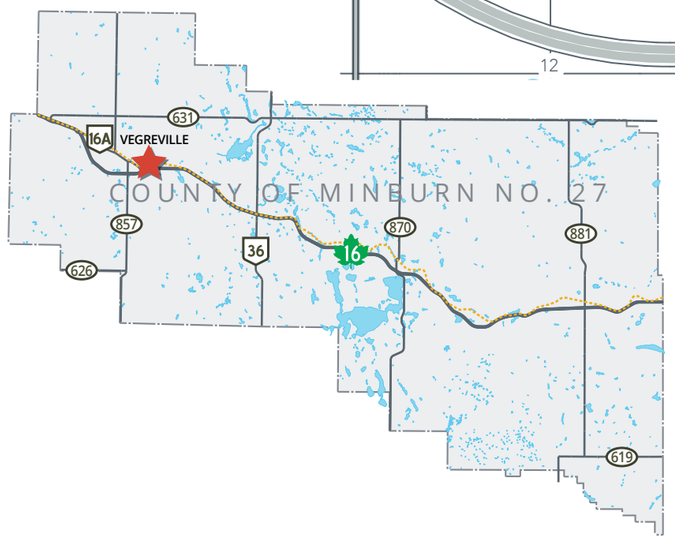
RGE 143

RGE 142

23 52-15-4 | 24 52-15-4 | 19 52-14-4 | 20 52-14-4 | 21 | 22 52-14-4

14 52-15-4 | 13 52-15-4 | 18 52-14-4 | 17 52-14-4 | 16 52-14-4 | 15 52-14-4

12 | 7 52-14-4 | 8 52-14-4 | 9 52-14-4 | 10 52-14-4



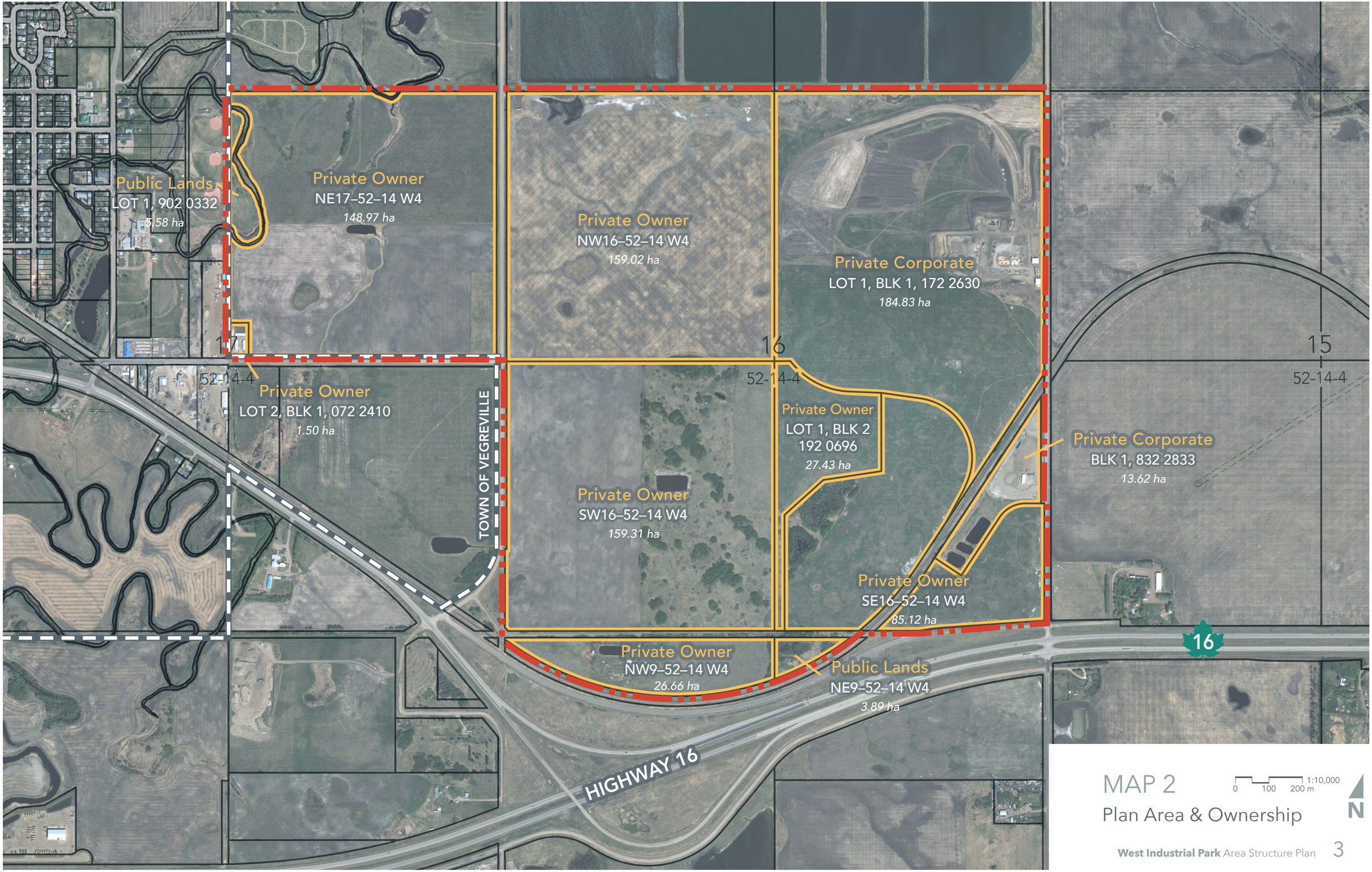
LEGEND

- ASP Boundary
- Town of Vegreville
- Vegreville Airport
- Vegreville AVPA Overlay
- Canadian National Railway
- Roadway
- Sewage Lagoon
- Landfill
- ACE Regional Waterline

MAP 1
Location/Context Plan

1:25,000
0 250 500 m

N



MAP 2

Plan Area & Ownership

0 100 200 m 1:10,000

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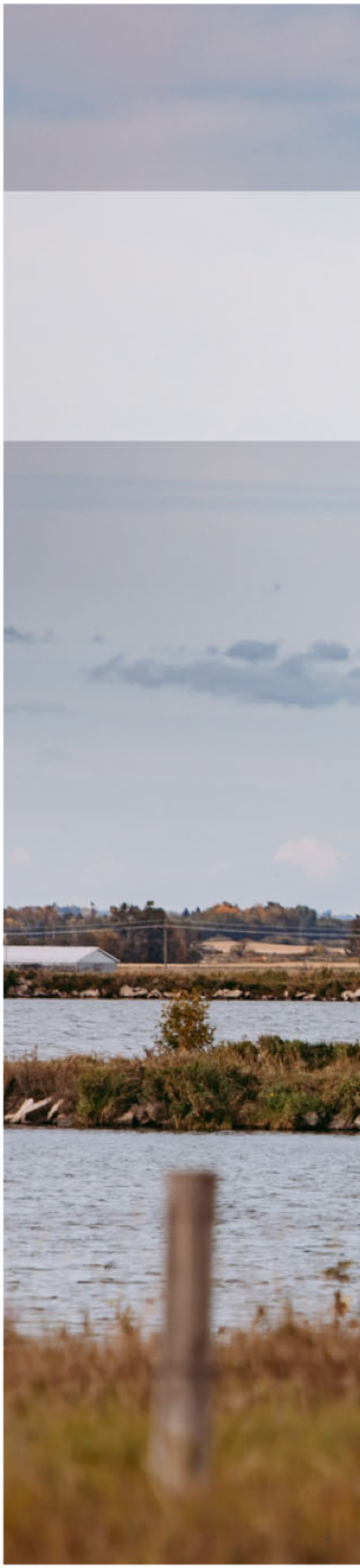
2
URGENCE 24 HRS EMERGENCY
1-800-465-9239
VEGREVILLE MILE 54.14

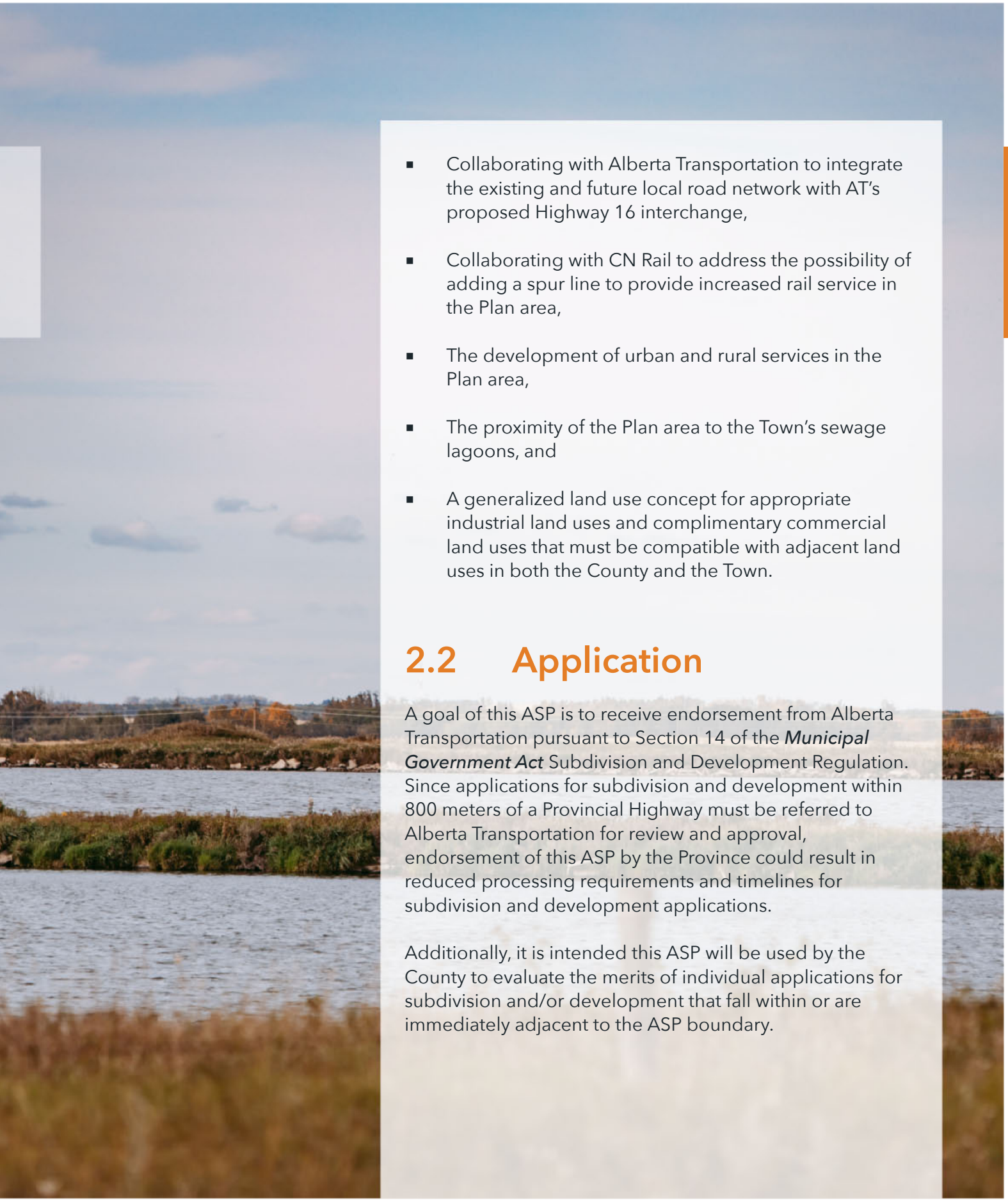
2.0 Terms of Reference & Application



2.1 General Terms of Reference

The 2013 IDP between the Town of Vegreville and the County of Minburn No. 27 in Section 3.10 outlines the general terms of reference for an ASP addressing the subject lands:

- Recognition of the existing Rural Industrial zoning on the east half of section 16-52-14-W4
- Inclusion of the following additional lands in the Plan:
  - Pt. SE 17-52-14-W4, north of Highway 16A and the CN Rail right-of-way,
  - NE 17-52-14-W4, and
  - Pt. NW and NE 9-52-14-W4, north of the CN Rail right-of-way.
- Internal road circulation within the Plan area,
- Integration of internal roads with existing County and Town municipal roads,
- The limited utility of the intersection of Range Road 143 and Highway 16 because of poor sightlines at this intersection,



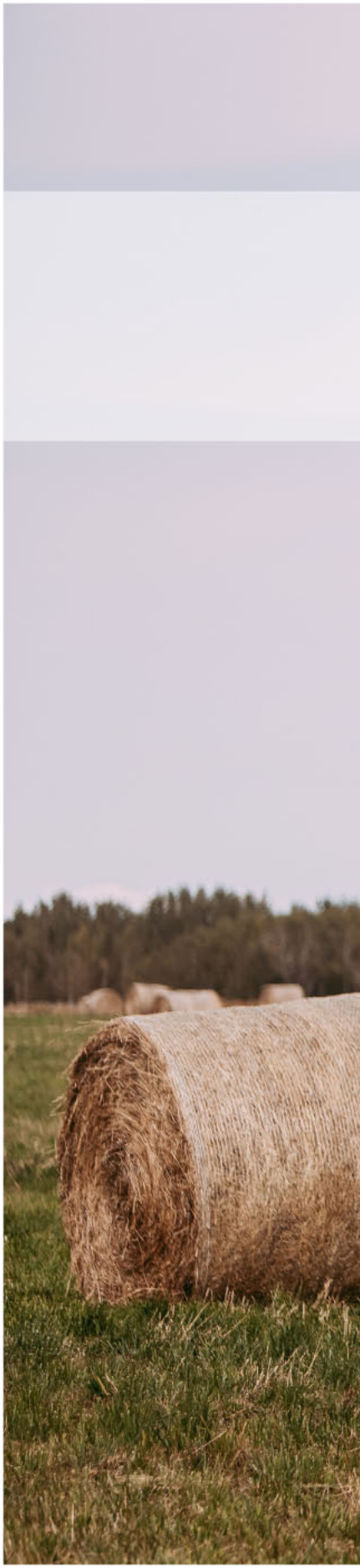
- Collaborating with Alberta Transportation to integrate the existing and future local road network with AT's proposed Highway 16 interchange,
- Collaborating with CN Rail to address the possibility of adding a spur line to provide increased rail service in the Plan area,
- The development of urban and rural services in the Plan area,
- The proximity of the Plan area to the Town's sewage lagoons, and
- A generalized land use concept for appropriate industrial land uses and complimentary commercial land uses that must be compatible with adjacent land uses in both the County and the Town.

2.2 Application

A goal of this ASP is to receive endorsement from Alberta Transportation pursuant to Section 14 of the ***Municipal Government Act*** Subdivision and Development Regulation. Since applications for subdivision and development within 800 meters of a Provincial Highway must be referred to Alberta Transportation for review and approval, endorsement of this ASP by the Province could result in reduced processing requirements and timelines for subdivision and development applications.

Additionally, it is intended this ASP will be used by the County to evaluate the merits of individual applications for subdivision and/or development that fall within or are immediately adjacent to the ASP boundary.

3.0 Statutory Requirements



3.1 Municipal Government Act

Part 17, Section 633 of the ***Municipal Government Act*** (MGA) outlines the minimum requirements for the preparation of an Area Structure Plan,

"An ASP

(a) must describe

(i) the sequence of development proposed for the area,

(ii) the land uses proposed for the area, either generally or with respect to specific parts of the area,

(iii) the density of population proposed for the area either generally or with respect to specific parts of the area, and

(iv) the general location of major transportation routes and public utilities, and

(b) may contain any other matters the council considers necessary."

3.2 Intermunicipal Development Plan

Section 3.10 of the IDP identified the desire for longer term plans for the subject lands, and provides a terms of reference, as outlined in **Section 2.1** above.

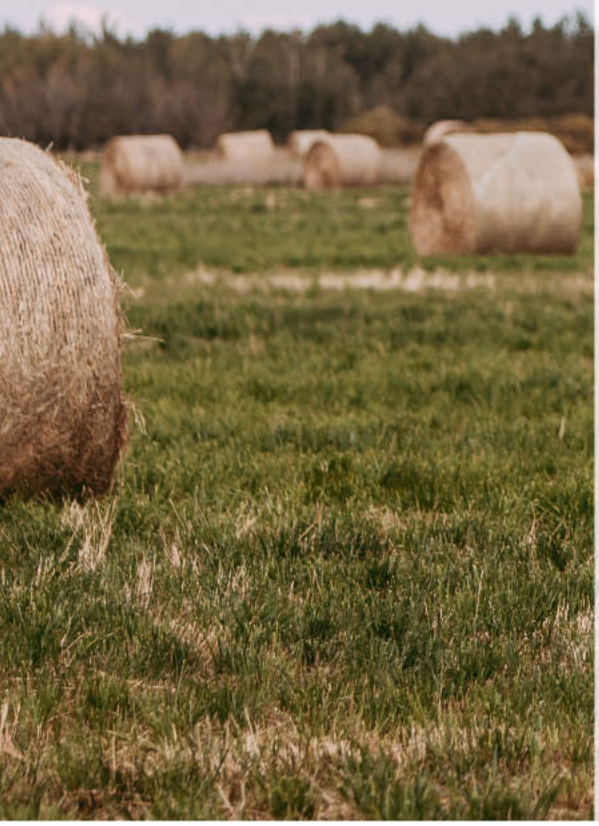
Further, the IDP speaks to servicing of lands within the plan area, identifying that lands within the Town will be serviced with urban-standard services and that lands within the County will be serviced with rural-standard services. That being said, there has been some discussion about providing ACE Waterline water within the ASP boundary, as discussed in greater detail in **Section 6.1** below.

3.3 Municipal Development Plan

The Municipal Development Plan outlines requirements for Area Structure Plans in Appendix B. Map 10 of the MDP identifies the joint area structure plan lands as described in the IDP, and this ASP is consistent with the MDP.

3.4 Land Use Bylaw

The ASP is consistent with the regulations of the Land Use Bylaw.



4.0 Existing Conditions

4.1 Plan Boundary & Ownership

The Plan area comprises **337.54 ha/834 ac** of land located to the east of Vegreville, just north of the CN Railway and Highway 16, as shown in **Map 1**. The area comprises predominately privately owned parcels with the west half of Section 16 being owned by private corporations, as shown in **Map 2**.

4.2 Land Use

The Land Use Bylaw identifies the east half of the ASP lands for Rural Industrial (RI). The SW of 16 is identified as Direct Control (DC) and the NW of 16 and NE of 17 are districted as Agriculture. A portion of the SE of 16 is districted as Marijuana Production Facility – Direct Control (MPF-DC) to accommodate the Lunaverse medical marijuana production facility (see **Map 3**).

4.3 Biophysical Assessment

The following sections are modified excerpts from the X-Terra Environmental Services Inc.'s ***Biophysical Environmental Assessment*** dated June, 2019, prepared for the County of Minburn.

4.3.1 Soils and Agriculture

The soils in the Plan area are comprised of miscellaneous poorly drained Solonetzic soils that include saline soils and Soils with Rego profiles. Comprised of undulating, high relief landform with a limiting slope of 4%.

The Alberta Soils Information Viewer indicates the area has a Land Sustainability Rating System rating of 3(10) and 4(8) – 5W(2), indicating moderate limitations that restrict the growth of specific crops and indicates lands in this area may have severe to very severe limitations that restrict the growth of specific crops, in some areas due to excess water.

4.3.2 Wetlands/Waterbodies and Watercourses

There were 25 wetlands identified in the Plan area (see **Map 4**). However, only two were deemed to be of a more permanent nature, Wetlands 9 and 12. Wetlands 1, 2 and 5 appear to have been established after the Town of Vegreville's lagoons were constructed and naturalized over time. Wetlands 3, 4, 6-8, 10, 11 and 13-25 were determined to be temporary in nature and farmed over during the majority of time between 1962 and 2017.

Wetlands are classified between A and D, with D having the lowest value and A having the highest value. The 25 wetlands are anticipated to be classified as D, although a field analysis and provincial assessment is required to confirm.

Several tributaries were also identified. As these tributaries connect to the Vermilion River they are categorized as Class C Unmapped watercourses. They have seasonal drainage with little to no defined channels, however further assessment may be required in the field prior to development.

4.3.3 Wildlife and Avian Assessment

A desktop review was completed for potentially sensitive wildlife restrictions and the biophysical report identified sharp-tailed grouse, raptors, migratory bird nests and habitat for other potential endangered species. Prior to development sensitive species surveys need to be conducted for short-eared owls, raptors, sharp-tailed grouse and other species.

Pre-construction nest sweeps are required within seven days prior to the onset of construction between April 1 and August 31.

4.3.4 Environmentally Sensitive Areas

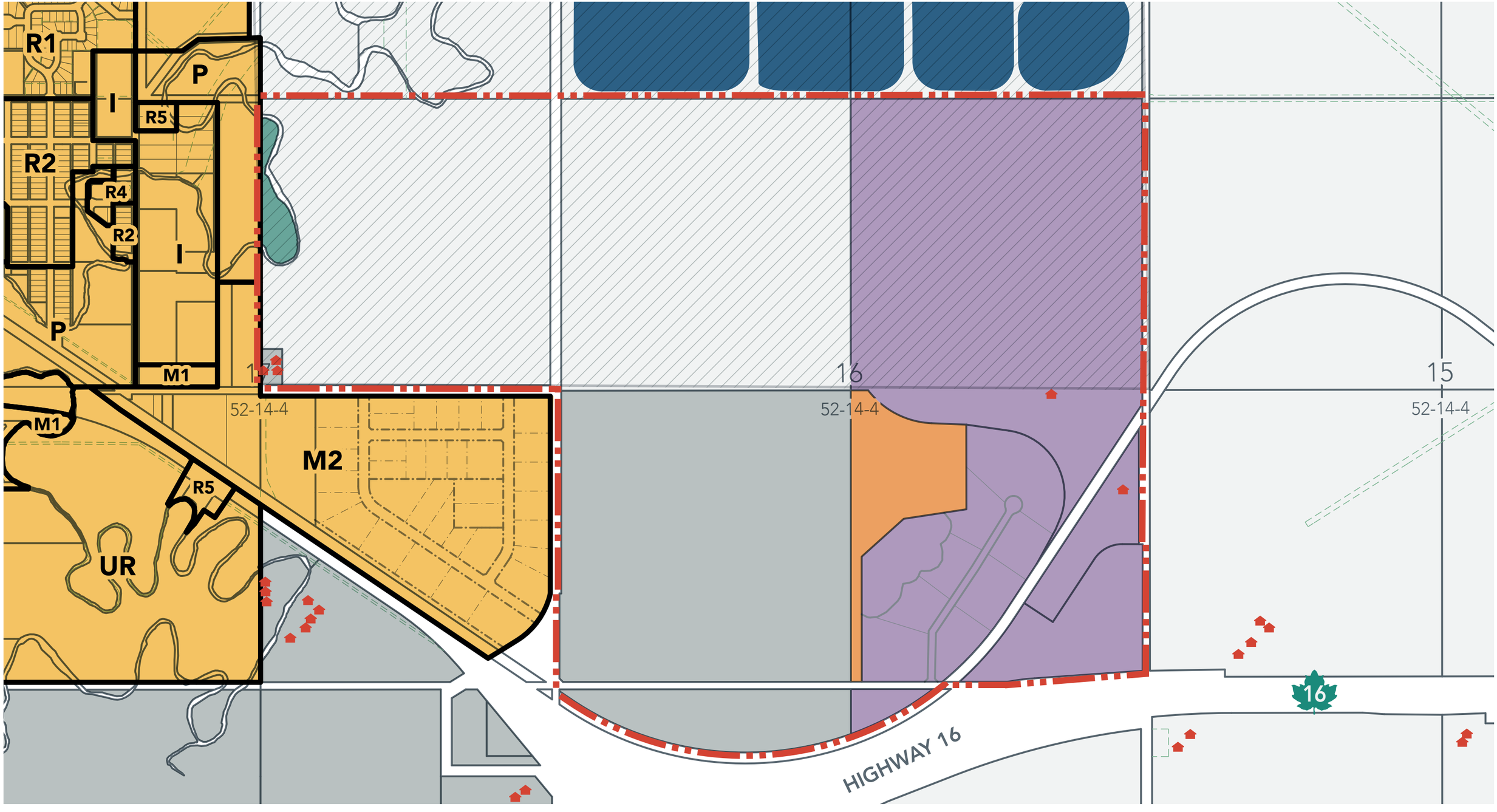
The Plan area has been historically used for agricultural purposes and future development may have further impacts on wetlands. Avoidance of wetland disruption is recommended as a first priority, followed by mitigation of impact, and as a last resort replacement/compensation.

4.3.5 Soils Protection

Erosion and sedimentation control measures need to be put into place prior to commencement of development. An erosion and sedimentation control plan should form part of a development agreement.

4.3.6 Significant Historical Sites

The Listing of Historical Resources maintained by the Province of Alberta was searched and confirmed that there are no historically valuable resources within the Plan area and not Heritage Resources Act clearances are required.



LEGEND

- ASP Boundary
- Agricultural (A)
- Direct Control (DC)
- MPF Direct Control (MPF-DC)
- Recreation & Resort (RR)
- Rural Industrial (RI)
- Vegreville AVPA Overlay
- Sewage Lagoon
- Existing Structures

Town of Vegreville Land Use (for reference only):

- UR — Urban Reserve District
- P — Community District
- I — Institutional District
- R1 — Single Detached Residential
- R2 — Single Detached Compact Res.
- R4 — High Density Residential
- R5 — Large Lot Residential District
- M1 — Business Industrial District
- M2 — Heavy Industrial District

MAP 3
Existing Land Use

0 100 200 m 1:10,000

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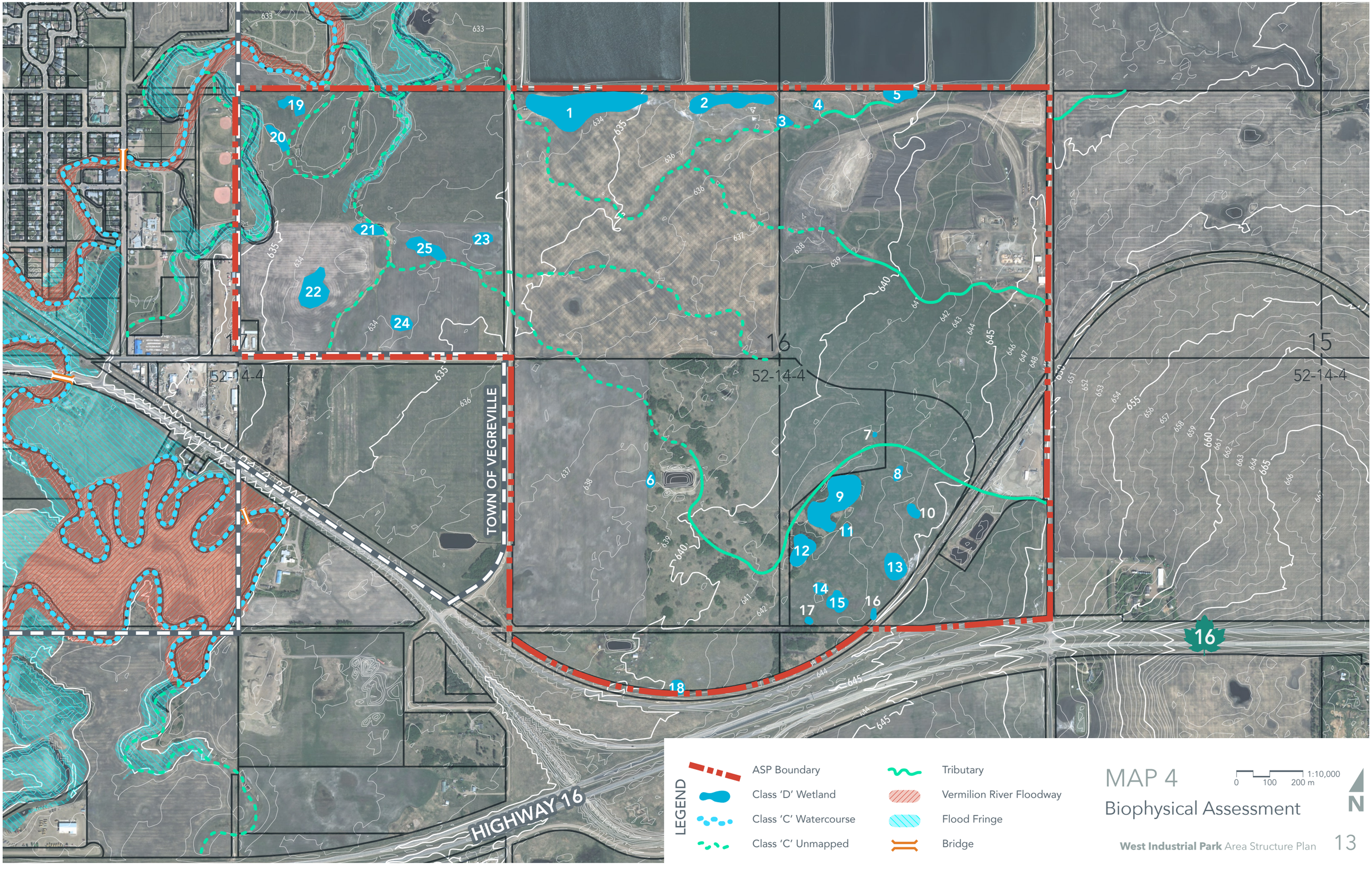


MAP 4

Biophysical Assessment

1:10,000

0 100 200 m

N

RGE.144

RGE.143

TOWN OF VEGREVILLE

17
52-14-4

16
52-14-4

15
52-14-4

W0114716

W0047571

W0233209

W0228727

16

HIGHWAY 16

LEGEND

- ASP Boundary
- Town of Vegreville
- Gas Pipeline
- Utility Right of Way
- Abandoned Well
- Suspended Gas Well

MAP 5
Oil & Gas

1:10,000
0 100 200 m

N

17
52-14-4

16
52-14-4

15
52-14-4

8
52-14-4

9
52-14-4

10
52-14-4

TOWN OF VEGREVILLE

access closed

16

HIGHWAY 16

HWY 857

RGE 144

RGE 143

Potential HWY 857 Alignment

LEGEND

- ASP Boundary
- Town of Vegreville
- Road
- Railroad
- Access Closure
- Potential Road Closure
- Potential Future Road

MAP 6
Transportation

1:15,000
0 150 300 m

N

4.4 Oil and Gas

Map 5 shows there are three abandoned wells within the ASP boundary. Abandoned wells can be either 'reclaimed' or 'non-reclaimed.'

Development setbacks to pipelines, abandoned and active wells are dependent upon a number of factors. The Alberta Energy Regular (AER) gives direction on minimum setback requirements.

The AER's Directive 079: Surface Development in Proximity to Abandoned Wells pertains to setbacks to abandoned wells, both reclaimed and non-reclaimed, as summarized here:

Reclaimed abandoned wells:

- Abandoned wells with a depth less than 150 m do not require a setback and are exempt from Directive 079.
- Abandoned wells with a depth 150 m or greater require a minimum 5 m setback radius around the well.
- Consultation with a well licensee may determine setback requirement greater than 5 m.
- Non-reclaimed abandoned wells:
- All non-reclaimed abandoned wells require a work area (i.e.: setback) equivalent to the well's lease area.

Subdivision and development applicants will be responsible for contacting well license holders to determine setbacks required for reclaimed, abandoned wells.

Subdivision and development applicants are responsible for determining the lease area around non-reclaimed, abandoned wells.

4.5 Transportation

4.5.1 Highways 16 & 857

In 2010 AMEC Environment & Infrastructure was retained by Alberta Transportation (AT) to prepare a functional planning study for the future realignment of the intersection of Highway 857 and Highway 16, which is located just south of the Town of Vegreville.

The purpose of the realignment is to facilitate converting Highway 16 to freeway status and removing at-grade access points. The preferred option for the realignment is depicted on **Map 6**, and is located about 600 m west of the existing flyover. The all-access interchange will consist of an initial diamond interchange with potential future upgrades to include two future loop ramps and a collector distributor road south of Highway 16. The realignment will necessitate changes to existing access in the immediate region around the ASP.

The existing at-grade access to Highway 16 will be removed, requiring re-routing of traffic along local roadways, including Range Road 144 which lies along the west edge of the ASP boundary. Additional re-routed traffic along Range Road 144 may necessitate upgrades to the road.

The existing at-grade access at Range Road 143 has already been removed by Grains Connect as a condition of its development agreement with the County.

4.5.2 Local Roads

The local roads in the ASP area include Range Road 144 along the western boundary of the Plan, unimproved Township Road 522 at the south end of the Plan, Vegreville Road at the south end of the Plan (paved between Range Road 143 and 144), and Range Road 143 along the eastern boundary of the Plan. Range Road 143 is paved between Highway 16 and the CN Railway. Range Road 144 is gravelled. Both are undivided roadways. Intersections on these roads are stop controlled. Township Road 522 is gravel and extends only part way along the southern boundary of SW16.

Based on AT's functional plan for the Highway 857 realignment, it appears that Range Road 144 will be realigned to a major intersection with realigned Highway 857 north of the future intersection of Highways 16 and 857 (see **Map 6**).

4.5.3 Transportation Impact Assessment

A Transportation Impact Assessment (TIA) was not prepared for this ASP as there is no specific development planned at this time. A TIA was prepared for the Grains Connect development, and it is recommended that all future developments be required to prepared TIA in consultation with Alberta Transportation.

4.5.4 CN Railway

The CN Railway forms the southern boundary of the Plan area and curves through the Plan area across the SE16. There is a rail spur/loop that serves the Grains Connect development in the northeast quadrant of the Plan. There is an additional spur to Block 1, Plan 8322833 which is currently a grain bin sales development. It is not anticipated that additional spur lines would be extended into the ASP boundary.

Transport Canada sets out proximity regulations for road accesses and intersections near railways. Road accesses and intersections need to be set back a minimum of 30 m from the nearest railway. Developers are responsible for adhering to Transport Canada regulations.

5.0 Future Land Use Concept

The Future Land Use Concept (see **Map 7**) illustrates how the ASP lands may develop over time, identifying different land use designations, natural and human-made features.

It is anticipated the ASP lands will take several decades to build out, and consequently land ownership and policies may change over time. This Future Land Use Concept reflects current planning policies, intermunicipal understandings and markvand, it may need to be updated over time to reflect the changing needs of the County, the Town of Vegreville and affected market sectors.

5.1 Industrial

Approximately **273.14 ha/675 ac** is identified to develop with industrial uses, in particular industrial uses such as those described in Policy 3.4.1 of the County's MDP. With the adoption of this ASP, developers wishing to convert land currently identified as DC - Direct Control within the Plan area to RI - Rural Industrial would be supported.

Should servicing become available, more intensive industrial uses may be developed. Serviced development proposals would require alignment with the County's current policies on industrial development and the policies of the Intermunicipal Development Plan.

5.2 Highway Commercial

Map 7 does not show any land designated for Highway Commercial development. At this time, it is not expected that commercial development in this location would be in demand or be feasible. However, this ASP supports the transition from the Industrial designation to Highway Commercial designation for certain parcels of land if there is strong market evidence to support such a request. In addition to strong market evidence, there should be good access and good visibility from Highway 16.

5.3 Open Space

There is approximately **9.37 ha/23 ac** of open space lands identified in the ASP boundary. These lands include the Town of Vegreville's off-leash dog park along the Vermilion River in NE17 as well as the lands above the high water mark of the stormwater management facility located in NE17.

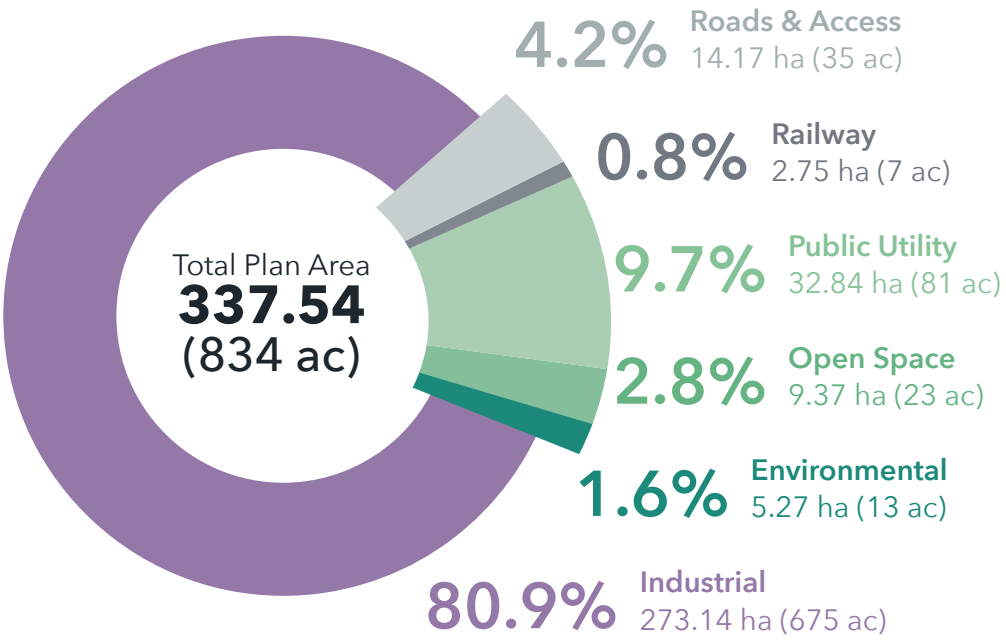
Active and passive recreational pursuits are encouraged in the Open Space areas.

5.4 Environmental Reserve/Easement

Approximately **5.27 ha/13 ac** of land is identified for 'Environment Easement'. These lands, given their environmentally sensitive nature, are expected to be identified for environment reserve. They may be protected through registration of environmental reserve easements during the development and subdivision processes.

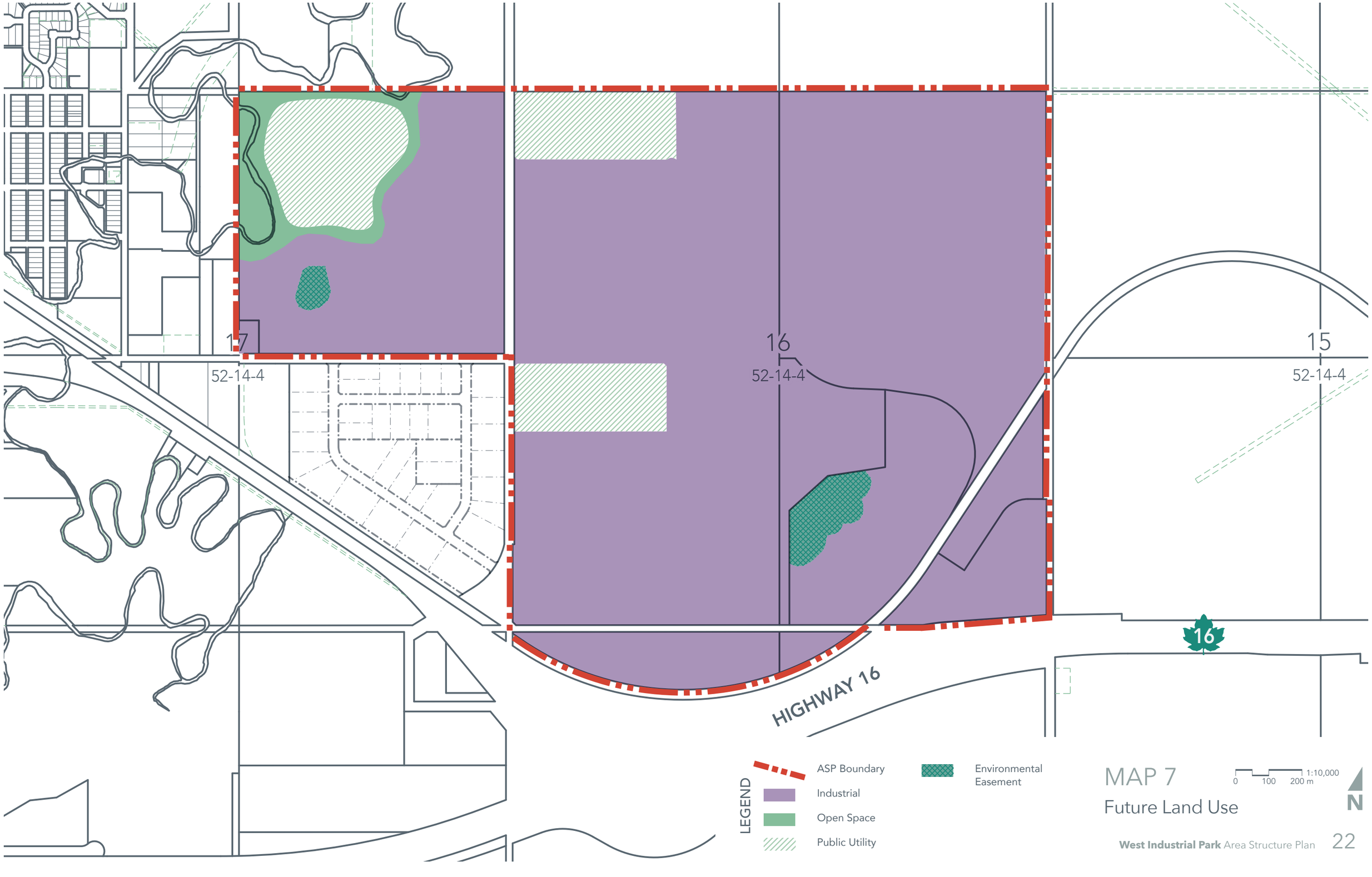
Environmental reserve easements are recommended by this ASP to allow land to remain under private ownership, in its natural state, yet protected from development.

Land Use by Area



5.5 Internal Roads & Access

Internal subdivision roads are expected to be confirmed in the future to meet development needs at that time. Minor changes to internal roadway configuration does not necessarily trigger an amendment to this ASP; however, discretion for deciding if an amendment is necessary remains with the County.


17
52-14-4
16
52-14-4
15
52-14-4
16
HIGHWAY 16
LEGEND
ASP Boundary
Industrial
Open Space
Public Utility
Environmental Easement
MAP 7
Future Land Use
0 100 200 m 1:10,000
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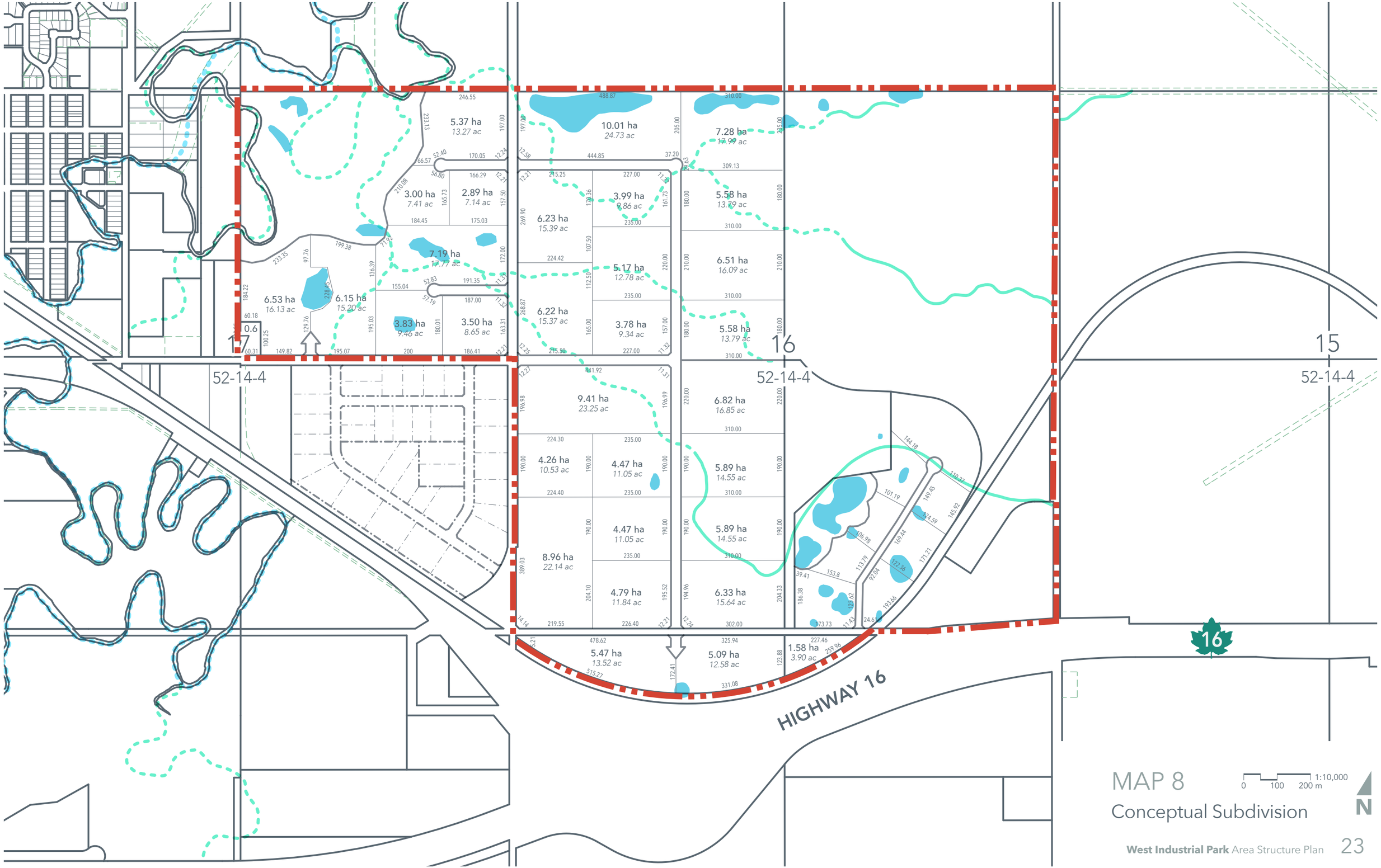

MAP 8

Conceptual Subdivision

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5.6 Subdivision & Consolidation

The proposed lot layout shown in **Map 8** is conceptual and changes to it will not trigger an amendment to this ASP. It is expected that lots will be reconfigured during the subdivision process and afterwards (through consolidation, potentially) in order to tailor lot sizes to market needs.

5.7 Development Staging

Development staging is likely to occur in response to market demand and investment in upgrading road infrastructure, and potential for future water and sanitary servicing.

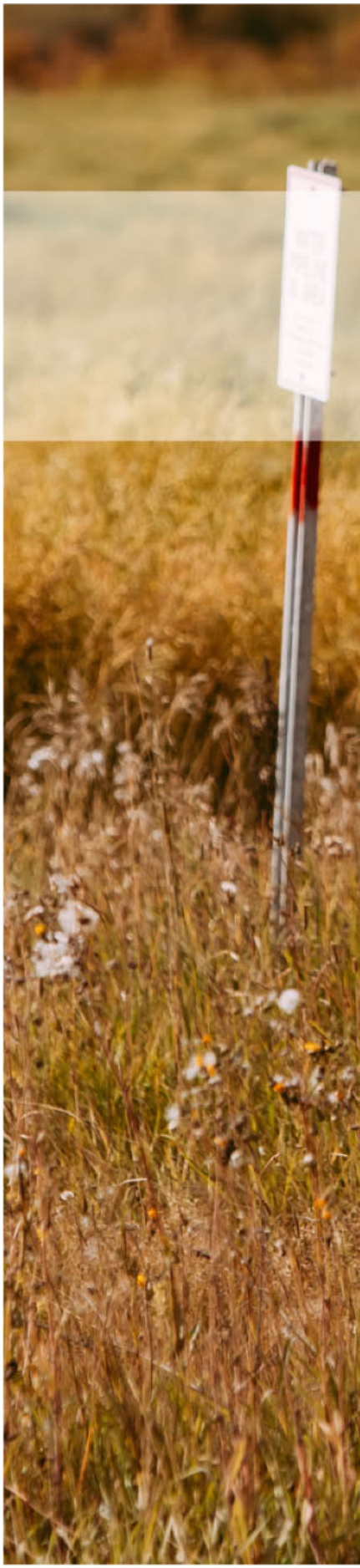
In the 2017 Conceptual Scheme prepared for Lunaverse Inc., two development stages are identified. The first being Lot 1, Block 2, Plan 192 0696, and the second being the northern part of SE 16-52-14W4M (see Map 2). As of the writing of this ASP, Stage 1 of the Lunaverse Inc. development had not yet commenced.

Overall staging is expected to follow existing patterns starting with Grains Connect, which is already developed, followed by Lunaverse Inc.'s Stages 1 and 2, then westward and northward through the rest of the Plan area.

5.8 Municipal Reserve

Municipal reserve triggered by the subdivision process should be collected in full by the County as cash-in-lieu. Deferral of reserve owing by way of deferred reserve caveat is anticipated for developers with larger land holdings and/or multi-staged developments. However, deferral to lands owned outside the ASP boundary is not recommended if those lands are unlikely to develop within a reasonable time horizon.

6.0 Utility Servicing



The following sections are modified excerpts from the BAR Engineering West Industrial Park Area Structure Plan Servicing Brief dated September 10, 2019, prepared for the County of Minburn.

6.1 Water

County of Minburn does not currently have an existing municipal water distribution system within the vicinity of the West Industrial Park ASP to provide potable water to future development. As such, either private on-site potable water systems, such as wells or cisterns, will need to be utilized for the development or a connection to the Alberta Central East (ACE) Regional Water System will be required. If water wells are utilized for the development, groundwater evaluations and/or hydrogeological assessments will be required prior to and as part of the subdivision process to obtain the required approvals and authorization from Alberta Environment and Parks and Alberta Sustainable Resource Development to divert and use groundwater.

The ACE Regional Water System supplies drinking water to member municipalities, which includes the County of Minburn. The ACE transmission line is located approximately 800m north of the north ASP boundary and runs east/west along Township Road 523A between Range Road 145 and Range Road 144. At Range Road 144, the transmission line heads north to Township Road 524.

Connection to the ACE Transmission line at the intersection of Township Road 523A and Range Road 144 could provide potable water to the West Industrial Park (see **Map 9**). A watermain, owned and operated by the County, would be required from the connection point south along Range Road 144 and looped throughout the development to provide service to the Rural Industrial lots.

It is important to note that ACE does not provide distribution pressures, so either the water supply would be through a trickle feed system to fill private on-site cisterns, or the County could construct a reservoir and pump station to provide adequate distribution pressures to the West Industrial Park. Application to connect to the ACE Transmission Line would be undertaken at future design stages of the development prior to subdivision.

6.2 Sanitary

Rural municipal wastewater collection systems are not present within or near the West Industrial Park ASP. Private on-site wastewater collection and treatment systems will be required for the proposed rural industrial development, which could include holding tanks, septic tanks, and/or septic fields. Unlike municipal wastewater collection systems, on-site sewage systems include either collection of the wastewater and hauling offsite or collecting and treating the wastewater onsite prior to discharging to the environment. Implementation of private sewage systems shall be in accordance with the Alberta Private Sewage Systems current Standard of Practice at the subdivision stage.

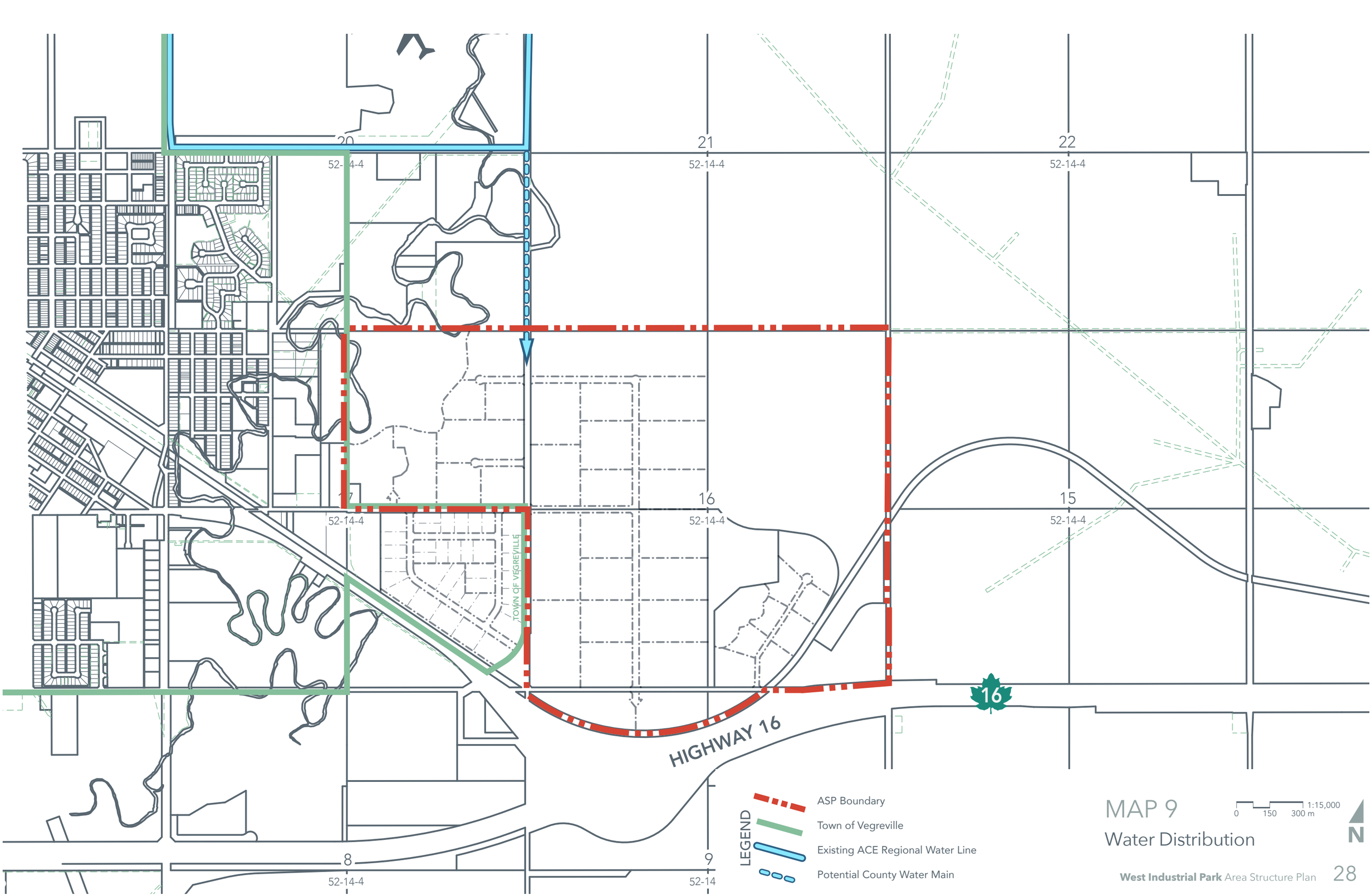
Town lagoons located immediately north of the NW and NE ¼ Sections 16-52-14-W4M treat wastewater collected from the Town prior to discharging. It is understood that, at this time, the County intends for the West Industrial Park to utilize on-site private sewage systems. Further analysis, in collaboration with the Town, could be completed if the County wishes to pursue installation of a wastewater collection system within the West Industrial Park to convey wastewater to the Town lagoons. A municipal wastewater collection system for the West Industrial Park could consist of a low-pressure sewage collection system, and/or gravity sanitary sewer mains in combination with lift stations.

6.3 Stormwater

The ASP lands generally slope from the southeast to the northwest with a relief of approximately 21m. Many trapped lows within the ASP boundary capture stormwater runoff and provide wetland habitat. An unnamed tributary of the Vermilion River is located along the west and north property lines of the NE ¼ Section 17-52-14-W4M, which serves as the natural drainage outlet for the West Industrial Park.

A flood hazard mapping study was undertaken for the Vermilion River to identify the extents of the 1:100 year flood plain. The flood plain consists of two areas of flow identified as the floodway and the flood fringe. Floodway represents the area where the floodwaters are deepest, fastest, and most destructive. Flood fringe are areas outside of the floodway where floodwaters are generally shallower and flow slower. According to Alberta Environment and Parks' flood hazard mapping, the unnamed tributary located within the NE ¼ Section 17-52-14-W4M is located within the Vermilion River's 1:100-year flood fringe.

Proposed stormwater management measures for the West Industrial Park includes series of drainage ditches, including roadside ditches, and stormwater management facilities (SWMF). These will be used to convey and control stormwater runoff from the future developments with natural drainage patterns from the southeast to the northwest being maintained.



MAP 9

Water Distribution

1:15,000

0 150 300 m

N

MAP 10

Stormwater Management

1:10,000

0 100 200 m

N

Three conceptual SWMF locations have been identified based on grading to maintain natural drainage and the conceptual subdivision layout (see **Map 10**). A maximum SWMF discharge rate of 0.45 L/s/ha has been adopted for this study based on the 1:100-year Vermilion River discharge rate provided in the flood hazard mapping study. Further analysis including sizing of the SWMFs, location, sequencing, and Water Act application will be completed in future stages of development prior to subdivision.

6.4 Shallow Utilities

Power, natural gas, and communication services are all located within the vicinity of the West Industrial Park and will be extended from the nearest connection location for the planned subdivision. Application to the utility provider for connection and/or extension of service to the proposed development will be required at the subdivision stage.

Power is provided by ATCO Electric for the West Industrial Park area. Three phase overhead power lines are located along the unimproved road allowance of Township Road 522, from Range Road 143 to Range Road 144, along the west property line of the NE ¼ Section 17-52-14-W4M running north/south, and along Range Road 143. Service connection location to power will be coordinated prior to subdivision.

7.0 General Land Use Issues

7.1 Signage & Lighting

As the ASP area develops, centralized signage at entrances to development nodes may be desirable and should be supported. Individual signage will need to conform to the requirements of the County's Land Use Bylaw.

Additionally, Alberta Transportation may have signage and lighting guidelines pertaining to developments adjacent to highways that would need to be considered.

7.2 Screening & Landscaping

The proximity to and visibility from Highway 16 suggest that appropriate and year-round effective landscaping and/or fencing/screening be applied to developments that include outdoor storage that could be considered unattractive.

In addition to the provisions of the County's Land Use Bylaw, the Development Officer and/or Subdivision Authority, as applicable, is enabled by this ASP to apply more rigorous screening and landscaping requirements. Variances to the minimum required screening and landscaping requirements of the Land Use Bylaw should not be considered, especially in proximity to a public road or Provincial Highway.

7.3 Agricultural Operations

Existing agricultural operations will be allowed to continue in perpetuity at the will of the landowner.

7.4 Sour Gas Facilities

There are no existing sour gas facilities in the ASP boundary. The County may support the development of a sour gas facility depending on its proximity to developed areas and the limitations such a facility could place on future development.

7.5 Existing Residences

There appear to be five existing residences within the Plan area. These residences will not be affected by the adoption of this Bylaw. Future development and the continuation of existing residential uses on land holding will remain in the control of individual landowners.

8.0 Policy Framework & Implementation

8.1 Interpretation

Policies are written using "*shall*", "*should*" or "*may*" statements. The interpretations of "*shall*", "*should*" and "*may*" that follow provide the reader with a greater understanding of the intent of each policy statement:

'**Shall**' – denotes compliance or adherence to a preferred course of action.

'**Should**' – denotes compliance is desired or advised but may be impractical or premature because of valid planning principles or unique/extenuating circumstances.

'**May**' – denotes discretionary compliance or a choice in applying policy.

8.2 Amendments

Applications for amendment will require supporting documentation as described in the Municipal Development Plan and Land Use Bylaw, and must be based on sound planning reasons and generally accepted planning practices.

8.3 Review & Monitoring

This ASP shall be reviewed and monitored to ensure its policies and intent are consistent with current planning principles and the needs of the County of Minburn.

It is recommended this document be reviewed at least every five (5) years.

9.0 Policies

The following policies will be used by the County of Minburn No. 27, including Administration and Council, to provide guidance and direction when making decisions on land use, subdivision and development on lands within the ASP boundary.

General

POLICY 1

The County of Minburn shall ensure that all future land use, subdivision and development, and amendment decisions made with respect to lands within the boundary of the West Industrial Park ASP comply with the provisions contained within this ASP, including the Maps. Decisions related to document 'housekeeping' or those that would be considered minor deviations, relaxations or variations from the provisions of this ASP would not require an amendment to this document where it can be demonstrated that the deviation, relaxation or variance does not substantively alter the intent, force or effect of the provisions of this ASP.

POLICY 2

Any discrepancies between this ASP and the Provincial transportation planning documents referenced herein are unintentional, and the Provincial transportation planning documents take precedence.

Variance

POLICY 3

The exercise of discretion and variance related to any matter or decision rendered with respect to this ASP as well as the amendment of this ASP shall be guided by the following principles:

a) The exercise of variance or discretion in deciding an application or amendment to this ASP must be both reasonable and defensible within the letter and spirit of this ASP as well as widely accepted planning principles;

b) If a requirement or provision of this ASP is to be deviated from or if an amendment is to be made, it is essential that those exercising the discretion or deciding upon variance or making the amendment clearly understand the rationale behind the requirement or provision they are being asked to vary or amend;

c) Discretion, variance and amendment shall only be considered if it can be demonstrated that the discretion, variance or amendment being considered will, at a minimum, not jeopardise the policies of this ASP and, at best, better serve them;

d) Any variance or discretion exercised or any amendment made shall be fully documented so that the reasons and rationale for the variance or discretion exercised or amendment made are accurately recorded and clearly understood.

Amendment Applications

POLICY 4

The County of Minburn may undertake or require that the owner/developer undertake an overall review of this ASP should an owner/developer make repeated applications to amend this ASP once it is in effect. The intent of an overall review, instead of continuing to entertain individual, isolated amendment applications, is to consider and evaluate the implications of the revisions to this ASP, at a minimum, in the context of the entire ASP area and, if warranted, beyond this ASP area.

Subdivision & Development

POLICY 5 The County of Minburn should support subdivision and/or consolidation of parcels to meet market needs.

Reserve Land

POLICY 6 The County shall require developers to provide the maximum amount of reserve land pursuant to the Municipal Government Act. The County should require reserve land dedication in the ASP by way of cash-in-lieu . Furthermore, the County should consider accepting environmental reserve dedication in the ASP by way of agreement with landowners for environmental reserve easements.

Signage & Lighting

POLICY 7 The County of Minburn should support centralized signage at the entrance to development nodes.

POLICY 8 The County of Minburn shall encourage dark night skies.

POLICY 9 The County of Minburn should require developers mitigate light trespass from new developments through use lighting with full cut-off fixtures and avoiding unnecessary up-lighting into the night sky.

Screening & Landscaping

POLICY 10 The County of Minburn shall encourage screening and landscaping to improve visual appeal of developments, in particular those with outdoor storage, from public roadways. This will be addressed at the time of subdivision and/or development as appropriate.

POLICY 11 The County of Minburn should not vary minimum standards of the Land Use Bylaw for screening and landscaping on new developments, especially in proximity to a public road or Provincial Highway.

Agricultural Operations

POLICY 12 The County of Minburn shall allow existing agricultural operations to continue in perpetuity at the will of the landowner. Existing agricultural operations in the designation Agricultural should not be unduly impeded and/or impacted by future non-agricultural development within the ASP boundary and adjacent to existing agricultural operations.

Public Consultation

POLICY 13 The County of Minburn may require proponents to engage adjacent landowners if it is deemed the proposed development may directly impact an development. The consultation must be done in the early stages of the application process, be appropriate and meaningful, and the outcomes of the consultations will be recorded and submitted for consideration by the Development Authority and/or Subdivision Authority.

Engineering Requirements

POLICY 14 Developers shall ensure that all site preparation, public roads, and any other public facilities/improvements are professionally engineered and constructed to the satisfaction of the County of Minburn in accordance with the County's standards.

POLICY 15 Owners/developers shall ensure that subdivision and development permit applications comply with the Stormwater Management Guidelines for the Province of Alberta 1999, prepared by Alberta Environment, as applicable, and generally with the Stormwater Management Plan contained in Appendix 2 of this ASP. There shall be no change between pre- and post-development off-site flows except where the application conforms to an approved stormwater management plan approved in conjunction with the County of Minburn.

POLICY 16 Applicants of subdivision and development permit applications shall be responsible for making all necessary arrangements regarding the disposal/management of stormwater off-site and providing to/for the County of Minburn all required documentation, permission, approvals and/or other forms of authorization from all relevant agencies having jurisdiction in relation thereto.

Transportation

POLICY 17 The provisions of the West Industrial Park ASP uphold and protect the integrity and function of Highway 16. This is important to secure and maintain Alberta Transportation's endorsement of this ASP.

POLICY 18 The applicant/owner/developer may be required to prepare a Traffic Impact Assessment (TIA), at their sole expense, as a condition of subdivision or development approval pursuant to this ASP. The timing and scope of the TIA will be determined by the County of Minburn in consultation with Alberta Transportation. If a TIA should be required, it will be prepared to the satisfaction of the County as well as Alberta Transportation.

POLICY 19 The developer shall undertake, at its sole expense, any engineering, requirements or improvements identified in or resulting from the TIA approved by the County and/or Alberta Transportation, or any other engineering, requirement or improvement specified by Alberta Transportation in relation to Highway 16 as a result of or that is attributable to the development of this ASP area. Further, such engineering and/or improvements must be undertaken to the satisfaction of the County of Minburn in consultation with Alberta Transportation.

POLICY 20 Developers should engage in discussions with Alberta Transportation to determine their obligations with respect to a TIA and possible improvements prior to submission of a subdivision or development application to the County of Minburn.

Land for Road Widening

POLICY 21 The County of Minburn shall ensure that when the opportunity arises as part of a subdivision or development permit application within the ASP area, and when considered warranted and appropriate by the Development Officer, road rights-of-way required up to and including 30 metres (100 ft) in total width should be protected without compensation using whatever legal means/form of agreement necessary and appropriate (ranging from survey and transfer to dedication by caveat, etc.) at the time of subdivision or development permit approval, as the case may be.

Hazardous Materials Development

POLICY 22

The Development or Subdivision Authority, as the case may be, in consideration of an application that involves explosives or radioactive material, shall:

a) consider the effects of the storage and/or transport of explosives or radioactive material proposed in an application (e.g. the implications of the development setbacks specified in the applicable Regulations or the provisions of the Transportation of Dangerous Goods Act) on the other existing and proposed use(s) located or proposed to be located on the subject parcel as well as adjacent parcels;

b) at their discretion, prior to deciding upon the application before them, provide public notice, through means and to whom they consider necessary, that a decision regarding an application involving the storage and/or transport of explosives or radioactive material is to be made, that an opportunity will be afforded to any person notified to make representation on the application and that the representations made shall be taken into account when final consideration is given to the said application; and,

c) based on the circumstances of the application before them, and at their sole discretion, either grant their approval, provided the application otherwise complies with this ASP or any Conceptual Scheme in effect, the applicable MDP and LUB, subject to the applicant complying with all applicable provincial and federal as well as any other municipal regulations related to explosives or radioactive material (and submitting proof of same – e.g. a license or certificate, as specified by the Development or Subdivision Authority, that they have complied), or withhold their approval until such time as the applicant demonstrates, to their satisfaction, compliance with all applicable provincial and federal as well as any other municipal regulations related to explosives or radioactive material.

Oil & Gas Activity

POLICY 23 The County of Minburn may support development of sour gas facilities within the ASP boundary.

POLICY 24 The County of Minburn will work with oil and gas interests and landowners to identify well-site development and production schedules that coordinate with land use designations within this ASP. In working with oil and gas interests and landowners, the County will strongly recommend that the following siting/development principles be followed:

a) wells should be clustered whenever possible;

b) flow lining to a common location for multiple wells should be utilized whenever possible;

c) clustered well sites should be located whenever possible next to public utility lots, storm water lakes and future municipal reserves (parks);

d) road accesses to clustered wells should be combined wherever possible and access routes utilized should be made to fit existing and identified future roadways whenever possible;

e) operating conditions of well/battery sites should be adjusted as follows:

   i. fluids should be hauled, tanks should be vacuumed/cleaned and servicing/maintenance should take place during regular daytime hours,

   ii. storage tank temperature should be kept at a level such that associated impacts, particularly odour, are minimized to the fullest extent possible,

   iii. portable generators should not be used to provide power, and

   iv. every effort needs to be made using whatever measures required to minimize odours, noise, dust, vibration and any other negative impacts.

POLICY 25 Subdivision and development applicants will be responsible for contacting well license holders to determine setbacks required for reclaimed, abandoned wells.

POLICY 26 Subdivision and development applicants are responsible for determining the lease area around non-reclaimed abandoned wells.

Subdivision Application Requirements

POLICY 27 The County of Minburn may require that applicants for subdivision within the West Industrial Park ASP provide information or address any or all of the following prior to accepting the subdivision application as complete:

a) general terrain;

b) soil characteristics;

c) soils capability to provide drainage and absorb sewage effluent;

d) potential for flooding, erosion or slumping of the land;

e) stormwater/wetland management;

f) adequacy of the proposed building sites;

g) proposed public road access;

h) availability of a water supply that is adequate for drinking and for the intended use of the parcel(s);

i) proximity to existing utilities;

j) proposed means of buffering in relation to adjacent lands;

k) all existing and historic oil/gas facilities and measures to mitigate any associated impacts;

l) provision/availability of emergency services;

m) identification and form of reserve dedication as applicable per the Municipal Government Act;

n) how the configuration, dimensions, spacing and location of the proposed parcel(s) complies with the concepts of this ASP; and

o) any other matters the Development Officer considers necessary.

Compliance with ASP

POLICY 28 The County of Minburn shall pursue whatever actions are deemed appropriate or necessary to secure compliance with the provisions of this ASP.

POLICY 29 The County of Minburn may require owner(s)/developer(s) to enter into an agreement with the County as a condition of an approved subdivision or development permit application pursuant to the Municipal Government Act.

POLICY 30 The County of Minburn may require caveats, performance bonds, letters of credit, restrictive covenants or any other available mechanisms to secure performance of any requirement stipulated in the provisions of this ASP.

Consistency between Plans

POLICY 31 The County of Minburn will ensure that when amendments are made to this ASP in the future, any complementary amendments to the Municipal Development Plan or Land Use Bylaw are also made to ensure conformance with Section 638 of the Municipal Government Act.

Monitoring & Review

POLICY 32 The County of Minburn will monitor the West Industrial Park ASP on an on-going basis. Notwithstanding, this ASP will be reviewed within five years of being adopted (i.e.: by 2025).

A1 Appendix 1
Biophysical Assessment

Does not form part of this Bylaw.

Prepared by: X-Terra Environmental Services Ltd.

BIOPHYSICAL ENVIRONMENTAL ASSESSMENT

FUTURE DEVELOPMENT OF 16-52-14 W4M, PORTIONS OF 9-52-14 W4M, AND NE-17-52-14 W4M WITHIN THE COUNTY OF MINBURN NO. 27

JUNE 2019

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X-TERRA ENVIRONMENTAL SERVICES LTD.

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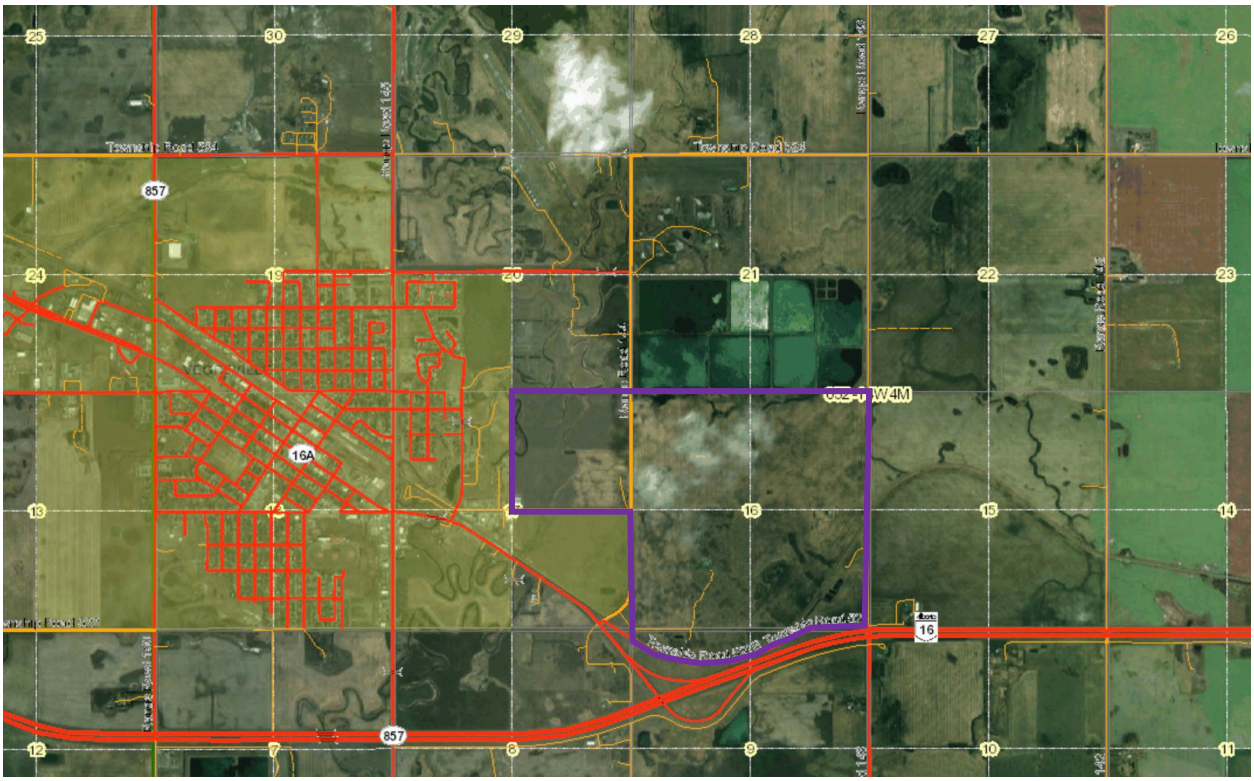
APPENDICES

1 INTRODUCTION

X-Terra Environmental Services Ltd. (X-Terra) was retained by Red Willow Planning on behalf of the County of Minburn No. 27 (COM) in May 2019 to complete an amendment to a previous *Biophysical Environmental Assessment* (BEA) of lands located north of Township Road 522 and Provincial Highway 16, between Range Roads 143 and 144. The previous project area encompasses section 16-52-14 W4M, approximately 2.4 km east of the most easterly border of The Town of Vegreville, Alberta within the County of Minburn No. 27. The amended report will incorporate additional adjacent lands that include northerly portions of 9-52-14 W4M (immediately North and adjacent to Highway 16) and NE-17-52-12 W4M.

This BEA includes a preliminary desktop assessment of the study area and any sensitive environmental features or concerns that may require consideration in order to meet environmental protection expectations and relevant regulations. As such, the entire section 16-52-14 W4M, NE-17-52-12 W4M, and NW and NE-9-52-14 W4M were considered as part of this BEA. The implementation of specific mitigations has been recommended to eliminate or reduce environmental impacts within the study area.

Figure 1-1. Aerial Overview Map of the Study Area in Section 16-52-14 W4M, NW and NE- 9-52-14 W4M, and NE-17-52-14 W4M



2 OBJECTIVE

The overall objective of the *Biophysical Environmental Assessment* (BEA) was to identify and calculate the environmental importance and sensitivity of the lands located within, and adjacent to, the ASP lands in 16-52-14 W4M, NE-17-52-12 W4M, and NW and NE-9-52-14 W4M, and to provide recommendations to avoid or minimize environmental impacts. In addition, the BEA will set out what regulatory processes may be required as a result of any future developments.

Specifically, the objectives of this BEA were:

- To conduct a desktop assessment of the ASP lands in order to identify wetlands/waterbodies and watercourses;
- To determine the potential environmental impacts that may results from the ASP lands;
- To outline mitigation recommendations that minimize the environmental impact of the ASP lands;
- To provide a high-level outline of the potential regulatory requirements and approvals needed for the development of the ASP lands.

3 STUDY METHODS

This BEA was performed by collecting and evaluating relevant information for the study area and the surrounding lands within 16-52-14 W4M, NE-17-52-12 W4M, and NW and NE-9-52-14 W4 from pertinent databases, existing documentation, regulatory resources, and interpretation and comparison of historical air photos.

The information gathered throughout the study was interpreted to determine potential for negative environmental impacts that may result from any future development activities. Based on the findings, sensitive environmental features were determined, and recommendations were proposed to mitigate the negative impacts.

4 RESULTS OF DESKTOP ASSESSMENT

The study area is located within, 16-52-14 W4M, NE-17-52-12 W4M, and NW and NE-9-52-14 W4M, East and Southeast of Vegreville, Alberta within the County of Minburn No. 27 (Appendix D). The study area includes all of section 16-52-14 W4M (approximately 259 ha), the Southeast ¼ Section of 17-52-12 W4M (approximately 65 ha), and a portion of the Northwest ¼ Section 9-52-14 W4M (11 ha), and portion of the Northeast ¼ Section 9-52-14 W4M (1.75 ha). This BEA primarily focusses on this specific area but also takes into consideration the lands adjacent this section of land. Portions of the SE-16-52-14 W4M have been previously assessed and documented as part of the Conceptual Scheme document as prepared for Lunaverse Inc. in August 2017; this existing documentation was reviewed and analyzed in relation to the study area and has been considered during the preparation of this report.

4.1 Ecoregion and Topography

The project area is located within the Aspen Parkland Ecoregion of east-central Alberta (Strong and Leggat, 1992). Topography varies across the region from nearly level, to gently rolling in areas, to hummocky or steeply rolling in lesser frequency when nearing the Vermilion River which is located in the northeast and the west portions of the County of Minburn.

Please find a topographic overview of the project area in Appendix A of this report.

4.2 Surrounding Land Use

Lands to be directly impacted by future development within 16-52-14 W4M, 17-52-12 W4M, and 9-52-14 W4M are used primarily for agricultural crop and livestock production purposes. The exception being the NE-16-52-14 W4M, where a Grains Connect rail transshipment development is located and encompasses most of the quarter section, as well as the SE-16-

52-14 W4M, which is home to a proposed Lunaverse Inc. medical marijuana facility. One suspended well owned by Alphabow Energy Ltd. (Omer's Energy Warwick 10-16-52-14) is located in NE-16-52-14 W4M; one Reclamation Certified well owned by BP Canada Energy Group ULC (Mesa Warwick 7-16-52-14) is located in SE-16-52-14 W4M; one Reclamation Certified well owned by Gain Energy Ltd. (Omer's Energy Warwick 14-9-52-14) is located in SE-16-52-14 W4M.

Lands surrounding 16-52-14 W4M, NE-17-52-12 W4M, and NW and NE-9-52-14 W4M include the town of Vegreville's lagoons to the north, Provincial Highway 16 to the south, the town of Vegreville to the west, and to the east are agricultural land not identified for development at this time. Generally, lands located in proximity to the study area are utilized for agricultural purposes, or for urban purposes including infrastructure such as homes, businesses, highways and rail transportation routes, a sewage treatment facility/lagoon and a cemetery.

4.3 Soils and Agriculture

According to the Alberta Agriculture and Forestry's online Soil Information Viewer (GoA, 2019), the immediate project area is known to have miscellaneous poorly drained Solonetzic soils that includes saline soils and Soils with Rego profiles; comprised of undulating, high relief landform with a limiting slope of 4%. Soils within the surrounding rural areas are comprised of poorly drained Eluviated to Solonetz Black Chernozem on medium textured (L, CL) till; comprised of undulating, high relief landform with a limiting slope of 4% (Alberta Agriculture and Forestry, accessed online December 2018/March 2019/June 3, 2019).

Statistical data gathered by the Government of Alberta between the years of 1971-2000 indicates the growing season starts between April 17-24 and ends between October 15-21 (GoA, 2018), lasting between 174 - 187 days.

According to the Alberta Soil Information Viewer, the study area has a Land Sustainability Rating System (LSRS) of 3(10) and 4(8) - 5W(2)). As per the LSRS for Agricultural Crops, the above-mentioned classifications are as follows:

- 3(10) indicates moderate limitations that restrict the growth of specific crops;
- 4(8) - 5W(2) indicates lands in this area may have severe to very severe limitations that restrict the growth of specific crops, in some areas due to excess water (not due to inundation).

Air photo review indicates the future development area is used for primarily agricultural purposes, varying from crop production to presumed pasture/hay land to support livestock production.

4.4 River Basin and Watershed

The project area is located within the North Saskatchewan River Basin (NSR). The NSR originates in the ice fields of Jasper and Banff National Parks and follows the North Saskatchewan River, flowing east towards the Alberta-Saskatchewan border. The North Saskatchewan River basin is divided into 12 watersheds, with the project area located in the Vermilion River watershed near the southern edge of the NSR basin.

The Vermilion River watershed covers approximately 7860 km^2, or 14% of the total NSR basin. Farming and oil and gas development are primary economical means as the watershed

is home to soils highly suitable for agriculture and petroleum reserves (State of the Watershed Report, North Saskatchewan River Watershed Alliance, 2005).

In April 1994 SNC-Lavalin Inc. of Edmonton, Alberta performed a flood hazard study that focused on the Vermilion River and tributaries and the associated flood risk to Town of Vegreville and surrounding area. According to the report summary, *'the headwaters of the Vermilion River originate in the prairies south of Vegreville. Channel modifications on the Vermilion River were carried out in 1977. Floods in the study area typically occur during the open water season as a result of spring snowmelt runoff but can also be caused by heavy rainfall events in summer or early fall. High flows are most likely to occur in March or April'* (Vegreville Flood Risk Mapping Study, GoA, 1994). The flood risk, in proximity to the study area is relatively close primarily with the extent of the mapped flood risk area being approximately 172m from the north corner of the site; the flood risk is primarily to the northwest and west of the study area.

A visual depiction of the location of the study area in relation to the boundaries of the Vermilion River Watershed and Flood Hazard Map for the project area can be found in Appendix B.

4.5 WETLANDS/WATERBODIES AND WATERCOURSES

Lands within the study area were reviewed using historical air photos and information provided by Alberta Merged Wetland Inventory geospatial dataset (GoA, 2018) for the presence of water features, including wetlands, waterbodies and watercourses. Historic aerial photographs between the years of 1962 to 2017 were reviewed and compared focussing on the presence of, and changes to, sensitive environmental features within the project area, in particular, wetland and watercourse areas. The photographs were reviewed in combination with relevant climate and precipitation data in order to provide preliminary wetland delineation and permanency.

Sixteen graminoid marsh wetlands and two deciduous wooded swamp wetlands, were identified and classified within the 16-52-14 W4M study area. One graminoid marsh wetland was identified and classified within the NW-9-52-14 W4M study area; no wetlands were identified within the NE-9-52-14 W4M study area. Seven graminoid marsh wetlands were identified and classified within the 17-52-14 W4M study area.

Through a review of historical aerial photos, it was determined that only two wetlands (Wetlands 9 and 12) were deemed to be of a more permanent nature as their presence of water was consistent from 1962 to current date. Wetlands 1, 2 and 5 border the north edge of the study area and are directly adjacent to a lagoon located to the north; the presence of these wetlands has been consistent only since the construction of the lagoon. It is assumed that the natural hydrology of the area was altered due to the lagoon and the wetlands were formed due to human interactions. However, the wetlands have now become naturalized. From 1962 to present, the presence of wetlands 3, 4, 6-8, 10, 11, and 13-25 are seen to be temporary in nature. Through the historical aerial review, it was seen that these wetlands were farmed through during the majority of the years.

Wetland classes range from A to D, with D being the lowest valued wetland (AEP, 2016); it is anticipated that the impacted wetlands within the potential development area will be classed as 'D" wetlands. An Alberta Wetland Rapid Evaluation Tool assessment should take place prior to development of the project area in order to determine the exact class of wetland, as well as to determine the appropriate mitigation measures for wetland impact.

In addition to the wetlands within the study area, several tributaries were identified; due to connectivity to the Vermilion River these tributaries are categorized as Class C Unmapped

watercourses. These Class C Unmapped watercourses are present within NE-17-52-14 W4M, NW-16-52-14 W4M, NE-16-52-14 W4M, and SW-16-52-14 W4M. Air photo review indicates these watercourses are seasonal drainages with little to no defined channel, however a field assessment would be required prior to any future development to confirm the classification of the impacted watercourses. The Code of Practice for Watercourse Crossings subject to recommendations by a Qualified Aquatic Environmental Specialist (QAES).

It should be noted that the findings of any future field assessments have the potential to identify further wetlands based on soil, vegetation and topography features. If any impacts to wetlands are to occur, Water Act Approval is required. As well, wetland replacement is required for mitigation for the disturbance of all wetlands (excluding ephemeral wetlands). In addition, any permanent or semi-permanent, shallow open water or marsh wetlands, are likely to have their ownership claimed by the provincial Crown under Section 3 of the Public Lands Act (GoA, 2000). Further investigations and regulatory applications may be required for assessing the permanence of the wetlands situated within the study area.

Any wetlands directly impacted by future development will require *Water Act* (GoA, 2000) approval supported by reporting and documentation as outlined in the Alberta Wetland Policy (GoA, 2013). The historical aerial imagery, including delineations of notable wetlands is located in Appendix C.

4.6 CLIMATE

The historical climate data gathered from the Environment Canada Weather Station in Vegreville, Alberta was evaluated. The average yearly temperature from 1956 to 2017 ranges from 5.4°C in 1967, to 10.7°C in 1980; yearly lowest temperatures range from -49.85°C in 1962, to -26.26°C in 1987; yearly highest temperatures range from 28.0°C (2000) to 36.09°C (2002; average total accumulated precipitation was approximately 406.30mm (1956 to 2017); minimum precipitation was 216.30mm (2002) and maximum precipitation amount of 639.64mm (2012).

Current local climate information will be required to be reviewed as part of the Wetland Assessment and Impact Report preparation, as outlined in the Alberta Wetland Policy's Identification and Delineation Directive (AEP, June 2015).

Please find the figures pertaining to specific climate data corresponding to historical air photos in Appendix D of this report.

4.7 WILDLIFE AND AVIAN INFORMATION

Specific areas, such as wetlands and riparian habitats, provide key and critical wildlife habitat potential; when planning projects and activities, all efforts must be made to reduce impacts to critical habitats to ensure timing of activities will not detrimentally affect potential avian, fish and/or wildlife habitat.

A complete desktop review was completed in terms of potential wildlife sensitivities and species at risk for the project area. A summary of the results of the database searches and review is as follows, in Table 4.7:

Table 4-7. Summary of Potential Wildlife Restrictions.

Restrictive Parameter	[2]Restricted Activity Period	Setback Distance	Details
Sharp-tailed Grouse Survey Area[1]	year-round	500m from leks	Sharp-tailed Grouse Surveys should be conducted during the appropriate periods as per the Sensitive Species Inventory Guidelines
Sensitive Raptor Survey Area[1]	year-round	1000m from nesting sites	Sensitive Raptor Surveys should be conducted as per the Sensitive Species Inventory Guidelines
Other Sensitive and Endangered Species Ranges[1]	April 1st to July 15th	100m from active nest and surrounding habitat	Grassland Birds and Short-eared Owl Surveys should be conducted as per the Sensitive Species Inventory Guidelines
Migratory Bird Nests	April 1st to August 31st	100m from nest site	A pre-construction nest sweep is recommended within 7 days prior to the onset of construction activities

[1]Alberta Energy Regulator (AER) Landscape Analysis Tool Report – accessed March 21, 2019
[2]Government of Alberta (2011) – Select Wildlife Species and Habitat within Grassland & Parkland Natural Regions of Alberta
[3]Setback distance based on medium level of disturbance

The following databases were used to evaluate the project area for wildlife habitat potential:

4.7.1 Landscape Analysis Tool (LAT) Report – Wildlife Ranges

The Landscape Analysis Tool (AER 2015) report was generated for the project area; review of the LAT report for the project area identifies the area as a Sharp-tailed Grouse Survey area, a Sensitive Raptor Survey area and Other Sensitive and Endangered Species Survey area. As per LAT approval standards specific to the above-mentioned sensitive features, pre-construction surveys are required to be completed as per the Sensitive Species Inventory Guidelines (AEP, 2013). Any future development activities may not commence prior to these applicable sensitive species surveys being completed. In addition, pre-construction grassland bird surveys, including Short-eared Owl surveys must be completed on any native grasslands impacted by the land development, to take place between the dates of April 15 and August 15.

Should any of the above-mentioned species or evidence of said species be observed during the surveys, AEP should be consulted to determine proceedings.

A copy of the LAT Report is located in Appendix E of this report. The applicable Sensitive Species Inventory Guidelines can be found online at https://www.alberta.ca/sensitive-species-inventory-guidelines.aspx

4.7.2 *Alberta Conservation Information Management System (ACIMS)*

The Alberta Conservation Information Management System (ACIMS) database was searched (online, June 2019) for the project area regarding the occurrence of any species at risk. The ACIMS search indicated that there are no non-sensitive or sensitive elemental occurrences in or within proximity to 16-52-14 W4M, NE-17-52-12 W4M, and NW and NE-9-52-14 W4M.

A copy of the ACIMS search results are located in Appendix E of this report.

4.7.3 *Fish and Wildlife Management Information System (FWMIS)*

A search of the Fish and Wildlife Management Information System (FWMIS) Internet Mapping Framework (IMF) was conducted on March 20, 2019 and June 4, 2019. The results from the FWMIS map search for the project area indicated there were no occurrences of rare or sensitive species within 1.5km of the project area, however, does show the project area occurs within a Sharp-tailed Grouse and a Bald Eagle range.

A copy of the FWMIS search results are located in Appendix E of this report.

4.8 Migratory Bird and Convention Act

Under *Migratory Bird and Convention Act* (MBCA), it is prohibited to destroy a nest or eggs for any families of migratory birds named in *Article I* of the convention (amended, 1995). In Canada, the general nesting period is approximately mid-March to late August. By consulting the nesting zone maps, it can be determined that the project area is located in Zone B5, which has a nesting period of early April to late August.

A pre-construction nest sweep is recommended within 7 days prior to the onset of construction activities if they are to occur between April 1 and August 31 in order to ensure no nests or eggs are destroyed as a result of development. For a larger land area development within the nesting period, it is recommended more than one nest sweep be conducted at different stages of the project in order to ensure no new species or nesting has taken place while activities are ongoing. In the event nests and/or eggs are observed, species and timing specific mitigation and/or monitoring should be applied.

4.9 Fisheries Information

According to statistical data gathered from Alberta Environment and Parks (AEP) Fish and Wildlife Management Information System (FWMIS 2019) fish species were identified within a 1.5km radius of the ASP lands. The data collected is as follows:

- From the furthest West boundary of NE-17-52-14 W4M: Fish Inventory – Brook Stickleback, Fathead Minnow, White Sucker; Stocked Inventory – Northern Pike, Rainbow Trout, Yellow Perch.
- From the further East boundary (where NE and SE quarter sections meet) of 15-52-14 W4M: Fish Inventory - No Species Found in Search Extent; Stocked Inventory – No Species Found in Search Extent.
- From near the furthest North boundary of NW-16-52-14 W4M: Fish Inventory - No Species Found in Search Extent; Stocked Inventory – No Species Found in Search Extent.
- From the further South boundary (where NW and NE quarter sections meet) of 9-52-14 W4M: Fish Inventory - No Species Found in Search Extent; Stocked Inventory – No Species Found in Search Extent.

The Department of Fisheries and Oceans 'Projects Near Water' self-assessment criteria may be used determine if a request for review is required for the Class C watercourse (Vermilion River) tributaries that are associated with any future development activities.

In the event the self-assessment indicates a Request for Review is required, the project will be reviewed in terms of the best management practices described in the 'measures to avoid harm' section of the Fisheries and Oceans Canada website found at:

(http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/measures-mesures-eng.html)

A thorough field assessment in conjunction with these best management practices should be used to provide mitigation for any future developments and its potential associated impacts to the watercourses.

4.10 CULTURAL AND HERITAGE RESOURCES

The Listing of Historic Resources (Alberta Culture and Tourism) is a tool that may assist developers, industry representatives and municipalities in determining if a development might affect historic resources. The listing identifies lands that contain or have a high potential to contain historic resources, including archaeological sites, paleontological sites, aboriginal traditional use sites of a historic resource nature (burials, ceremonial sites, etc.), and/or historic structures. The listing can provide proponents with advance notification of possible historic resource concerns and may be used as a tool in planning projects.

The *Listing of Historic Resources* (accessed online June 2019) was searched for the project area. The search indicated that lands within 16-52-14 W4M, NE-17-52-12 W4M, and NW and NE-9-52-14 W4M, have no HRV, therefore a *Heritage Resources Act* Clearance is not required.

5 POTENTIAL IMPACTS TO SENSITIVE ENVIRONMENTAL FEATURES

The future property development will modify the landscape and change the land-use within the project area which may result in negative impacts that relate to wildlife and natural hydrology within the location and surrounding areas.

The project area has been historically used for agricultural purposes. The lands adjacent to the project area include homes, businesses, highway and rail transportation routes, a sewage treatment facility/lagoon, a cemetery, and a regional airport. It is suspected that a future development will modify the land-use of the project area to be similar to that of the neighbouring urban properties.

Future development activities may increase the potential for wildlife mortalities due to the destruction/alteration/reduction of wildlife habitat (removal of vegetation, alteration of wetlands, destruction of dens and nests, etc.). There may also be an increased potential for negative impacts associated with impacts to wetlands. The alteration or removal of wetlands reduces water storage and contaminant capture, decreases available habitat for wetland species, and modifies natural hydrology patterns.

6 GENERAL - MITIGATION OPTIONS

To reduce the potential for negative impacts to environmentally sensitive areas, that may result due to future development activities, specific mitigation measures should be considered and implemented.

6.1 Migratory Birds and Wildlife Protection

It is recommended that a pre-construction wildlife sweep be conducted within 7 days prior to the onset of vegetation clearing or construction activities, if activities are to be carried out between April 1 and August 15.

The residual effects of the project on wildlife are anticipated to be low. Overall, impacts on wildlife are expected to be relatively minimal due to the close proximity of the project to existing developments and location on agricultural lands. However, temporary indirect impacts on wildlife may result from increased noise and stimuli extending for distances into adjacent habitats. This noise and stimuli may cause edge effects, resulting in some species avoiding areas of adjacent habitats during construction. The impacts of disturbances associated with the project may cause some wildlife species to favor or avoid areas adjacent to the project during the activity. However, these residual impacts are expected to be low due to the high level of development in the surrounding area.

Sensitive species surveys (noted in Section 4.7) are to be conducted as per applicable directives. The relevant *Sensitive Species Inventory Guidelines* can be found online at https://www.alberta.ca/sensitive-species-inventory-guidelines.aspx

6.2 Fish and Fish Habitat Protection

The study area includes tributaries that are connected and within 2km of the Vermilion (Class C Watercourse). Due to the connectivity, these tributaries are categorized as Class C Unmapped Watercourses. The tributaries have potential for fish-bearing habitat, therefore works are subject to recommendations by a Qualified Aquatic Environmental Specialist (QAES). A QAES assessment and report may be required for activities that impact these tributaries.

The *Department of* Fisheries and Oceans 'Projects Near Water' self-assessment criteria will assist in determining if any future project development will require a *Request for Review* (DFO).

6.3 Soils Protection

In terms of soil protection, erosion and sedimentation are the primary concerns associated with a development project. A plan should be developed that outlines erosion and sediment control strategies to be implemented during the construction and post construction phases of the development project. This plan should outline short-term and long-term permanent controls which will safeguard the sensitive features (e.g. wetlands, watercourses, etc.), within the project area and adjacent lands from unnecessary inputs.

6.4 Vegetation Retention and Weed Management

In terms of vegetation, invasive species encroachment is the primary concern associated with a development project. A plan should be developed that outlines strategies for vegetation retention, revegetation and weed control (as per the Province of Alberta, *Weed Control Act* 2017). This plan should be implemented during the construction and post construction phases of the development project. If possible, the retention of existing vegetation is preferred as this strategy serves to prevent erosion and sedimentation and may reduce the encroachment of invasive species.

6.5 MINIMIZING THE ENVIRONMENTAL FOOTPRINT

A well designed and executed construction plan can help minimize the initial environmental impacts and reduce the overall environmental footprint caused by development activities. The plan should be developed to outline specific strategies to protect environmentally sensitive areas from situations that may arise as a result of construction activities. This plan should itemize all construction phase environmental protection strategies such as spill response, regulatory reporting, topsoil storage, weed management, re-vegetation and vegetation retention, setback/buffer distances, erosion and sedimentation protection, etc.

7 WETLANDS - MITIGATION OPTIONS

Wetland avoidance, minimization and replacement mitigation strategies are outlined under the Alberta Wetland Mitigation Directive (GoA, 2015, updated 2017). These strategies are in place to reduce to preserve the presence of vital wetlands within Alberta.

7.1 AVOIDANCE

As per the Alberta Wetland Mitigation Directive, the most desired option for any wetland is avoidance. There are many instances where avoidance is the only option considered; crown ownership, special designated lands, presence of endangered species, etc. For the purpose of this project, avoidance of wetlands may be feasible as development plans may be altered to avoid the wetlands within the project area.

Water Act Approval is not required if wetland avoidance is possible.

7.2 MINIMIZATION

Minimization is the second preference when planning a project if avoidance is not possible. It refers to minimizing both the direct and indirect effects on the wetland and the value of the wetland during development activities. For the purpose of this project, minimization of wetland impacts may be feasible as development plans may be altered to reduce impacts to the wetlands within the project area. In order to achieve this goal, alternate activities may be considered, or development plans may be modified.

Water Act Approval, and other related applications and approvals under the *Act*, are required if the wetland under the minimization strategy option.

7.3 REPLACEMENT

If permanent wetland loss is expected, a Replacement Proposal must accompany the *Water Act* application. A desktop delineation, as per the directive ABWRET-D, identified twenty-four wetlands within the project area totalling approximately 10.10ha. In the event these wetlands are eliminated due to project activities a replacement payment may be required. This area of Alberta falls under the in-lieu fee rate of $8,600.00/ha therefore the approximate in-lieu payment of $202,091.00 would need to be submitted to the current and appropriate Wetland Replacement Agency for the area. The approximate in-lieu fees, per wetland, are itemized within Table 1.

A map and details pertaining to the assigned wetland assessment unit and value, and current (2019) in-lieu rates are located in Appendix F of this report.

Table 7-3. Potential In-Lieu Replacement Costs for Wetland Impacts.

Wetland Identification	Wetland Value*	Wetland Classification	Wetland Area (ha)	Total In-Lieu Replacement Cost/ha**
Wetland 1	D	Primary [M][G][II], Secondary [M][G][II]	2.4452	$45,480.72
Wetland 2	D	Primary [M][G][II], Secondary [M][G][II]	0.9391	$17,467.26
Wetland 3	D	Primary [M][G][II], Secondary [M][G][II]	0.1462	$2,719.32
Wetland 4	D	Primary [M][G][II], Secondary [M][G][II]	0.0997	$1,854.42
Wetland 5	D	Primary [M][G][II], Secondary [M][G][II]	0.3971	$7,386.06
Wetland 6	D	Primary [M][G][II], Secondary [M][G][II]	0.1102	$2,049.72
Wetland 7	D	Primary [M][G][II], Secondary [M][G][II]	0.0209	$388.74
Wetland 8	D	Primary [M][G][II], Secondary [M][G][II]	0.0988	$27,453.60
Wetland 9	D	Primary [S][Wd][III], Secondary [M][G][III]	1.4760	$27,453.60
Wetland 10	D	Primary [M][G][II], Secondary [M][G][II]	0.1314	$2,444.04
Wetland 11	D	Primary [M][G][II], Secondary [M][G][II]	0.1012	$1,882.32
Wetland 12	D	Primary [S][Wd][III], Secondary [M][G][III]	0.5155	$9,588.30
Wetland 13	D	Primary [M][G][II], Secondary [M][G][II]	0.4484	$8,340.24
Wetland 14	D	Primary [M][G][II], Secondary [M][G][II]	0.1358	$2,525.88
Wetland 15	D	Primary [M][G][II], Secondary [M][G][II]	0.3041	$5,656.26
Wetland 16	D	Primary [M][G][II], Secondary [M][G][II]	0.0572	$1,063.92
Wetland 17	D	Primary [M][G][II], Secondary [M][G][II]	0.0489	$909.54
Wetland 18	D	Primary [M][G][II], Secondary [M][G][II]	0.1749	$3,253.14
Wetland 19	D	Primary [M][G][II], Secondary [M][G][II]	0.2264	$4,211.04
Wetland 20	D	Primary [M][G][II], Secondary [M][G][II]	0.2356	$4,382.16
Wetland 21	D	Primary [M][G][III], Secondary [M][G][II]	0.2803	$5,213.58
Wetland 22	D	Primary [M][G][II], Secondary [M][G][II]	0.7714	$14,348
Wetland 23	D	Primary [M][G][II], Secondary [M][G][II]	0.1974	$3,671.64
Wetland 24	D	Primary [M][G][II], Secondary [M][G][II]	0.2730	$2,347.80
Wetland 25	D	Primary [M][G][II], Secondary [M][G][II]	0.4646	$8.667.60

**Assumptions within table are based on historic values assigned to similar wetlands within the region. The wetlands have been delineated wetlands as per ABWRET-D directive but have not been submitted for an ABWRET Score.*

*** Based on desktop wetland delineations, a summary of the approximate wetland replacement for the study area (all of section 16-52-14 W4M, the Southeast ¼ Section of 17-52-12 W4M and a portion of the Northwest ¼ Section 9-52-14 W4M and portion of the Northeast ¼ Section 9-52-14 W4M. The values were calculated based on a replacement ratio of 1:1, relative wetland value assessment unit of 7, and an in-lieu rate of $18,600.00.*

In addition, any permanent or semi-permanent, shallow open water or marsh wetlands, are likely to have their ownership claimed by the provincial Crown under Section 3 of the *Public Lands Act* (GoA, 2000). Further investigations and regulatory applications may be required for assessing the permanence of the wetlands situated within the study area.

8 CONCLUSION AND SUMMARY

On behalf of the County of Minburn No. 27, X-Terra Environmental Services Ltd. completed a Biophysical Environmental Assessment of lands within 16-52-14 W4M, NE-17-52-12 W4M, and NW and NE-9-52-14 W4M, located East and Southeast of The Town of Vegreville, Alberta.

The information gathered throughout the Biophysical Environmental Assessment was interpreted to determine the potential for negative environmental impacts that may result from any future development activities. Based on the findings, sensitive environmental features were determined, and recommendations were proposed to mitigate the negative impacts.

The study area includes tributaries that are within 2km of the Vermilion River (Class C Watercourse). All Class C watercourses have potential for fish-bearing habitat, therefore works are subject to recommendations by a Qualified Aquatic Environmental Specialist (QAES). A QAES assessment and report may be required for activities that impact these tributaries. Several ephemeral and seasonal drainages were observed within the property; however, the historic aerial photos did not show inundation, nor did the drainages appear to have defined beds and banks. These drainages may meet the definition of a wetland, therefore impacts to the ephemeral drainages may require *Water Act* approval prior to disturbance.

The Department of Fisheries and Oceans 'Projects Near Water' self-assessment criteria will assist in determining if the future project development will require a Request for Review (DFO). It is not suspected that the wetlands and watercourses present in the project are fish bearing, however avoidance semi-permanent and permanent wetlands, as well as water courses connected to the Vermilion River should be considered. In the event further assessment confirms the presence of fish, approvals may be required.

Twenty-three marsh wetlands and two swamp wetlands were identified and classified within the study area. Through a review of historical aerial photos, it was determined that only two wetlands (Wetlands 9 and 12) were deemed to be of a more permanent nature as their presence was consistent from 1962 to current date. Wetlands 1, 2 and 5 border the north edge of the study area and are directly adjacent to a lagoon located to the north; the presence of these wetlands has been consistent only since the construction of the lagoon. It is assumed that the natural hydrology of the area was altered due to the lagoon and the wetlands were formed due to human interactions. However, the wetlands have now become naturalized. From 1962 to present, the presence of wetlands 3, 4, 6-8, 10, 11, and 13-25 are observed to be temporary in nature. Through the historical aerial review, it was observed that these wetlands were farmed through during most of the years. If any impacts to wetlands are to occur, *Water Act* Approval is required. In addition to *Water Act* approval, wetland replacement or in-lieu fees is required for the disturbance of all wetlands (excluding ephemeral wetlands).

In addition, any permanent or semi-permanent, shallow open water or marsh wetlands, are likely to have their ownership claimed by the provincial Crown under Section 3 of the *Public Lands Act* (GoA, 2000). Further investigations and regulatory applications may be required for assessing the permanence of the wetlands situated within the study area.

The existing information review indicated that Sharp-tailed Grouse, Sensitive Raptor and other sensitive and species of concern occur in the project area. Prior to development activities, sensitive species surveys are to be conducted as per the applicable Sensitive Species Inventory Guidelines.

All activities pertaining to any future developments must be in compliance with the *Migratory Bird and Convention Act*. A pre-construction wildlife and nest sweep is recommended within 7 days prior to the onset of construction activities.

Prior to any development activities, specific plans such as an ECO plan should be developed that outline strategies to protect the soil, minimize erosion, retain and re-establish vegetation, and control invasive weed species. Also, a construction plan should be developed to include strategies to minimize the initial environmental impacts and reduce the overall environmental footprint caused by development activities.

Respectfully submitted,

Theresa Veitch
Environmental Consultant

Reviewed by,

Lacey Teasdale, RT(Ag), EP
Environmental Consultant

X-Terra Environmental Services Ltd.

9 EVALUATION OF INFORMATION AND REPORTING

This report has been prepared and the work referred to within, has been undertaken by X-Terra Environmental Services Ltd. (X-Terra) for the named client using generally accepted environmental consulting practices. The material within reflects X-Terra's best judgment based on the material available at the time of preparation. It is intended for the exclusive use of the client, its affiliated companies and partners, their respective insurers, agents, employees, advisors, and applicable regulatory agencies. Any use, reliance on, or decision based on this report made by any person other than those identified above, is the sole responsibility of such other person. X-Terra makes no representation or warranty to any other person with regard to this report and the work referred to within and accepts no duty or care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties, or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made, or any action taken based on this report, or the work referred to in this report.

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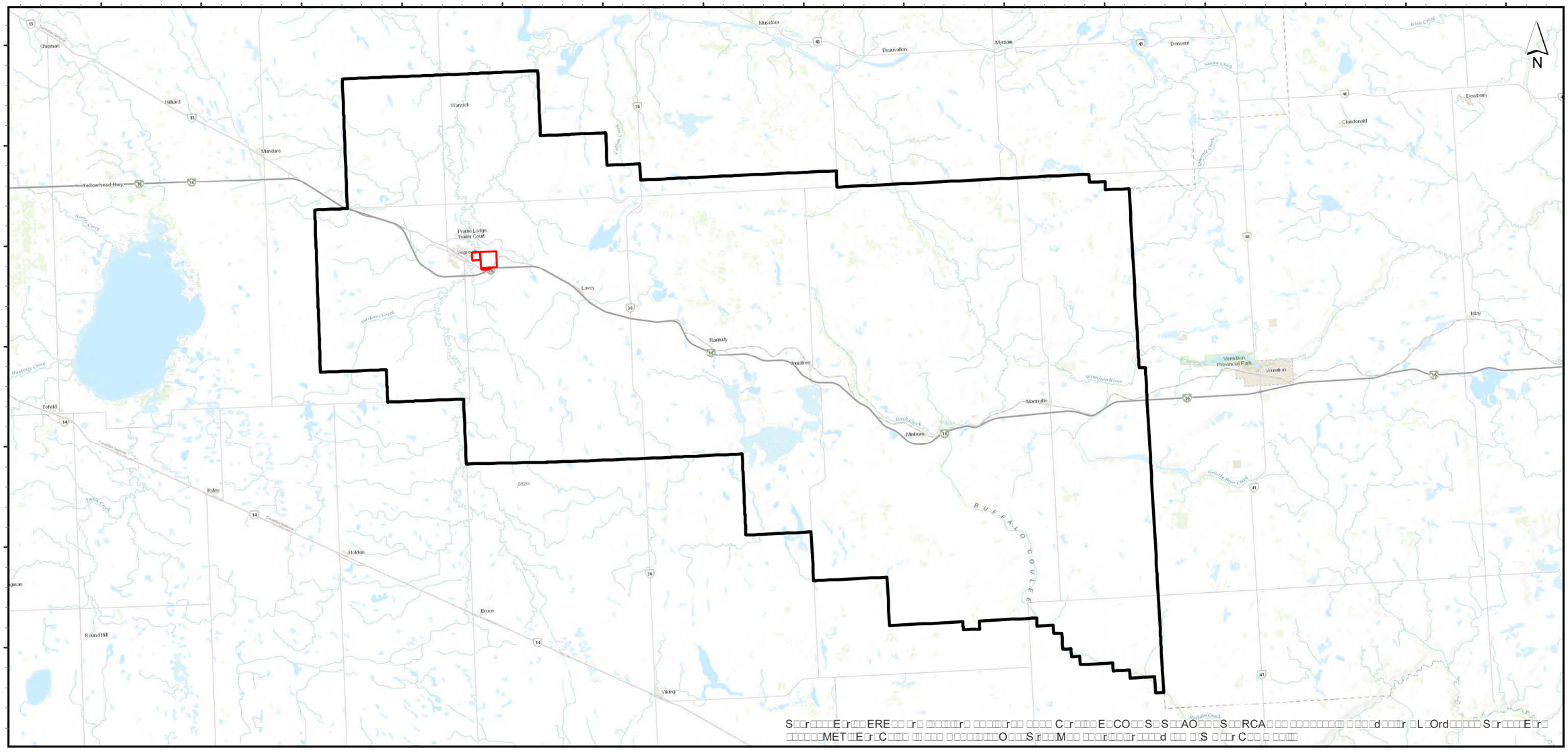
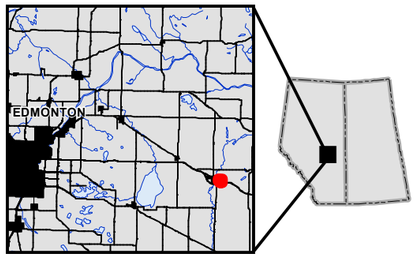
APPENDIX A

TOPOGRAPHIC OVERVIEW





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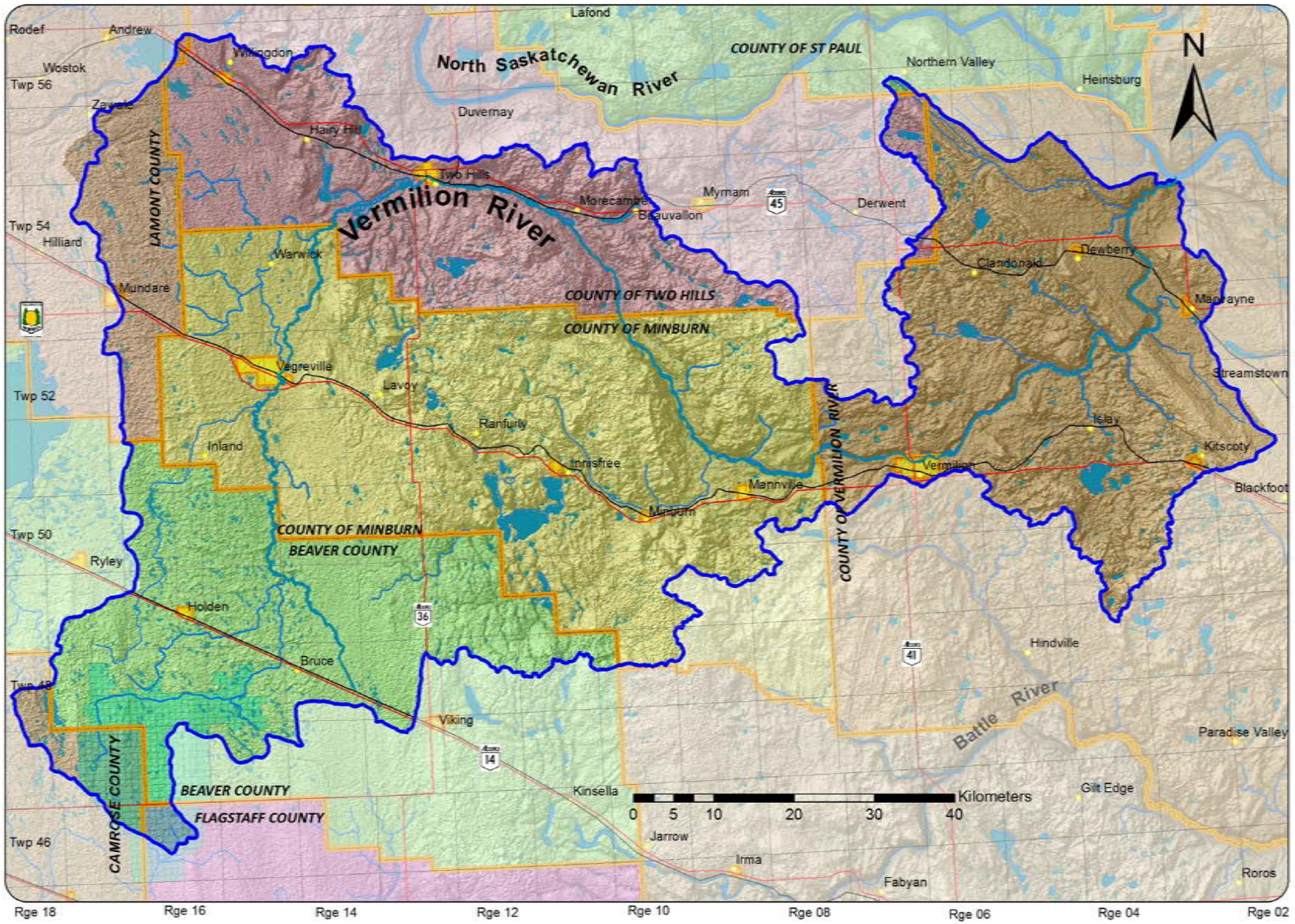
APPENDIX B

WATERSHED MAP

FLOOD HAZARD MAP

Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

Vermilion River Watershed Basemap



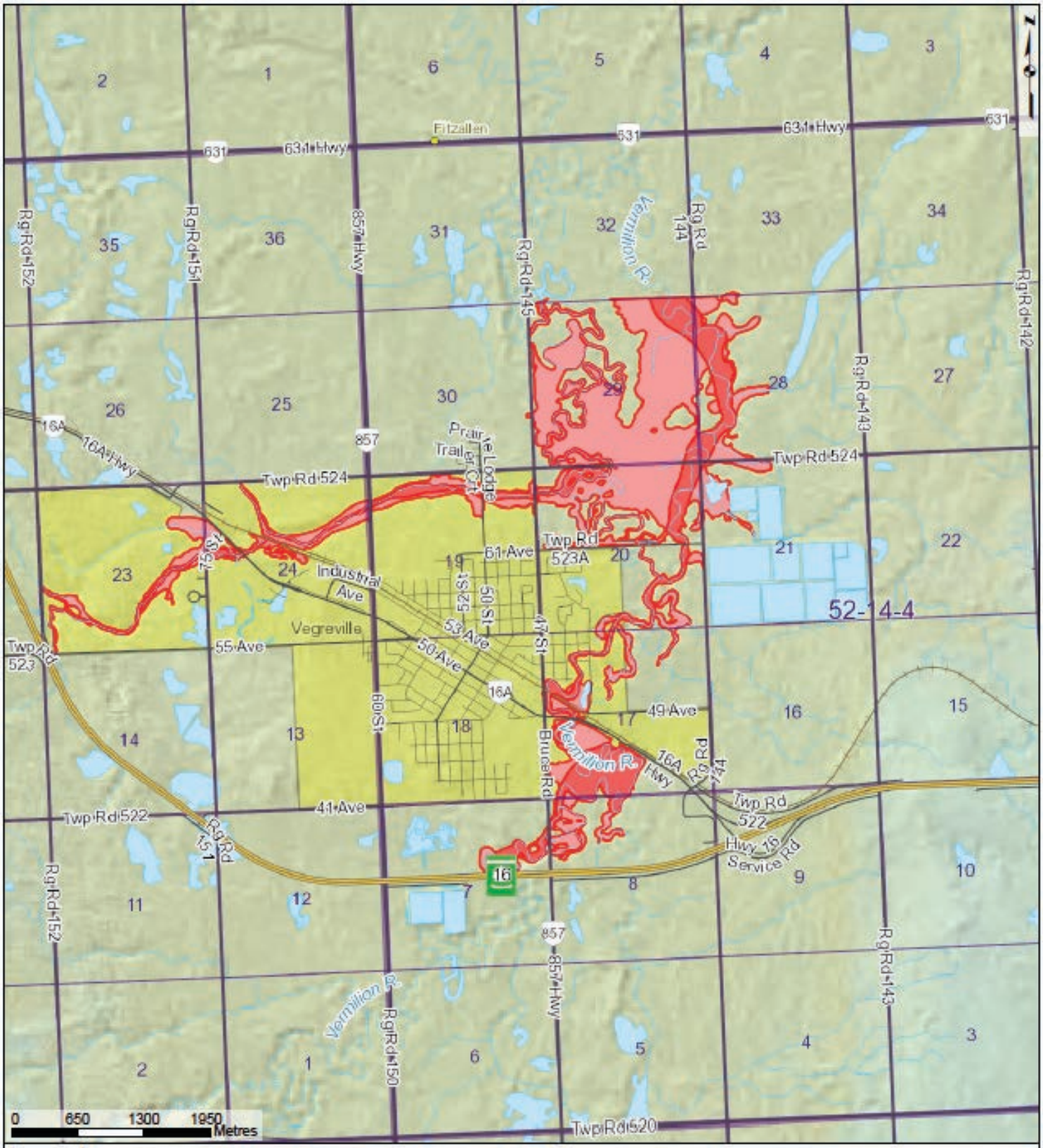
Legend

- Vermilion River
- Vermilion Watershed
- Urban Municipalities
- Rural Municipalities
- Holden Drainage District
- Townships
- Highway
- Roads
- Rail

Vermilion River WATERSHED ALLIANCE

North Saskatchewan Watershed Alliance

Canada



Legend

- Floodway
- Flood Fringe
- Overland Flow (Flood Fringe)
- Under Review
- 855.09 m Cross Section and Design Flood Level
- Water Body
- First Nation Boundary
- Municipal Boundary

Information as depicted is subject to change, therefore the Government of Alberta assumes no responsibility for discrepancies at time of use.

Flood Hazard Map

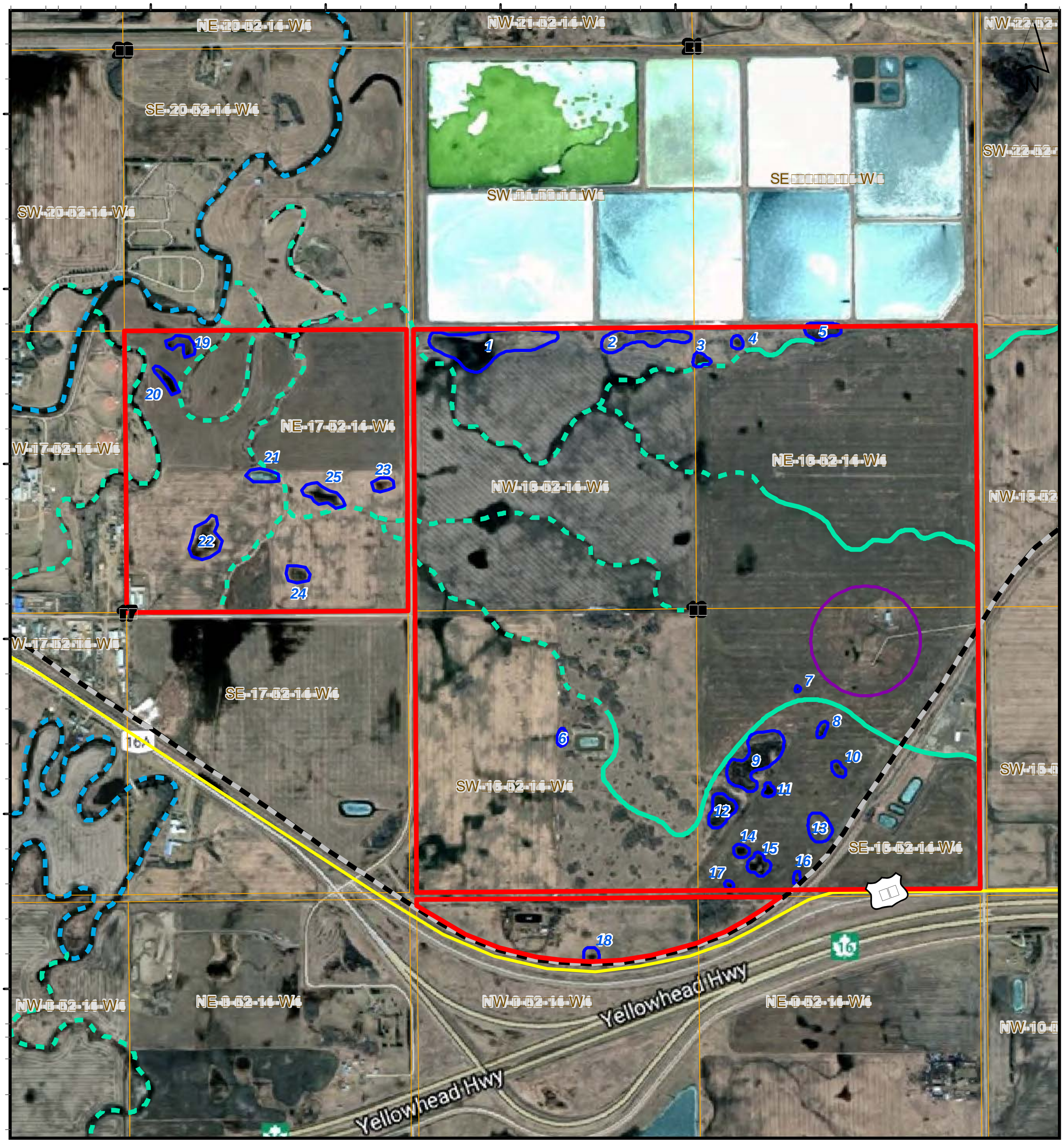
Projection:	Datum:	Date:
ALBERTA 10TM	NAD 83	2018-Dec-20

maps.srd.alberta.ca/FloodHazard/

APPENDIX C

AIR PHOTOGRAPHS

AIR PHOTO SUMMARY AND YEARLY COMPARISON



LEGEND

- PROJECT LOCATION
- WETLAND
- FARMSTEAD
- CLASS C UNMAPPED
- CLASS C WATERCOURSE
- TRIBUTARY
- HIGHWAY
- RAILWAY

IMAGERY AND PHOTO SOURCE

GOOGLE IMAGERY

REFERENCE

NATURAL RESOURCES CANADA CENTRE FOR TOPOGRAPHIC INFORMATION

ALBERTA ENVIRONMENT and SUSTAINABLE RESOURCE DEVELOPMENT AIR PHOTO DISTRIBUTION

GOOGLE EARTH ESRI IMAGERY

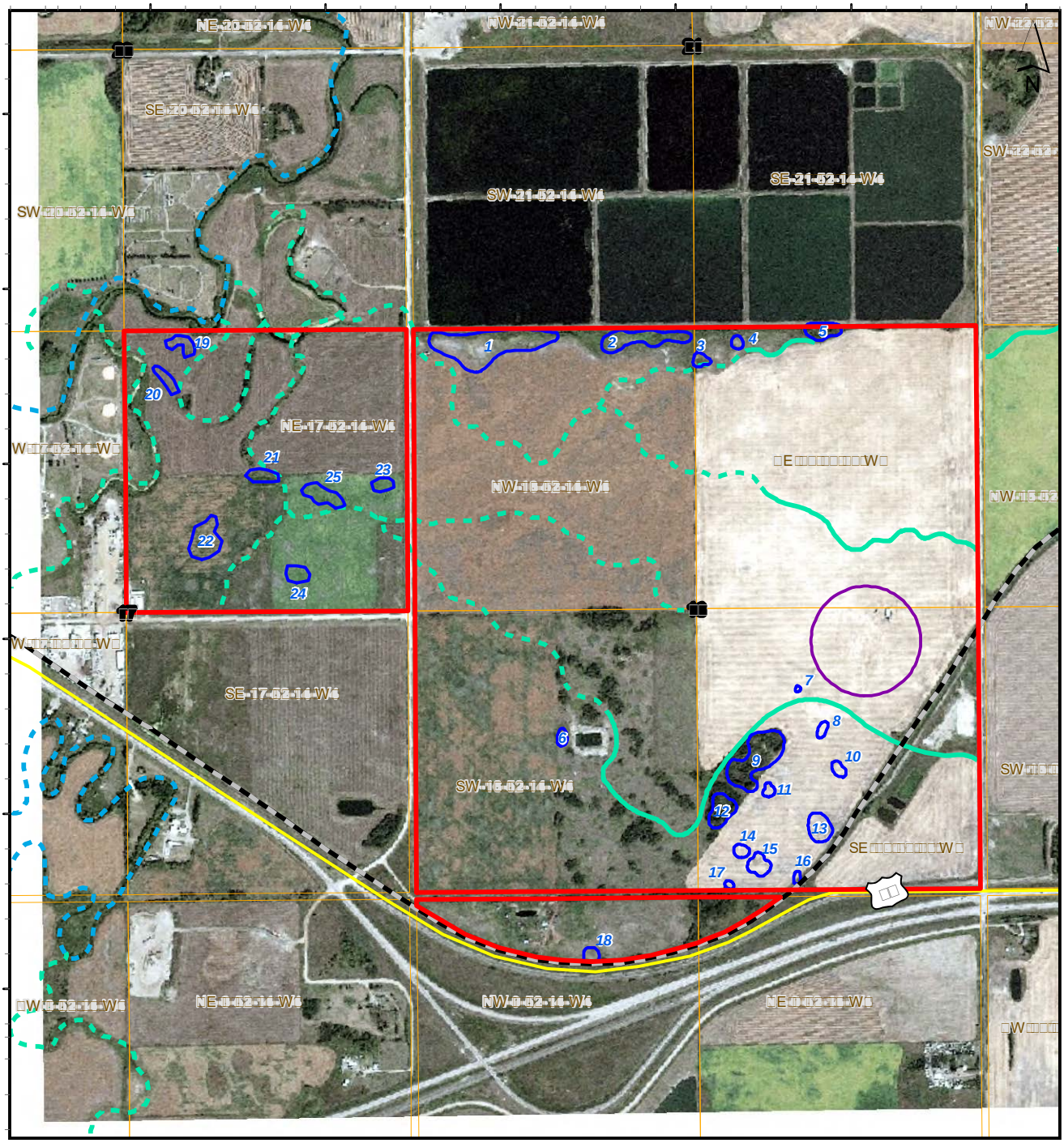
PROJECT: COUNTY OF MINBURN
16-52-14-W4M; Portions of 9-52-14 W4M and NE-17-52-14 W4M

TITLE: BIOPHYSICAL ENVIRONMENTAL ASSESSMENT

SCALE	DATUM	PROJECTION	DATE	DRAWN	REVIEWED
1:17,500	NAD 83	UTM Z12	2019-06-04	GH	TV

FIGURE

X-TERRA



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COUNTY OF MINBURN
16-52-14-W4M; Portions of 9-52-14 W4M and NE-17-52-14 W4M

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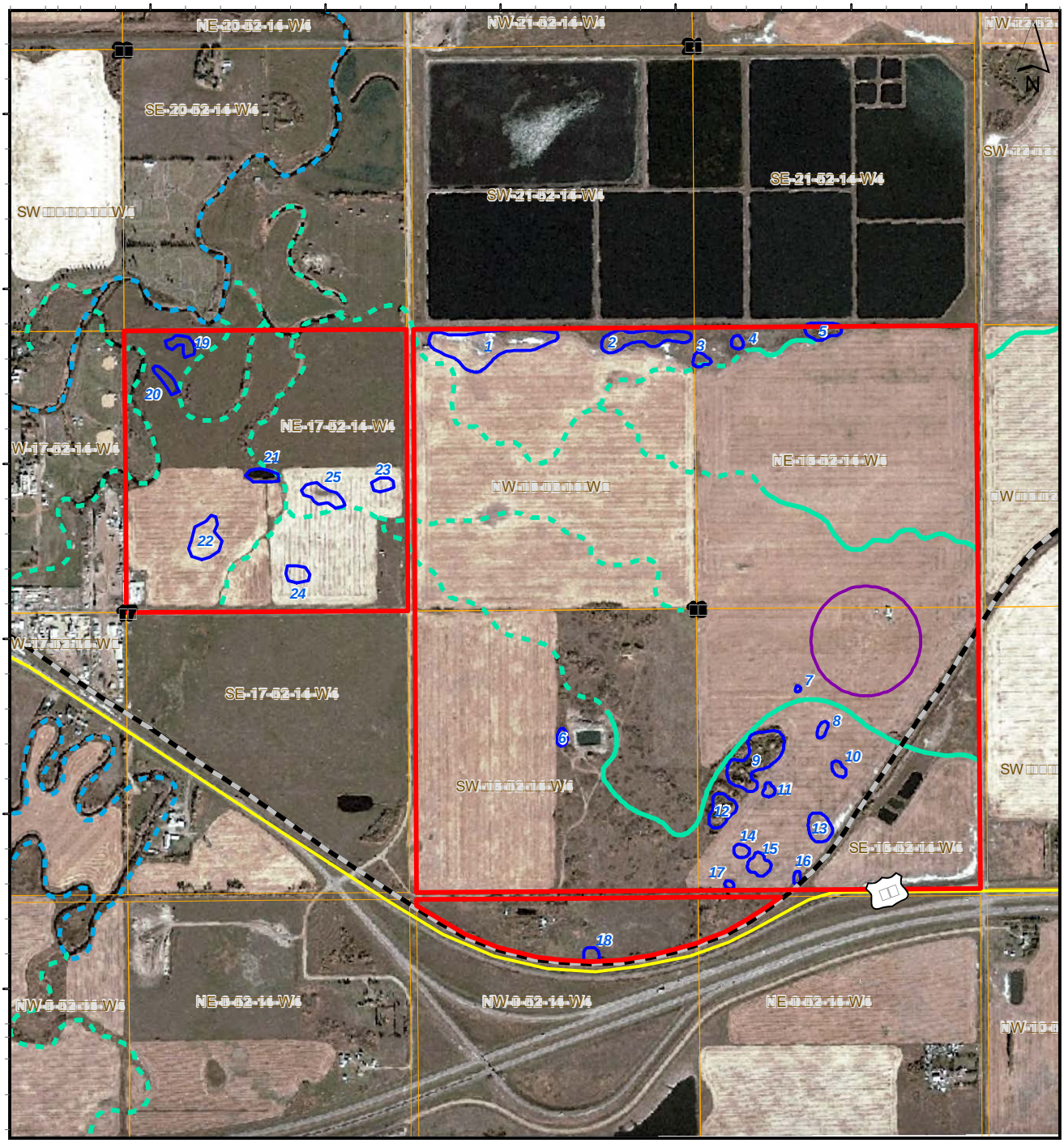

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COUNTY OF MINBURN
16-52-14-W4M; Portions of 9-52-14 W4M and NE-17-52-14 W4M

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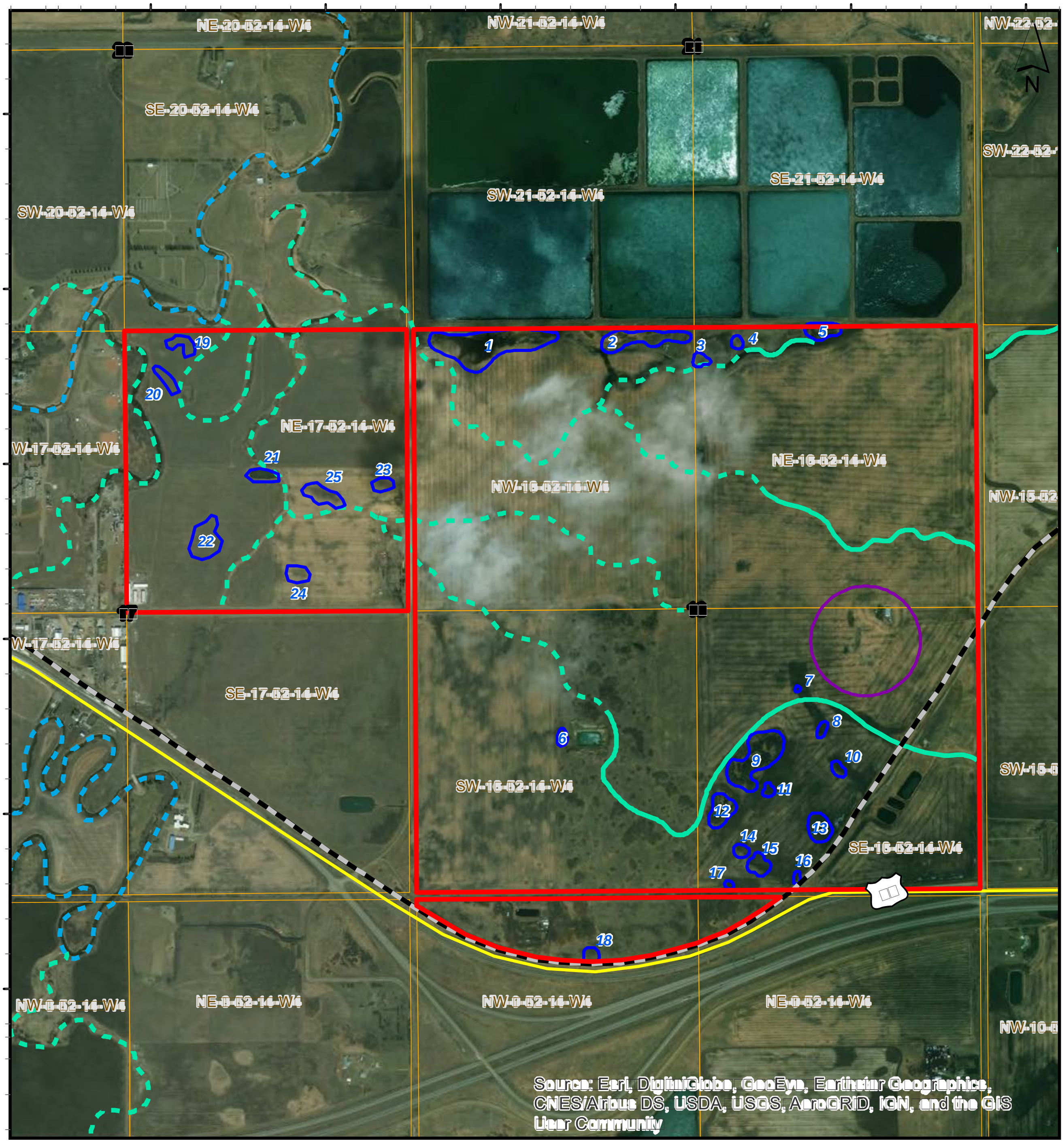

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□RO□ECT□ **COUNTY OF MINBURN**
16-52-14-W4M; Portions of 9-52-14 W4M and NE-17-52-14 W4M

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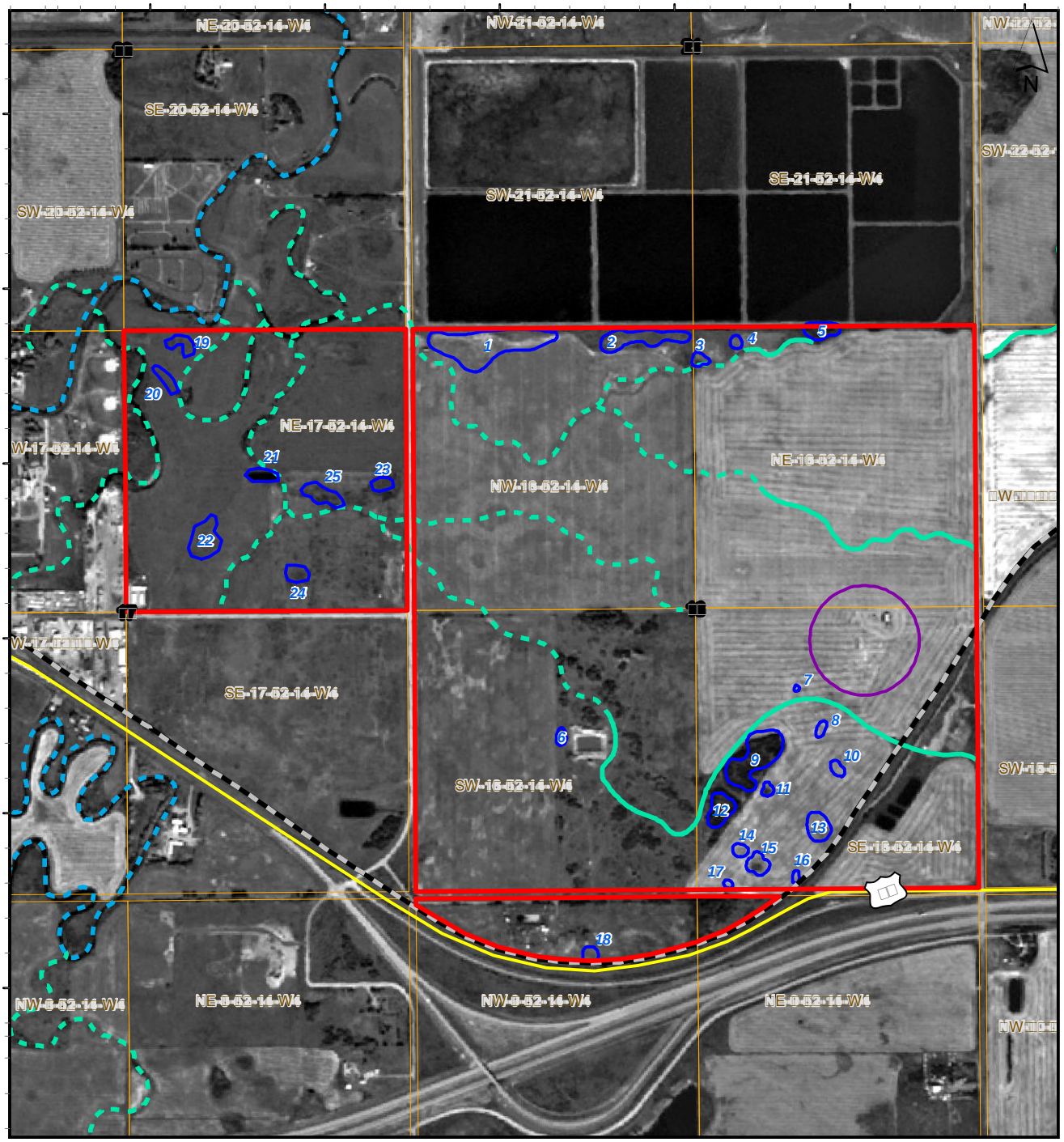

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COUNTY OF MINBURN
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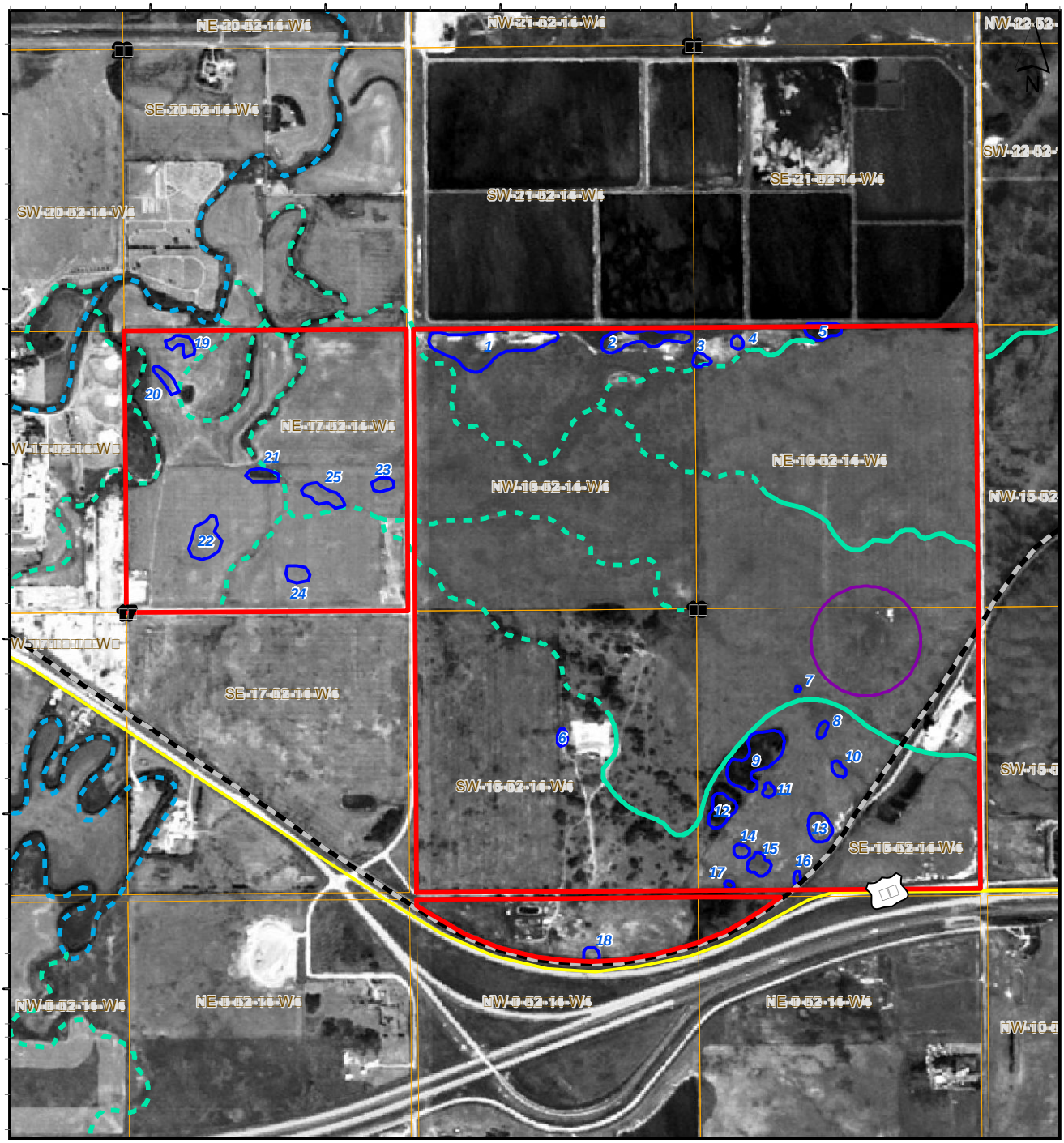

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COUNTY OF MINBURN
16-52-14-W4M; Portions of 9-52-14 W4M and NE-17-52-14 W4M

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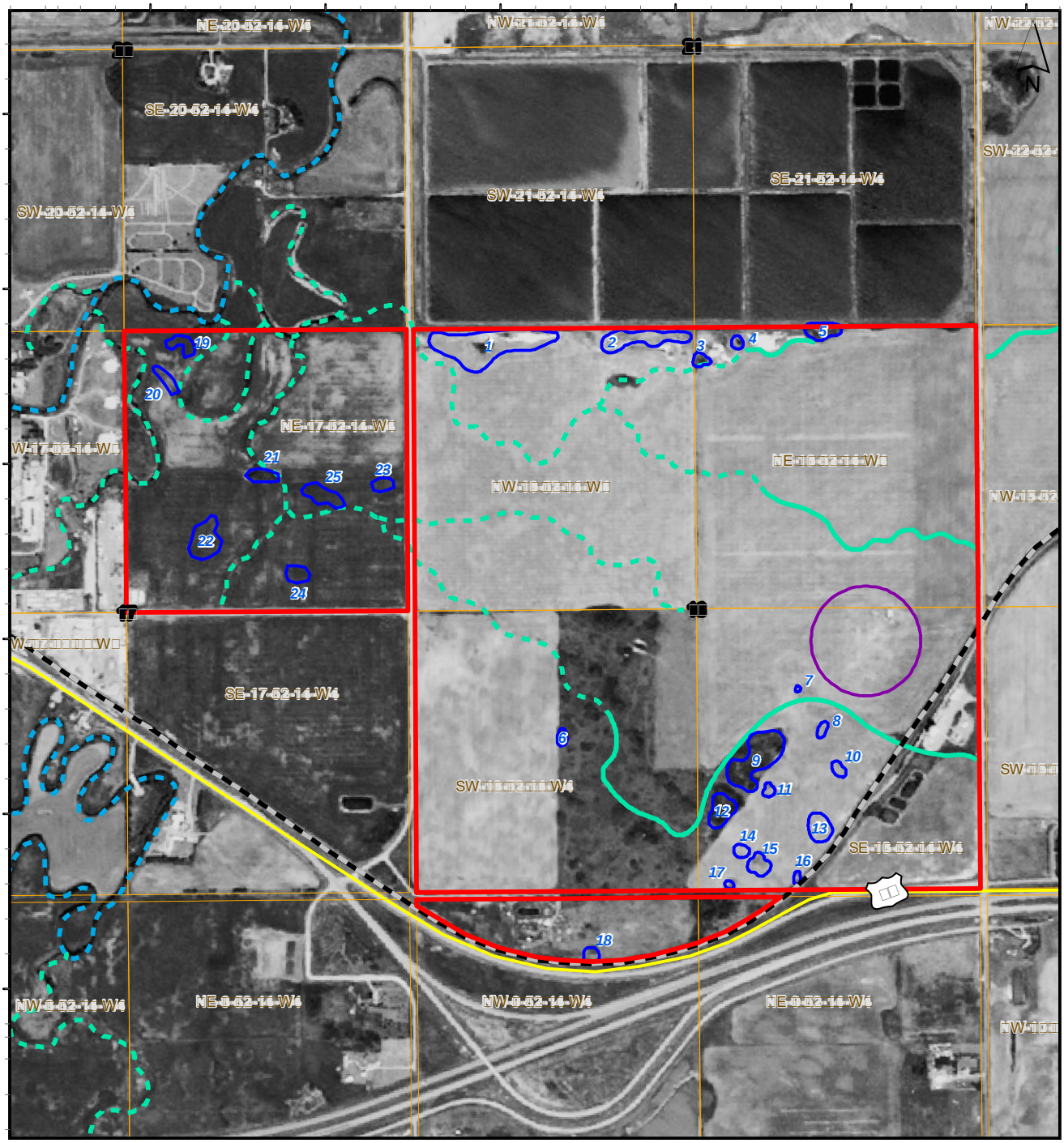

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COUNTY OF MINBURN
16-52-14-W4M; Portions of 9-52-14 W4M and NE-17-52-14 W4M

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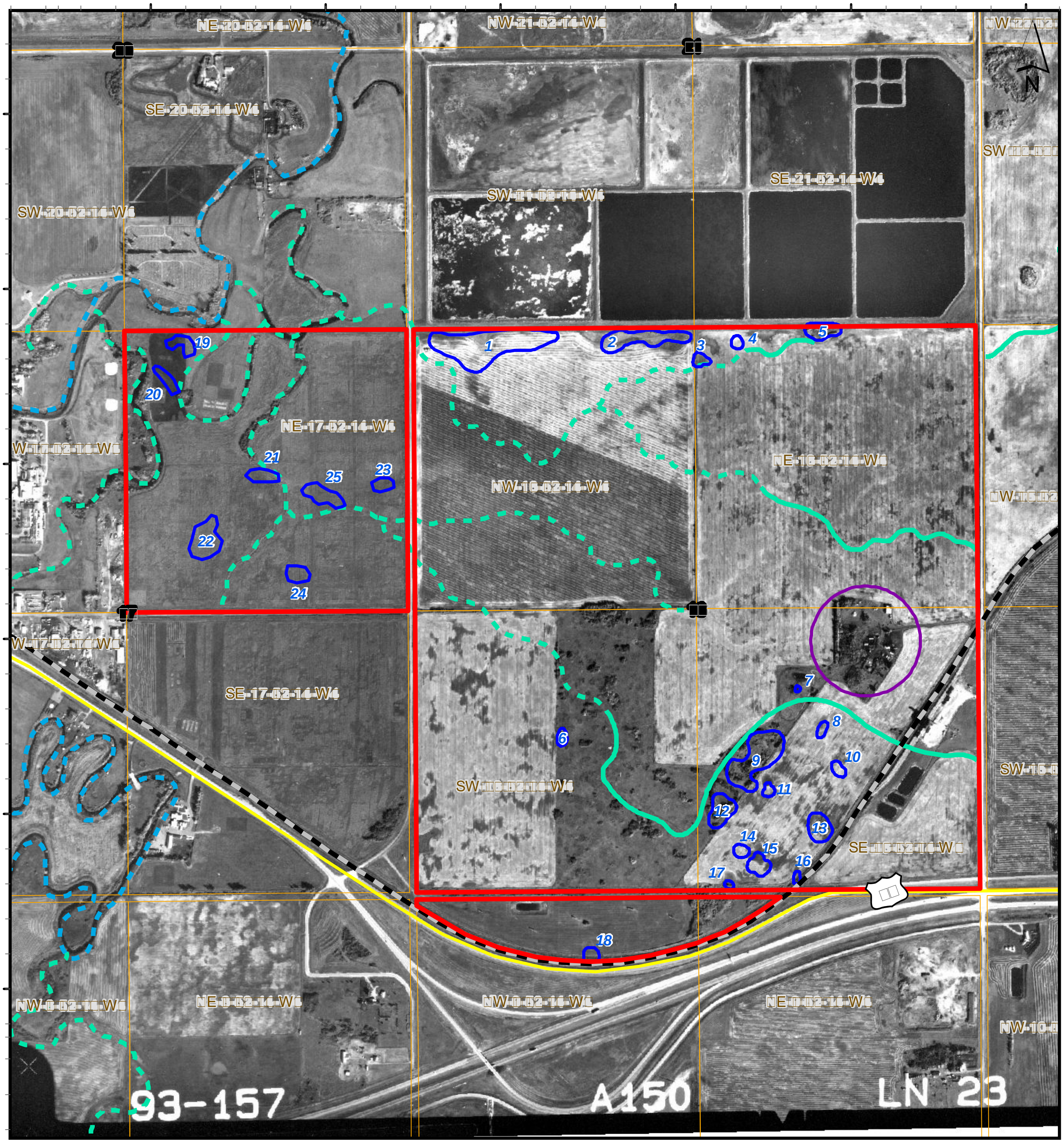

LEGEND

- PROJECT LOCATION
- WETLAND
- FARMSTEAD
- CLASS C UNMAPPED
- CLASS C WATERCOURSE
- TRIBUTARY
- HIGHWAY
- RAILWAY

IMAGERY (AIR PHOTO) SOURCE

AIR PHOTO

REFERENCE

NATURAL RESOURCES CANADA CENTRE FOR TOPOGRAPHIC INFORMATION
ALBERTA ENVIRONMENT AND SUSTAINABLE RESOURCE DEVELOPMENT AIR PHOTO DISTRIBUTION
GOOGLE EARTH ESRI IMAGERY

PROJECT: **COUNTY OF MINBURN**
16-52-14-W4M; Portions of 9-52-14 W4M and NE-17-52-14 W4M

TITLE: **BIOPHYSICAL ENVIRONMENTAL ASSESSMENT**

SCALE	DATUM	PROJECTION	DATE	DRAWN	REVIEWED
1:17,500	NAD 83	UTM Z12	2019-06-04	GH	TV

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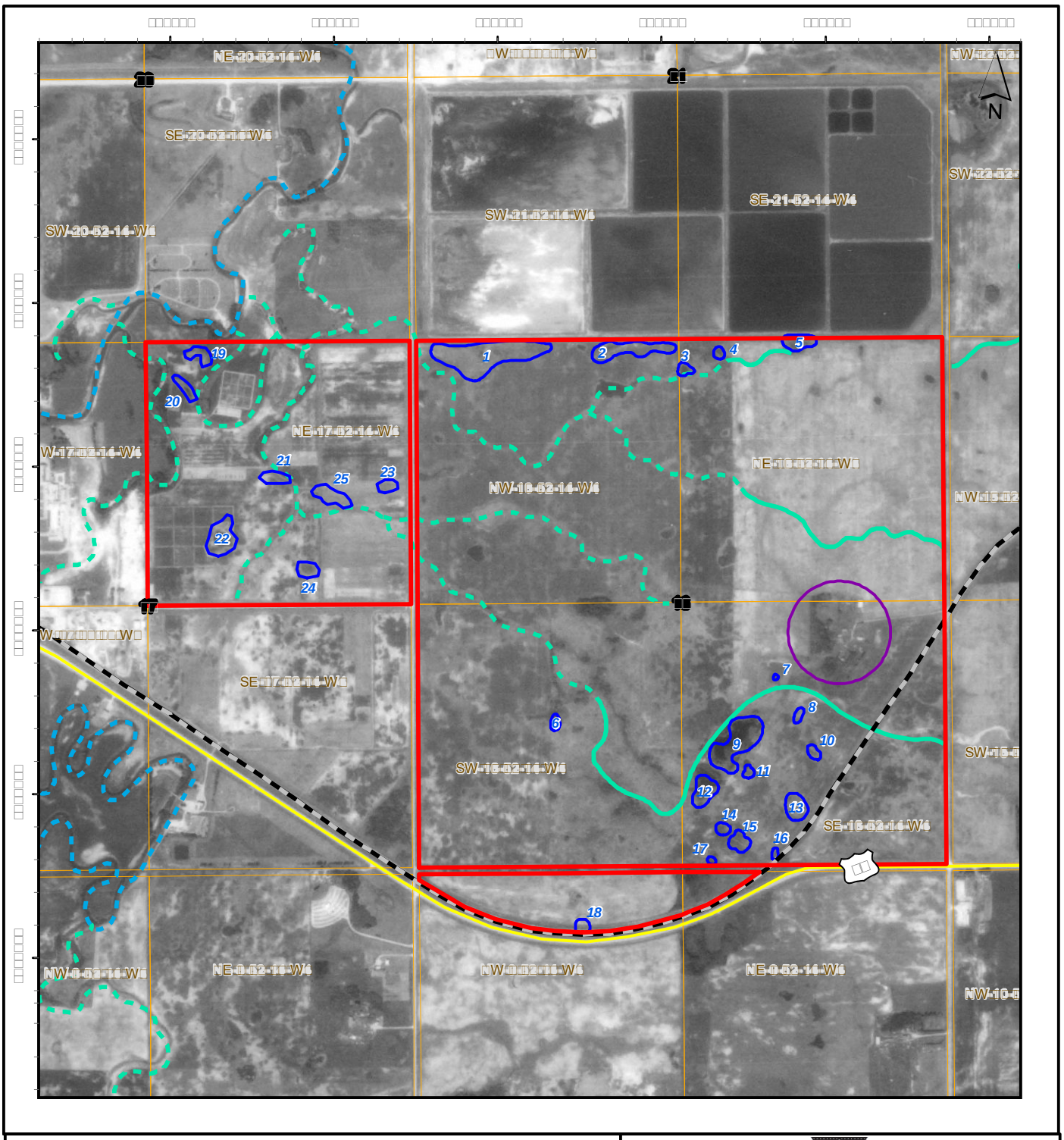

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COUNTY OF MINBURN
16-52-14-W4M; Portions of 9-52-14 W4M and NE-17-52-14 W4M

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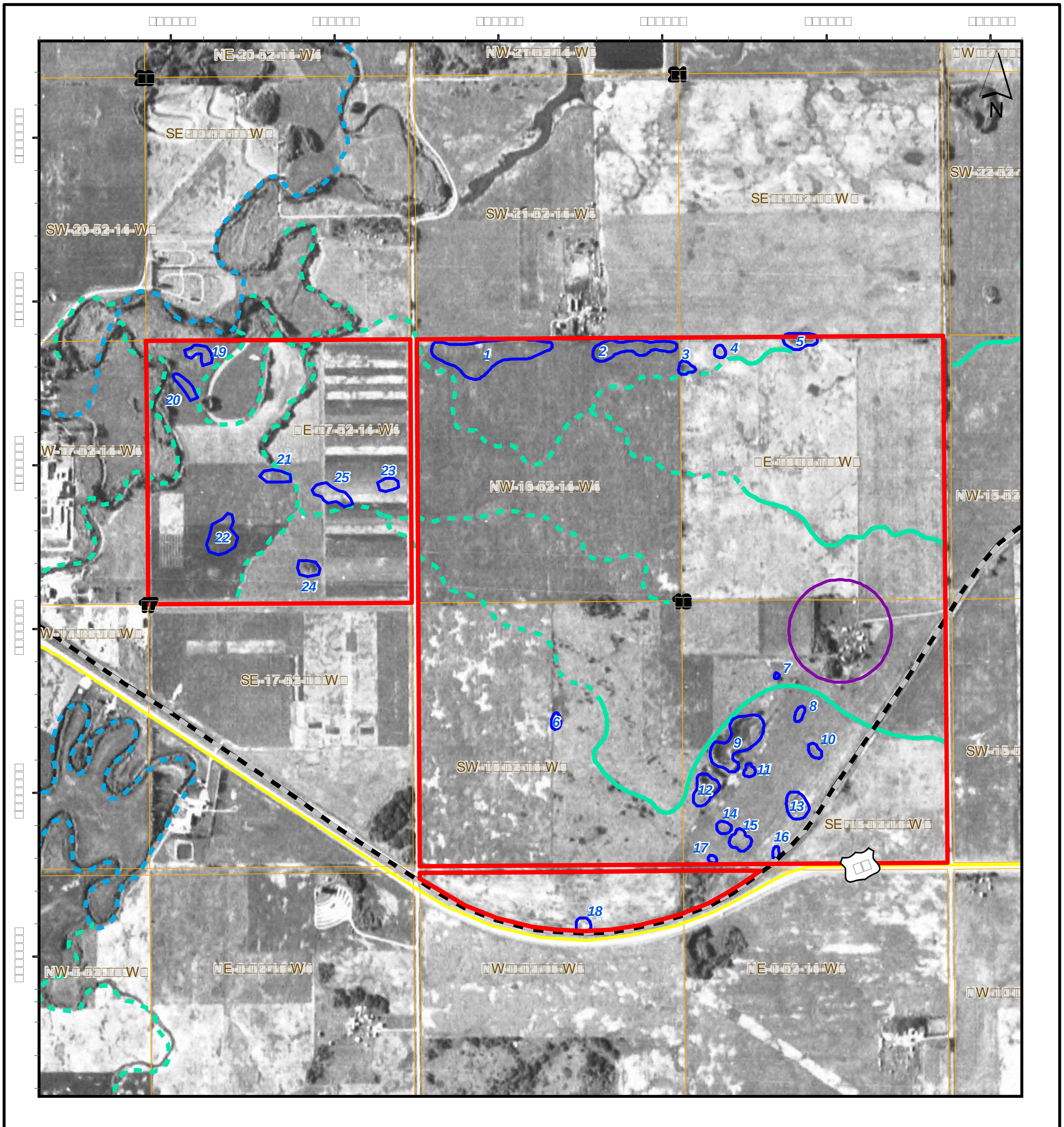

LEGEND

- PROJECT LOCATION
- WETLAND
- FARMSTEAD
- CLASS C UNMAPPED
- CLASS C WATERCOURSE
- TRIBUTARY
- HIGHWAY
- RAILWAY

IMAGERY / AIR PHOTO SOURCE

AIR PHOTO

REFERENCE

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SCALE	DATUM	PROJECTION	DATE	DRAWN	REVIEWED
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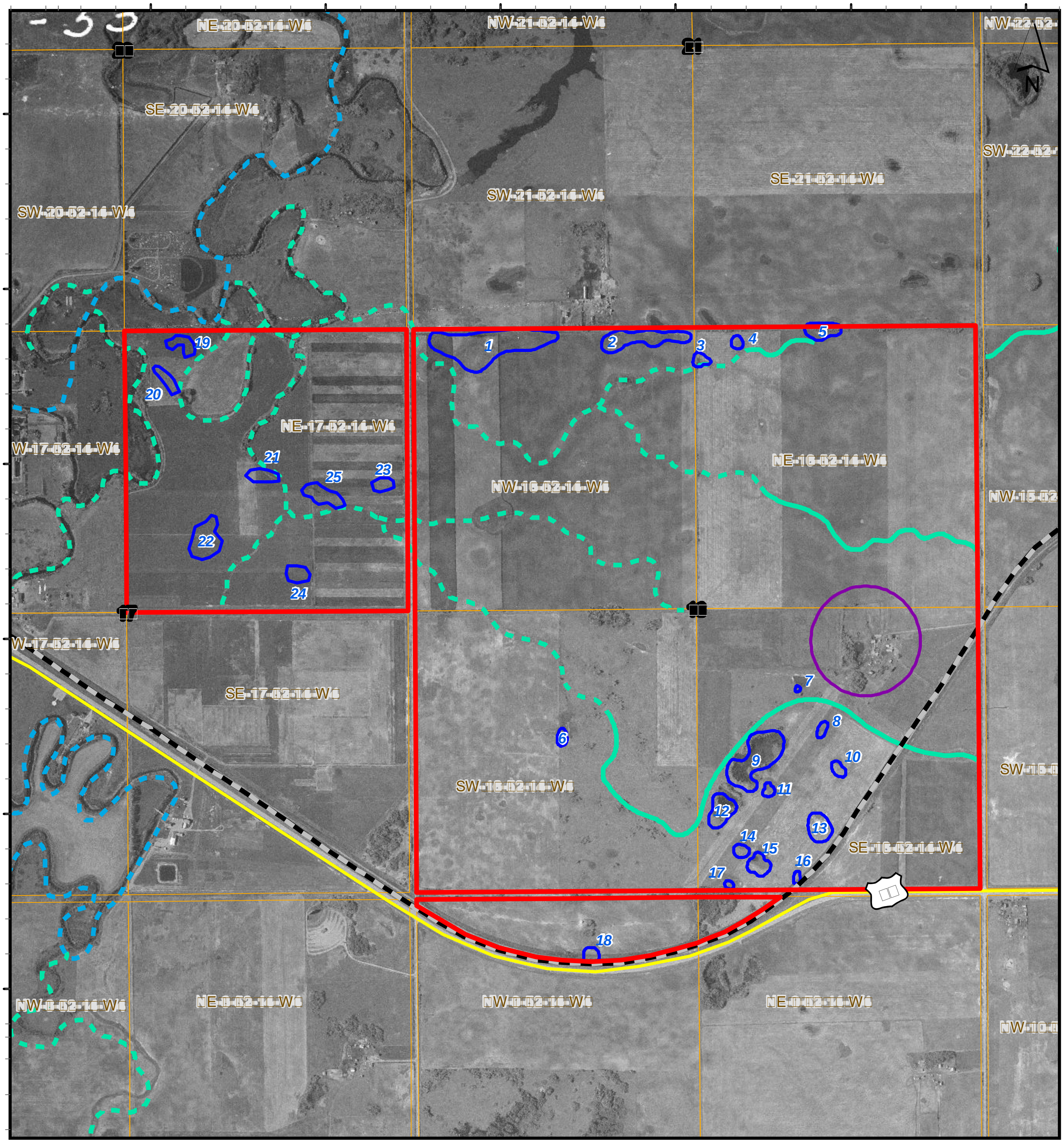

LEGEND

- PROJECT LOCATION
- WETLAND
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and NE-17-52-14 W4M

TITLE: **BIOPHYSICAL ENVIRONMENTAL ASSESSMENT**

SCALE	DATUM	PROJECTION	DATE	DRAWN	REVIEWED
1:17,500	NAD 83	UTM Z12	2019-06-04	GH	TV

FIGURE

AIR PHOTO SUMMARY AND YEARLY COMPARISON
ENVIRONMENTALLY SENSITIVE FEATURES

Sensitive Feature(s): 2 Consistent Wetlands, Class C Watercourse (Vermilion River) and Tributaries
AWCS Wetland Class(es): Seasonal, Temporary, Semi-Permanent and Permanent – Marshes

Photo Date	Photo ID	Season	Precipitation Year	Precipitation Month	Photo Notes
1962-05-23	**AS 0818 LINE# 5311 PIC# 53**	**S**	**W** preceded by 2 below average years	**Third wettest month**	A Coded Class C Watercourse is present within 2km of the ASP lands. As of current (2019), there are specific tributaries that are coded as Class C Unmapped watercourses that connect to the Vermilion River; they run through NE-17-52-14 W4M, NW-16-52-14 W4M, SW-16-52-14 W4M, and NE-16-52-14 W4M; during this period of time there are no landscape features that support the presence of these tributaries in all of these areas, with the exception of a presence seen within NE-17-52-14 W4M. No lagoon present to the North; wetlands are not developed on the North edge of the ASP lands, as seen in the air photos from 1993 to 2018. Minimal wetlands are present, with the exception of two significant wetlands that are located in 2 and 7-16-52-14 W4M; these wetlands have not been farmed through and are considered marshes, with a wooded riparian area. The wetlands that are visible in the air photos between 1983-2018 are not present. A single lane highway is located slightly to the South of the future development area and runs in an East/West direction. A rail line runs through the Southeast corner of the future development area; no buildings are located on the site adjacent to the rail line.

S=Spring; Sum=Summer; F=Fall; D=Dryer; N=Normal; W=Wetter; N/A=Not Available
* Assumption Based on the Details Within the Photo

AIR PHOTO SUMMARY AND YEARLY COMPARISON
ENVIRONMENTALLY SENSITIVE FEATURES

Sensitive Feature(s): 2 Consistent Wetlands, Class C Watercourse (Vermilion River) and Tributaries
AWCS Wetland Class(es): Seasonal, Temporary, Semi-Permanent and Permanent – Marshes

Photo Date	Photo ID	Season	Precipitation Year	Precipitation Month	Photo Notes
1970-08-15	**AS 1110 LINE# 35 PIC# 138**	**Sum**	**D** preceded by four below average years	**D**	A Coded Class C Watercourse is present within 2km of the ASP lands. As of current (2019), there are specific tributaries that are coded as Class C Unmapped watercourses that connect to the Vermilion River; they run through NE-17-52-14 W4M, NW-16-52-14 W4M, SW-16-52-14 W4M, and NE-16-52-14 W4M; during this period of time there are no landscape features that support the presence of these tributaries in all of these areas, with the exception of a presence seen within NE-17-52-14 W4M. No lagoon present to the North; wetlands are not developed on the North edge of the ASP lands as seen in the air photos from 1993 to 2018. Minimal wetlands are present, with the exception of two significant wetlands that are located in 2 and 7-16-52-14 W4M; these wetlands have not been farmed through and are considered marshes, with a wooded riparian area. The wetlands that are visible in the air photos between 1983-2018 are not present. A single lane highway is located slightly to the South of the future development area and runs in an East/West direction. A rail line runs through the Southeast corner of the future development area; no buildings are located on the site adjacent to the rail line.

S=Spring; Sum=Summer; F=Fall; D=Dryer; N=Normal; W=Wetter; N/A=Not Available
* Assumption Based on the Details Within the Photo

AIR PHOTO SUMMARY AND YEARLY COMPARISON
ENVIRONMENTALLY SENSITIVE FEATURES

Sensitive Feature(s): 2 Consistent Wetlands, Class C Watercourse (Vermilion River) and Tributaries
AWCS Wetland Class(es): Seasonal, Temporary, Semi-Permanent and Permanent – Marshes

Photo Date	Photo ID	Season	Precipitation Year	Precipitation Month	Photo Notes
1983-07-31	**AS 2793 LINE# 52 PIC# 27**	**Sum**	**W** preceded by one above average year	**Second wettest month**	A Coded Class C Watercourse is present within 2km of the ASP lands. As of current (2019), there are specific tributaries that are coded as Class C Unmapped watercourses that connect to the Vermilion River; they run through NE-17-52-14 W4M, NW-16-52-14 W4M, SW-16-52-14 W4M, and NE-16-52-14 W4M; during this period of time there are minimal landscape features that support the presence of these tributaries but their presence is more significant than in previous years. The lagoon to the North is now present; wetlands look as though they are starting to develop on the North edge of the site adjacent to the lagoon that may be attributed to the lagoon development (not natural hydrology). Minimal wetlands are present, with the exception of two significant wetlands that are located in 2 and 7-16-52-14 W4M; these wetlands have not been farmed through and are considered marshes, with a wooded riparian area. A single lane highway is located slightly to the South of the future development area and runs in an East/West direction. A rail line runs through the Southeast corner of the future development area; no buildings are located on the lands adjacent to the rail line.

S=Spring; Sum=Summer; F=Fall; D=Dryer; N=Normal; W=Wetter; N/A=Not Available
* Assumption Based on the Details Within the Photo

AIR PHOTO SUMMARY AND YEARLY COMPARISON
ENVIRONMENTALLY SENSITIVE FEATURES

Sensitive Feature(s): 2 Consistent Wetlands, Class C Watercourse (Vermilion River) and Tributaries
AWCS Wetland Class(es): Seasonal, Temporary, Semi-Permanent and Permanent – Marshes

Photo Date	Photo ID	Season	Precipitation Year	Precipitation Month	Photo Notes
1993-09-13	**AS 4454 LINE# 23 PIC# 181**	**F**	**W** preceded by three below average years	**N/A**	A Coded Class C Watercourse is present within 2km of the ASP lands. As of current (2019), there are specific tributaries that are coded as Class C Unmapped watercourses that connect to the Vermilion River; they run through NE-17-52-14 W4M, NW-16-52-14 W4M, SW-16-52-14 W4M, and NE-16-52-14 W4M; during this period of time there are no landscape features that support the presence of these tributaries in all of these areas, with the exception of a presence seen within NE-17-52-14 W4M. A dugout, that was not present in previous years, is no present on the most Northerly border of NW-9-52-14 W4; this wet area is not deemed as a wetland as it has not naturalized. The lagoon to the North is now present; wetlands developed on the North edge of the future development area adjacent to the lagoon that may be attributed to the lagoon development (not natural hydrology). Minimal wetlands are present, other than those which occur near the lagoon, with the exception of two significant wetlands that are located in 2 and 7-16-52-14 W4M; these wetlands have not been farmed through and are considered marshes, with a wooded riparian area. Highway 16 (double lane) is located slightly to the South of the future development area and runs in an East/West direction. A rail line runs through the Southeast corner of the future development area; buildings are located to the Southeast of this rail line that are assumed to be loading/unloading areas.

S=Spring; Sum=Summer; F=Fall; D=Dryer; N=Normal; W=Wetter; N/A=Not Available
* Assumption Based on the Details Within the Photo

AIR PHOTO SUMMARY AND YEARLY COMPARISON
ENVIRONMENTALLY SENSITIVE FEATURES

Sensitive Feature(s): 2 Consistent Wetlands, Class C Watercourse (Vermilion River) and Tributaries
AWCS Wetland Class(es): Seasonal, Temporary, Semi-Permanent and Permanent – Marshes

Photo Date	Photo ID	Season	Precipitation Year	Precipitation Month	Photo Notes
2006	**Abadata 2016**	**F***	**W** preceded by one above average year	**N/A**	A Coded Class C Watercourse is present within 2km of the future development area. As of current (2019), there are specific tributaries that are coded as Class C Unmapped watercourses that connect to the Vermilion River; they run through NE-17-52-14 W4M, NW-16-52-14 W4M, SW-16-52-14 W4M, and NE-16-52-14 W4M; during this period of time there are no landscape features that support the presence of these tributaries in all of these areas, with the exception of a presence seen within NE-17-52-14 W4M. A dugout, that was constructed in/around 1993, is no present on the most Northerly border of NW-9-52-14 W4; this wet area is not deemed as a wetland as it has not naturalized. The lagoon to the North is now present; wetlands developed on the North edge of the ASP lands adjacent to the lagoon that may be attributed to the lagoon development (not natural hydrology). Minimal wetlands are present, other than those which occur near the lagoon, with the exception of two significant wetlands that are located in 2 and 7-16-52-14 W4M; these wetlands have not been farmed through and are considered marshes, with a wooded riparian area. Highway 16 (double lane) is located slightly to the South of the site and runs in an East/West direction. A rail line runs through the Southeast corner of the future development area; buildings are located to the Southeast of this rail line that are assumed to be loading/unloading areas.

S=Spring; Sum=Summer; F=Fall; D=Dryer; N=Normal; W=Wetter; N/A=Not Available
* Assumption Based on the Details Within the Photo

AIR PHOTO SUMMARY AND YEARLY COMPARISON
ENVIRONMENTALLY SENSITIVE FEATURES

Sensitive Feature(s): 2 Consistent Wetlands, Class C Watercourse (Vermilion River) and Tributaries
AWCS Wetland Class(es): Seasonal, Temporary, Semi-Permanent and Permanent – Marshes

Photo Date	Photo ID	Season	Precipitation Year	Precipitation Month	Photo Notes
2009	**Abadata 2009**	**Sum/F***	**D** preceded by two below average years	**N/A**	A Coded Class C Watercourse is present within 2km of the ASP lands As of current (2019), there are specific tributaries that are coded as Class C Unmapped watercourses that connect to the Vermilion River; they run through NE-17-52-14 W4M, NW-16-52-14 W4M, SW-16-52-14 W4M, and NE-16-52-14 W4M; during this period of time there are minimal landscape features that support the presence of these tributaries but their presence is more significant than in previous years. A dugout, that was constructed in/around 1993, is no present on the most Northerly border of NW-9-52-14 W4; this wet area is not deemed as a wetland as it has not naturalized. The lagoon to the North is now present; wetlands developed on the North edge of the future development area adjacent to the lagoon that may be attributed to the lagoon development (not natural hydrology). Minimal wetlands are present, other than those which occur near the lagoon, with the exception of two significant wetlands that are located in 2 and 7-16-52-14 W4M. Highway 16 (double lane) is located slightly to the South of the future development area and runs in an East/ West direction. A rail line runs through the Southeast corner of the future development area; buildings are located to the Southeast of this rail line that are assumed to be loading/unloading areas.

S=Spring; Sum=Summer; F=Fall; D=Dryer; N=Normal; W=Wetter; N/A=Not Available
* Assumption Based on the Details Within the Photo

AIR PHOTO SUMMARY AND YEARLY COMPARISON
ENVIRONMENTALLY SENSITIVE FEATURES

Sensitive Feature(s): 2 Consistent Wetlands, Class C Watercourse (Vermilion River) and Tributaries
AWCS Wetland Class(es): Seasonal, Temporary, Semi-Permanent and Permanent – Marshes

Photo Date	Photo ID	Season	Precipitation Year	Precipitation Month	Photo Notes
2011	**Abadata 2011**	**Sum/F***	**W** preceded by one above average year	**N/A**	A Coded Class C Watercourse is present within 2km of the ASP lands. As of current (2019), there are specific tributaries that are coded as Class C Unmapped watercourses that connect to the Vermilion River; they run through NE-17-52-14 W4M, NW-16-52-14 W4M, SW-16-52-14 W4M, and NE-16-52-14 W4M; during this period of time there are minimal landscape features that support the presence of these tributaries but their presence is more significant than in previous years. A dugout, that was constructed in/around 1993, is no present on the most Northerly border of NW-9-52-14 W4; this wet area is not deemed as a wetland as it has not naturalized. The lagoon to the North is now present; wetlands developed on the North edge of the future development area adjacent to the lagoon that may be attributed to the lagoon development (not natural hydrology). Minimal wetlands are present, other than those which occur near the lagoon, with the exception of two significant wetlands that are located in 2 and 7-16-52-14 W4M; these wetlands have not been farmed through and are considered marshes, with a wooded riparian area. Highway 16 (double lane) is located slightly to the South of the ASP lands and runs in an East/West direction. A rail line runs through the Southeast corner of the future development area; buildings are located to the Southeast of this rail line that are assumed to be loading/unloading areas.

S=Spring; Sum=Summer; F=Fall; D=Dryer; N=Normal; W=Wetter; N/A=Not Available
* Assumption Based on the Details Within the Photo

AIR PHOTO SUMMARY AND YEARLY COMPARISON
ENVIRONMENTALLY SENSITIVE FEATURES

Sensitive Feature(s): 2 Consistent Wetlands, Class C Watercourse (Vermilion River) and Tributaries
AWCS Wetland Class(es): Seasonal, Temporary, Semi-Permanent and Permanent – Marshes

Photo Date	Photo ID	Season	Precipitation Year	Precipitation Month	Photo Notes
2015	**Abadata 2015**	**Sum/F***	**D** preceded by one below average year	**N/A**	A Coded Class C Watercourse is present within 2km of the ASP lands. As of current (2019), there are specific tributaries that are coded as Class C Unmapped watercourses that connect to the Vermilion River; they run through NE-17-52-14 W4M, NW-16-52-14 W4M, SW-16-52-14 W4M, and NE-16-52-14 W4M; during this period of time there are no landscape features that support the presence of these tributaries in all of these areas, with the exception of a presence seen within NE-17-52-14 W4M. A dugout, that was constructed in/around 1993, is no present on the most Northerly border of NW-9-52-14 W4; this wet area is not deemed as a wetland as it has not naturalized. The lagoon to the North is now present. The lagoon to the North is now present; wetlands developed on the North edge of the future development area adjacent to the lagoon that may be attributed to the lagoon development (not natural hydrology). Minimal wetlands are present, other than those which occur near the lagoon, with the exception of two significant wetlands that are located in 2 and 7-16-52-14 W4M; these wetlands have not been farmed through and are considered marshes, with a wooded riparian area. Highway 16 (double lane) is located slightly to the South of the ASP lands and runs in an East/West direction. A rail line runs through the Southeast corner of the future development area; buildings are located to the Southeast of this rail line that are assumed to be loading/unloading areas.

S=Spring; Sum=Summer; F=Fall; D=Dryer; N=Normal; W=Wetter; N/A=Not Available
* Assumption Based on the Details Within the Photo

AIR PHOTO SUMMARY AND YEARLY COMPARISON
ENVIRONMENTALLY SENSITIVE FEATURES

Sensitive Feature(s): 2 Consistent Wetlands, Class C Watercourse (Vermilion River) and Tributaries
AWCS Wetland Class(es): Seasonal, Temporary, Semi-Permanent and Permanent – Marshes

Photo Date	Photo ID	Season	Precipitation Year	Precipitation Month	Photo Notes
2018	Google 2018	Sum/F*	N/A	N/A	A Coded Class C Watercourse is present within 2km of the ASP lands. As of current (2019), there are specific tributaries that are coded as Class C Unmapped watercourses that connect to the Vermilion River; they run through NE-17-52-14 W4M, NW-16-52-14 W4M, SW-16-52-14 W4M, and NE-16-52-14 W4M; during this period of time there are minimal landscape features that support the presence of these tributaries but their presence is more significant than in previous years. A dugout, that was constructed in/around 1993, is now present on the most Northerly border of NW-9-52-14 W4; this wet area is not deemed as a wetland as it has not naturalized. The lagoon to the North is now present; wetlands developed on the North edge of the future development area adjacent to the lagoon that may be attributed to the lagoon development (not natural hydrology). More wetlands seem to be present in this photo; in comparing the features of the photo with Alberta Merged Wetland Inventory, it was confirmed that still only the two significant wetlands (with the exclusion of the wetlands located on the North edge of the ASP lands, South of the lagoon) have been present from 1962-2018. It is assumed that the clarity and high resolution of this photo shows low lying areas as possible wetland locations. Highway 16 (double lane) is located slightly to the South of the future development area and runs in an East/West direction. A rail line runs through the Southeast corner of the ASP lands; buildings are located to the Southeast of this rail line that are assumed to be loading/unloading areas. Of all the aerial photos reviewed, this image provides the best resolution that indicates possible low areas that may be indicative of draws; it is assumed that these locations do not carry substantial amounts of water as the majority of locations are farmed through.

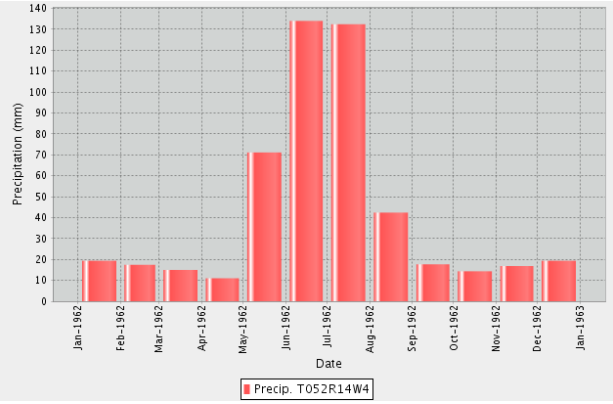
S=Spring; Sum=Summer; F=Fall; D=Dryer; N=Normal; W=Wetter; N/A=Not Available
* Assumption Based on the Details Within the Photo

APPENDIX D

PRECIPITATION DATA FOR CORRESPONDING AIR PHOTOS

HISTORICAL TEMPERATURES

PRECIPITATION DATA FOR CORRESPONDING AIR PHOTOS



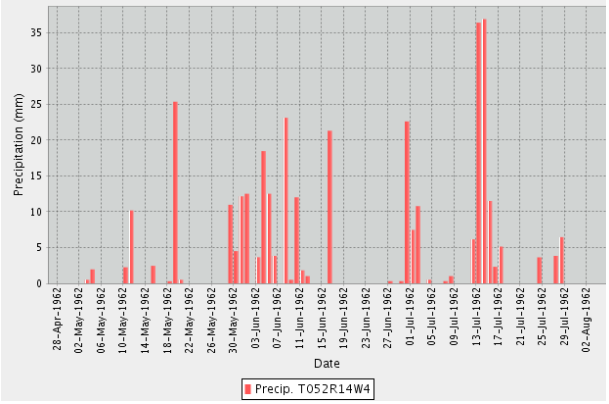
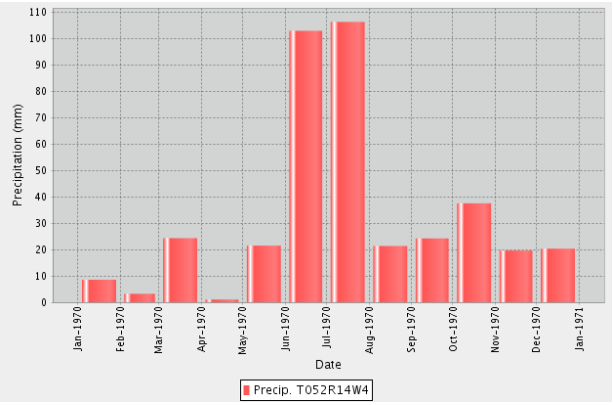


Figure 1. Precipitation data for 1962. Visual depiction of monthly rainfall received throughout the course of the year (left) and rainfall received daily the summer months (right).



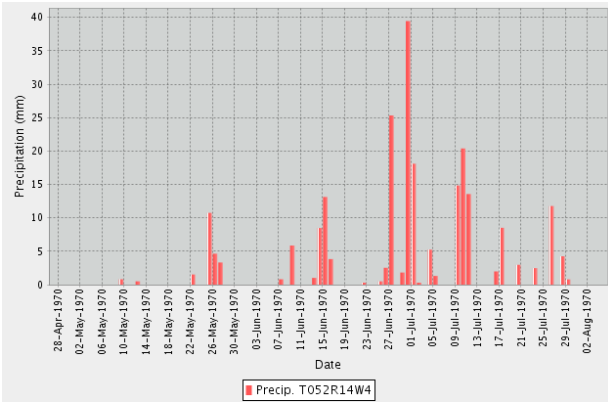
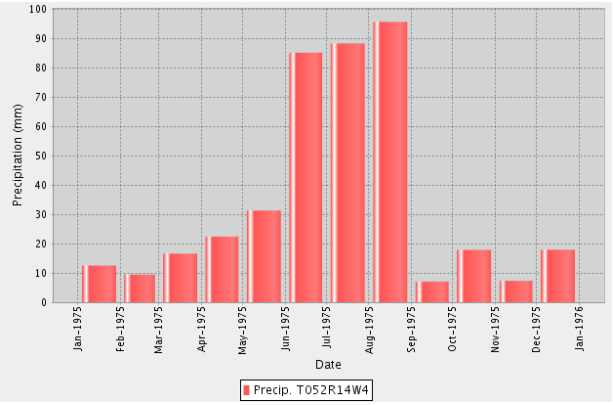


Figure 2. Precipitation data for 1970. Visual depiction of monthly rainfall received throughout the course of the year (left) and rainfall received daily the summer months (right).



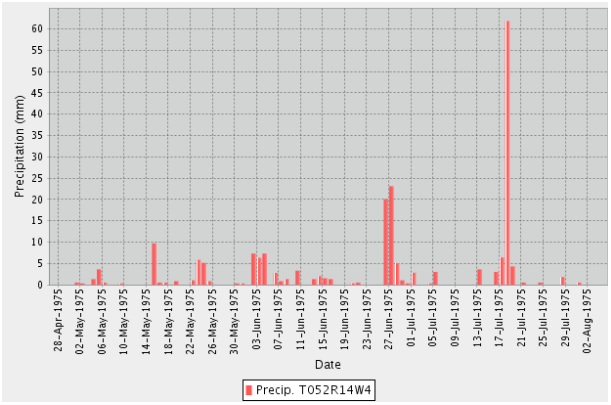


Figure 3. Precipitation data for 1975. Visual depiction of monthly rainfall received throughout the course of the year (left) and rainfall received daily the summer months (right).

PRECIPITATION DATA FOR CORRESPONDING AIR PHOTOS

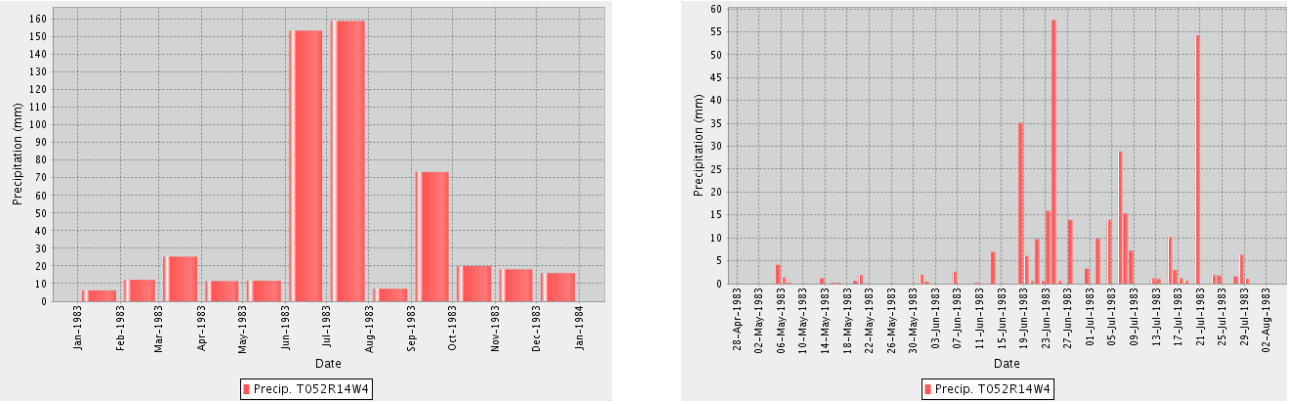


Figure 4. Precipitation data for 1983. Visual depiction of monthly rainfall received throughout the course of the year (left) and rainfall received daily the summer months (right).

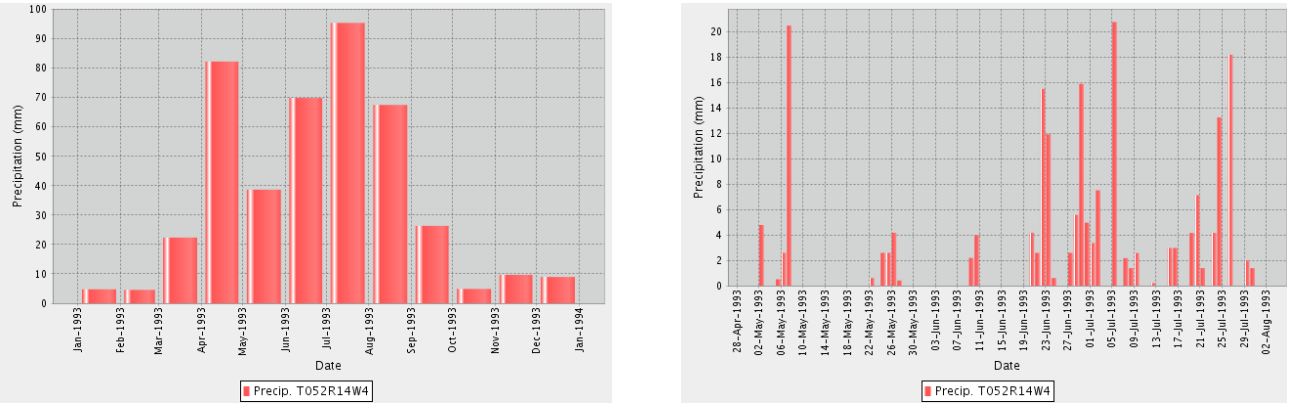


Figure 5. Precipitation data for 1993. Visual depiction of monthly rainfall received throughout the course of the year (left) and rainfall received daily the summer months (right).

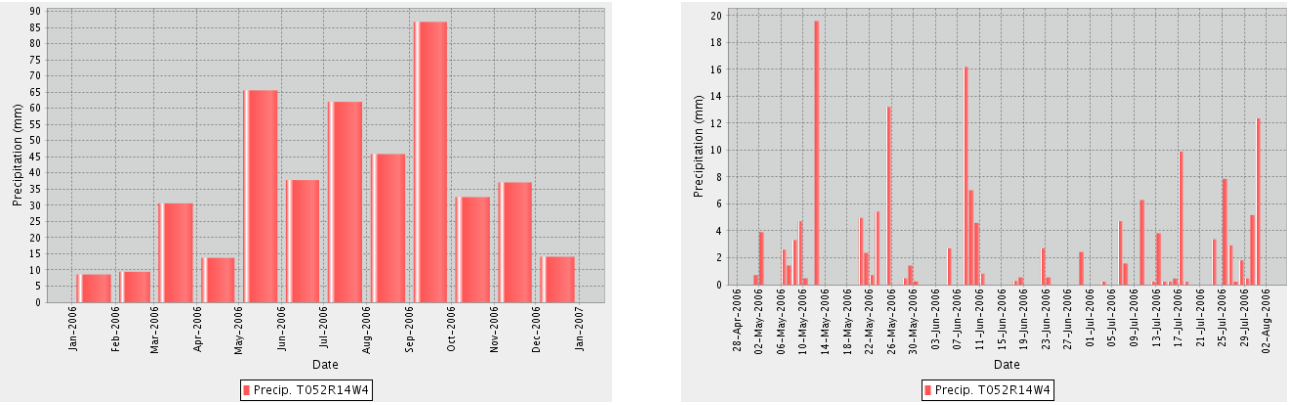


Figure 6. Precipitation data for 2006. Visual depiction of monthly rainfall received throughout the course of the year (left) and rainfall received daily the summer months (right).

PRECIPITATION DATA FOR CORRESPONDING AIR PHOTOS

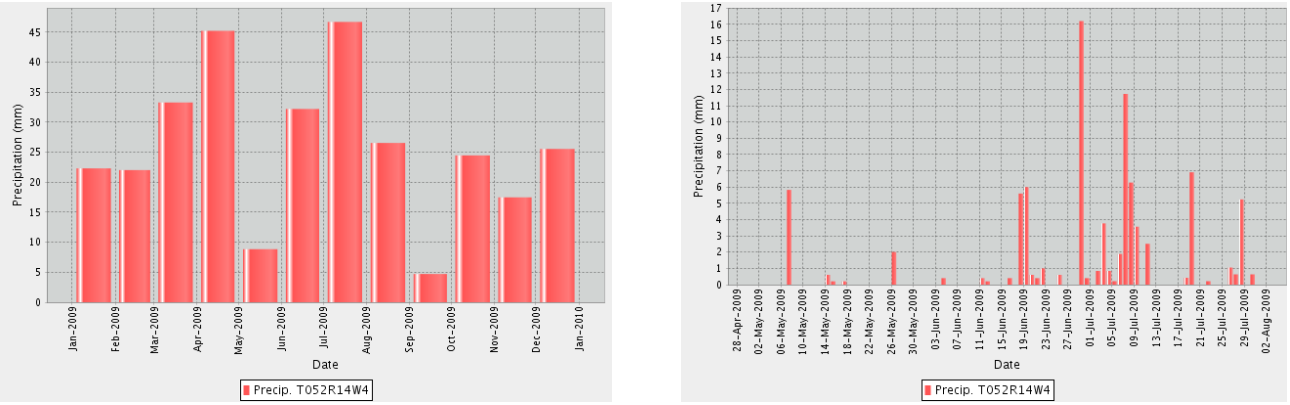


Figure 7. Precipitation data for 2009. Visual depiction of monthly rainfall received throughout the course of the year (left) and rainfall received daily the summer months (right).

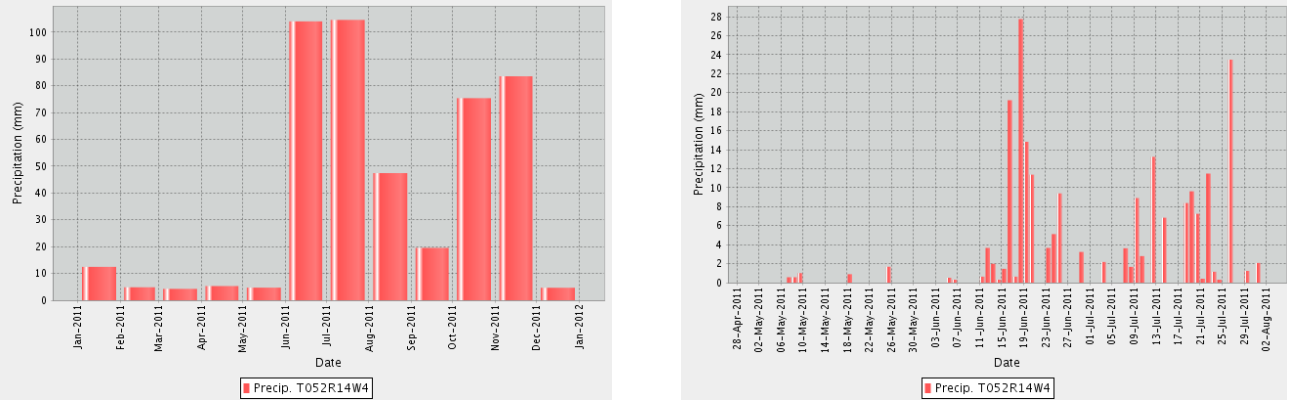


Figure 8. Precipitation data for 2011. Visual depiction of monthly rainfall received throughout the course of the year (left) and rainfall received daily the summer months (right).

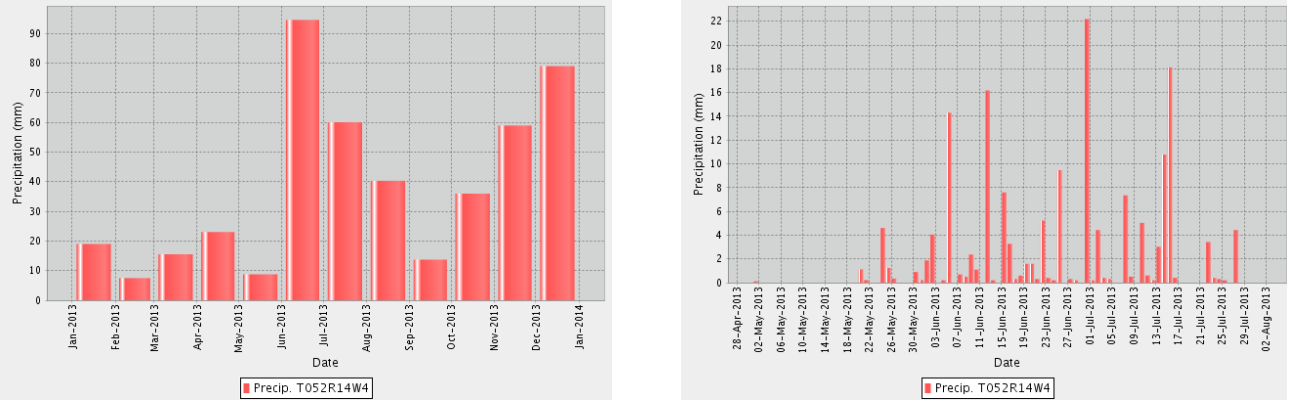


Figure 9. Precipitation data for 2013. Visual depiction of monthly rainfall received throughout the course of the year (left) and rainfall received daily the summer months (right).

PRECIPITATION DATA FOR CORRESPONDING AIR PHOTOS

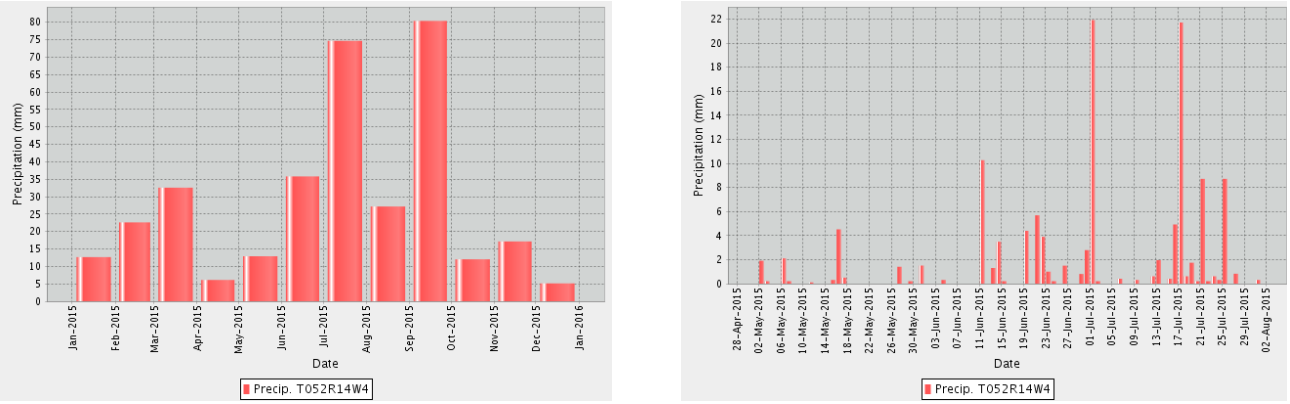


Figure 10. Precipitation data for 2015. Visual depiction of monthly rainfall received throughout the course of the year (left) and rainfall received daily the summer months (right).

HISTORICAL TEMPERATURE DATA

Date	Temperature °C Lowest	Temperature °C Highest	Temperature °C Average
1956	-37.77	31.47	7.268961749
1957	-32.57	30.01	8.14
1958	-38.18	33.12	8.692191781
1959	-43.49	35.33	7.557424658
1960	-39.1	32.53	7.894398907
1961	-40.14	35.27	8.17690411
1962	-49.85	29.42	7.931452055
1963	-37.74	31.01	8.871643836
1964	-37.14	35.25	7.570765027
1965	-42.97	31.47	6.334410959
1966	-43.1	31.71	6.364383562
1967	-42.53	33.62	7.415260274
1968	-41.47	32.81	7.673961749
1969	-46.24	31.93	6.780958904
1970	-43.72	35.58	6.562547945
1971	-44.25	32.04	6.781561644
1972	-49.73	32.35	5.449098361
1973	-41.13	31.52	6.861753425
1974	-42.19	30.87	7.272684932
1975	-37.9	32.21	6.789205479
1976	-43.28	29.75	9.578114754
1977	-47.32	31.34	8.450520548
1978	-39.98	32.66	7.16030137
1979	-43.03	31.09	6.952821918
1980	-39.15	31.3	8.06215847
1981	-36.12	34.83	10.41317808
1982	-42.94	31.82	5.922575342
1983	-40.93	32.37	7.461534247
1984	-37.72	32.99	8.045437158
1985	-38.03	31.78	7.511287671
1986	-42.06	32.76	8.769123288
1987	-26.26	33.78	10.71380822
1988	-34.69	32.32	10.01901639
1989	-42.07	30.48	8.359726027
1990	-38.67	34.44	8.591643836
1991	-39.82	34.38	9.434273973
1992	-42.58	32.34	8.790874317
1993	-39.22	32.61	8.612246575

HISTORICAL TEMPERATURE DATA

Date	Temperature °C Lowest	Temperature °C Highest	Temperature °C Average
1994	-46.67	31.15	7.767068493
1995	-35.33	31.91	7.45490411
1996	-41.35	31.5	5.158360656
1997	-41.51	33.2	8.599534247
1998	-38.51	35.08	9.361315068
1999	-36.3	29.87	9.115150685
2000	-34.25	28.23	7.941338798
2001	-31.26	32.12	9.931424658
2002	-33.87	36.09	8.398493151
2003	-37.85	31.54	8.219479452
2004	-43.69	30.65	8.12863388
2005	-37.56	30.8	9.01890411
2006	-32.66	34.64	9.039287671
2007	-35.2	33.07	8.492739726
2008	-42.57	32.77	8.349945355
2009	-40.42	32.87	7.898164384
2010	-33.79	30.76	8.427945205
2011	-35.61	32.97	8.734
2012	-35.51	31.41	8.973032787
2013	-36.35	31.95	8.358575342
2014	-39.8	30.59	8.074027397
2015	-34.35	33.24	10.34673973
2016	-34.36	31.02	10.1595082
2017	-35.06	31.83	8.70709589

APPENDIX E

LANDSCAPE ANALYSIS TOOL REPORT

ALBERTA CONSERVATION INFORMATION SYSTEM MANAGEMENT SEARCH RESULTS

FISH AND WILDLIFE MANAGEMENT INFORMATION SYSTEM SEARCH RESULTS

Landscape Analysis Tool (LAT) Report

LAT Number:	00000578C4	**LAT Date:** 2019-06-03	11:27:11
Project Name:	Addendum to Biophyscial		
Project Description:	Town Development - Additional lands added to previous biophysical assessment.		
Disposition Type:	DML	Miscellaneous Lease	
Purpose Type:	CMDV	Commercial Development	
Activity Type:	CMDV02DMLP	Commercial Facility	

Responsibility of Applicants:

It is the applicant's responsibility to conduct a full review of the generated LAT Report, ensuring that you are aware and have a full understanding of the identified standards and conditions, and any additional limitations that may also be imposed by an approved higher level plan, reservation or notation or any other law or Order of the Province or the Government of Canada that may impact the placement, construction or operation of the proposed disposition, purpose and activity.

The applicant must assess if the proposed disposition, purpose and activity can meet the applicable standards, conditions and any limitations which will subsequently determine if the application can be submitted to the regulatory body. Applicants should complete a thorough review of regulatory and application processes including supporting procedural documents and the generated LAT Reports prior to making this determination.

Where the applicant chooses not to meet, or is not able to meet, one or more Approval Standards or higher level plans within the generated LAT Report as submitted as part of the application, or any affected reservations as identified within the land status report, the applicant is required to complete the appropriate mitigation as part of their supplement submission that addresses individually each of the items not being met.

The information provided within the LAT Tool is a spatial representation of features provided to the applicant for activity and land use planning. The accuracy of these layers varies depending on the resource value being represented. The regulatory body insists that site visits, wildlife surveys and groundtruthing efforts are completed to ensure that you, the applicant can meet the procedures detailed within the *Pre-Application Requirements for Formal Dispositions*, the identified approval standards, operating conditions and *Best Management Practices* as represented within the *Master Schedule of Standards and Conditions*.

Proximity to Watercourse/Waterbodies:

Applicants will ensure that standards or conditions for Watercourse/Waterbody features as identified within the generated LAT Report are followed. It is the responsibility of the applicant to ensure the identified setbacks and buffers are properly established through a pre-site assessment and maintained.

NOTE: Be aware that the submission of a LAT Report as part of an application submission does not imply approval of the activity. The standards and conditions identified within the LAT Report may be subject to change based on regulatory review.

Base Features

Green/White Area	White Area
Municipality	County of Minburn No. 27
FMA	
FMU	
Provincial Grazing Reserve	
Rocky Mountain Forest Reserve	
PLUZ Areas	
Protected Areas	

Provincial Sanctuaries

Wildlife Corridors	
Restricted Area	
Game Bird	Zone 3
Seasonal	

Higher Level Plans

Integrated Resource Plan (Local)	
Integrated Resource Plan (Subregional)	
Access Management Plan	
Landscape Management Plan	

Additional Application Requirements

Wildlife Survey	Yes	DND Area	

Historical Resources

HRV Rating	Category

Historic Resources Application Required: No

While no specific historic resource concerns have been identified within the proposed activity area, Section 31 of the *Historical Resources Act* states that "a person who discovers a historic resource in the course of making an excavation for a purpose other than for the purpose of seeking historic resources shall forthwith notify the Minister of the discovery." Should a historic resource be encountered with the construction or operation of this disposition, information on who to contact can be found on the Ministry of Culture and Tourism's website in; Standard Requirements under the Historical Resources Act: Reporting the Discovery of Historic Resources.

Sensitive Features

Wildlife and Other Sensitive Species

	Intersected		Intersected
Burrowing Owl Range		Ord's Kangaroo Rat Key Habitat Area	
Caribou Range		Other Sensitive and Endangered Species	Yes
Colonial Nesting Birds			
Endangered and Threatened Plants Ranges		Piping Plover Waterbodies	
		Sensitive Amphibian Ranges	
Federal Aquatic Critical Habitat		Sensitive Raptor Range	Yes
Greater Short-horned Lizard Habitat		Sensitive Snake Species Range	
Greater Short-horned Lizard Range		Sharp-tailed Grouse Leks and Buffer	
Greater Sage Grouse Range		Sharp-tailed Grouse Survey	Yes
Greater Sage Grouse Leks and Buffer		Special Access Area	
Grizzly Bear Zone		Swift Fox Range	
Key Wildlife and Biodiversity Areas		Trumpeter Swan Buffer	
Mountain Goat and Sheep Areas		Trumpeter Swan Waterbodies/Watercourse	
Ord's Kangaroo Rat Range			

Federal Orders:

	Intersected
Greater Sage Grouse	

Grassland and Natural Regions:

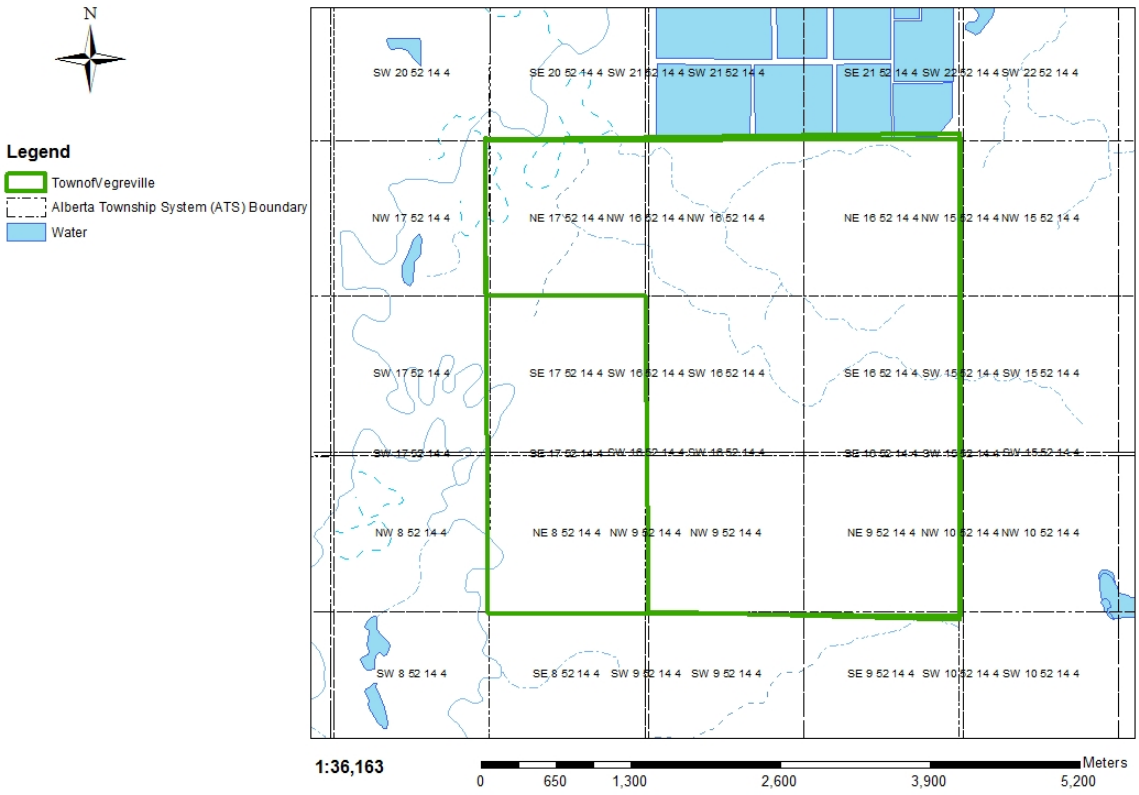
	Intersected		Intersected
Central Parkland	Yes	Mixed Grass Sub-region layer	
Central Parkland and Northern Fescue		Montane	
Chinook Grasslands		Northern Fescue	
Dry Mixed Grass		Peace River Parkland	
Foothills Fescue		Permafrost	
Foothills Parkland Grasslands		Rough Fescue PNT	
Grassland and Parkland Natural Region	Yes	Subalpine or Alpine	

Alberta Township System (ATS) Land List

Quarter	Section	Township	Range	Meridian	Road Allow.	Sensitive Features Identified
NW	8	52	14	4		Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SW	9	52	14	4		Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SW	10	52	14	4	RW	Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SW	16	52	14	4	RI	Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SW	17	52	14	4	RS	Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SE	20	52	14	4		Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SW	21	52	14	4	RW	Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SW	15	52	14	4	RW	Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SW	8	52	14	4		Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SW	9	52	14	4	RW	Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SE	17	52	14	4	RS	Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
NW	15	52	14	4	RW	Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area

SW	17	52	14	4		Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SE	21	52	14	4		Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SE	9	52	14	4		Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
NE	17	52	14	4		Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SW	21	52	14	4		Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SE	17	52	14	4		Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SE	8	52	14	4		Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
NW	17	52	14	4		Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
NW	10	52	14	4	RW	Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SW	16	52	14	4	RW	Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SW	22	52	14	4	RW	Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
NW	9	52	14	4	RW	Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
SW	20	52	14	4		Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area
NE	8	52	14	4		Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area

SW	15	52	14	4	RI	Grassland and Parkland Natural Region,Sensitive Raptor Range,Sharp-tailed Grouse Survey,Other Sensitive and Endangered Species,Central Parkland,Green / White Area


N
Legend
TownofVegreville
Alberta Township System (ATS) Boundary
Water
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1:36,163
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650
1,300
2,600
3,900
5,200
Meters

Land Management

Report ID	Approval	Condition
1	1032-AS	Incidental Activities* as referenced on the associated supplement that fall within the sizing parameters, as defined within the PLAR Approvals and Authorizations Administrative Procedure's as amended, identified at the time of application are subject to the conditions of the associated Disposition and available for use for a term of four years from date of Disposition approval.
2	1035-AS	Where an Integrated Resource Plan or a Reservation/Protective Notation identifies a greater set back, the greater set back will prevail.
3	1036-AS	The Disposition Holder must not submit additional applications for access dispositions if access under disposition already exists.
4	1037-AS	Where a Higher Level Plan* exists, the Disposition Holder must follow any direction provided within that plan.
5	1039-AS	With the exception of pipelines, for activities that fall within any Protective Notation (PNT) lands with a purpose code 400 Series encompassing a section of land (259 hectares) or less, located in the Provincial White Area* (i.e., Provincial settled lands), the Disposition Holder must construct all activities within lands developed as range improvement. Where no range improvement exists, activities must occur within 100 metres of the PNT perimeter (i.e., outside boundary).
6	1046	The Disposition Holder must repair or replace any identified improvements (e.g., fences, water control structures, and signage) that were damaged as a result of industry activities on the land to pre-existing condition within 30 days of entry or immediately if occupied by livestock.
7	1047	The Disposition Holder must maintain all activities for proper drainage of surface water.
8	1049	For activities that occur on Canadian Forces Bases, the Disposition Holder must coordinate all activities through Energy Industry Control at (780) 842-5850 for activity on Canadian Forces Base/Area Support Unit, Wainwright, and (780) 573-7206 for activity on Canadian Forces Base/Area Support Unit, Cold Lake.
9	1051	The Disposition Holder must comply with all requirements and direction as defined within the Pre-Application Requirements for Formal Dispositions as amended from time to time.
10	1053-AS	The Disposition Holder must not locate activities within 45 meters from the top of any coulees* with the exception of activities such as; access, pipelines and linear easements crossing those features.
11	1058	The Disposition Holder must remove all garbage and waste material from this site to the satisfaction of the Regulatory Body, in its sole discretion.
12	1062	The Disposition Holder must not enter the boundaries of any research or sample plot.

13	1063	When proposed activities cross designated or recreation trail(s)* or when operations encroach on those trail(s)*, the Disposition Holder must ensure that: • Activities crossing trails* are constructed in a manner that will not remove snow from the trail(s)*, produce ruts in the trail(s)*, or otherwise adversely affect travel. • No mechanical equipment is permitted to travel along the trail(s)*, unless approved in writing by the Regulatory Body. • Warning signs are posted along trail(s)* during construction and reclamation activities advising trail* users of the upcoming crossing location. • Any recording devices or equipment laid along the trail(s)* are placed off of the travel portion so that the geophones do not interfere with travel.
14	1071	Where a Wildfire Prevention Plan or FireSmart Plan is reviewed and approved by the Wildfire Management Branch, the Disposition Holder must ensure any proposed clearing on public land has been authorized by the Regulatory Body.

Vegetation

Report ID	Approval	Condition
15	1200	The Disposition Holder must manage all weeds as per the Weed Control Act.
16	1204	The Disposition Holder must ensure the chemical application for the purpose of vegetation control occurs in accordance with the Pesticide Regulation and Environmental Code of Practice for Pesticides.
17	1205	The Disposition Holder must salvage all merchantable timber and haul to the location of end use unless a request for waiver is approved under the Forests Act.
18	1206	The Disposition Holder must salvage merchantable timber according to the utilization standards for the overlapping timber disposition(s) (i.e., FMA, CTL, DTL) or, where no overlapping timber disposition exists, as per the approved forest management plan.
19	1207	The Disposition Holder must slash, limb and buck flat to the ground all woody debris* and leaning trees created by the activity to a length that must not exceed 2.4 metres.
20	1208	On forested lands, the Disposition Holder must dispose of excess coarse woody debris* remaining after rollback* or stockpiling for interim reclamation* and final reclamation*.
21	1209	The Disposition Holder must dispose of coarse woody debris* within FireSmart Community Zones* by burning unless a Debris Management Plan has been approved under the Forest and Prairie Protection Act.
22	1211	The Disposition Holder must not allow timber storage piles or windrows to encroach into standing timber.

Soil

Report ID	Approval	Condition
23	1256	The Disposition Holder must not conduct any activities during adverse ground conditions*.
24	1257	The Disposition Holder must conduct all activity to prevent and control erosion* and sedimentation on or adjacent* to the Lands.
25	1258	The Disposition Holder must install and maintain erosion control* measures.
26	1259-AS	The Disposition Holder must not transport from the Lands topsoil* or subsoil* unless authorized in writing by the Regulatory Body.
27	1260	Where activities have occurred on the Lands that do not involve minimal disturbance* construction, the Disposition Holder must salvage topsoil* for land reclamation as follows: a. Salvage all topsoil* from: i. Mineral soils ii. Shallow organic soils* iii. Reclaimed soils b. Where the depth of the topsoil* is less than 15 cm, the topsoil* and part of the subsoil* to a total depth of 15 centimetres must be salvaged, unless the upper subsoil* is considered chemically unsuitable*.
28	1263	All reclamation material* must be considered suitable as defined in the May 2001 Salt Contamination Assessment Guidelines and meet the February 2016 Alberta Tier 1 Soil and Groundwater Remediation Guidelines, as amended or replaced from time to time.
29	1265	The Disposition Holder must store reclamation material* in accordance with all of the following: a. reclamation material* must not be placed beneath the ground surface or buried in any way; b. coarse woody debris* stored for greater than 12 months must be stored with the topsoil*; and c. topsoil* and subsoil* must be stored separately.
30	1267	The Disposition Holder must not mix wood chips with any reclamation material*.
31	1268	The Disposition Holder must not apply wood chips to the lands at a depth greater than five (5) centimeters.
32	1269	The Disposition Holder must manage wood chips in accordance with the directive ID 2009-01 Management of Wood Chips on Public Land as amended from time to time.
33	1270	The Disposition Holder must not store piles or windrows of reclamation material* that encroach into standing timber.
34	1271	The Disposition Holder must not use soil sterilants for any activities on the Lands.

Watercourse / Waterbody

Report ID	Approval	Condition
35	1301-AS	The Disposition Holder must not interrupt natural drainage (including ephemeral and fens*), block water flow or alter the water table.
36	1303-AS	The Disposition Holder must construct activities outside the appropriate watercourse* setbacks, except for vehicle or pipeline crossings: a) Intermittent watercourses* and springs must have a setback of at least 45 metres from the top of the break. b) Small Permanent watercourses* must have a setback of at least 45 metres from the top of the break. c) Large Permanent watercourses* must have a setback of at least 100 metres from the top of the break.
37	1304-AS	The Disposition Holder must maintain the following waterbody* setbacks from the disposition edge for all site activities, or paralleling linear dispositions, or pipeline bore site: a) A minimum setback of 45 metres of undisturbed vegetation must be maintained from non-permanent seasonal wetlands*. b) A minimum setback of 100 metres from the bed and shore* of semi-permanent and permanent ponds, wetlands*, shallow open water ponds and lakes.
38	1310	The Disposition Holder must not deposit or place debris*, soil or other deleterious materials* into or through any watercourse* and/or waterbody*, or on the ice of any watercourse* and/or waterbody*.
39	1315	The Disposition Holder must acquire an authorization for access (off-disposition) for water withdrawal activities.
40	1317	Where surface disturbance* will occur and a risk of surface erosion* exists, the Disposition Holder must install and maintain sediment* control structures to dissipate the flow of water and capture sediment* prior to it entering a watercourse* or waterbody*.
41	1325	The Disposition Holder must not remove or use water from dugouts, surface ponds, springs, or water wells within the grazing disposition unless an authorization is issued from the Environment and Parks (GoA) agrologist.
42	1327	All licences, authorizations and approvals issued under the Alberta Environmental Protection and Enhancement Act, Water Act or Public Lands Act should not be taken to mean the Disposition Holder has complied with federal legislation. The Disposition Holder should contact Habitat Management, Fisheries and Oceans in relation to the application of federal laws relating to the Fisheries Act (Canada). Fisheries Protection Program, Fisheries and Oceans Canada 867 Lakeshore Road, Burlington, Ontario, L7R 4A6 Telephone: 1-855-852-8320 Email: Fisheriesprotection@dfo-mpo.gc.ca Web address: www.dfo-mpo.gc.ca The Disposition Holder should also contact the Navigation Protection Program, Canadian Coast Guard, 4253-97 Street, Edmonton, Alberta, T6E 5Y7, phone: (780) 495-4220, relating to the Navigation Protection Act.

Reclamation

Report ID	Approval	Condition
43	1351	For progressive reclamation* on forested lands*, the Disposition Holder must replace all reclamation materials* that have been salvaged in accordance with all of the following: a. all salvaged subsoil* must be replaced, then all salvaged topsoil*; and b. reclamation materials* must be replaced over the entire progressive reclamation area*; unless otherwise approved in writing by the Regulatory Body.
44	1353	The Disposition Holder must complete temporary reclamation* on the Lands within 1 growing season of construction phase* for all topsoil* and subsoil* stockpiles required for final reclamation*.
45	1354	The Disposition Holder must prior to seeding herbaceous seed in forested* or peatlands* submit a Request for Seeding in writing to the Regulatory Body that contains all of the following: a. rationale for conducting seeding of herbaceous species*; b. a description of the proposed site for seeding including information with respect to the following: i. Whether the Lands are subject to high erosion* ii. Whether the Lands are prone to invasion from agronomic or weed species c. a proposed seed mix composition for re-vegetation of the Lands in accordance with the Native Plant Revegetation Guidelines for Alberta, 2001 as amended or replaced from time to time or a rationale for alternate species; d. provide a seed certificate in accordance with the Seed Act for the seed mixed to be used for re-vegetation*; and e. any other information requested by the Regulatory Body.
46	1355	The Disposition Holder must only conduct seeding in accordance with the written request for seeding as approved by the Regulatory Body.
47	1356	The Disposition Holder must when seeding cultivated lands*, use agronomic or forage seed that meets or exceeds Certified #1 as outlined in the Seeds Act and Seeds Regulations. Seed mixes are to be free of species listed in the Weed Control Act. A seed certificate must be provided to the Regulatory Body within 30 days upon request.
48	1357	The Disposition Holder must re-vegetate the Lands with trees or shrubs within the Green Area* that meet the requirements of the December 2016 Alberta Forest Genetic Resource Management and Conservation Standards document, as amended or replaced from time to time.
49	1359	The Disposition Holder must not have slash and rollback* accumulations within five (5) meters of the perimeter of the disposition boundary, greater than the percent ground cover on the surrounding undisturbed forest floor.
50	1361	The Disposition Holder must complete progressive reclamation* on forested lands* for all associated and incidental disturbances to the Disposition.

51	1362	The following activities are excluded from progressive reclamation* requirement on forested lands*: a) Lands that have received authorization for clay pad construction; and b) Lands with a 4:1 or steeper slopes where a cut and fill has been constructed to level the ground surface.
52	1363	For final reclamation*, the Disposition Holder must complete all of the following: a) contour the disturbed land to the pre-disturbance landform or to the landform approved by the Regulatory body; b) replace all stockpiled subsoil*, then replace all stockpiled topsoil*; c) spread all coarse woody debris* on forested lands*; and d) reclamation materials* must be replaced over the entire area from which they were removed unless otherwise approved in writing by the Regulatory Body.
53	1364	The Disposition Holder must reclaim the Lands to the pre-disturbance land use* type (forested*, grassland*, cultivated*, mineral wetland* and peatlands*) unless otherwise authorized in writing by the Regulatory Body.

Wildlife

Report ID	Approval	Condition
54	1500	The Disposition Holder must conduct a complete and immediate Wildlife Sweep* of the Lands (plus 100 metre buffer*) subject to the disposition prior to any activity.
55	1501	The Disposition Holder must submit results from a Wildlife Sweep* to the Fisheries and Wildlife Management Information System (FWMIS) and notify the issuing Regulatory Body in writing upon request that the Wildlife Sweep* was completed.
56	1502-AS	The Disposition Holder must incorporate a buffer* zone of a minimum width of 100m undisturbed vegetation, where an established buffer* does not already exist (e.g. Species at Risk) for any and all key habitat features including, but not limited to leks*, nests, dens and houses identified in the Wildlife Sweep*.
57	1503	When Wildlife Surveys* are required, the Disposition Holder must submit results from the Wildlife Survey* to the Fisheries and Wildlife Management Information System (FWMIS).
58	1509	The Disposition Holder must incorporate buffers*, setbacks and activity timing restrictions for any and all key habitat features including, but not limited to leks*, nests, dens and houses identified in the wildlife survey*.

59	1510	The Disposition Holder is responsible for compliance with federal laws and should contact Environment and Climate Change Canada in relation to the application of federal laws relating to the Migratory Birds Convention Act and the Species at Risk Act. Canadian Wildlife Service Prairie Region Environment and Climate Change Canada Eastgate Offices 9250 – 49th Street Edmonton, Alberta T6B 1K5 Telephone: 1-855-245-0331 (toll free) Email: ec.leprpn-sarapnr.ec@canada.ca Web address: sararegistry.gc.ca

Sensitive Raptor Range

Report ID	Approval	Condition
60	1550-AS	The Disposition Holder must conduct appropriate pre-construction wildlife* surveys for all activities occurring within the identified Species At Risk ranges of the Landscape Analysis Tool, as per the direction of the Sensitive Species Inventory Guidelines as amended from time to time.
61	1551-AS	The Disposition Holder must not conduct any activities within 1000 metres of a sensitive raptor active nest*.

Sharp-Tailed Grouse Survey / Leks and Buffers

Report ID	Approval	Condition
62	1640-AS	The Disposition Holder must conduct appropriate pre-construction wildlife surveys* for all activities occurring within the identified Species At Risk ranges of the Landscape Analysis Tool, as per the direction of the Sensitive Species Inventory Guidelines 2013 as amended from time to time.

Other Sensitive and Endangered Species

Report ID	Approval	Condition
63	1780-AS	The Disposition Holder must conduct appropriate pre-construction wildlife* surveys for all activities occurring within the identified Species At Risk ranges of the Landscape Analysis Tool, as per the direction of the Sensitive Species Inventory Guidelines 2013 as amended from time to time.
64	1781-AS	Between April 15 and August 15, the Disposition Holder must not conduct any activities* within 100 meters of an active nest site for Federally listed species.

Grassland and Parkland Natural Region

Report ID	Approval	Condition
65	1944	On native grasslands*, the Disposition Holder must not crimp straw* subject to the following exceptions: a) The straw* used for crimping must be sourced from a native species* from the same ecological range site* as the Lands; b) The weed analysis for the straw* used for crimping must comply with the Weed Control Act, as amended or replaced from time to time.

66	1952	In native grasslands* as identified by the Central Parkland Layer of the Landscape Analysis Tool that requires Assisted Natural Recovery*, the Disposition Holder must submit a request for Assisted Natural Recovery in writing to the Regulatory Body that contains all of the following: 1. Rationale for conducting Assisted Natural Recovery*; 2. A description of the proposed site for Assisted Natural Recovery* including information with respect to the following: a) Whether the Lands are subject to high erosion*; b) Whether the soil on the Lands has been disturbed to an area greater than 50m2; c) Whether the Lands are prone to invasion from agronomic or weed species; 3. A proposed seed mix composition for re-vegetation of the Lands: a) That is consistent with native plant communities that are adjacent* to and in the immediate vicinity of the Lands as determined by the A Preliminary Classification of Plant Communities in the Central Parkland Natural Subregion of Alberta, as amended or replaced from time to time; b) Provide a seed certificate in accordance with the Seed Act for the seed mix to be used for Assisted Natural Recovery*; and c) Any other information requested by the Regulatory Body.
67	1957	The Disposition Holder must not construct activities on native grassland* within the Grassland and Parkland Natural Region between April 15th and August 15th, unless grassland bird surveys are completed as per the Sensitive Species Inventory Guidelines Protocol as amended.
68	1958	The Disposition Holder must not conduct any activities within 100 meters of an active nest site between April 15th and August 15th for the following species: • short-eared owl • mountain plover • long-billed curlew • upland sandpiper • Sprague’s pipit • Chestnut-collared longspur • Loggerhead Shrike • Bank Swallow

Search ACIMS Data

MENU

Date: 18/12/2018
Requestor: Consultant
Reason for Request: Land Use Planning
SEC: 16 **TWP:** 052 **RGE:** 14 **MER:** 4

Alberta Parks

Non-sensitive EOs: 0 (*Data Updated:October 2017*)

M-RR-TTT-SS	EO_ID	ECODE	S_RANK	SNAME	SCOMNAME	LAST_OBS_D
No Non-sensitive EOs Found: Next Steps - See FAQ						

Sensitive EOs: 0 (*Data Updated:October 2017*)

M-RR-TTT	EO_ID	ECODE	S_RANK	SNAME	SCOMNAME	LAST_OBS_D
No Sensitive EOs Found: Next Steps - See FAQ						

Protected Areas: 0 (*Data Updated:October 2017*)

M-RR-TTT-SS	PROTECTED AREA NAME	TYPE	IUCN
No Protected Areas Found			

Crown Reservations/Notations: 0 (*Data Updated:October 2017*)

M-RR-TTT-SS	NAME	TYPE
No Crown Reservations/Notations Found		

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Search ACIMS Data

Date: 3/6/2019
Requestor: Consultant
Reason for Request: Land Use Planning
SEC: 09 **TWP:** 052 **RGE:** 14 **MER:** 4

Alberta Parks

Non-sensitive EOs: 0 (*Data Updated:October 2017*)

M-RR-TTT-SS	EO_ID	ECODE	S_RANK	SNAME	SCOMNAME	LAST_OBS_D
No Non-sensitive EOs Found: Next Steps - See FAQ						

Sensitive EOs: 0 (*Data Updated:October 2017*)

M-RR-TTT	EO_ID	ECODE	S_RANK	SNAME	SCOMNAME	LAST_OBS_D
No Sensitive EOs Found: Next Steps - See FAQ						

Protected Areas: 0 (*Data Updated:October 2017*)

M-RR-TTT-SS	PROTECTED AREA NAME	TYPE	IUCN
No Protected Areas Found			

Crown Reservations/Notations: 0 (*Data Updated:October 2017*)

M-RR-TTT-SS	NAME	TYPE
No Crown Reservations/Notations Found		

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Search ACIMS Data

Date: 3/6/2019
Requestor: Consultant
Reason for Request: Land Use Planning
SEC: 17 **TWP:** 052 **RGE:** 14 **MER:** 4

Alberta Parks

Non-sensitive EOs: 0 (*Data Updated:October 2017*)

M-RR-TTT-SS	EO_ID	ECODE	S_RANK	SNAME	SCOMNAME	LAST_OBS_D
No Non-sensitive EOs Found: Next Steps - See FAQ						

Sensitive EOs: 0 (*Data Updated:October 2017*)

M-RR-TTT	EO_ID	ECODE	S_RANK	SNAME	SCOMNAME	LAST_OBS_D
No Sensitive EOs Found: Next Steps - See FAQ						

Protected Areas: 0 (*Data Updated:October 2017*)

M-RR-TTT-SS	PROTECTED AREA NAME	TYPE	IUCN
No Protected Areas Found			

Crown Reservations/Notations: 0 (*Data Updated:October 2017*)

M-RR-TTT-SS	NAME	TYPE
No Crown Reservations/Notations Found		

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Fish and Wildlife Internet Mapping Tool (FWIMT)

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

Species Summary Report

Report Created: 4-Jun-2019 10:20

Species present within the current extent :

Fish Inventory	Wildlife Inventory	Stocked Inventory
BROOK STICKLEBACK	No Species Found in Search Extent	NORTHERN PIKE
FATHEAD MINNOW		RAINBOW TROUT
WHITE SUCKER		YELLOW PERCH

Buffer Extent

Centroid (X,Y):	Projection	Centroid: (Qtr Sec Twp Rng Mer)	Radius or Dimensions
696959, 5929000	10-TM AEP Forest	NW 17 52 14 4	1.5 kilometers

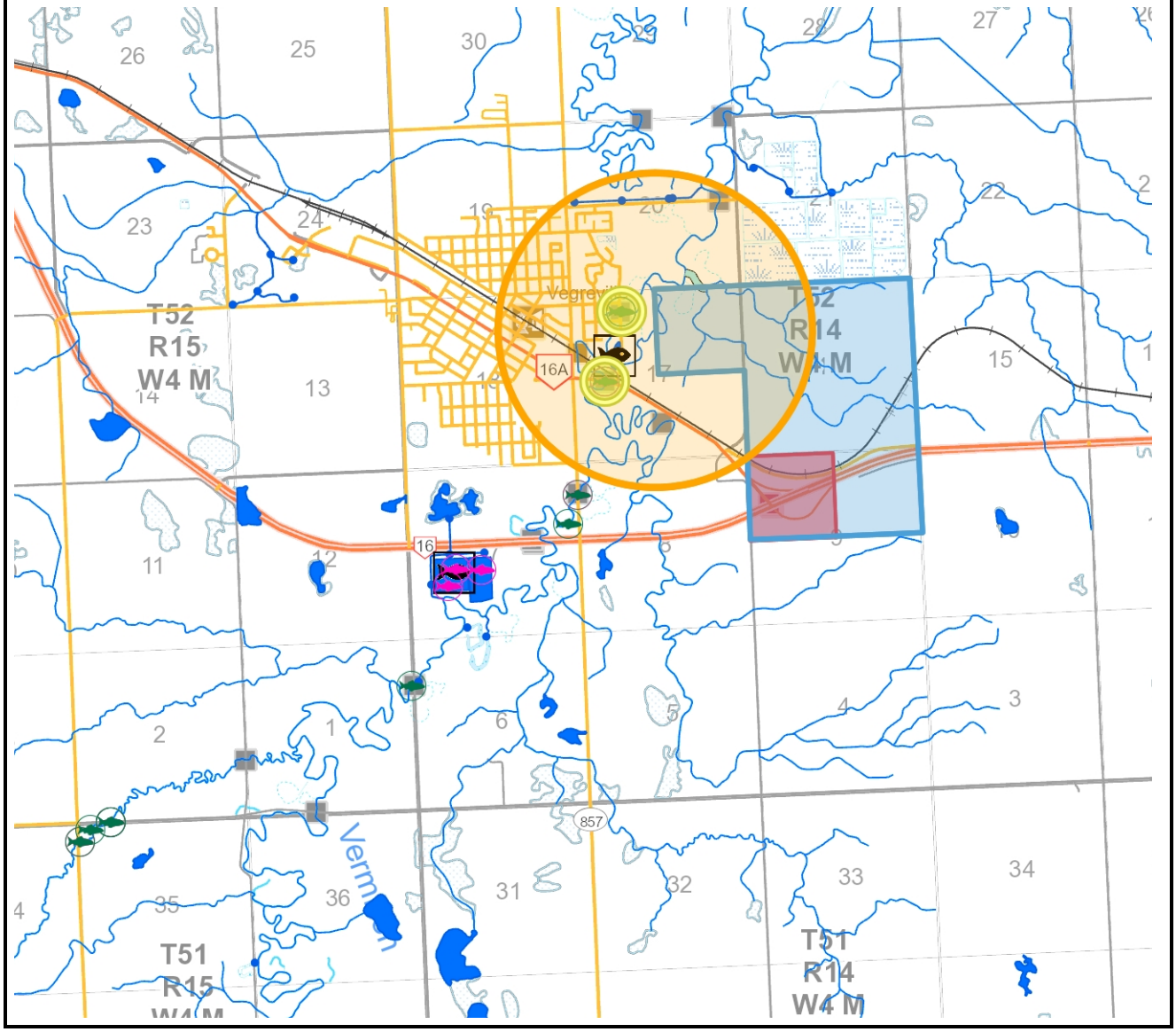
Contact Information

For contact information, please visit:

http://aep.alberta.ca/about-us/contact-us/fisheries-wildlife-management-area-contacts.aspx

4-Jun-2019 10:20

Map Results



Fish and Wildlife Internet Mapping Tool (FWIMT)

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

Species Summary Report

Report Created: 4-Jun-2019 10:25

Species present within the current extent :

Fish Inventory	Wildlife Inventory	Stocked Inventory
	No Species Found in Search Extent	No Species Found in Search Extent

Buffer Extent

Centroid (X,Y):	Projection	Centroid: (Qtr Sec Twp Rng Mer)	Radius or Dimensions
698678, 5927051	10-TM AEP Forest	NW 9 52 14 4	1.5 kilometers

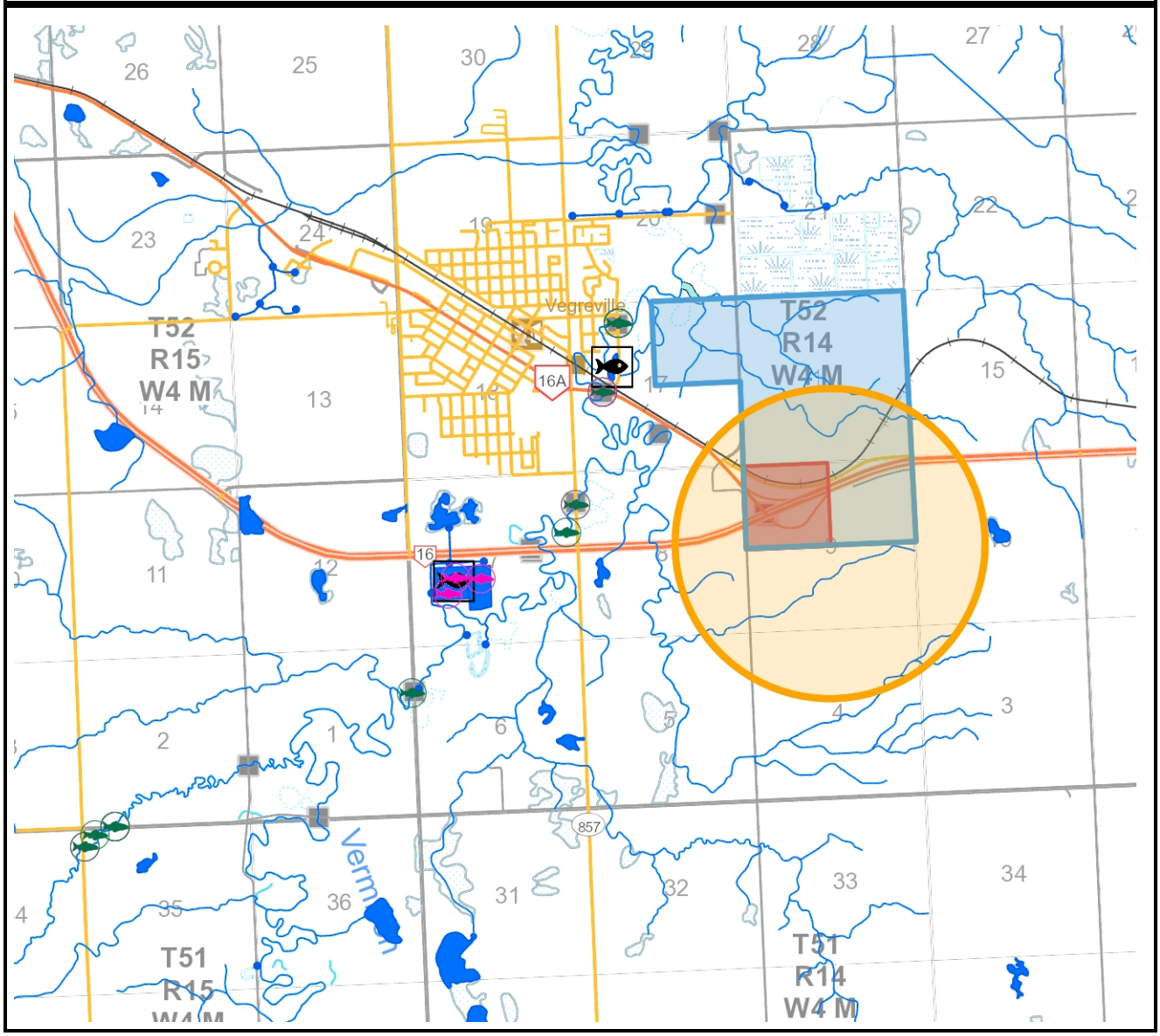
Contact Information

For contact information, please visit:

http://aep.alberta.ca/about-us/contact-us/fisheries-wildlife-management-area-contacts.aspx

4-Jun-2019 10:25

Map Results



Fish and Wildlife Internet Mapping Tool (FWIMT)

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

Species Summary Report

Report Created: 4-Jun-2019 10:27

Species present within the current extent :

Fish Inventory	Wildlife Inventory	Stocked Inventory
	No Species Found in Search Extent	No Species Found in Search Extent

Buffer Extent

Centroid (X,Y):	Projection	Centroid: (Qtr Sec Twp Rng Mer)	Radius or Dimensions
698258, 5929459	10-TM AEP Forest	SW 21 52 14 4	1.5 kilometers

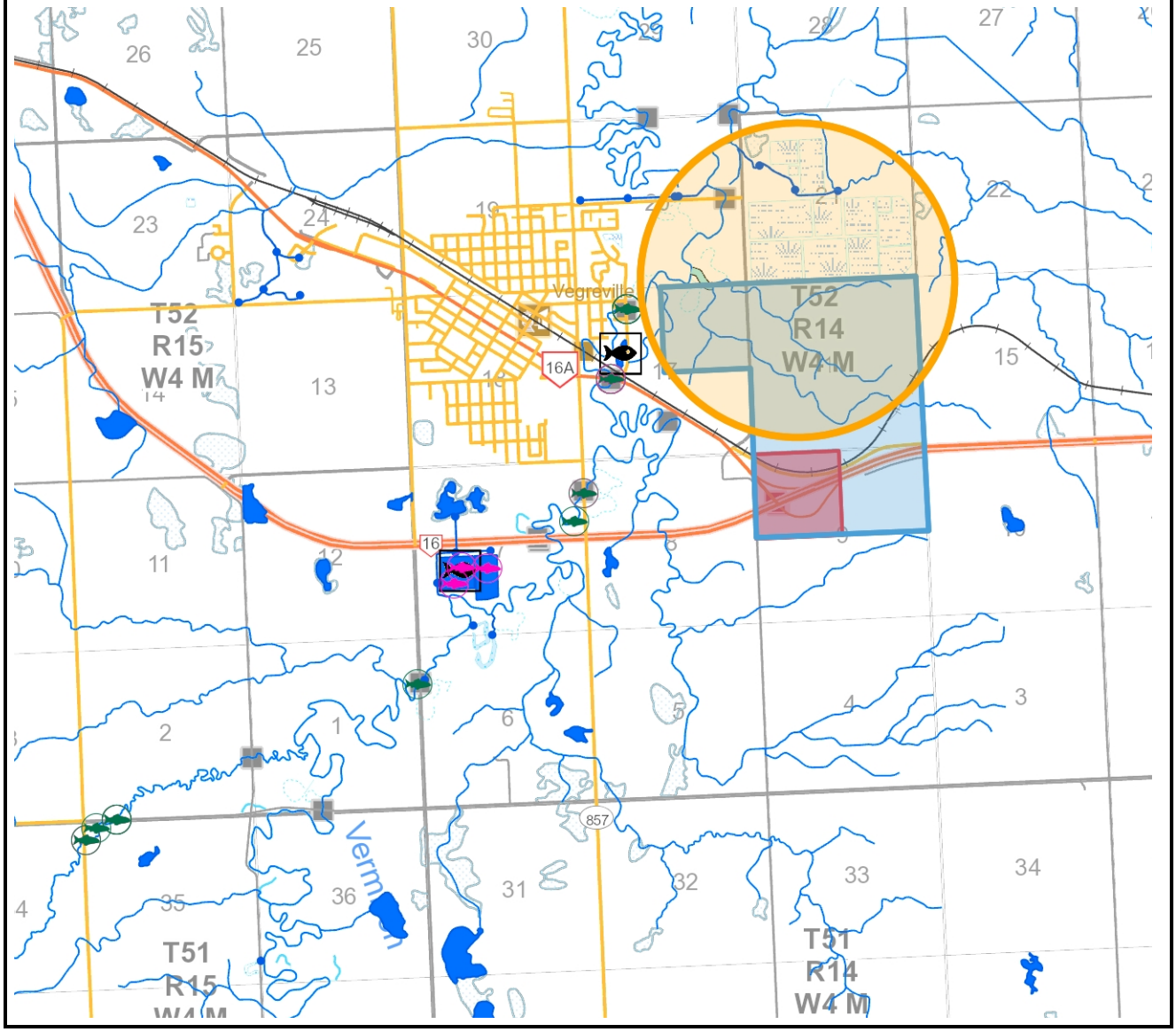
Contact Information

For contact information, please visit:

http://aep.alberta.ca/about-us/contact-us/fisheries-wildlife-management-area-contacts.aspx

4-Jun-2019 10:27

Map Results



Fish and Wildlife Internet Mapping Tool (FWIMT)

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

Species Summary Report

Report Created: 4-Jun-2019 10:28

Species present within the current extent :

Fish Inventory	Wildlife Inventory	Stocked Inventory
	No Species Found in Search Extent	No Species Found in Search Extent

Buffer Extent

Centroid (X,Y):	Projection	Centroid: (Qtr Sec Twp Rng Mer)	Radius or Dimensions
699443, 5928370	10-TM AEP Forest	SW 15 52 14 4	1.5 kilometers

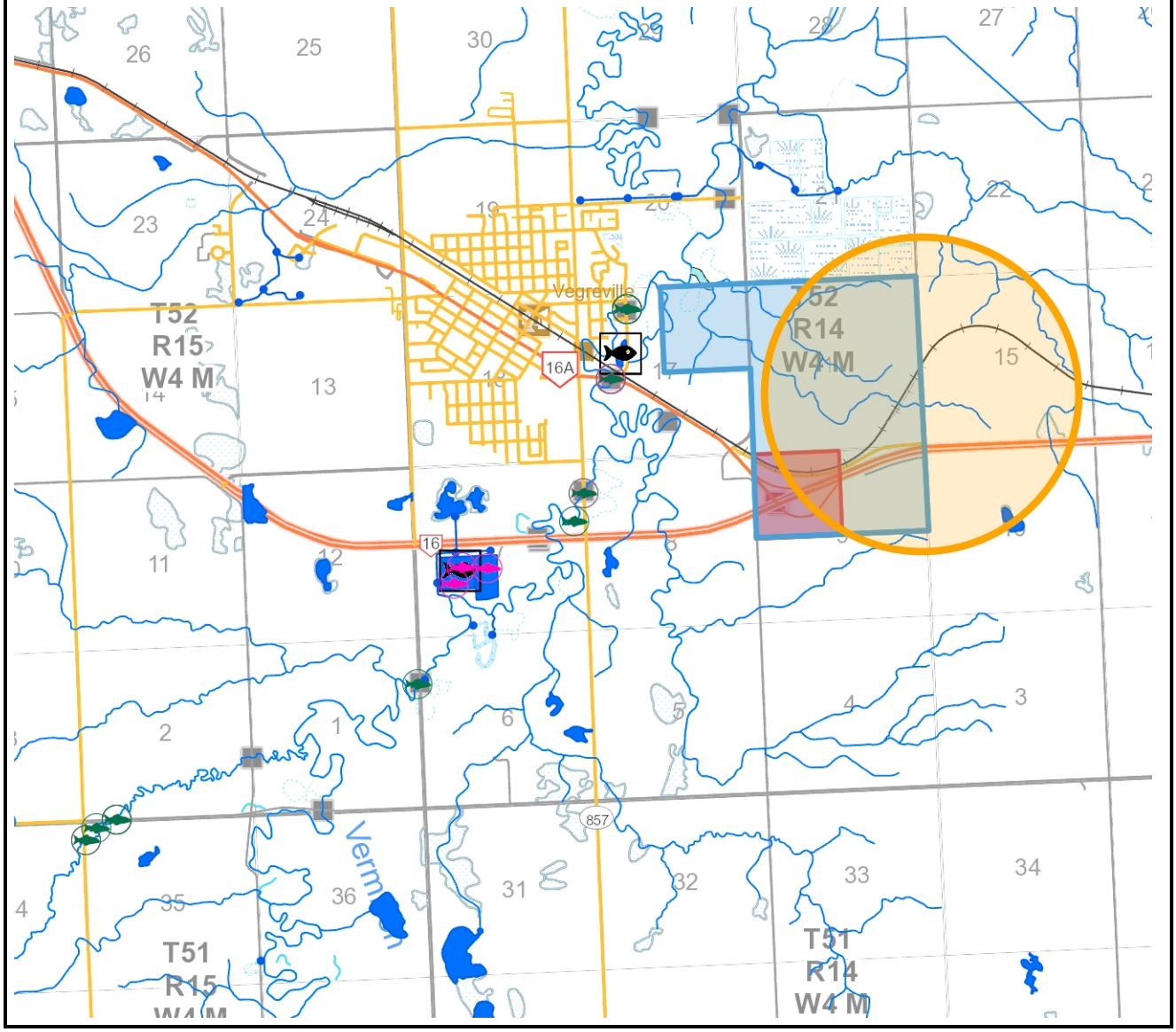
Contact Information

For contact information, please visit:

http://aep.alberta.ca/about-us/contact-us/fisheries-wildlife-management-area-contacts.aspx

4-Jun-2019 10:28

Map Results



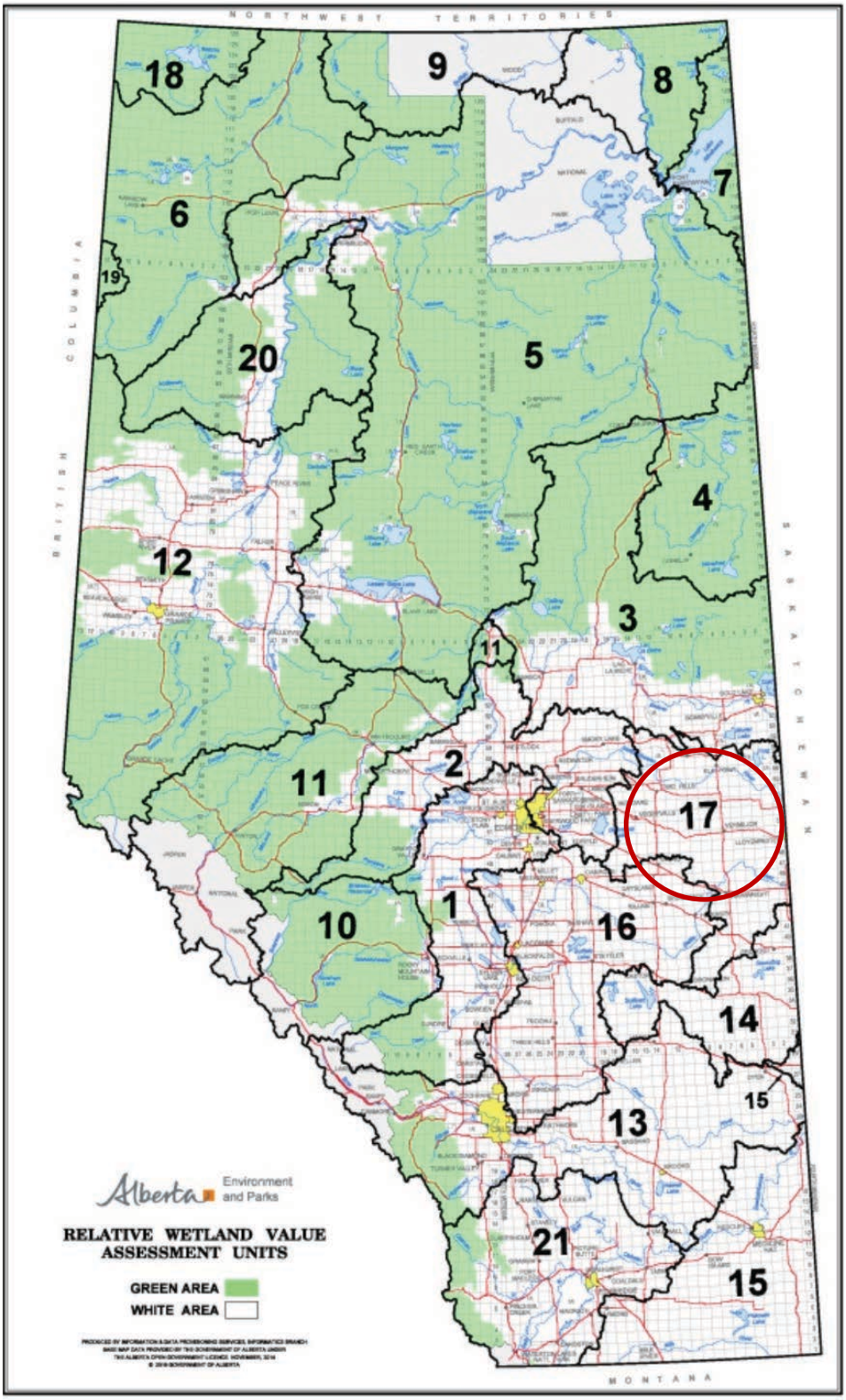
APPENDIX F

WETLAND ASSESSMENT UNIT MAP

WETLAND ASSESSMENT REPLACEMENT VALUE

WETLAND REPLACEMENT IN-LIEU RATES

WETLAND ASSESSMENT UNIT AND VALUE



WETLAND ASSESSMENT UNIT AND VALUE

	Relative Wetland Value Assessment Unit	*In lieu* Rate ($/ha)
Public Lands[7] (in the Green Area)	Units 1-12 and 18-21	10,300
Public Lands (in the White Area) All other lands[8] (province-wide)	1	19,100
	2	19,400
	3	19,100
	4	19,100
	5	18,400
	6	18,200
	7	18,400
	8	18,400
	9	18,400
	10	19,100
	11	19,400
	12	18,500
	13	17,700
	14	18,200
	15	17,300
	16	18,500
	17	18,600
	18	18,200
	19	18,200

		Value of Replacement Wetland			
		D	C	B	A
Value of Lost Wetland	A	8:1	4:1	2:1	1:1
	B	4:1	2:1	1:1	0.5:1
	C	2:1	1:1	0.5:1	0.25:1
	D	1:1	0.5:1	0.25:1	0.125:1

*Ratios are expressed as area of wetland

A2 Appendix 2
Stormwater Management Plan

Does not form part of this Bylaw.

Prepared by: BAR Engineering

October 4, 2019 | Project No.: 18MU-352300

County of Minburn No. 27
4909 – 50 Street
Box 550
Vegreville, AB
T9C 1R6

Attention: Davin Gegolick

Dear Sir:

Re: West Industrial Park Area Structure Plan – Servicing Brief
County of Minburn No. 27

1.0 | INTRODUCTION

Red Willow Planning, on behalf of the County of Minburn No. 27 (County), engaged BAR Engineering Co. Ltd. (BAR) to prepare a servicing brief associated with, and to compliment, the preparation of the West Industrial Park Area Structure Plan (ASP). Servicing options and recommendations for the West Industrial Park water, wastewater, stormwater management, franchise utilities, and transportation network are provided in this servicing brief.

2.0 | BACKGROUND

The West Industrial Park is located within the County on the east side of the Town of Vegreville (Town) and comprises Section 16-52-14-W4M, NE ¼ Section 17-52-14-W4M, and portions of the NW and NE ¼ Sections 9-52-14-W4M. Range Road 143 bounds the West Industrial Park to the east, Town lagoons to the north, Town land to the west, and Canadian National (CN) Railway and Highway 16 right-of-way to the south. CN Rail tracks bisect the SE ¼ Section 16-52-14-W4M. Location of the West Industrial Park including the ASP boundary is shown in Figure 2-1.

Majority of the land within the West Industrial Park is currently used for agricultural purposes with the NE ¼ Section 17-52-14-W4M and the NW ¼ Section 16-52-14-W4M zoned Agricultural. According to the County's Land Use Bylaw 1254-16, the NE and SE ¼ Sections 16-52-14-W4M and portion of NE ¼ Section 9-52-14-W4M are zoned Rural Industrial and the portion of NW ¼ Section 9-52-14-W4M, and SW ¼ Section 16-52-W4M are zoned Direct Control. A portion of the SE ¼ Section 16-52-14-W4M is zoned MPF Direct Control, which in recent years was redistricted for the Lunaverse Medical Marijuana Facility (Lunaverse). The County adopted a Conceptual Scheme, prepared by Lunaverse, to support the development of the land prior to the County adopting an ASP for the West Industrial Park. In addition to Lunaverse, GrainsConnect is currently in the process of developing a grain terminal in the NE ¼ Section 16-52-14-W4M. Figure 2-2 illustrates the land use and identifies the locations of the Lunaverse and

GrainsConnect developments.

Proposed land use for the West Industrial Park, excluding the parcel districted MPF Direct Control, is Rural Industrial district. Large lot sizes are typical for rural industrial developments, which is consistent with the proposed lotting plan provided by Red Willow Planning. Proposed lot sizes range in size from roughly 3.6 acres to 15.6 acres as shown in Figure 2-3. It is important to note that the proposed lotting provided by Red Willow Planning is conceptual and will be refined during future development stages.

3.0 | SERVICING

3.1 WATER

County of Minburn does not currently have an existing municipal water distribution system within the vicinity of the West Industrial Park to provide potable water to the development. As such, either private on-site potable water systems, such as wells or cisterns, will need to be utilized for the development or a connection to the Alberta Central East (ACE) Regional Water System will be required. If water wells are utilized for the development, groundwater evaluations and/or hydrogeological assessments will be required prior to and as part of the subdivision process to obtain the required approvals and authorization from Alberta Environment and Park's and Sustainable Resource Development to divert and use groundwater.

ACE Regional Water System supplies drinking water to member municipalities, which includes the County of Minburn. The ACE transmission line is located approximately 800m north of the north ASP boundary and runs east/west along Township Road 523A between Range Road 145 and Range Road 144. At Range Road 144, the transmission line heads north to Township Road 524. Connection to the ACE Transmission line at the intersection of Township Road 523A and Range Road 144 could provide potable water to the West Industrial Park. A watermain, owned and operated by the County, would be required from the connection point south along Range Road 144 and looped throughout the development to provide service to the Rural Industrial lots. It is important to note that ACE does not provide distribution pressures, so either the water supply would be through a trickle feed system to fill private on-site cisterns, or the County could construct a reservoir and pump station to provide adequate distribution pressures to the West Industrial Park. Figure 3-1 illustrates the location of the existing ACE Transmission Line and the possible connection point and watermain alignment to the north side of the West Industrial Park. Application to connect to the ACE Transmission Line would be undertaken at future design stages of the development prior to subdivision.

3.2 WASTEWATER

Rural municipal wastewater collection systems are not present within or near the West Industrial Park. Private on-site wastewater collection and treatment systems will be required for the proposed rural industrial development, which could include holding tanks, septic tanks, and/or septic fields. Unlike municipal wastewater collection systems, on-site sewage systems include either collection of the

wastewater and hauling offsite or collecting and treating the wastewater onsite prior to discharging to the environment. Implementation of private sewage systems shall be in accordance with the Alberta Private Sewage Systems current Standard of Practice at the subdivision stage.

Town lagoons located immediately north of the NW and NE ¼ Sections 16-52-14-W4M treat wastewater collected from the Town prior to discharging. It is understood, that at this time, the County intends for the West Industrial Park to utilize on-site private sewage systems. Further analysis, in collaboration with the Town, could be completed if the County wishes to pursue installation of a wastewater collection system within the West Industrial Park to convey wastewater to the Town lagoons. A municipal wastewater collection system for the West Industrial Park could consist of a low-pressure sewage collection system, and/or gravity sanitary sewer mains in combination with lift stations.

3.3 STORMWATER MANAGEMENT

The ASP lands generally slope from the southeast to the northwest with a relief of approximately 21m. Many trapped lows within the ASP boundary capture stormwater runoff and provide wetland habitat. An unnamed tributary of the Vermilion River is located along the west and north property lines of the NE ¼ Section 17-52-14-W4M, which serves as the natural drainage outlet for the West Industrial Park. A flood hazard mapping study was undertaken for the Vermilion River to identify the extents of the 1:100 year flood plain. The flood plain consists of two areas of flow identified as the floodway and the flood fringe. Floodway represents the area where the floodwaters are deepest, fastest, and most destructive. Flood fringe are areas outside of the floodway where floodwaters are generally shallower and flow slower. According to Alberta Environment and Park's flood hazard mapping, the unnamed tributary located within the NE ¼ Section 17-52-14-W4M is located within the Vermilion River's 1:100 year flood fringe.

Proposed stormwater management measures for the West Industrial Park are provided in the attached Stormwater Management Plan. A series of drainage ditches, including roadside ditches, and stormwater management facilities (SWMF) will be utilized to convey and control stormwater runoff from the proposed development with natural drainage patterns from the southeast to the northwest being maintained. Three conceptual SWMF locations have been identified based on grading to maintain natural drainage and the proposed lotting plan. A maximum SWMF discharge rate of 0.45 L/s/ha has been adopted for this study based on the 1:100 year Vermilion River discharge rate provided in the flood hazard mapping study. Further analysis including sizing of the SWMFs, location, sequencing, and Water Act application will be completed in future stages of development prior to subdivision. Figure 3-2 illustrates the proposed stormwater management system including the conceptual SWMF sizing for a 1:100 year 24 hour rain event.

3.4 FRANCHISE UTILITIES

Power, natural gas, and communication services are all located within the vicinity of the West Industrial Park and will be extended from the nearest connection location for the planned subdivision. Application to the utility provider for connection and/or extension of service to the proposed development will be

required at the subdivision stage.

Power is provided by ATCO Electric for the West Industrial Park area. Three phase overhead power lines are located along the unimproved road allowance of Township Road 522, from Range Road 143 to Range Road 144, along the west property line of the NE ¼ Section 17-52-14-W4M running north/south, and along Range Road 143. Service connection location to power will be coordinated prior to subdivision.

3.5 TRANSPORTATION NETWORK

Access to the West Industrial Park is currently provided via Township Road 522A, Range Road 144, and Range Road 143. Township Road 522A provides access from the Town on the west side of the development. Range Road 144 connects to Highway 16A to the south, Township Road 522A, Township Road 523A, and Township Road 524 to the north. Range Road 143, located along the east side of the West Industrial Park, can currently be accessed from the service road/Township Road 522 to the south and Township Road 524 to the north. The road allowance width of undeveloped Township Road 522, along the south side of the West Industrial Park, and Range Road 143 are 20m, while all other existing roads have a road allowance width of 30m. Existing roadways are shown in Figure 2-1.

Transportation networks typically consist of three classifications of roadways; arterial, collector, and local. Roadway classification is determined based on connectivity of the transportation network and traffic volumes. In general, arterial roadways have higher traffic volumes and connect to collector roadways, while collector roadways connect to local roads with the least traffic volume. Direct access to private development is permitted on local and collector road classifications, but not arterial. The proposed transportation network, including roadway classifications, is shown in Figure 3-3.

All proposed roadways within the West Industrial Park development will be rural cross section roads with roadside ditches to provide drainage and convey stormwater runoff as noted in Section 3.3 and will be developed to the current County of Minburn's Road Standards at time of development. The following recommendations are provided for the West Industrial Park transportation network at future development stages:

- Undertake a traffic impact assessment prior to subdivision to determine if intersection upgrades or controls are required as a result of development.
- Complete a geotechnical investigation to confirm soil stratigraphy, suitability of existing soil for construction, and recommended road pavement structures based on soils and vehicular loading.
- Construct roadways to accommodate a minimum 9m finished top width for truck traffic.
- Widen Township Road 522 road allowance to 30m for construction of the proposed road cross section.

It should be noted that GrainsConnect Canada retained Stantec Consulting Ltd. to prepare a Transportation Impact Assessment (TIA) for the proposed grain terminal development located in the NE

¼ Section 16-52-14-W4M. Recommendations from the TIA are provided in the report entitled New Grain Terminal Facility – Vegreville Transportation Impact Assessment, Stantec Consulting Ltd., October 2, 2017, which concludes that the roadway network and intersections within the TIA's study area are expected to accommodate traffic volumes generated by the proposed grain terminal development including for future growth.

4.0 | CLOSURE

If you have any questions or require any clarifications regarding this servicing brief, please do not hesitate to contact me at (780) 875-1683 or via e-mail at scott.simons@bareng.ca.

Yours truly,
BAR Engineering Co. Ltd.

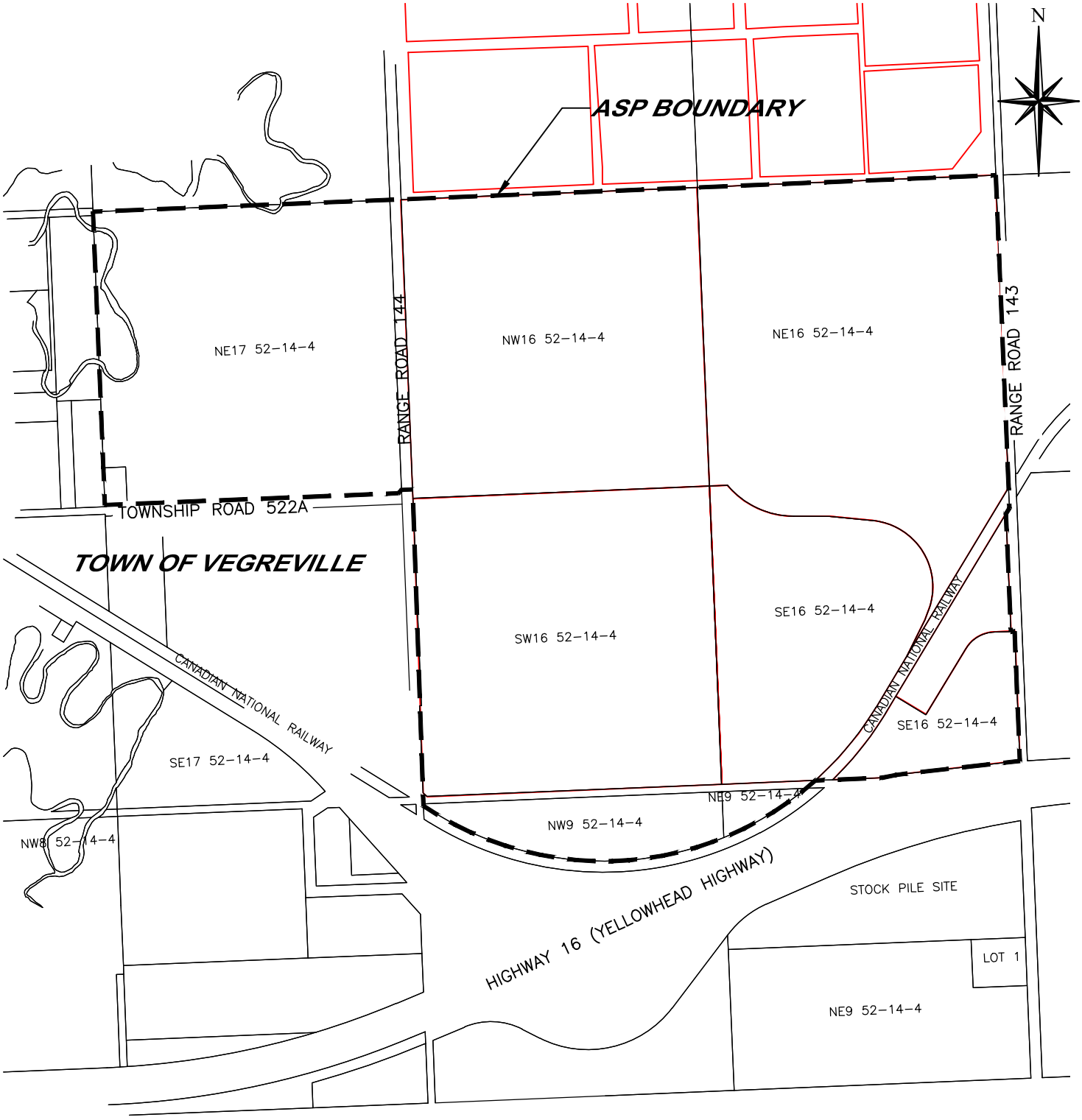
Scott Simons, P. Eng.
Senior Engineer
Municipal Division

Reviewed by,
BAR Engineering Co. Ltd.

Rick Collins, P. Eng.
Director
Municipal Division

Attachments: West Industrial Park Stormwater Management Plan DRAFT Report, September 13, 2019

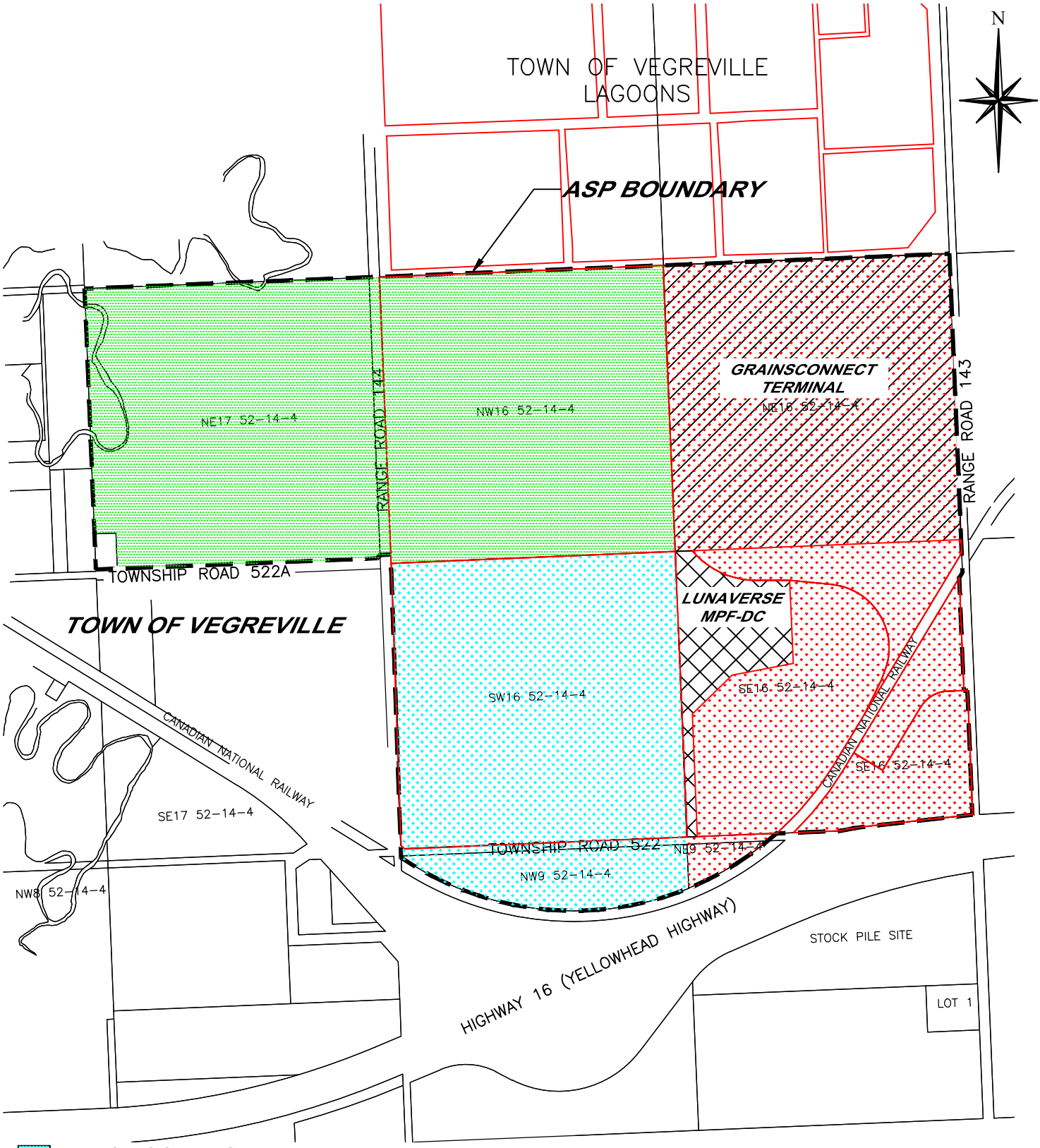
CC/cc: Red Willow Planning – Vicki Dodge



BAR Engineering

Drawn by:	SWS	**Figure 2-1: Location Plan**	Drawing #: 2-1
Approved by:	SWS	Servicing Brief	Scale: 1:15,000
Date:	2019-09-10	County of Minburn No. 27, Alberta	Revision: 0

Drawing path: \\BARDC1\P_Drive\Municipal\18MU-352300 County of Minburn Sec 16-52-14-W4M Area Structure Plan\300-Eng Design\Drafting\Municipal\Servicing Brief\18MU-323700 - Figure 2-1 - Location



BAR Engineering

Drawn by:	SWS	**FIGURE 2-2: EXISTING LAND USE**	Drawing #: 2-2
Approved by:	SWS	SERVICING BRIEF County of Minburn No. 27, Alberta	Scale: 1:15,000
Date:	2019-09-10		Revision: 0

Drawing path: \\BARDC1\P_Drive\Municipal\18MU-352300 County of Minburn Sec 16-52-14-W4M Area Structure Plan\300-Eng Design\Drafting\Municipal\Servicing Brief\18MU-323700 - Figure 2-2 - Existing L

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Drawn by:	SWS	**FIGURE 2-3: DEVELOPMENT PLAN**	Drawing #: 2-3
Approved by:	SWS	SERVICING BRIEF	Scale: 1:15,000
Date:	2019-09-10	County of Minburn No. 27, Alberta	Revision: 0

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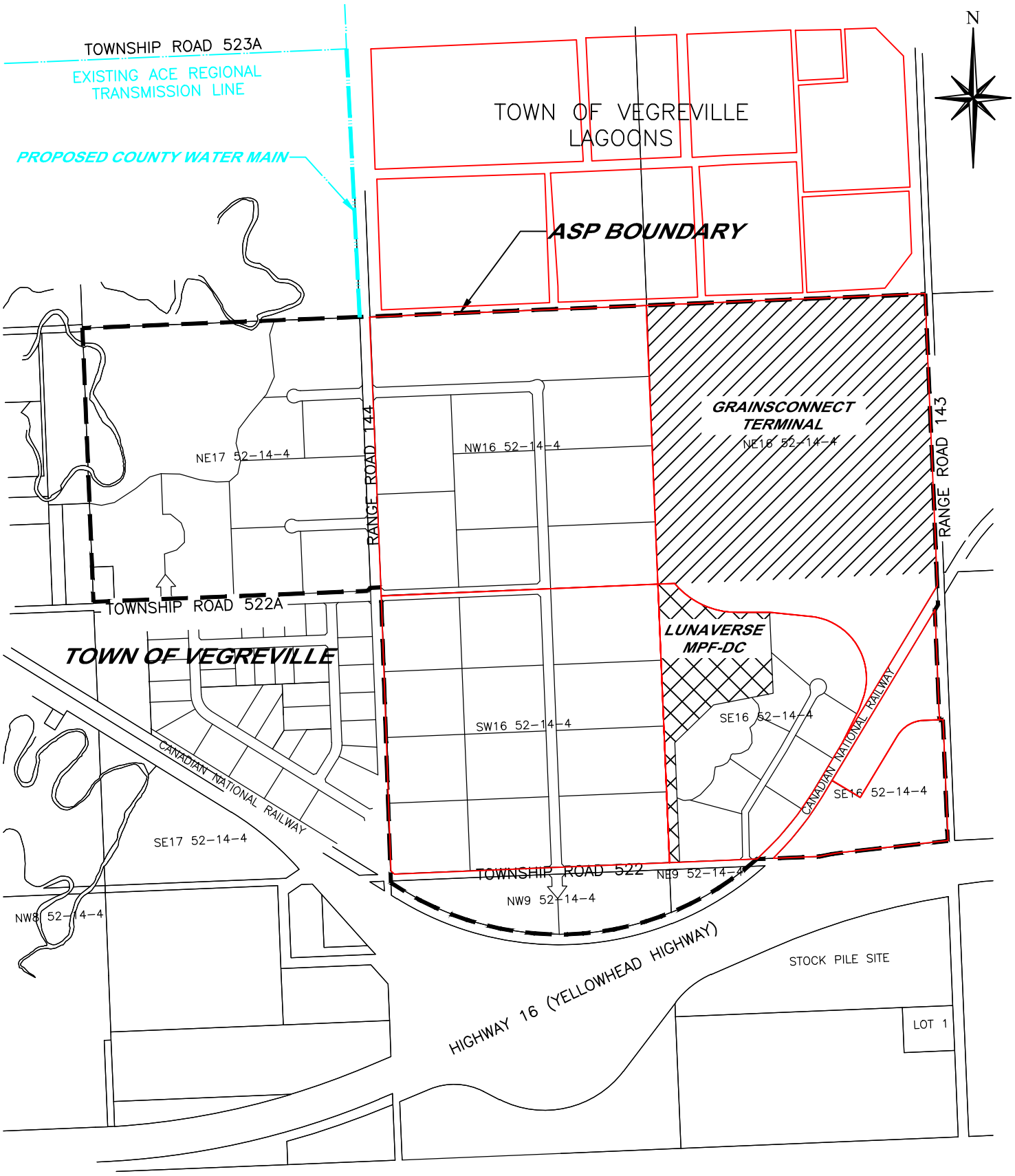

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Drawn by:	SWS	**FIGURE 3-1: ACE WATER CONNECTION**	Drawing #: 3-1
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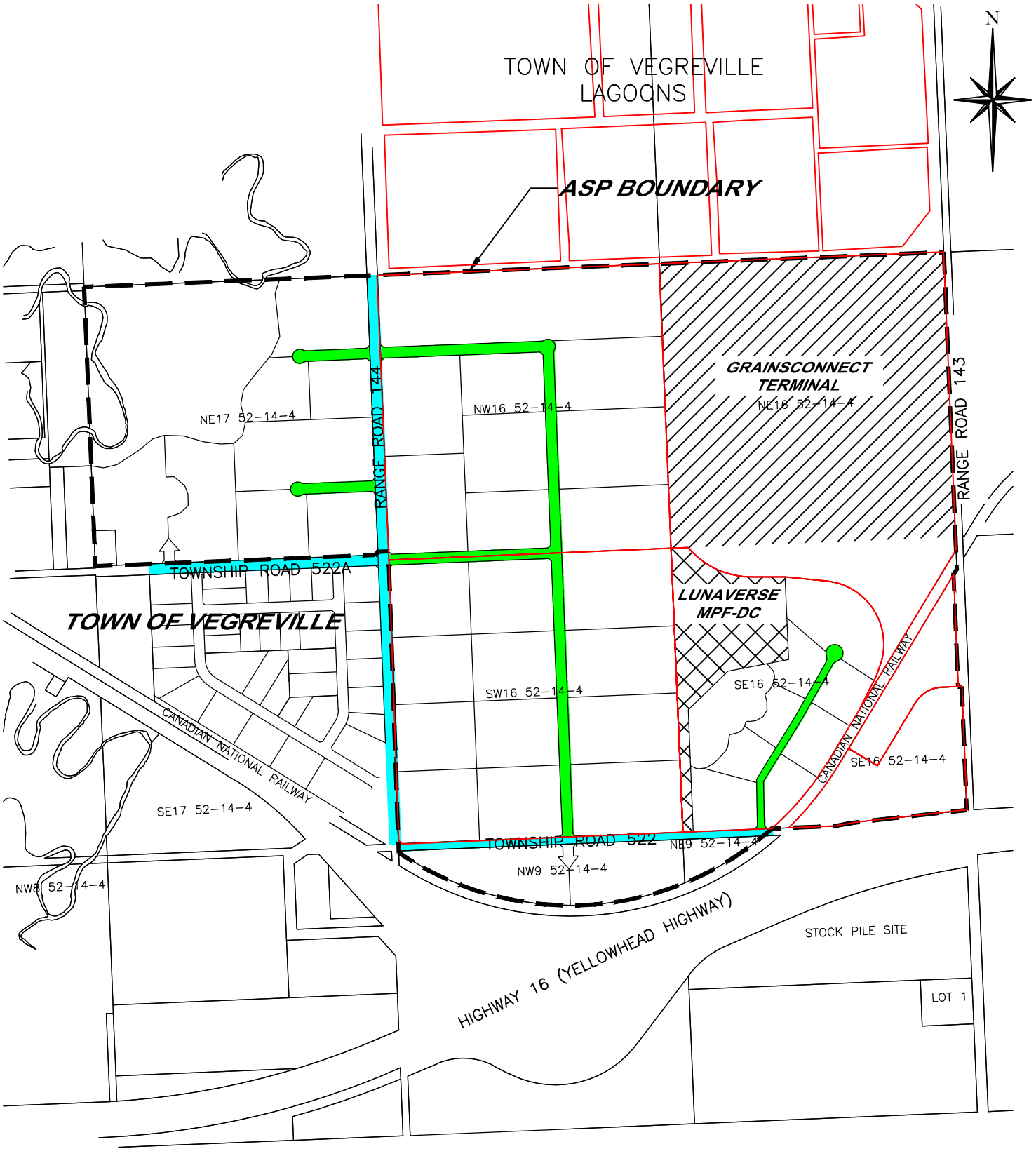
Drawn by:	SWS	**FIGURE 3-2: STORMWATER MANAGEMENT**	Drawing #: 3-2
Approved by:	SWS	SERVICING BRIEF	Scale: 1:15,000
Date:	2019-09-10	County of Minburn No. 27, Alberta	Revision: 0

Drawing path: \\BARDC1\P_Drive\Municipal\18MU-352300 County of Minburn Sec 16-52-14-W4M Area Structure Plan\300-Eng Design\Drafting\Municipal\Servicing Brief\18MU-323700 - Figure 3-2 - Post Dev



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Drawn by:	SWS	**FIGURE 3-3: TRANSPORTATION NETWORK**	Drawing #: 3-3
Approved by:	SWS	SERVICING BRIEF	Scale: 1:15,000
Date:	2019-09-10	County of Minburn No. 27, Alberta	Revision: 0

Drawing path: \\BARDC1\P_Drive\Municipal\18MU-352300 County of Minburn Sec 16-52-14-W4M Area Structure Plan\300-Eng Design\Drafting\Municipal\Servicing Brief\18MU-323700 - Figure 3-3 - Transport

West Industrial Park
Stormwater Management Plan

October 4, 2019 | BAR Project No.: 18MU-352300

FINAL Report

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Exceptional ... EVERY TIME!

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5237 – 70 Avenue Lloydminster, AB T9V 3N6

CONTENTS

LIST OF FIGURES

LIST OF TABLES

1.0 | INTRODUCTION

1.1 BACKGROUND

The County of Minburn No. 27 (County) retained BAR Engineering Co. Ltd. (BAR) to prepare a stormwater management plan (SWMP) to supplement the Area Structure Plan (ASP) being prepared by Red Willow Planning for the West Industrial Park. An ASP provides the framework for decision-making regarding future subdivision of the lands, which is utilized by the Municipality and developers for development of the identified area. The SWMP outlines major overland drainage design concepts, in context with the ASP and in accordance with applicable design standards and guidelines, to facilitate development of the subject lands. Refinement of the presented stormwater management concepts will occur prior to subdivision of the lands as part of the subdivision phase.

1.2 PRE DEVELOPMENT SITE DESCRIPTION

The West Industrial Park is located along the east boundary of the Town of Vegreville (Town) and is bounded by the Town to the west, Town lagoons to the north, Range Road 143 to the east, and undeveloped road allowance to the south beyond which Canadian National Railway and Highway 16 right-of-way exists. Section 16-52-14-W4M, NE ¼ Section 17-52-14-W4M, and portions of the NW and NE ¼ Section 9-52-14-W4M are located within the West Industrial Park ASP boundary. SE ¼ Section 17-52-14-W4M, directly adjacent to the West Industrial Park, is located within the Town boundaries. A Canadian National Railway Line bisects the southeast quarter section from the southwest corner of the quarter to the northeast. Figure 1-1 shows the location of the ASP lands.

According to the County's Land Use Bylaw 1254-16, the SW ¼ Section 16 and portion of NW ¼ Section 9-52-14-W4M are zoned Direct Control and the east quarter sections are zoned Rural Industrial. The NE ¼ Section 17-52-14-W4M and NW ¼ Section 16-52-14-W4M are zoned Agricultural. Currently, the majority of the parcel is used as agricultural land, however, GrainsConnect is in the process of developing a grain terminal on the NE ¼ Section of 16. In addition, a portion of the SE ¼ Section of 16 has recently been redistricted to MPF-DC: Marijuana Productions Facility – Direct Control district and is in the process of being subdivided for the Lunaverse Medical Marijuana Facility.

LiDAR survey data, provided by the County, shows that the subject lands generally drain from the southeast to the northwest with approximately 21m of relief. An unnamed tributary of the Vermilion River is located within the northwest portion of the ASP boundary and provides drainage outlet for stormwater runoff. A number of trapped lows within the ASP boundary capture runoff prior to reaching the unnamed tributary. Figure 1-2 shows the original ground contours and general flow direction within the property.

A flood hazard mapping study of the Vermilion River was completed in 1994 by SNC Lavalin for Alberta Environment and is summarized in a report entitled "Vegreville Flood Risk Mapping Study, Canada – Alberta Flood Damage Reduction Program. April 1994". The unnamed tributary within the NE17-52-14-W4M is included in the 1:100 year flood fringe of the Vermilion River. Flood fringe is the area outside of the floodway where flows are shallower and generally slower than in the floodway. New development within the flood fringe may be permitted, but would require flood proofing. The approximate extents of the flood fringe was obtained from Alberta Environment's Flood Hazard Map Application and is shown in Figure 1-2.

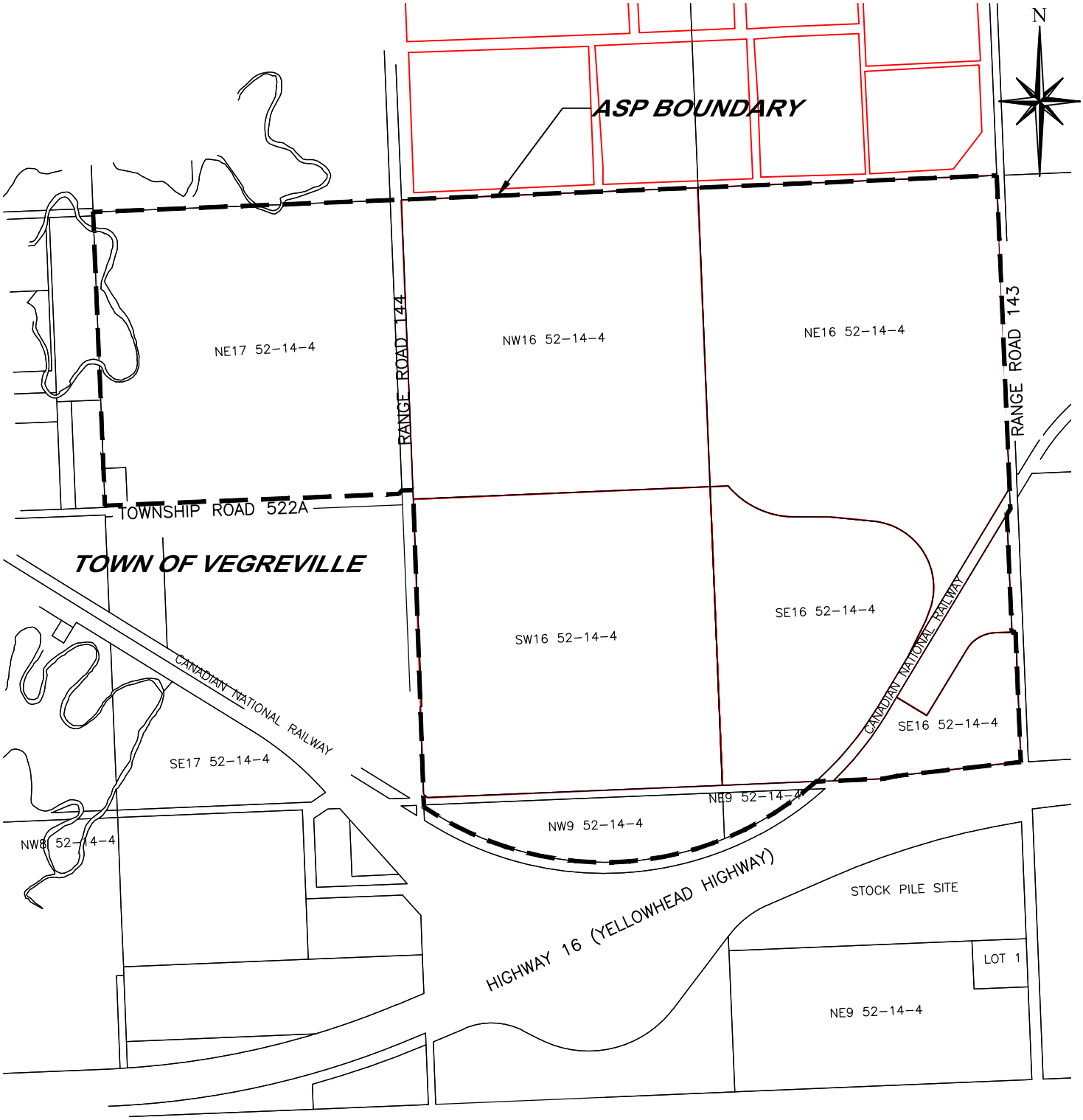
1.3 POST DEVELOPMENT SITE DESCRIPTION

The ASP development area will be redistricted and subdivided for Rural Industrial land use. Lot sizes for Rural Industrial District are not specified in the County's Land Use Bylaw, but will be determined by the County's Subdivision Authority at future subdivision stages. Figure 1-3 illustrates the proposed lot layout provided by Red Willow Planning.

Rural Industrial lots are proposed within the NE ¼ Section 17-52-14-W4M and NW, SW, and SE 16-52-14-W4M as shown in the proposed development plan. The GrainsConnect terminal is currently being developed in the NE 16-52-14-W4M and the Lunaverse Medical Marijuana Facility has been subdivided from the SE 16-52-14-W4M as previously noted and as shown on Figure 1-3.

Access to the proposed Rural Industrial lots will be provided off existing Range Road 144 and Township Road 522A. Local rural cross section industrial roads will be constructed within the proposed development to provide access to the internal lots. The undeveloped road allowance of Township Road 522 will be developed to provide access to the SE ¼ Section 16-52-14-W4M, and NW and NE ¼ Sections 9-52-14-W4M, and to also provide internal looping of the development's road network.

Phasing of the ASP lands has not been identified at this time, although phasing of the development should consider logical implementation and sequencing of the overall drainage and stormwater management system as discussed in Section 3.6. Further review and refinement of the stormwater management plan will be required at the subdivision stage once phasing has been confirmed as the development phasing may impact proposed stormwater management facility (SWMF) locations.



BAR Engineering

Drawn by:	SWS	**Figure 1-1: Location Plan** Stormwater Management Plan County of Minburn No. 27, Alberta	Drawing #: 1-1
Approved by:	SWS		Scale: 1:15,000
Date:	2019-09-10		Revision: 0

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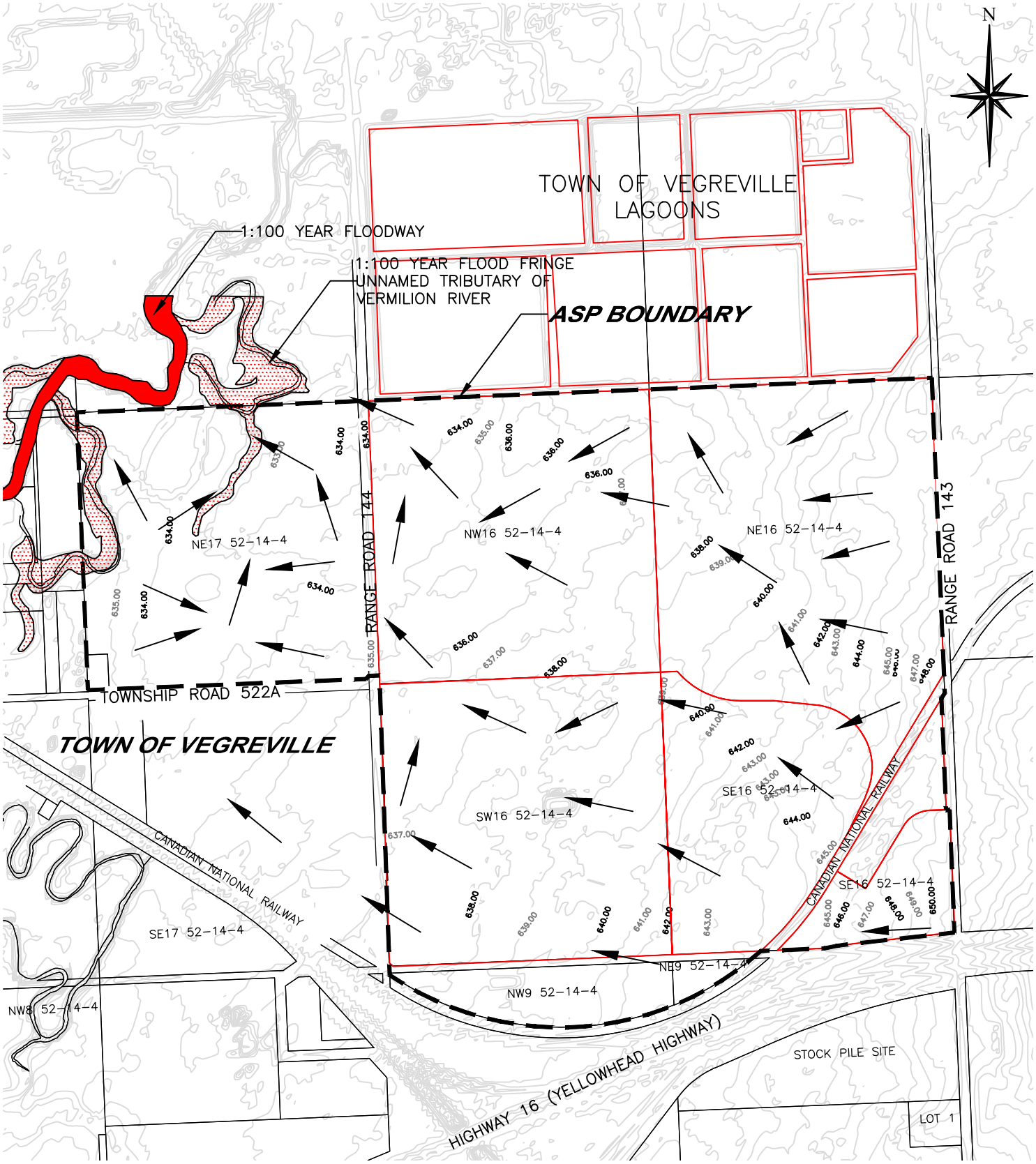

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Drawn by:	SWS	**FIGURE 1-2: PRE DEVELOPMENT DRAINAGE**	Drawing #: 1-2
Approved by:	SWS	Stormwater Management Plan	Scale: 1:15000
Date:	2019-09-10	County of Minburn No. 27, Alberta	Revision: 0

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BAR Engineering

Drawn by:	SWS	**FIGURE 1-3: DEVELOPMENT PLAN**	Drawing #: 1-3
Approved by:	SWS	STORMWATER MANAGEMENT PLAN	Scale: 1:15,000
Date:	2019-09-10	County of Minburn No. 27, Alberta	Revision: 0

Drawing path: \\BARDC1\P_Drive\Municipal\18MU-352300 County of Minburn Sec 16-52-14-W4M Area Structure Plan\300-Eng Design\Drafting\Municipal\18MU-323700 - Figure 1-3 - Development Plan.dwg

2.0 | DESIGN CRITERIA AND METHODOLOGY

2.1 DESIGN STANDARDS AND ASSUMPTIONS

Stormwater management regulations and engineering standards have evolved over the past several decades. An approved stormwater management plan (SWMP) must address both stormwater quality and quantity aspects under today's regulations. The following design guidelines and standards were used in the development of the present stormwater management plan:

- Alberta Environment Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems, Part 5 Stormwater Management Guidelines, March 2013;
- Alberta Environment's Stormwater Management Drainage Systems Design Guidelines, January 1999; and,
- City of Edmonton Design and Construction Standards, Volume 3 Drainage, March 2015.

In addition to the above guidelines, the following reports were utilized in the development of the SWMP:

- Vegreville Flood Risk Mapping Study, Canada-Alberta Flood Damage Reduction Program, April 1994, SNC Lavalin;
- SE 17 Industrial Area Structure Plan, August 2015, Eagle River Planning Services; and,
- Town of Vegreville North Parkway Drainage Course for Water Act Application Approval, February 9, 2015, MPE Engineering Ltd.
- Stormwater Management Plan for GrainsConnect Canada's Grain Elevator Facility Development at Vegreville, AB, DRAFT, April 6, 2018, Stantec Consulting Ltd.

Stormwater runoff volume and discharge rate increase with development of land due to an increase in impervious area from roads, buildings, parking lots, etc. and altering of drainage paths. Stormwater management facilities (SWMFs) are used as a best management practice (BMP) within developments for flood control by temporarily storing and restricting the release rate of stormwater runoff and to provide water quality enhancement prior to discharging to downstream water bodies and watercourses. Wet ponds are commonly used SWMFs as they provide water quality enhancement through settling of runoff pollutants within the permanent pool (dead storage) and stormwater runoff during rain events is temporarily stored above the permanent pool (live or active storage) and released downstream at a restricted rate. Alberta Environment guidelines do not specifically dictate the stormwater quantity requirements; however, they provide the following design parameters:

- 1 in 100 year storm stored within 2m above the permanent pool (alternatively, the 2m can be used to store the 1 in 25 year storm. In such cases an emergency overflow drainage system should be constructed with the capacity to carry storm runoff from the 1 in 100 year storm event to receiving streams or downstream stormwater management facilities); and,
- Detention time of 24 hours.

The 1 in 100 year 24 hour storm design parameter will be adopted for the purposes of quantity control for this SWMP.

Generally, the release rate of a SWMF is restricted to the pre development runoff rate for a parcel of land and is commonly determined using known flow data of downstream watercourses. Matching post development stormwater

runoff rate to pre development will mitigate impact on downstream watercourses caused by development. The following release rates are considered based on the above noted reports:

- 24-hour drawdown time for a 1:5 year storm (North Parkway Drainage Course);
- Pre development rate of 4.0 L/s/ha (SE 17 Industrial Area Structure Plan); and,
- 0.45 L/s/ha based on 1:100 year Vermilion River at Vegreville flood peak of 73m^3/s and drainage area of 1,630 km^2 (Vegreville Flood Hazard Mapping).

The 24-hour drawdown time for a 1:5 year storm provided in the North Parkway Drainage Course report is based on a City of Edmonton standard, which doesn't account for pre development flow. Pre development rate of 4.0 L/s/ha provided in the SE 17 Industrial ASP was not able to be confirmed although the ASP indicates it is as per Alberta Environment 1998. Flood frequency analysis was provided for the downstream receiving watercourse, Vermilion River, in the Vegreville Flood Hazard Mapping report. Using the 1:100 year flow of the Vermilion River and the drainage area of 1,630 km^2 results in a discharge rate of 0.45 L/s/ha for the Vermilion River at Vegreville, which has been adopted for this SWMP. Further analysis of the pre development discharge rate should be completed during future subdivision stages and prior to Water Act Application.

2.2 RAINFALL MODELS

The City of Edmonton Intensity, Duration and Frequency Curves (IDF Curves) were used to develop the storm events to determine the required storage of the SWMF(s). Specifically, required storage was determined using the City of Edmonton's 1:100 year 24 hour Huff distribution.

2.3 HORTON'S INFILTRATION METHOD

The infiltration method used in this study was the Horton Infiltration Method, which determines the rate that water seeps through the soil during a storm. This method is based on empirical data that shows that infiltration starts at an initial maximum rate and decreases exponentially to a minimum rate over the course of the rainfall event, which implies that the rate of infiltration decreases as the soil becomes saturated. The infiltration method is described by the following equation:

$$f_p = f_c + (f_o - f_c)e^{-kt}$$

Where: f_p = infiltration rate at time t (mm/hr)

k = decay rate (1/hr)

f_c = minimum equilibrium infiltration rate (mm/hr)

f_o = maximum infiltration rate (mm/hr)

The above parameters are based on soil properties and vegetation cover for any basin. For the purposes of this SWMP, it has been assumed that the soil in the study area is comprised of clay loam, lightly vegetated, and moist soil conditions.

2.4 COMPUTER ANALYSIS

To assist in determining the post development runoff rates and design of the Stormwater Management Facilities, a computer model was produced. This model was created using USEPA SWMM 5.0, a dynamic rainfall-runoff simulation model developed by the U.S. Environmental Protection Agency. City of Edmonton rainfall distributions were utilized in the model as previously noted, and a maximum release rate of 108 L/s was used based on a pre development release rate of 0.45 L/s/ha for a 240 ha development area. It should be noted that a pre development analysis of the West Industrial Park ASP lands was not completed, as existing stormwater reports were utilized for determination of the maximum allowable release rate for the development.

The post development basin parameters that were used in the computer model are provided in Table 2-1. Post development basins used a combined imperviousness of 72% for the rural industrial lots and subdivision roads, and 100% imperviousness for stormwater management facilities. The impervious area Manning's 'n' of 0.015 is typical for concrete, asphalt, or gravel surfaces and the Manning's 'n' value for pervious areas of 0.10 is typical for short natural grass. Depression storage is the depth of stormwater that is trapped in the basin due to small storage depressions. Impervious areas provide little depression storage, typically ranging in depth from 1.0 to 2.50mm. Pervious areas, like pasture and landscaping, have a much greater potential for depression storage. The Horton Infiltration parameters for the post development basins are described in Section 2.3.

Table 2-1: Basin Parameters

Parameter	Post Development
Hydraulically Connected Impervious Area: • **Rural Industrial Lots** • **Stormwater Management Facilities**	 72% 100%
Impervious Area Manning's 'n'	0.015
Pervious Area Manning's 'n'	0.10
Impervious Area Depression Storage	2.0 mm
Pervious Area Depression Storage	5.0 mm
Initial Infiltration Rate, f_o	25 mm/hr
Final Infiltration Rate, f_c	1.52 mm/hr
Decay Rate of Infiltration	4 /hr

3.0 | STORMWATER MANAGEMENT

3.1 POST DEVELOPMENT DRAINAGE PATTERNS

Natural drainage patterns from the southeast to the northwest will be maintained with roadside ditches collecting and conveying stormwater runoff to the proposed stormwater management facilities. Overland flow is designed to run off from the industrial lots to the roadside ditches with minimum 2% lot grades and minimum roadside ditch grades of 0.2%. Three stormwater management facility locations have been identified as shown in Figure 3-1, however, phasing of the development could result in additional interconnected stormwater management facilities in locations best suited to the phasing of the development. It should be noted that excavated earth from the proposed stormwater management facilities would be used as engineered fill (if suitable) to construct the roadways and proposed lots.

GrainsConnect Terminal will control stormwater runoff from their site to predevelopment rates via an on-site stormwater management facility and control structure as outlined in the Stantec Draft Report entitled Stormwater Management Plan for GrainsConnect Canada's Grain Elevator Facility Development at Vegreville, AB, dated April 6, 2018. The proposed onsite SWMF will discharge to a natural drainage path at the northwest corner of the NE ¼ Section 16-52-14-W4M. Drainage will be diverted around the proposed industrial lots within the NW ¼ Section 16-52-14-W4M to the Vermilion River tributary near Range Road 144 via a man-made drainage ditch along the north and west quarter lines of the NW ¼ Section 16-52-14-W4M.

3.2 PROPOSED STORMWATER MANAGEMENT FACILITIES

All proposed stormwater management facilities (SWMF) are wet retention ponds designed in accordance with Alberta Environment guidelines. The SWMFs are designed with interior side slopes of 5:1 (H:V) from 1m below normal water level (NWL) to the high water level (HWL) and 3:1 (H:V) side slopes from the pond bottom to 1m below NWL. Fencing should be placed around the perimeter of the SWMFs to mitigate the public and wildlife from entering the facilities. A minimum 0.3m freeboard is proposed as emergency storage within the SWMFs.

The SWMF dead storage is the volume of water that is permanently stored in the pond and is the storage depth measured from the NWL to the pond bottom. Alberta Environment guidelines require a minimum dead storage depth of 2.0m to mitigate vegetation growth in the pond bottom. Dead storage provides the water quality enhancement of the BMP as previously noted by allowing sediments and pollutants to settle out prior to discharging.

Proposed SWMF 1 has a catchment area of 50.8 ha, as shown in the blue hatch in Figure 3-1, and is located in the northwest portion of the SW ¼ Section 16-52-14-W4M. Ditch blocks are required in the upstream ditches to direct flow from the roadside ditches into SWMF 1. Stormwater from SWMF 1 will be discharged to the downstream roadside ditch, which conveys the stormwater to SWMF 3 and subsequently to the unnamed tributary of Vermilion River at a controlled release rate of 0.45 L/s/ha. Table 3-1 below provides the surface area and storage volume at the pond bottom, NWL, HWL, and freeboard elevations.

Table 3-1: SWMF 1 – Design Parameters

Elevation (m)	Surface Area (m^2)	Volume (m^3)	Notes
633.00	32,028.4	0.0	Bottom
635.00	39,028.8	70,127.2	NWL
636.86	47,672.8	150,892.3	HWL
637.17	49,166.3	165,675.1	Freeboard

Stormwater runoff from an area of 89.0 ha, shown in the red hatch in Figure 3-1, will drain via roadside ditches to SWMF 2 proposed in the northwest portion of the NW ¼ Section 16-52-14-W4M. Similar to SWMF 1, stormwater from SWMF 2 will be discharged to an adjacent roadside ditch at a controlled release rate and conveyed to the unnamed tributary of Vermilion River through SWMF 3. Table 3-2 below provides the surface area and storage volume at the pond bottom, NWL, HWL, and freeboard elevations.

Table 3-2: SWMF 2 – Design Parameters

Elevation (m)	Surface Area (m^2)	Volume (m^3)	Notes
631.00	63,412.7	0.0	Bottom
633.00	72,587.3	135,260.9	NWL
634.73	82,959.7	270,642.2	HWL
635.03	84,806.2	294,431.7	Freeboard

SWMF 3 is proposed in the very northwest corner of the ASP lands directly adjacent to the unnamed tributary of Vermilion River. The entire ASP lands will drain through SWMF 3 to the unnamed tributary and subsequently to Vermilion River providing a hydraulically connected stormwater management system for the entire West Industrial Park development. SWMF 3 has a catchment area of 100.2 ha, as show in the green hatch in Figure 3-1, draining directly into the facility, however, with SWMF 1 and SWMF 2 discharging through SWMF 3, the total catchment area of SWMF 3 is 240 ha. Table 3-3 below provides the surface area and storage volume at the pond bottom, NWL, HWL, and freeboard elevations.

Table 3-3: SWMF 3 – Design Parameters

Elevation (m)	Surface Area (m^2)	Volume (m^3)	Notes
628.50	123,401.2	0.0	Bottom
630.50	134,362.2	256,343.0	NWL
632.79	150,750.2	582,736.0	HWL
633.10	153,032.0	629,710.6	Freeboard

3.3 SWMF MODELING RESULTS

Computer model simulations were completed for the 5, 10, 25, 50, and 100 year rainfall events. Table 3-4, Table 3-5, and Table 3-6 summarize the results of the simulations and includes the water depth, volume, and outlet discharge as well as the orifice size determined from the computer analysis for the three proposed stormwater management facilities.

Table 3-4: SWMF 1 – 24 Hour Rainfall Simulation Results

SWMF	Design Parameter	Elevation (m)	Pond Volume (m^3)	Outlet Peak Discharge (l/s)	Notes
1	Freeboard	637.17	165,675.1	N/A	
	HWL	636.86	150,892.3	23.0	90mm Orifice Max. Allowable Peak Discharge = 23 l/s
	1:100	636.86	150,892.3	23.0	
	1:50	636.42	130,295.7	20.0	
	1:25	636.12	116,486.1	18.0	
	1:10	635.81	103,335.7	15.0	
	1:5	635.58	93,349.3	13.0	
	NWL	635.00	70,127.2	NA	
	Pond Bottom	633.00	0	NA	

Table 3-5: SWMF 2 – 24 Hour Rainfall Simulation Results

SWMF	Design Parameter	Elevation (m)	Pond Volume (m^3)	Outlet Peak Discharge (l/s)	Notes
2	Freeboard	635.03	294,431.7	N/A	
	HWL	634.73	270,642.4	40.0	120mm Orifice Max. Allowable Peak Discharge = 40 l/s
	1:100	634.73	270,642.4	40.0	
	1:50	634.30	235,008.8	34.0	
	1:25	634.00	211,320.6	30.0	
	1:10	633.72	189,021.1	25.0	
	1:5	633.50	172,276.1	20.0	
	NWL	633.00	135,260.9	N/A	
	Pond Bottom	631.00	0	N/A	

Table 3-6: SWMF 3 – 24 Hour Rainfall Simulation Results

SWMF	Design Parameter	Elevation (m)	Pond Volume (m^3)	Outlet Peak Discharge (l/s)	Notes
3	Freeboard	633.10	629,710.6	N/A	
	HWL	632.79	582,736.0	63.0	140mm Orifice Max. Allowable Peak Discharge = 45 l/s
	1:100	631.67	418,468.3	45.0	
	1:50	631.38	377,224.4	39.0	
	1:25	631.18	349,554.4	35.0	
	1:10	630.99	323,194.5	29.0	
	1:5	630.84	303,015.8	25.0	
	NWL	630.50	256,343.0	N/A	
	Pond Bottom	628.50	0	N/A	

3.4 SWMF DRAWDOWN

The ability of a SWMF to drawdown in a reasonable amount of time after a storm event has past is an important consideration in design to allow for available capacity within the SWMF for subsequent rainfall events. Alberta Environment do not stipulate drawdown requirements within their guidelines, however, City of Edmonton Design and Construction Standards provide the following parameters:

Time after commencing drawdown from design full level	Available volume between high water level (HWL) and NWL
24 hours	Volume equivalent to runoff from 1 in 5 year storm
48 hours	Volume equivalent to runoff from 1 in 25 year storm
96 hours	90% of total storage volume above NWL

The above City of Edmonton parameters are not achievable with the adopted maximum allowable release rate of 0.45 L/s/ha. Reducing drawdown time in SWMF's 1 and 2 can be achieved by allowing the SWMF's to discharge at a release rate greater than 0.45 L/s/ha and controlling the discharge from the entire ASP lands in SWMF 3 to the maximum allowable release rate of 0.45 L/s/ha. To achieve 90% of total storage volume above NWL within 96 hours after commencing drawdown, SWMF 1 must be discharged at a rate of 5.30 L/s/ha and SWMF 2 at 5.70 L/s/ha. Table 3-7 summarize the results of the computer model simulation of the hydraulically interconnected pond scenario for the 1:100 year 24-hour storm.

Table 3-7: SWMF 1:100 Year 24-Hour Simulation Results: Hydraulically Interconnected Ponds

SWMF	Design Parameter	Elevation (m)	Pond Volume (m^3)	Outlet Peak Discharge (l/s)	Peak Discharge Rate (L/s/ha)	Notes
1	1:100 HWL	636.51	134,379.9	269	5.30	320mm Orifice
2	1:100 HWL	634.37	240,523.6	506	5.70	450mm Orifice
3	1:100 HWL	632.79	582,736.0	106	0.45	181mm Orifice

Water elevations and volumes at various times after pond drawdown has commenced are provided in Table 3-8, Table 3-9, and Table 3-10 for the three proposed SWMFs. An emergency overflow on SWMF 3 sized for the 1:100 year discharge should be constructed to allow stormwater to flow directly to the unnamed tributary above the HWL elevation due to the slow drawdown resulting from the adopted maximum discharge rate of 0.45 L/s/ha. The SWMF volumes at time 0 represents the dead storage capacity or permanent pool volume for the facility.

SWMF 1 would reach a maximum volume of 134,379.9 m^3 in 19.0 hours. At 24 hours after pond drawdown has commenced, the live storage is at 72% of maximum capacity. The pond is 90% drained 92.65 hours after pond drawdown has commenced.

Table 3-8: SWMF 1 Drawdown – 1:100 Year 24-Hour Storm Simulation

Time (hours)	Elevation (m)	Pond Volume (m^3)	% of Maximum Live Storage
0	635.00	70,127.2	0
19.0	636.51	134,379.90	100
43.0	636.10	116,211.65	72
111.65	635.16	76,548.23	10

SWMF 2 would reach a maximum volume of 240,523.6 m^3 in 16.98 hours. At 24 hours after pond drawdown has commenced, the live storage is at 71% of maximum capacity. The pond is 90% drained 84.3 hours after pond drawdown has commenced.

Table 3-9: SWMF 2 Drawdown – 1:100 Year 24-Hour Storm Simulation

Time (hours)	Elevation (m)	Pond Volume (m^3)	% of Maximum Live Storage
0	633.00	135,260.9	0
16.98	634.37	240,523.6	100
40.98	633.99	210,298.9	71
101.25	633.14	145,783.0	10

SWMF 3 would reach a maximum volume of 582,736.1 m^3 in 121.0 hours. At 24 hours after pond drawdown has commenced, the live storage is at 99% of maximum capacity. The pond is 90% drained 1,176.8 hours after pond drawdown has commenced. As previously stated, an emergency overflow should be constructed to allow stormwater to discharge directly to the unnamed tributary due to the slow pond drawdown of SWMF 3.

Table 3-10: SWMF 3 Drawdown – 1:100 Year 24-Hour Storm Simulation

Time (hours)	Elevation (m)	Pond Volume (m^3)	% of Maximum Live Storage
0	630.50	256,343.0	0
121.0	632.79	582,736.1	100
145.0	632.76	578,579.5	99
1,297.8	630.74	288,982.9	10

3.5 STORMWATER QUALITY

Wet retention ponds are one of Alberta Environment's best management practices for removing sediments and pollutants from stormwater runoff. Alberta Environment design criteria for stormwater quality control consider storing the volume of runoff from a 25 mm 24 hour storm within the dead storage of a wet pond. This provides adequate volume for the removal of sedimentation and pollutants.

A peak elevation of 633.30m was found in SWMF 1 through computer simulation of a 25mm 24-hour storm event. This equates to a depth of 0.30m in the facility with a runoff volume of 9,726 m^3, which is 14.0% of the dead storage capacity.

SWMF 2 has a peak elevation of 631.25m during a 25mm 24-hour storm event simulation. This equates to a depth of 0.25m in the facility with a runoff volume of 15,728 m^3, which is 11.6% of the dead storage capacity.

A peak elevation of 628.64m was found in SWMF 3 through computer simulation of a 25mm 24-hour storm event. This equates to a depth of 0.14m in the facility with a runoff volume of 17,539 m^3, which is 6.8% of the dead storage capacity.

3.6 STORMWATER MANAGEMENT PHASING

All three proposed stormwater management facilities have been designed to function independently of one another, however, stormwater runoff from the overall ASP area will ultimately drain through SWMF 3 prior to discharging to the downstream watercourse. In addition, stormwater drawdown of SWMF's 1 and 2 can be increased by utilizing SWMF 3 to restrict the discharge off-site as discussed in Section 3.4. Development of SWMF 3 and the NE ¼ Section 17-52-14-W4M in Phase 1 of the development, prior to the remainder of the ASP lands, would allow for the development to be seamlessly constructed from downstream to upstream in terms of stormwater drainage. Development of the remainder of the ASP lands could be phased independently of stormwater drainage as the downstream infrastructure to discharge stormwater will be in place and SWMF 1 and 2 are not dependent on one another.

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Drawn by:	SWS	**FIGURE 3-1: POST DEVELOPMENT SWMP**	Drawing #: 3-1
Approved by:	SWS	STORMWATER MANAGEMENT PLAN	Scale: 1:15,000
Date:	2019-09-10	County of Minburn No. 27, Alberta	Revision: 0

Drawing path: \\BARDC1\P_Drive\Municipal\18MU-352300 County of Minburn Sec 16-52-14-W4M Area Structure Plan\300-Eng Design\Drafting\Municipal\18MU-323700 - Figure 3-1 - Post Dev SWMP.dwg La

4.0 | CONCLUSIONS AND RECOMMENDATIONS

The West Industrial Park ASP area, located in the County of Minburn No. 27, consists of approximately 240 ha of rural industrial development. Stormwater management for the rural industrial development includes ditch conveyance and three stormwater management facilities to capture stormwater runoff for water quality and quantity control prior to discharging downstream to an unnamed tributary of the Vermilion River.

A pre development discharge rate of 0.45 L/s/ha was adopted for the purposes of this study based on the Vermilion River Flood Hazard Mapping Study completed by SNC Lavalin for Alberta Environment in 1994. Further analysis of the pre development release rate should be completed at future subdivision stages during detailed stormwater management design.

Stormwater runoff simulations were undertaken for various rain events and the stormwater management facilities were sized to accommodate stormwater runoff for the 1:100 year 24-hour City of Edmonton Huff distribution. Pond drawdown after the rain event has subsided, is critical in the design of a stormwater management facility to maximize available storage capacity within the facility for subsequent rain events. The adopted pre development discharge rate results in the stormwater management facilities discharging at a very slow rate. It is recommended that the internal subdivision SWMF's 1 and 2 be discharged at release rates of 5.30 L/s/ha and 5.70 L/s/ha, respectively, and SWMF 3 control the stormwater discharge for the entire study area to the 0.45 L/s/ha pre development release rate. This will allow SWMF's 1 and 2 to achieve recommended pond drawdown times as provided in the City of Edmonton Design and Construction Standards and is made possible by having SWMF's 1 and 2 discharge to roadside ditches that convey stormwater runoff to SWMF 3. With SWMF 3 being located directly upstream of the receiving unnamed tributary of Vermilion River, an emergency overflow sized for the 1:100 year discharge should be constructed due to the slow pond drawdown of SWMF 3 resulting from the adopted pre development discharge rate.

All three stormwater management facilities have been designed as wet retention ponds with permanent water for enhancement of water quality by allowing sediments and pollutants to settle out in the pond prior to discharging to the downstream watercourse. Configuration of the stormwater management facilities include 5:1 (H:1V) side slopes from 1m below the NWL to freeboard elevation, 3:1 (H:V) side slopes from pond bottom to NWL, minimum 0.3m freeboard depth, and 2.0m permanent pool depth.

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ENERGY BUILDINGS MUNICIPAL

West Industrial Park
Area Structure Plan

COUNTY OF MINBURN NO. 27

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