

MUNICIPAL DISTRICT OF GREENVIEW No. 16

GREENVIEW INDUSTRIAL GATEWAY COMMITTEE MEETING AGENDA

Tuesday, September 7, 2021

1:00 PM

Administration Building
Valleyview, AB

#1	CALL TO ORDER		
#2	ADOPTION OF AGENDA		
#3	MINUTES	3.1 Greenview Industrial Gateway Committee Meeting Minutes held July 28, 2021.	2
#4	DELEGATION		
#5	BUSINESS	5.1 First Nations Consultations	5
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		5.3 Carbon (CO2) Sequestration Management Plan	14
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#6	CLOSED SESSION		
#7	ADJOURNMENT		

Minutes of a
GREENVIEW INDUSTRIAL GATEWAY COMMITTEE MEETING
MUNICIPAL DISTRICT OF GREENVIEW NO. 16

Greenview Administration Building,
Valleyview, Alberta on Tuesday, July 28, 2021

**#1
CALL TO ORDER
PRESENT**

Reeve Dale Smith called the meeting to order at 2:14

Ward 5
Ward 8
Ward 1
Ward 2
Ward 3
Ward 4
Ward 6
Ward 7
Ward 9
Ward 9

Reeve Dale Smith
Deputy Reeve Bill Smith
Councillor Winston Delorme
Councillor Dale Gervais
Councillor Les Urness
Councillor Shawn Acton
Councillor Tom Burton
Councillor Roxie Chapman
Councillor Tyler Olsen
Councillor Duane Didow

ATTENDING

Interim Chief Administrative Officer
Recording Secretary
Executive Director, Industrial Development
Manager Communications and Marketing
Accurate Assessment Group

Stacey Wabick
Wendy Holscher
Kyle Reiling
Stacey Sevilla
Ray Fortin
Sean Barrett

ABSENT

Ward 9
Ward 8

Councillor Tyler Olsen
Deputy Reeve Bill Smith

**#2
AGENDA**

MOTION: 21.07.01 Moved by: COUNCILLOR DUANE DIDOW
That Council adopt the July 28, 2021, Greenview Industrial Gateway
Committee Meeting Agenda as amended.
- Remove Greenview Industrial Gateway Strat. Plan.
- Add Agenda item 5.1 Appointment of Chair and Deputy Chair

#3 MINUTES

3.0 MINUTES

#4 DELEGATIONS

4.0 DELEGATIONS

#5 NEW BUSINESS

5.0 NEW BUSINESS

Interim CAO called for nominations for the chair of the Greenview
Industrial Gateway Committee.

Councillor Urness nominated Councillor Delorme.

Interim CAO, Stacey Wabick called a second time for nominations for the chair of the Greenview Industrial Gateway Committee.

Councillor Gervais nominates Deputy Reeve Bill Smith.
Councillor Gervais withdraws his nomination.

Interim CAO, Stacey Wabick called a third time for nominations for the chair of the Greenview Industrial Gateway Committee.

None were heard.

**CEASE NOMINATION
FOR CHAIR**

MOTION: 21.07.02 Moved by: COUNCILLOR SHAWN ACTON
That Committee cease nomination for Chair of the Greenview Industrial Gateway Committee.

CARRIED

Interim Chief Administrative Officer, Stacey Wabick declared Councillor Winston Delorme as Chair for the Greenview Industrial Gateway Committee.

APPT. OF CHAIR

5.1 APPOINTMENT OF CHAIR

MOTION: 21.07.03 Moved by: COUNCILLOR SHAWN ACTON
That Committee appoint Councillor Winston Delorme as the Chair for the Greenview Industrial Gateway Committee.

CARRIED

FUTURE PROGRESSION

5.2 GREENVIEW INDUSTRIAL GATEWAY FUTURE PROGRESSION

MOTION: 21.07.04 Moved by: REEVE DALE SMITH
That the Greenview Industrial Gateway Committee accept the Greenview Industrial Gateway Future Progression presentation for information, as presented.

CARRIED

C02 SEQUESTRATION

5.3 C02 SEQUESTRATION AND MANAGEMENT

MOTION: 21.07.05 Moved by: COUNCILLOR SHAWN ACTON
That the Greenview Industrial Gateway Committee accept the C02 Sequestration and Management verbal update for information, as presented.

CARRIED

**FINANCIAL
COMMITMENT**

5.4 GREENVIEW FINANCIAL COMMITMENT

MOTION: 21.07.06 Moved by: COUNCILLOR TOM BURTON

That the Greenview Industrial Gateway Committee recommend that Council authorize the financial commitment of \$15,000,000.00 for the development of the Greenview Industrial Gateway project, with funds to come from the Economic Development Reserve.

CARRIED

#6 CLOSED SESSION

6.0 CLOSED SESSION

**#7
ADJOURNMENT**

7.0 ADJOURNMENT

MOTION: 21.07.07 Moved by: REEVE DALE SMITH

That the Committee adjourn this Greenview Industrial Gateway Meeting at 3:32 p.m.

CARRIED

CHIEF ADMINISTRATIVE OFFICER

CHAIR



REQUEST FOR DECISION

SUBJECT: First Nations Consultations

SUBMISSION TO: Greenview Industrial Gateway
Committee Meeting

MEETING DATE: September 7, 2021

DEPARTMENT: CAO SERVICES

STRATEGIC PLAN: Development

REVIEWED AND APPROVED FOR SUBMISSION

CAO: SW

GM: DM

LEG:

MANAGER:

PRESENTER: KR

RELEVANT LEGISLATION:

Provincial (cite) – N/A

Council Bylaw/Policy (cite) – N/A

RECOMMENDED ACTION:

MOTION: That the Greenview Industrial Gateway Committee accept the Special Boundary Redesignation Report for information, as presented.

BACKGROUND/PROPOSAL:

Greenview has been engaged with Alberta Environment as to obtain a special boundary redesignation on the 32,500 hectares of land for the Greenview Industrial Gateway project. On August 23rd, notification has been received from the province that the consultation with stakeholders has been completed and the special boundary redesignation will be assigned in the near future. This redesignation is a vital component in allowing the purchase sales agreement of approximately 2000 acres of land with the Province of Alberta to occur. It should be noted that Administration estimates that a purchase sales agreement may be available by February of 2022.

The next step will be for Administration to contact the four indigenous stakeholders as to inform them of further development and/or future opportunities related to the Greenview Industrial Gateway. It is recommended that the CAO, Greenview Industrial Gateway Committee Chairman or designate, and Executive Director of Industrial Development attend these meetings.

These meetings will be vital in establishing an informal partnership with the stakeholders regarding future growth of the Greenview Industrial Gateway project.

BENEFITS OF THE RECOMMENDED ACTION:

1. The benefit of the recommended motion is that the Committee will be informed of the Special Boundary Redesignation progress status to-date.

DISADVANTAGES OF THE RECOMMENDED ACTION:

1. There are no disadvantages to the recommended motion.

ALTERNATIVES CONSIDERED:

Alternative #1: The Committee has the alternative to alter or deny the recommended motion.

FINANCIAL IMPLICATION:

There are no financial implications to the recommended motion.

STAFFING IMPLICATION:

There are no staffing implications to the recommended motion.

PUBLIC ENGAGEMENT LEVEL:

Greenview has adopted the IAP2 Framework for public consultation.

INCREASING LEVEL OF PUBLIC IMPACT

Inform

PUBLIC PARTICIPATION GOAL

Inform - To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.

PROMISE TO THE PUBLIC

Inform - We will keep you informed.

FOLLOW UP ACTIONS:

There are no follow-up actions to the recommended motion.

ATTACHMENT(S):

- N/A



REQUEST FOR DECISION

SUBJECT:	Purchase Sales Agreement		
SUBMISSION TO:	Greenview Industrial Gateway Committee Meeting	REVIEWED AND APPROVED FOR SUBMISSION	
MEETING DATE:	September 7, 2021	CAO: SW	MANAGER:
DEPARTMENT:	CAO SERVICES	GM: DM	PRESENTER: KR
STRATEGIC PLAN:	Development	LEG:	

RELEVANT LEGISLATION:

Provincial (cite) – N/A

Council Bylaw/Policy (cite) – N/A

RECOMMENDED ACTION:

MOTION: That the Greenview Industrial Gateway Committee accept the Purchase Sales Agreement Report for the purchase of land with the Province of Alberta for information, as presented.

MOTION: That the Greenview Industrial Gateway Committee recommend to Council to authorize Administration to enter into an agreement with Meridian Survey, Edmonton, Alberta at a cost of \$49,615.00 excluding GST for land surveying services for Greenview Industrial Gateway.

BACKGROUND/PROPOSAL:

A purchase sales agreement is required as the final step or condition to establish ownership of the 2000 acres of land required for the Greenview Industrial Gateway project. Currently, the province is conducting an appraisal of the above-noted lands in order to establish a purchase price. Greenview will have the following options:

- Greenview accept the determined value of the property and complete the purchase.
- Greenview does not accept the appraised price of the property and request the province to complete another appraisal. It should be noted that Administration is not recommending this option as this will create further delays (3-4 months) on the project. However, Administration will have further dialogue with Council regarding this matter, if required.

Administration will be presenting further information regarding the terms of a purchase sales agreement upon completion of the appraisal.

Greenview is required to perform a legal survey in preparation of a registered subdivision plan and register the 2000 acres of property with Alberta Land Titles. This survey is required in order for Greenview to complete the purchase sales agreement. Administration is recommending that we proceed with the survey at this time in order to progress the completion of the purchase sales agreement. If the sales agreement can not be executed, the survey would still be of value in that the special boundary designation allows Greenview to

establish a subdivision. It should be noted that this process is the same as any other developer wishing to establish a subdivision within Greenview.

BENEFITS OF THE RECOMMENDED ACTION:

1. The benefit of the recommended motion is that the Committee will be informed of the purchase sales agreement progress to-date and the applicable options to consider.
2. The benefit of the recommended motion is that a survey of the area may commence and therefore expedite the process of the land sales agreement.

DISADVANTAGES OF THE RECOMMENDED ACTION:

1. There are no disadvantages to the recommended motions.

ALTERNATIVES CONSIDERED:

Alternative #1: The Committee has the alternative to alter or deny the recommended motion.

FINANCIAL IMPLICATION:

There are no financial implications to the recommended motion.

STAFFING IMPLICATION:

There are no staffing implications to the recommended motion.

PUBLIC ENGAGEMENT LEVEL:

Greenview has adopted the IAP2 Framework for public consultation.

INCREASING LEVEL OF PUBLIC IMPACT

Inform

PUBLIC PARTICIPATION GOAL

Inform - To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.

PROMISE TO THE PUBLIC

Inform - We will keep you informed.

FOLLOW UP ACTIONS:

If the Committee approves the survey proposal recommendation a Request for Decision will be presented to Council for ratification.

ATTACHMENT(S):

- Greenview Industrial Gateway Purchase Sales Agreement Process and Anticipated Timelines
- Meridian – Land Survey Service Proposal

GiG Purchase Sales Agreement Process and Anticipated Timelines

START

First Nations
Consultations
Completed

**August 23
2021**

Special
Boundary
Redesignation

**August 31
2021**

Purchase
Sales
Agreement
Initiated

**September 15
2021**

Tender for
Appraisal

**September 30
2021**

Review of
Tender and
Award

**October 15
2021**

Issue for
Completion

**October 30 /
November 30
2021**

Gov't
Review

**November 30 /
December 30
2021**

MD
to Review
Appraisal

**January 15
2022**

Purchase Sale
Review and
Purchase

**January 15 /
February 15
2022**

MD Purchase
Agreement
Completed

**February 30
2022**



#152, 2301 Premier Way
Sherwood Park, AB
T8H 2K8

August 24, 2021

Kyle Reiling
Executive Director
Via email

RE: Survey Consulting Services for Greenview Industrial Gateway

Meridian Surveys is pleased to present the following proposal for Land Survey Services for the above noted project.

About Us

Founded in 1966, Meridian Surveys is one of Canada's leading Surveying and Mapping Firms. In Western Canada, we operate from a network of 9 offices and employ over 150 staff, including over 50 active field crews. Since our company's inception more than 50 years ago, our mandate has been to provide cost effective, quality service. From the beginning, we focused on the needs of the marketplace, working in partnership with our clients to maintain open dialogue and ensure excellent outcomes.

With field crews, office staff, and management dedicated exclusively to Survey projects, our group offers a team of specialists. They are skilled Surveyors, Mappers, Data Technologists and CAD Technologists, who understand the overall culture of Engineering and Construction projects. Our group will provide an experienced and committed team of personnel, working with proven procedures that are continually being refined and tailored to meet our client's requirements.

Advantages to your Project

The following items summarize, in general terms, the advantages offered to your project by our group. Our seasoned supervisors, field surveyors and data technicians:

- Understand the plans and survey requirements for Legal Survey, Engineering and Construction projects.
- Understand UAVs, imagery and LiDAR and how to maximize their usefulness to the project team.
- Utilize in-house custom software routines for streamlining data flow, data integrity and cost efficiency from field to office.
- Communicate effectively with Engineering, Construction and Project Management.

These advantages are realized with accurate cost estimates, reduced timelines, efficiencies in completing tasks and most importantly, the required correct information for the design team.

**Registered
Land Surveyors**

- Sherwood Park
- Lloydminster
- Calgary
- Saskatoon
- Melfort
- Kindersley
- North Battleford
- Prince Albert
- Regina

Scope of Work

I have reviewed the information provided and have determined a general scope as follows:

1. Record Searches and Preparation

Meridian will research existing Dispositions and Survey Plans as they relate to the project area and coordinate with the Director of Surveys office to prepare work per their instruction.

2. Legal Survey

A Meridian field survey crew will visit the project area to survey the boundaries of existing rights of way and dispositions as well as any additional monuments as directed by the Director of Surveys office. Calculations and Monuments will be installed in accordance with the Surveys Act.

3. Prepare Plan of Survey (Settlement Plan)

Given the purpose of the sale, we assume the initial survey plan required will be a "Settlement Plan" and will be done under the direction of the Director of Surveys. This plan will create one large Lot/Block and would conclude the DoS office involvement. The primary purpose of the Settlement plan is to get the lands out of the jurisdiction of the Public Lands Act and place it in the jurisdiction of the Land Titles Act. Once in the Land Titles system the land can then be subdivided, transferred etc.

4. Prepare Plan of Survey (Subdivision Plan)

Following the registration of the Official Settlement Plan, we can proceed with preparation and registration of the Subdivision Plan which will create the titles for all of the new lots. We propose completing this using two plans so you have the flexibility to change Lot and Road configuration until the plan is registered without the input of the DoS office.

5. Registration of Plan of Survey

Meridian will ensure a successful registration of the Plans of Survey with Land Titles.

Project Team and Qualifications

To address the key success factors for the project, Meridian Surveys will conduct the work under the direction of Dagen Deslauriers, ALS. We have the experience necessary to work with the Director of Surveys office and will provide a team of competent and experienced staff to perform the work in a manner that will exceed expectations. Meridian Surveys is a member in good standing of the Alberta Land Surveyors Association (ALSA).

Schedule

We will work with the Project team to determine our schedule. We are available to start preparations for this project upon approval to proceed.

Estimate of Fees

Please find a schedule of estimated costs attached to this estimate.

Conclusion

I appreciate the opportunity to submit a proposal for this Project. If you have any questions or require any clarifications, please contact me as soon as possible.

Regards,



Dagen Deslauriers, ALS
Branch Manager, Sherwood Park



Meridian
Surveys Ltd.

Client: Greenview Industrial Gateway
Project: Settlement and Subdivision Surveys

Meridian Project #:
Project Manager: Dagen Deslauriers
2021-08-24

Scope: • As defined in proposal

Field Component

Description	Quantity	Rate	Unit	Total
Two Person Survey Crew (all inclusive)	120 hours	\$195.00 /hr		\$ 23,400.00

Equipment & Supplies

Description	Quantity	Rate	Unit	Total
Vehicle (hr)-mob and demob	km	\$1.10 /km		\$ -
Disbursements (LTO fees, survey posts, etc.)	900 \$	1.1 cost +10%		\$ 990.00
Unmanned Aerial Vehicle	days	\$150.00 /day		\$ -
Meal and living out allowance	18 days	\$200.00 /prsn/day		\$ 3,600.00
		Sub-Total		\$ 28,815.00

Data Processing and Drafting Component

Description	Quantity	Rate	Unit	Total
Drafting, computations, admin, search	160 hours	\$95.00 /hr		\$ 15,200.00
				\$ 15,200.00

Project Management, ALS, CAD and Field Supervision

Description	Quantity	Rate/Hr.	Total
Alberta Land Surveyor	40 hours	\$140.00 /hr	\$ 5,600.00
			\$ 5,600.00

Total Cost

	Field Component	\$ 28,815.00
	Data Processing and Drafting Component	\$ 15,200.00
	Project Management, ALS, CAD and Field Supervision	\$ 5,600.00
	Grand-Total (ex GST):	\$ 49,615.00



REQUEST FOR DECISION

SUBJECT:	Carbon Sequestration (CO₂) Management Plan		
SUBMISSION TO:	Greenview Industrial Gateway Committee Meeting	REVIEWED AND APPROVED FOR SUBMISSION	
MEETING DATE:	September 7, 2021	CAO: SW	MANAGER:
DEPARTMENT:	CAO SERVICES	GM: DM	PRESENTER: KR
STRATEGIC PLAN:	Development	LEG:	

RELEVANT LEGISLATION:

Provincial (cite) – N/A

Council Bylaw/Policy (cite) – N/A

RECOMMENDED ACTION:

MOTION: That the Greenview Industrial Gateway Committee accept the Carbon Sequestration (CO₂) Management Plan report for information, as presented.

MOTION: That the Greenview Industrial Gateway Committee recommend that Council authorize Administration to proceed with McDaniels & Associates Consultants Ltd., Calgary, Alberta to prepare a Carbon Sequestration Management Report for an upset limit of \$35,000.00.

BACKGROUND/PROPOSAL:

A preliminary report has been completed by McDaniel & Associates Consultants Ltd. in regard to opportunities for carbon sequestration and management within close proximity of the Greenview Industrial Gateway project. The report has concluded that the area is very conducive to capture large quantities of carbon in the Woodbend Formation (underground geological structure). This formation is directly northeast of the proposed industrial area and has various depths in which to capture carbon.

Administration is recommending that Greenview's philosophy on carbon sequestration should be to identify and facilitate suitable locations as to aid in the marketing of the area in which to capture carbon. Future proponents will be responsible for all costs and associated risks associated with integrating the carbon management into their operations. Greenview as per legislation / MGA is restricted from participating in the development and operation of carbon sequestration projects.

In establishing the Greenview Industrial Gateway as a carbon sequestration centre of excellence it will ensure carbon sequestration options and opportunities for future proponents. If Greenview does not establish a carbon sequestration framework it risks the economic viability for all future development whereby proponents will be required to look offsite at other carbon sequestration options.

An expression of interest is required with the federal/provincial governments as to apply for a carbon sequestration permit for the Greenview Industrial Gateway area. A further synopsis is required in order for Greenview to complete the required technical capacity for the expression of interest. This report can be generated from McDaniels and Associates for a cost of approximately \$35,000.00, which will include:

- Well lists indicating all company owned wells in each property.
- Well logs, cores, production information, pressure test information and all other basic well data for new wells.
- Geophysical data and detailed information on abandonment, decommissioning and reclamation costs.
- Etc.

Administration is recommending that Greenview proceed with the technical data analysis from McDaniels and Associates. It should be noted that Administration foresees no additional Greenview costs in establishing the Greenview Industrial Gateway project as a carbon sequestration area.

BENEFITS OF THE RECOMMENDED ACTION:

1. The benefit of the recommended motion is that the Carbon Sequestration Management Report will be prepared aiding in the marketability of the land for future potential proponents.

DISADVANTAGES OF THE RECOMMENDED ACTION:

1. There are no disadvantages to the recommended motion.

ALTERNATIVES CONSIDERED:

Alternative #1: The Committee has the alternative to alter or deny the recommended motion.

FINANCIAL IMPLICATION:

The carbon sequestration management report will cost an upset limit of \$35,000.00.

STAFFING IMPLICATION:

There are no staffing implications to the recommended motion.

PUBLIC ENGAGEMENT LEVEL:

Greenview has adopted the IAP2 Framework for public consultation.

INCREASING LEVEL OF PUBLIC IMPACT

Inform

PUBLIC PARTICIPATION GOAL

Inform - To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.

PROMISE TO THE PUBLIC

Inform - We will keep you informed.

FOLLOW UP ACTIONS:

Administration will proceed with the Carbon Sequestration Management Plan in accordance with the Committee's recommendation.

ATTACHMENT(S):

- McDaniels and Associates – Site Screening and Selection Report



McDANIEL

VALUE THE DETAILS

Carbon Sequestration Site Screening and Selection

Provided to

Municipal District of Greenview No. 16



Municipal District of Greenview No. 16

Carbon Sequestration Site Screening and Selection

Prepared For:
Municipal District of Greenview No. 16.
4806, 36 Avenue
Valleyview, Alberta
T0H 3N0

Prepared By:
McDaniel & Associates Consultants Ltd.
2200, 255 – 5th Avenue SW
Calgary, Alberta
T2P 3G6

August 2021

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Certificates of Qualification

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1. Executive Summary

Site Screening is the first of several steps used to evaluate large regions and identify geological formations that have the highest potential for carbon dioxide (CO₂) storage. Site Selection is used to assess selected areas and extract a list of potential sites suitable for site characterization.

To acquire a carbon sequestration lease in Alberta a CO₂ Evaluation Permit must first be obtained. The major requirement for an evaluation permit is a Measurement and Monitoring Verification plan (MMV), which outlines proposed steps for the safe operation of a sequestration project. Geological interpretation and modelling can help reduce subsurface risk and are a necessary step in the MMV. After the receipt of an Evaluation Permit and subsequent testing of the subsurface, the permit can be converted to a longer-term sequestration lease.

Large scale regional maps of identified saline aquifers were created to estimate storage potential using filtered and curated public data. Saline aquifers were assessed for depth, thickness, rock volume, porosity, estimated CO₂ density and eventually Mass Storage of CO₂ for a permit area. The two horizons selected for this project were the Devonian aged Winterburn and Woodbend Groups.

2. CO₂ Background and Description

2.1 Carbon Capture and Storage (CCS)

CCS is the process of capturing CO₂ from a large point source and storing it underground to avoid its release into the atmosphere. In a CCS project the CO₂ gas is separated from an industrial process and injected at high pressures into a subsurface geological storage site. Storage sites include coal beds, saline aquifers, salt caverns or depleted oil reservoirs ^[2]. Extensive geological studies are required to ensure the injected CO₂ does not leak to the surface.

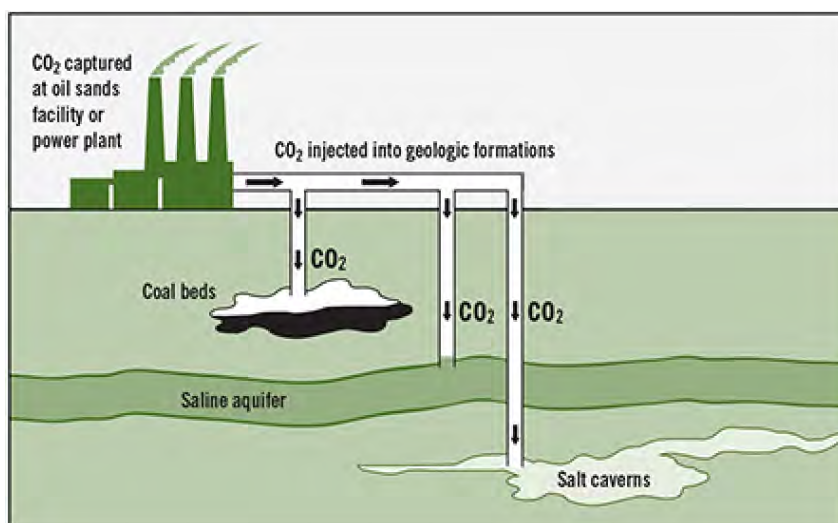


Figure 1: Carbon capture storage potential solutions (Energywatch Inc.)

2.1.1 CCS

There have been few pilot projects and small projects that have injected CO₂ underground solely for the purpose of sequestration in Canada over the years, but by far the largest and most successful is the Quest CCS facility northeast of Edmonton. Since 2015, this facility has been capturing about 1.1 Mt of CO₂ per year from the Shell Scotford Upgrader and sending it 65 kilometres north to inject into a saline aquifer deep underground ^[20]. The Alberta government has invested \$745 million in this project through 2025 ^[22].

3. Regulatory and Tenure

3.1 Carbon Offset and Performance Credits

As of January 1, 2020, the Technology Innovation and Emission Reduction (TIER) program regulates large emitters (>100,000 CO₂e/year) in Alberta. The federal government has approved this regulation and it replaces any federal carbon tax that would be placed on large emitters in Alberta. Benchmarks are stated as allowable emissions per production unit, called emission intensity. Examples include power generation (Tonnes CO₂e/MWh), steam assisted gravity drainage facilities (SAGD) (Tonnes CO₂e/bbl oil) or fertilizer plants (Tonnes CO₂e/e³m³ Ammonia). Facilities that produce more will have a higher total CO₂e emission allowance.

A facility will earn Emission Performance Credits (EMPs) when they are below their emission benchmark. These EMPs can then be sold on markets to large emitters that are over their benchmark. Recently, there was federal approval for EMPs created in Alberta to be sold to large emitters outside of Alberta.

Each tonne of CO₂e reduced in specified gas emissions, or tonne of CO₂e sequestered will grant the company responsible one Emission Offset, which can then be sold on markets.

EMPs and Emission Offsets present a huge opportunity to highly efficient facilities and carbon sequestration projects in Alberta, although at the cost to less efficient emitters.

The TIER is what large emitters are regulated under in Alberta, but this is currently contingent on the federal government approval of the regulation. If the federal government does not approve a provincial carbon pricing regulation, the federal Output Based Pricing System (OBPS) will act as a backstop. OBPS carbon taxes are planned to gradually increase to \$170 per tonne CO₂e over set benchmarks by 2030. [23]

3.2 Evaluation Permit and Sequestration Lease for Saline Storage

Before acquiring a Carbon Sequestration Lease (Section 116 of the Mineral Act) in Alberta, a Sequestration Evaluation Permit must be obtained. The application for an Evaluation Permit must be submitted to the Minister outlining the Measurement, Monitoring and Verification (MMV) plans that will be undertaken to ensure safe operation. The MMV plan should include necessary steps to measure and monitor the atmosphere, soil, groundwater and subsurface to identify CO₂ leaks. Examples of information included are three-dimensional (3D) geological modelling, carbon dioxide plume modelling, ground water well monitoring, satellite imagery, soil sampling and atmospheric testing.

The Sequestration Evaluation Permit (Section 115 of the Mineral Act) grants the right to perform detailed testing and characterization of the subsurface. After information has been gathered regarding the suitability of the storage reservoir a 15-year Sequestration Lease can then be obtained.

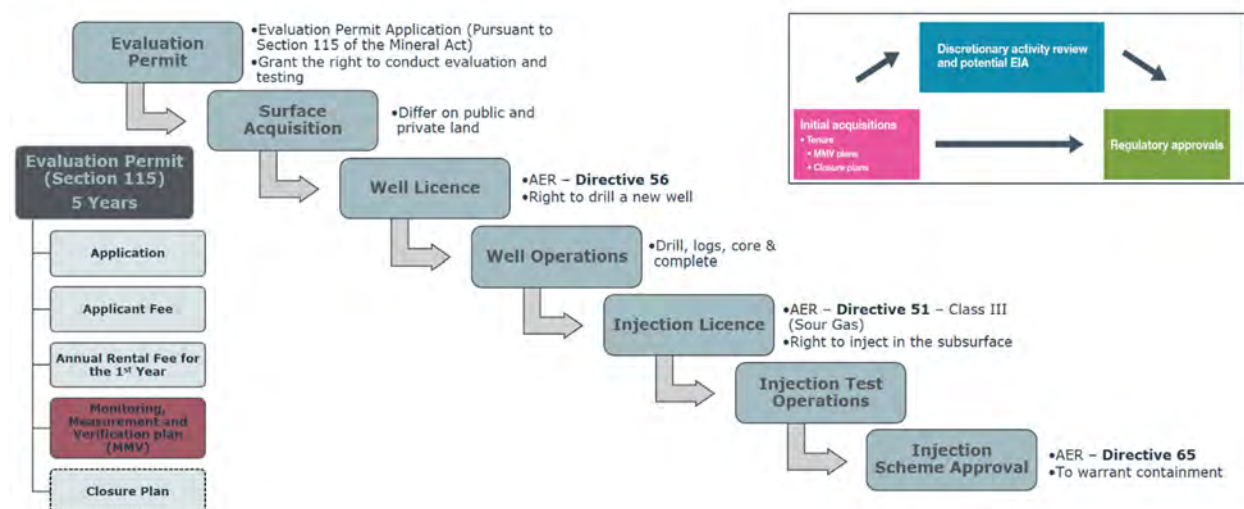


Figure 2: Regulatory Approval Process

3.3 Society of Petroleum Engineers Resource Management System

The Society of Petroleum Engineers (SPE) has published a system to define the quantity of CO₂ that can be stored. The Storage Resource Management System (SRMS) provides a consistent approach to estimate storable quantities, evaluate development projects and present results in a consistent framework. Figure below summarizes the stages of resources and capacity.

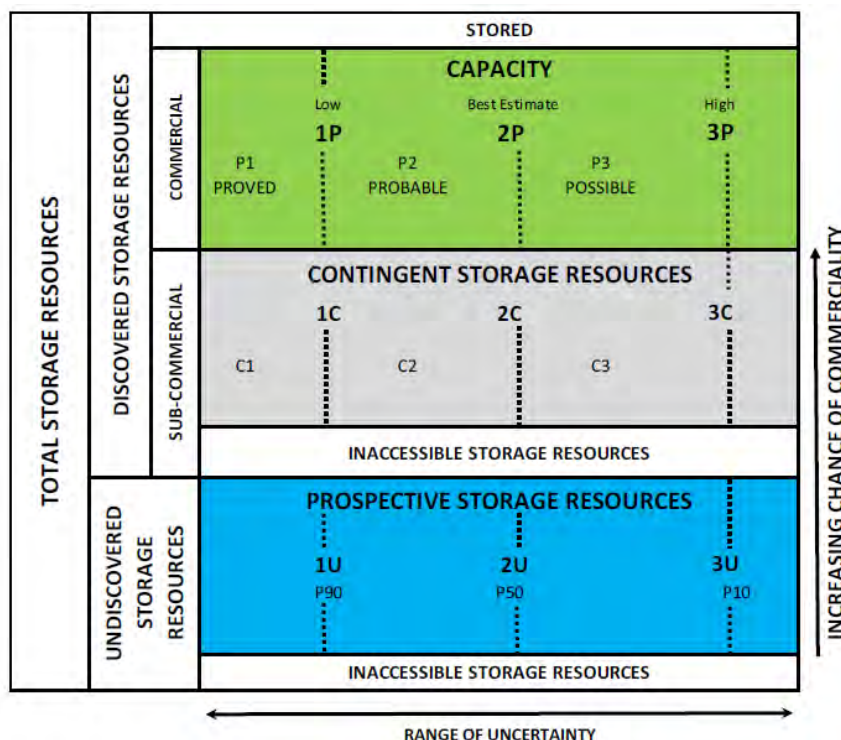


Figure 3: Resources Classification Framework

3.4 Class III Injection and Disposal Wells - Directive 051

Upon receiving an evaluation permit and a well license (Directive 056), an operator can move forward with development. Once initial well operations are completed, an application to the AER under directive 051 is required. This Class III (Sour Gas including CO₂) application is needed to ensure that well design, operating, and monitoring requirements are consistent across the province for any given substance being injected in the subsurface. The primary purpose of the directive lies in the need to ensure wellbore integrity during injection or disposal operations.

3.5 Injection Scheme Approval - Directive 065

Following the drilling, completion and testing of injection wells, an operator will apply to the AER for an injection scheme under directive 065. Directive 065 requires all proposed injection wells to be completed and tested prior to the application. The primary purpose of the directive is to ensure containment of the disposal fluid in the geological zone under injection as well as conservation of the oil and gas resources when disposal occurs adjacent to hydrocarbon accumulations.

4. Site Screening, Selection and Characterization

Numerous social, environmental, and geological considerations must be addressed to identify the appropriate location for a carbon sequestration project. The goal is to reduce a large prospective region that can be tens if not hundreds of million hectares to a permit of 73,728 hectares. McDaniel's suggested approach to choose the best location is designed from the guidelines proposed by the National Energy Technology Laboratory (NETL). The document proposes a gradual three step system to high-grade locations for more in-depth analysis. Initial site screening identifies areas potentially suitable for geologic storage. Subsequently, site selection is intended to determine if potential sites can be identified within the prospective areas. Finally, site characterization is further analysis on one or more sites that were highly ranked. When a site emerges from the site characterization and is deemed to have met all necessary criteria it is then progressed toward regulatory approval and operations, it moves up the pyramid of resource characterization from prospective to contingent. Figure shows the described workflow.



Figure 4: Carbon Sequestration Progress Chart

4.1 Site Screening

The purpose of site screening is to evaluate large regions within a basin scale area of interest. Areas with the highest potential can be classified for storage while others are rejected. The site screening step has three major components: subsurface data analysis, regional proximity analysis and social context analysis. McDaniel's Phase One report scope is focused on the subsurface portion of site screening. The subsurface analysis includes storage assessment by zone, depth, confining zone analysis and prospective storage resources for potential sub-regions. Progressing in parallel a surface and social analysis is required to identify viable storage areas. Figure 5 shows the described flowcharts.

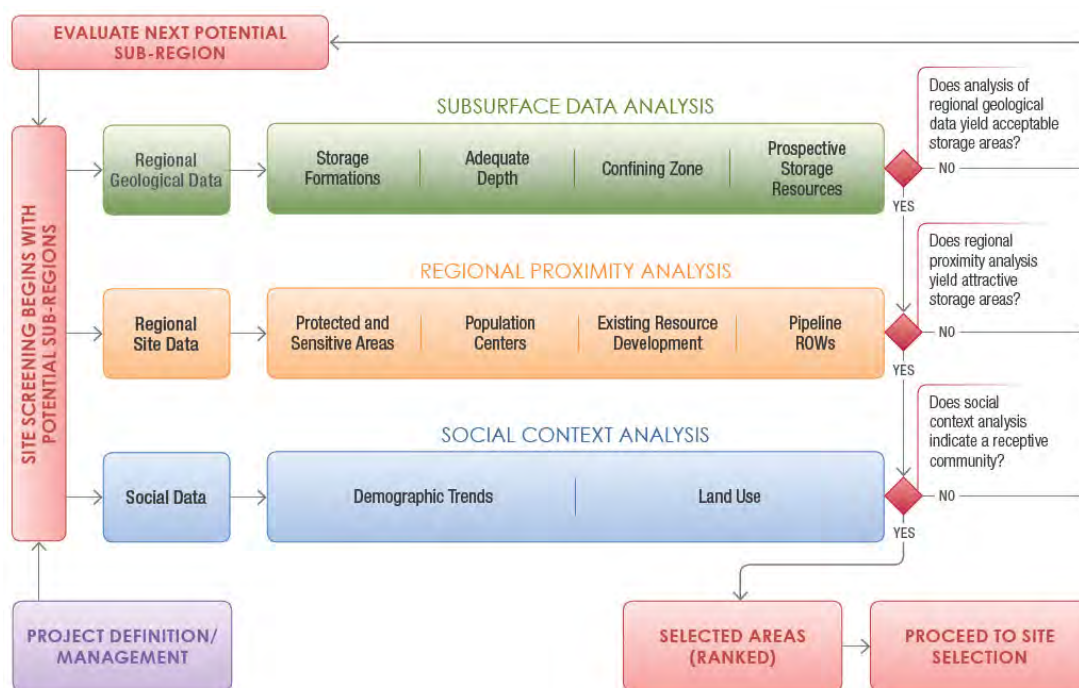


Figure 5: Process Flowchart for Site Screening (NETL)

4.2 Site Selection

The purpose of site selection is to assess selected areas and extract a list of potential sites suitable for site characterization. Site selection has five major components: subsurface data analysis, regulatory issue analysis, model development, site suitability analysis and preliminary social characterization. This subsurface analysis includes in depth storage analysis and petrophysics, confining zone analysis, review of core data, legacy wells containment and prospective storage resources at the area level. The model development is a two dimensional (2D) representation of the subsurface through stacked maps. Figure shows the described flowcharts.

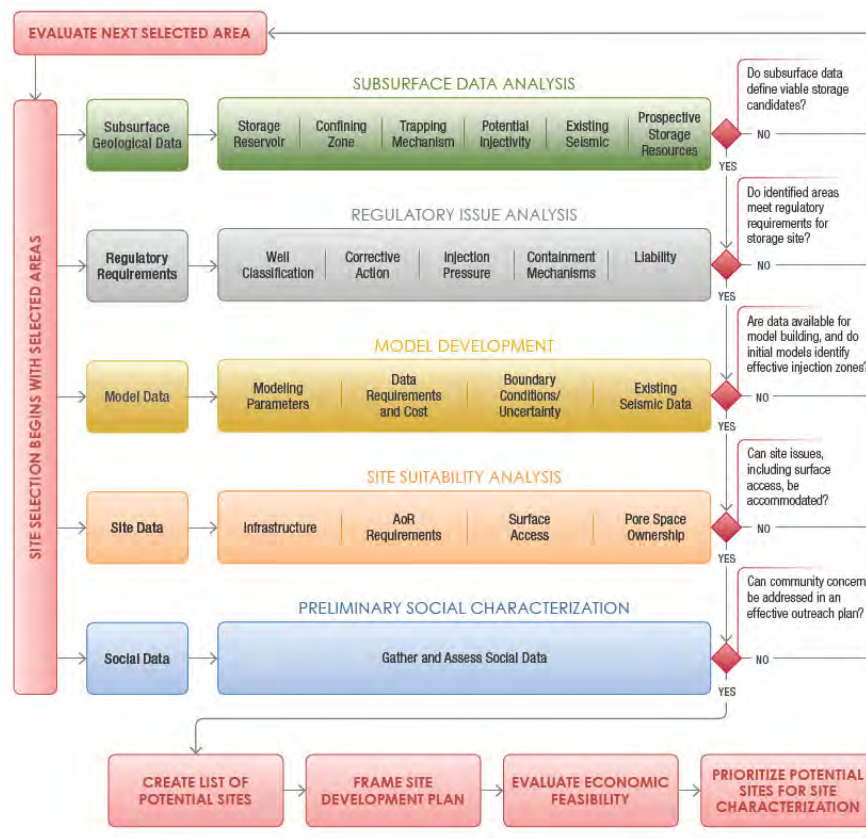


Figure 6: Process Flowchart for Site Selection (NETL)

4.3 Site Characterization

The purpose of site characterization is to assess all potential sites to define their storage attributes and determine if they should be progressed as a qualified site. Site characterization has five major components: assess outreach needs, analyze regulatory issues, characterize the subsurface geology, build and calibrate models and finally create an initial site development plan. McDaniel's phase three report scope is focused on the subsurface and modelling portion of the site characterization. This subsurface analysis includes building a 3D static geo-model, calibrating the model, testing injection scenarios and comparing outputs. Figure shows the described flowcharts.

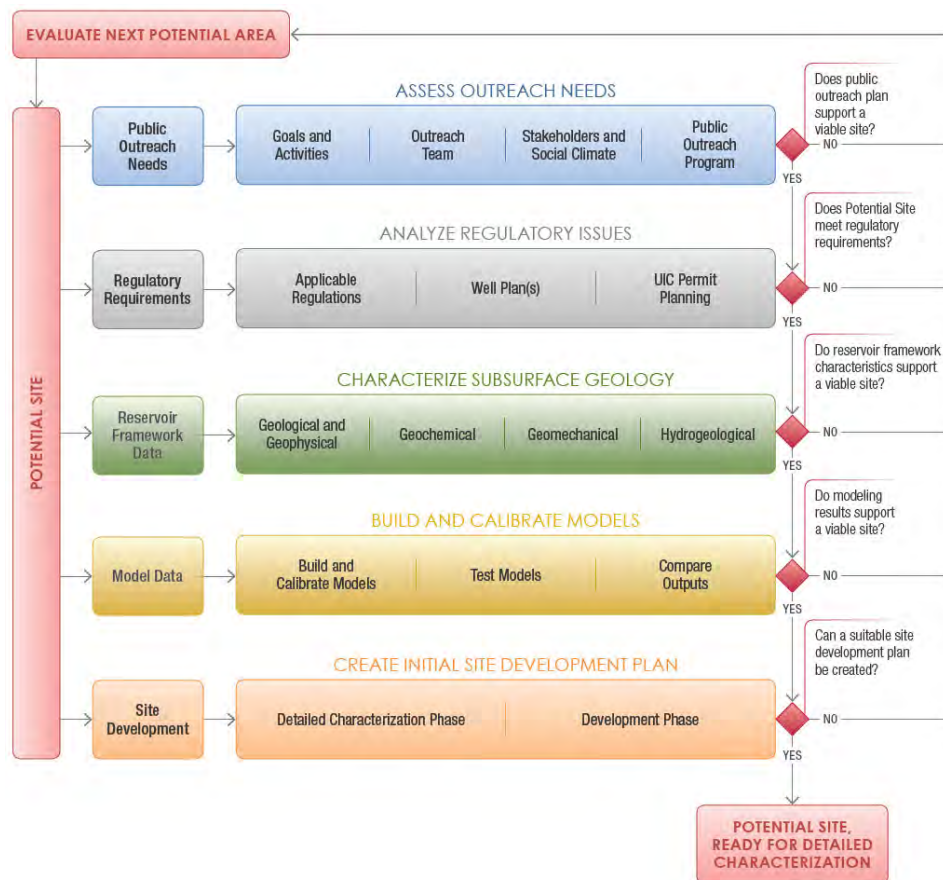


Figure 7: Process Flowchart for Site Characterization (NETL)

5. Saline Aquifer Methodology

5.1 Effective Mass Storage Calculation

The effective mass storage calculation can be derived volumetrically by attempting to quantify the size of the pore space available and the mass of carbon dioxide that can be held within that space. The major maps used in the mass storage calculation can be found in the Appendix.

Site screening is defined as a high-level regional assessment of the aquifers, the volumetric-based approach covers vast aerial extents and multiple formations. The storage calculations are derived from the “Best Practices Manual” published by the National Energy Technology Laboratory. Three governing equations exist to evaluate the potential effective mass storage of CO₂ from the pore space medium.

$$MCO_2e = A \times h \times \phi_t \times \rho_{CO_2} \times E \text{ [Eq. 1]}$$

The effective mass storage (MCO₂e) is a direct function of the total area (A), the gross formation thickness (h), the total porosity (φ_t), the carbon dioxide density (ρCO₂) and finally the efficiency factor (E).

$$E = E_{\text{geol}} * E_D \text{ [Eq. 2]}$$

The efficiency factor (E) is derived from the multiplication of the geology efficiency factor (E_{geol}) and the displacement efficiency factor (E_D). E_{geol} represents the fraction of the geologic media that can act as storage. This value varies spatially on a horizontal and vertical axis but is considered constant on a temporal basis. On the other end, the displacement efficiency factor (E_D) is a function of the shape of the CO_2 plume. Through a series of complex interactions between the pore space, the injectivity rate and the buoyancy forces, this value will change temporarily making this parameter challenging to assess in a volumetric-based estimate.

$$E_{\text{geol}} = E_{A_n/A_t} * E_{h_n/h_g} * E_{\phi_{\text{eff}}/\phi_{\text{tot}}} \text{ [Eq. 3]}$$

The geological efficiency factor (E_{geol}) is in turn the product of these three ratios. The net-to-total area (E_{A_n/A_t}) which represents the fraction of the total area available for storage. The net-to-gross thickness (E_{h_n/h_g}) which represents the vertical ratio of the total thickness that is deemed prospective to injection or “net”. Finally, the effective-to-total porosity ($E_{\phi_{\text{eff}}/\phi_{\text{tot}}}$) represents the fraction of the pore space that is not connected and commonly tied to low permeability shale facies.

The terms of the first three equations can be re-arranged into a single equation. This equation shows from left to right the typical workflow employed in a storage assessment. Furthermore, the underlying bars show the maps commonly created during the process and the portion of the equation they belong to. For example, the *Gross Rock Volume (GRV)* is derived from the multiplication of the area (A) and the thickness (h) only.

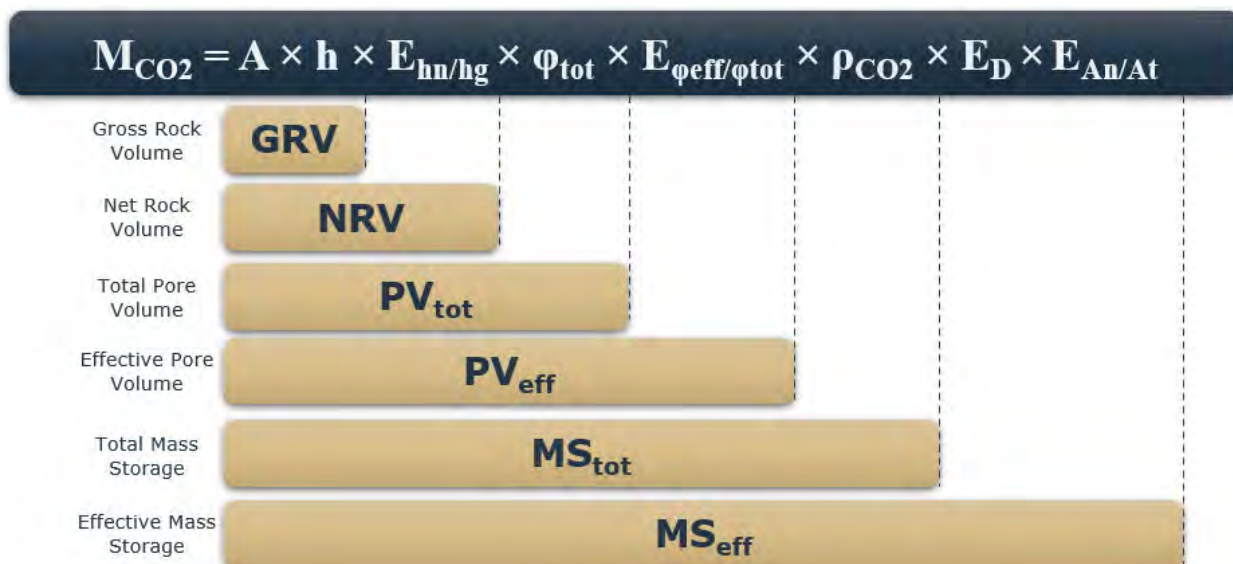


Figure 8: Effective Mass Storage equation in relation to the maps derived from it

5.2 Aquifer Selection

The study was limited to the aquifers within the Winterburn and Woodbend Groups which are both Devonian in age. These deeper horizons have limited hydrocarbon potential or development and no underlying fields and pools that would be sterilized once a CO₂ plume is initiated above. These reservoirs are overlain in part by the Jurassic Fernie shale which acts as a vertical and lateral seal. The regional unconformity is overlain by tighter permeability facies which prevent up-dip buoyant migration in some localities.

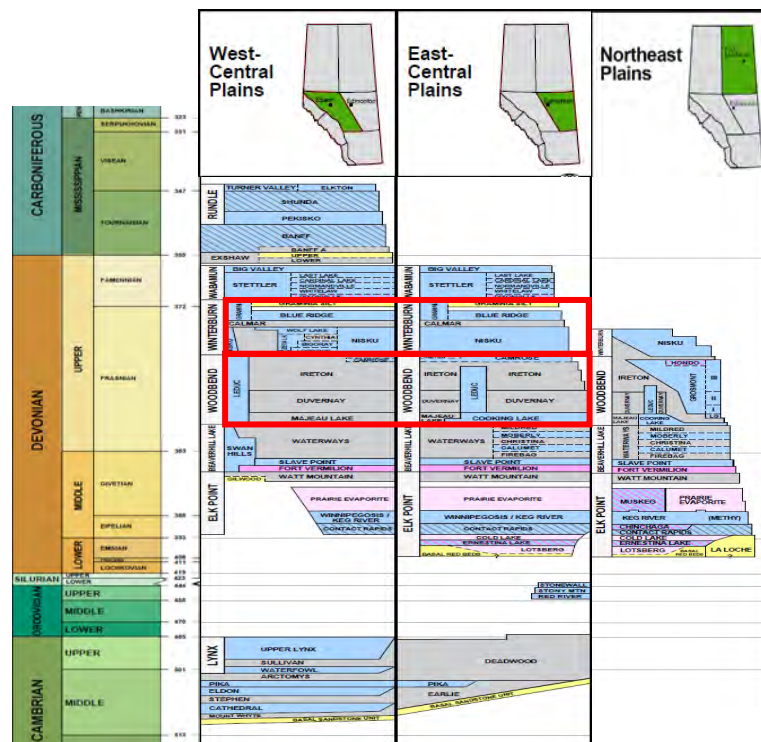


Figure 9: Stratigraphic Column for Central and Eastern Alberta (AER - Table of Formations)

5.3 Area Definition

The study area for the scope of this report comprised 50-kilometre radius centered around the "GIG" area south of Grand Prairie. Figure below shows the aerial extent of the area.

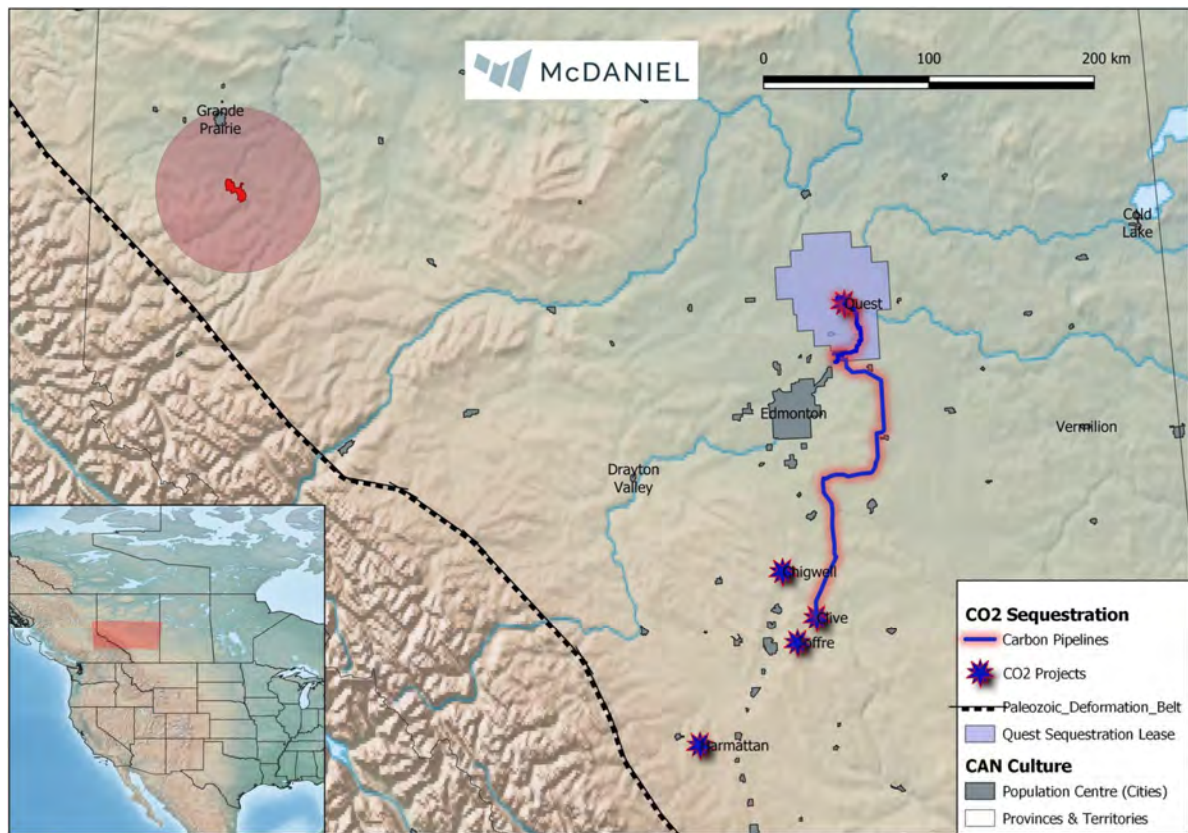


Figure 10: Map showing Greenview study areas, major carbon capture landmark and the deformation belt (Dashed)

5.4 Gross Thickness

5.4.1 Seeds

The study area includes numerous wells drilled to the Devonian depth, some of which were drilled decades ago. The nature and quality of the data available is diverse. McDaniel has developed an algorithm to rank all the wells in the study area. The wells can be ranked by any parameter. For the present study, some of the important parameters used were:

- Depth of the well relative to all offsets
- Presence of Devonian formation tops
- Petrophysical log data available
- Well type (horizontal vs vertical)
- Well vintage

Once all the wells across the study area were ranked, an equally spaced grid was created. The wells with the highest score within each cell of the grid was then selected. This high grading of wells is commonly referred to as selecting “seed” wells. These seed wells carry the richest data set from the deepest stratigraphic horizons. Seed wells are also spread across the study area evenly, declustering the data and providing even coverage for optimal mapping.

5.4.2 Gross Rock Volume (GRV)

The true vertical thickness of a formation is calculated from the difference between the top and base of the zone. This calculation is run on every well then gridded in mapping software to create a 2D map. The gross rock thickness is measured in metres. Multiplying an area [m^2] by the average value of the GRV map [m] yields the gross rock volume of a zone [m^3].

5.4.3 Zone Sub-crop and Zero Edge

The Western Canadian Sedimentary Basin (WCSB) is a foreland basin which dips towards the southwest and is coupled with multiple periods of surface erosion throughout geological history. This means that formations tend to have an up-dip erosional limit to the northeast which occurs in the subsurface and is referred to as the Paleozoic-Cretaceous unconformity. This sub-crop edge limits the extension of all six zones. The aerial extent of formations is reduced as we move upward through the stratigraphic column. The only zone that breaks this trend is the Cambrian, which is eroded by the Devonian unconformity, an older period of erosion.

The line where the gross thickness of a formation reaches zero is referred to as the zero edge. The location of this contour is approximated from the seed control points, however, secondary sources such as the WCSB ATLAS were also used for its recognition. These zero edges are used to assist gridding of certain maps including gross rock volume (GRV) and net rock volume (NRV).

5.5 Net to Gross Thickness Ratio

Net Rock Volume (NRV) was calculated using a five percent porosity cutoff along with a 50 percent shale volume cutoff. The porosity cutoff is derived from core analysis showing 1 mD permeability at five percent porosity, this is also supported from our internal database of existing carbon capture projects.

Volume of shale was calculated using the average of two equations. The first being derived directly from the gamma ray curve using a linear scale between a clean value of reservoir at 20 API and a 100 percent shale value at 120 API. The second using the neutron density curve separation.

The neutron density cross plot method was used to estimate porosity due to lithology and grain density changes vertically and laterally. To calculate effective porosity, the total porosity from the neutron density cross plot was reduced by the volume of shale.

5.6 Total Porosity

Total porosity is mapped directly from core analysis. Values below five percent are filtered out as they do not meet the NRV cutoff. The average value per well was gridded into an average total porosity map. Core data summaries and statistics are shown in section six below in the individual aquifer sections. The total pore volume (PV_{tot}) map is calculated by multiplying the net rock volume map (NRV) by the total porosity map (ϕ_t).

5.7 Total to Effective Porosity Ratio

To transition from total porosity pore volume into the effective (connected) porosity, a ratio must be applied to remove the shale porosity which has little or no permeability. The effective porosity ratio reduction is derived from the average volume of shale within the net interval. This value is computed at all wells for all zones and subsequently gridded into a map. The effective pore volume (PV_{eff}) map is calculated by multiplying the total pore volume (PV_{tot}) map by the average volume of shale ($E_{\phi_{eff}/\phi_{tot}}$) map.

5.8 Density of Carbon Dioxide

The density of CO_2 is derived from pressure and temperature and requires calculations to establish its phase (liquid or gas) and the relative density. It is possible to assert a fourth non-direct relationship [Eq. 7] between TVD and CO_2 density from equation 4 to 6.

$$\text{Temperature} = f(\text{TVD}) \text{ [Eq. 4]}$$

$$\text{Pressure} = f(\text{TVD}) \text{ [Eq. 5]}$$

$$pCO_2 = f(\text{Temperature}, \text{Pressure}) \text{ [Eq. 6]}$$

$$pCO_2 = f(\text{TVD}) \text{ [Eq. 7]}$$

5.8.1 Temperature

Geothermal gradient and temperature vary across the study area. Figure 11 shows the spatial variation. The general temperature gradient is 25°C/kilometre with an average surface temperature of 10°C. This allows to derive equation 8 directly from equation 4 as:

$$\text{Temperature } [^{\circ}\text{C}] = 0.025 [^{\circ}\text{C}/\text{m}] * \text{TVD } [\text{m}] + 10 [^{\circ}\text{C}] \text{ [Eq. 8]}$$

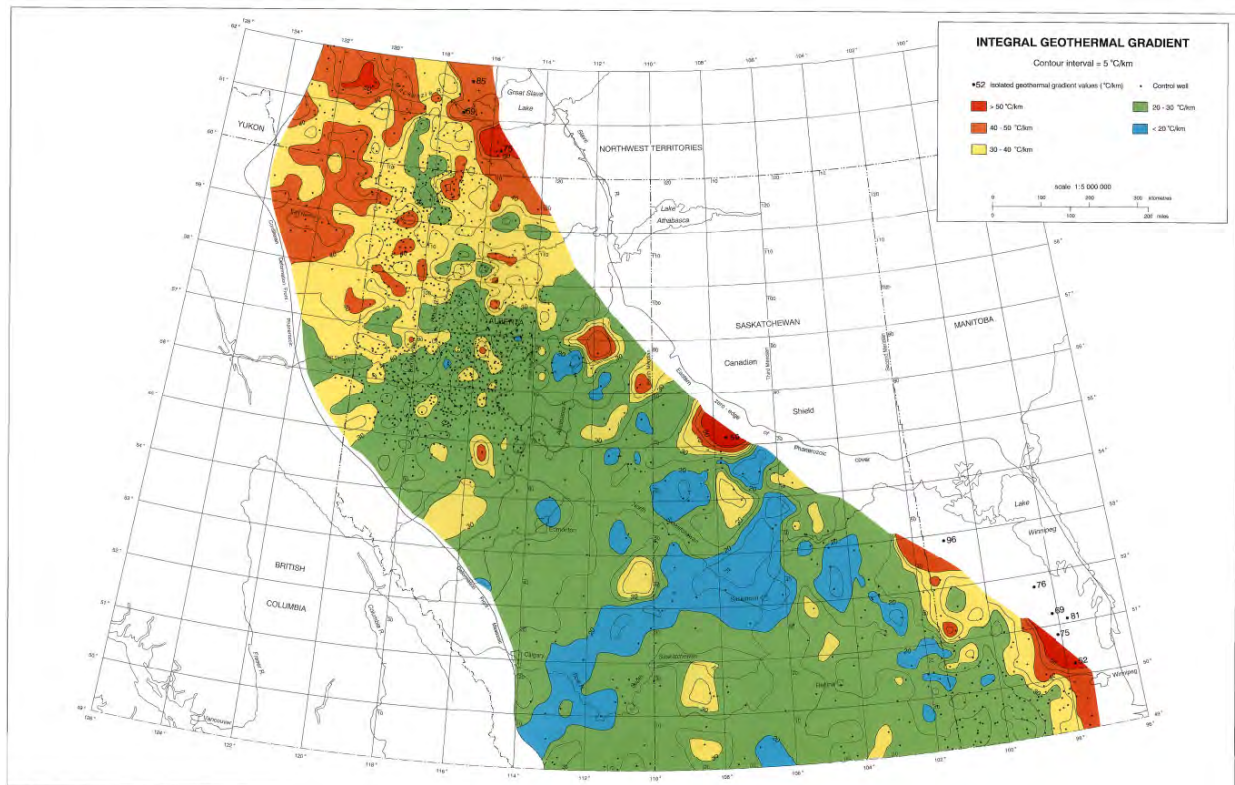


Figure 11: Geothermal Gradient across WCSB (ATLAS)

5.8.2 Pressure

McDaniel possesses a large database of drill stem test (DST) data across Alberta. This data was analyzed to estimate the pressure gradient for the target aquifers. Figure below shows the maximum shut-in pressure data cross plotted against true vertical depth (TVD). There is a strong linear trend when the depleted and generating intervals are removed. Equation 9 is derived from equation 5 as:

$$\text{Pressure [kPa]} = (\text{TVD [m]} - 250)/0.106 \text{ [m/kPa]} \text{ [Eq. 9]}$$

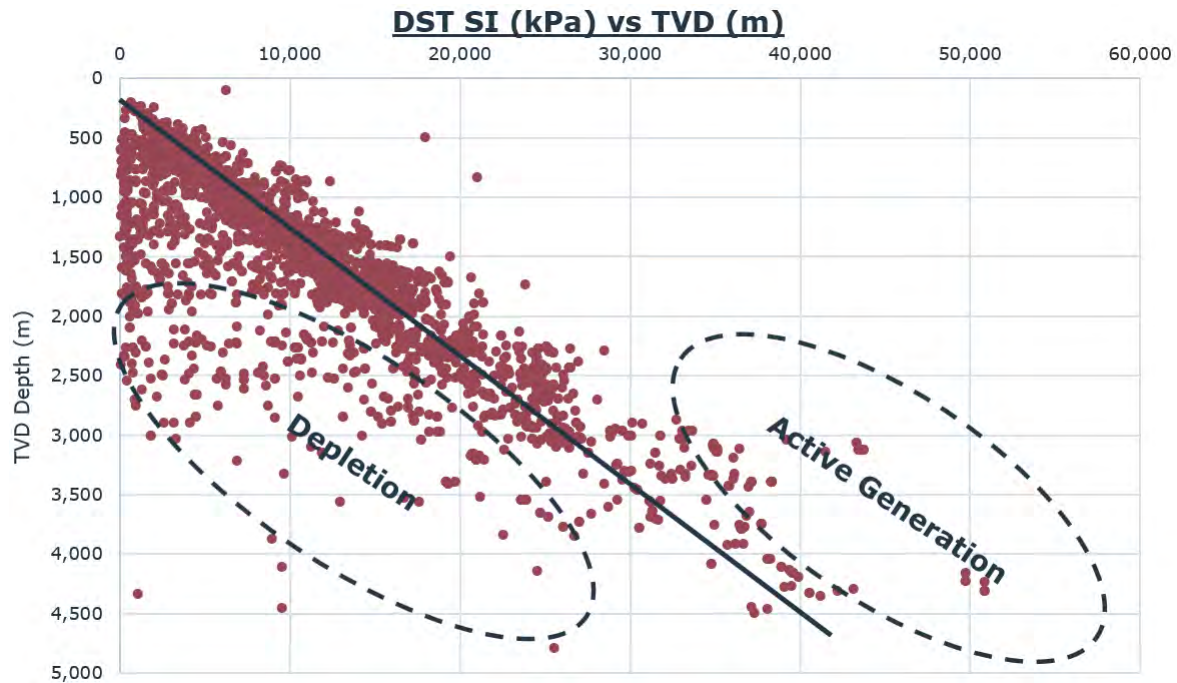


Figure 2: DST data for Devonian aquifers and older. Max shut-in pressure vs TVD

TVD [m]	Pressure [MPa]	Temperature [K]	Density [Kg/m3]
300	0.5	291	9
500	2.4	296	49
700	4.2	301	99
900	6.1	306	172
1100	8.0	311	317
1300	9.9	316	558
1500	11.8	321	611
1700	13.7	326	634
1900	15.6	331	647
2100	17.5	336	656
2300	19.3	341	662
2500	21.2	346	667
2700	23.1	351	671
2900	25.0	356	674
3100	26.9	361	676
3300	28.8	366	678
3500	30.7	371	680
3700	32.5	376	681
3900	34.4	381	683

Figure 3: Summary table between TVD, Pressure, Temperature and CO₂ Density

5.8.3 CO₂ Density using Polynomial Regression

As demonstrated previously (equations 4 to 7), CO₂ density can be a function of depth. Figure 14 summarizes how CO₂ density varies with depth. This complex relationship can be estimated with high accuracy with a 6th degree polynomial regression. Equation 7 can therefore be rewritten into equation 10. The true vertical depth map can then be converted to a CO₂ density equivalent map.

If TVD >= 500m Then

$$pCO_2 = 7.84E-18TVD^6 - 1.34E-13TVD^5 + 8.90E-10TVD^4 - 2.86E-06TVD^3 + 4.37E-03TVD^2 - 2.43TVD + 4.46E+02$$

If TVD < 500m Then $pCO_2 = 0$ [Eq. 10]

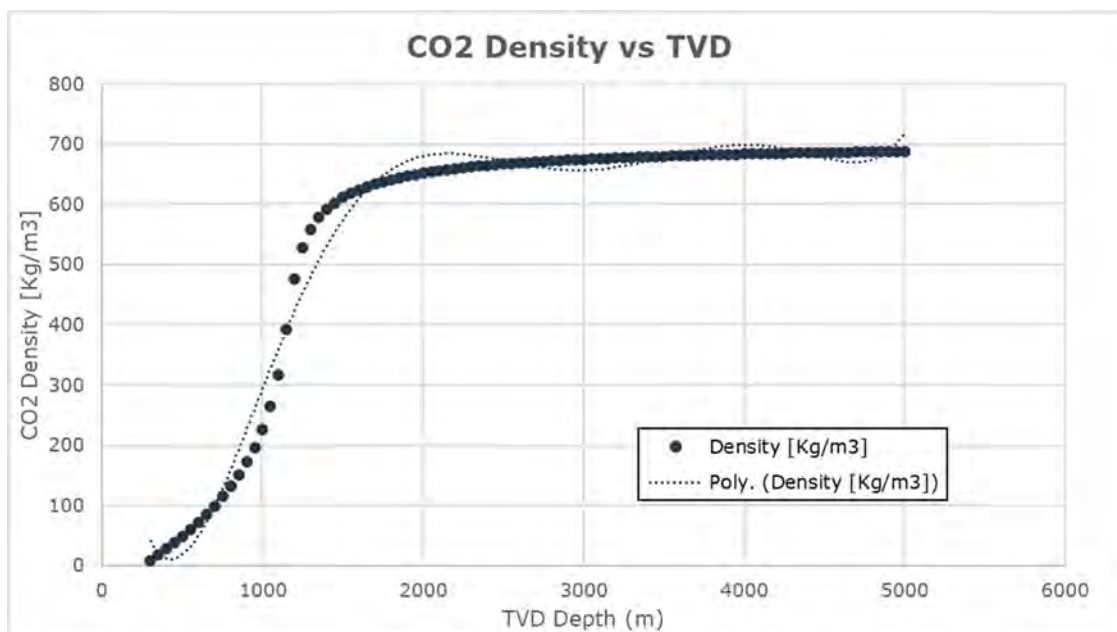


Figure 14: Cross plot of density over TVD and polynomial regression approximating the relationship

5.9 Displacement Efficiency

The displacement efficiency (E_D) represents the fraction of pore volume that can be actively displaced by injection. Plume growth continues over time once injection has stopped. As the plume increases its distance away from the injection site, its relative thickness decreases leading to a displacement efficiency factor that diminishes overtime. The time horizon chosen has a significant impact on in E_D .

Dynamic plume modeling would be the preferred option to characterize E_D . The vast number of combinations for gross thickness, net-to-gross, porosity and injection strategies make it prohibitive during site selection.

Scientific literature presents analogs and documentation for efficiency factor (E) as per equation 2, but there appears to be a shortage when it comes to separating E_{geol} from E_D . Therefore, the most reliable way to appraise E_D is to turn to the nearest analog and back calculate this parameter from the plume modeling that was undertaken. Figure shows the post injection P_{50} plume size overtime at the Quest facility. The equation in Figure 15 can be rewritten to isolate the E_D parameters. This leads to equation 11 where M_{CO_2} is equal to the specified nine Mt, $E_{An/At}$ is assigned as one and MS_{tot} is sampled directly from the Cambrian map at the Quest project location.

$$E_D = M_{CO_2} / (M_{Stot} \times E_{An/At}) \text{ [Eq. 11]}$$

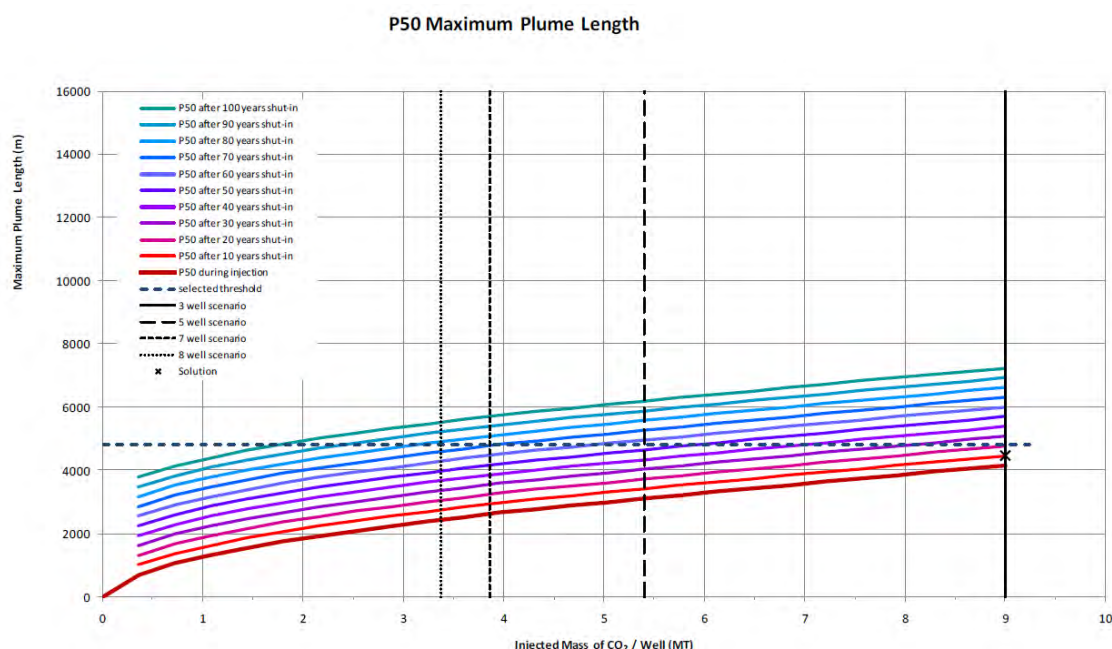


Figure 15: Quest project dynamic P50 plume modeling (Quest - Gen 4 Integrated Reservoir Modeling)

Figure summarizes the inputs used to calculating E_D . Directly post injection, this number is expected to be around 19 percent, but steadily decreases down to six percent after 100 years has passed. The table also allows calculation of the efficiency factor (E_s) which ranges from 6 percent down to 1.9 percent. This E_s value is within the range of values that have been previously published. For the scope of this study, a 50 year post-injection E_D value of 10 percent is chosen to convert the total mass storage (M_{Stot}) into an effective mass storage (M_{Seff}).

SI post injection time [Yrs]	P50 Maximum Plume Length [km]	P50 Max Orthogonal Plume Width [km]	P50 Avg Plume Diameter [km]	Plumes Area [ha]	Mapped MStot [t/m2]	MS Storage [Mt]	Storage per plume [Mt]	Ed [Frac]	Egeol [Frac]	Es [Frac]
0	4.1	1.8	3.0	685	7	48	9	19%	32%	6.0%
10	4.4	1.9	3.2	789	7	55	9	16%	32%	5.2%
20	4.7	2.1	3.4	900	7	63	9	14%	32%	4.6%
30	5.0	2.2	3.6	1,019	7	71	9	13%	32%	4.0%
40	5.3	2.3	3.8	1,158	7	81	9	11%	32%	3.6%
50	5.7	2.5	4.1	1,305	7	91	9	10%	32%	3.2%
60	6.0	2.6	4.3	1,467	7	103	9	9%	32%	2.8%
70	6.3	2.8	4.5	1,617	7	113	9	8%	32%	2.5%
80	6.6	2.9	4.8	1,775	7	124	9	7%	32%	2.3%
90	6.9	3.0	5.0	1,940	7	136	9	7%	32%	2.1%
100	7.2	3.2	5.2	2,112	7	148	9	6%	32%	1.9%

Figure 16: Displacement Efficiency calculation inputs overtime

5.10 Net-to-Total Area Ratio

The net to total area ($E_{An/At}$) ratio is an important parameter to properly assess the effective mass storage of carbon dioxide. From a spatial and geological standpoint, a net rock volume (NRV) map that was properly completed should already account for ineffective areas. Therefore, there is no need to reduce the net rock volume with an aerial reduction due to geological reasons. It is possible, however, to relate the net to total area ratio to regulatory factors. In other words, plume extent follows physical processes, but evaluation permits and sequestration leases follow man made rules. For this phase of site screening a one hundred percent net-to-total area ratio is carried across the report.

5.11 Salinity

The salinity distribution for all zone was obtained directly from water analysis. McDaniel has access to over 30,000 water analysis over the study area. This was intended to confirm the chosen zones were qualifying as “saline” which has a minimum threshold in Alberta greater than 4,000 mg/l. All dissolved elements were combined tallied, and each analysis was assigned to its respective zone. Figure is obtained directly by charting the histogram of the distributions.

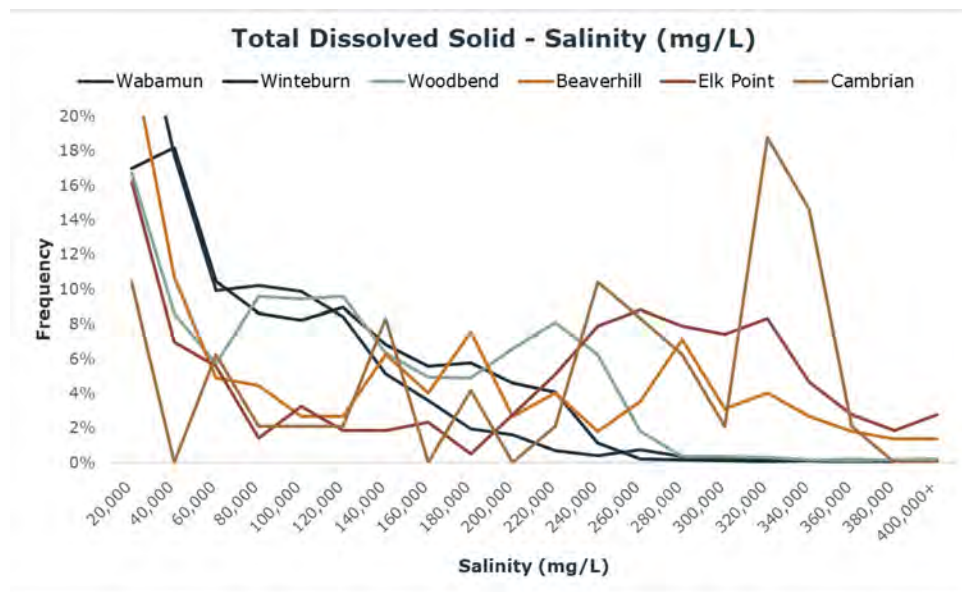
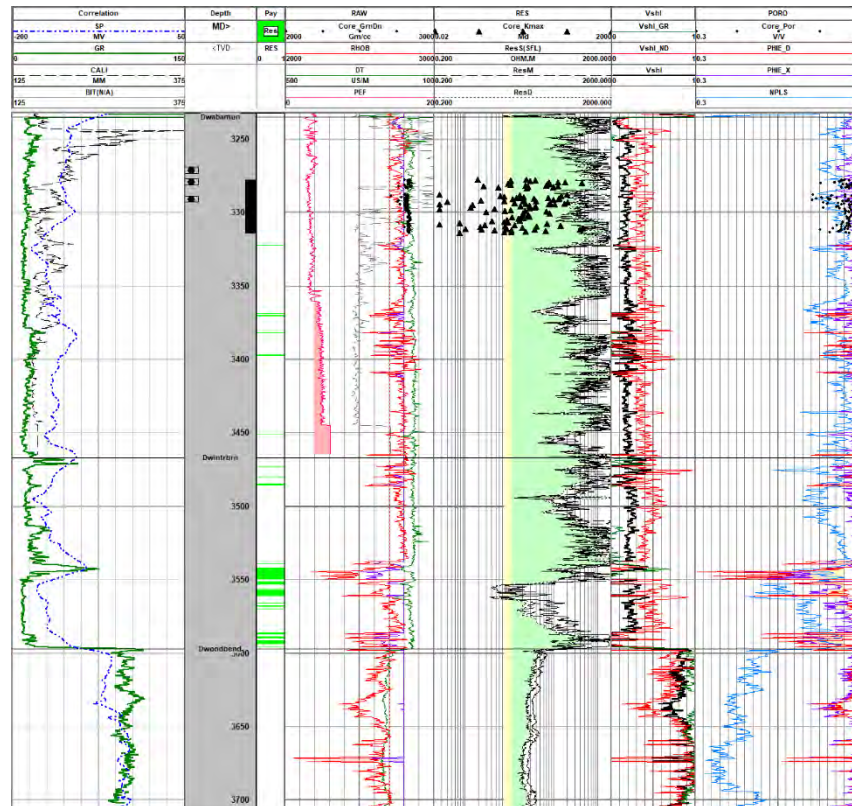


Figure 17: Salinity distribution per zone

Detailed maps are shown in the appendix for the Winterburn and Woodbend Groups. Each with spatially varying reservoir qualities. The following section is a brief overview of the two horizons.

6.1.1 Geological Overview and Containment



The Winterburn Group conformably overlies the Woodbend Group of sediments. The group is composed of multiple formations. The highest reservoir potential is in the Nisku and the BlueRidge/Graminia. There are also significant amounts of shale deposited during this period. Common shaley formations are the upper Ireton and the Calmar. To the west, the Woodbend/Winterburn groups are undifferentiated and referred to as the Fairholme Group. The Winterburn is either conformably overlain by the Wabamun Group or is partially eroded by sub-cretaceous unconformity. Some of the younger seals present above the sub-cretaceous unconformity include the shales from the Fernie Group. The dominant lithology is carbonate and shale, but clastic and evaporite facies can also be found. The zone shows an abundance of dolostone but also some limestone. Winterburn deposition is characterized by an overall shallowing and filling of the basin. Numerous hydrocarbon accumulations are found within the unit, with many of them present at the erosional sub-crop edge or centered around reef complexes. All deeper zones apart from the Wabamun and

Cambrian have greater aerial extents. Figure 18 above shows a type log of the Winterburn Group.

6.1.2 Storage

The Winterburn Group is up to 200 metres thick and grades towards zero towards the erosional unconformity. The net thickness is up to 100 metres but only a small fraction of the study area is over 50 metres. The thickest areas are directly North of Edmonton. The study area has a good spread of wells with the proper mapping log suites.

Core analysis is summarized in Figure for the Winterburn zone. The range of porosity value is wider than the Wabamun, and this zone is mid-range compared to the others.

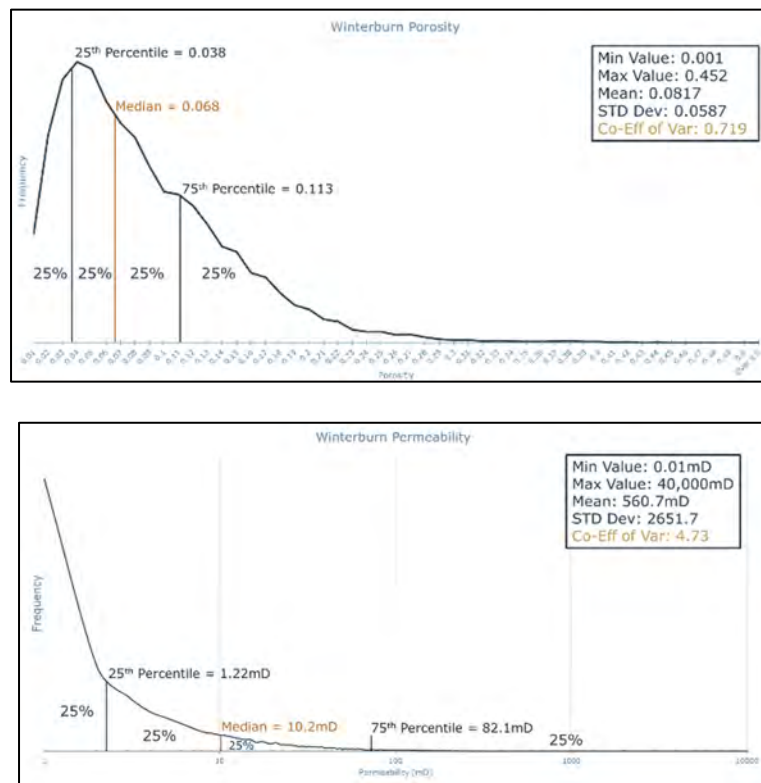


Figure 19: Winterburn Core Analysis Summary

The Winterburn holds one of the smallest storage potentials across the study area due to a combination of reservoir properties. The areas with the greatest storage potential are directly northwest and southwest of Edmonton. These areas could hold a full-size permit with 100 Mt of prospective storage. Figure below shows the effective storage across the study area.

There are many oil and gas wells drilled into and through the Winterburn indicating higher risk in regard to containment.

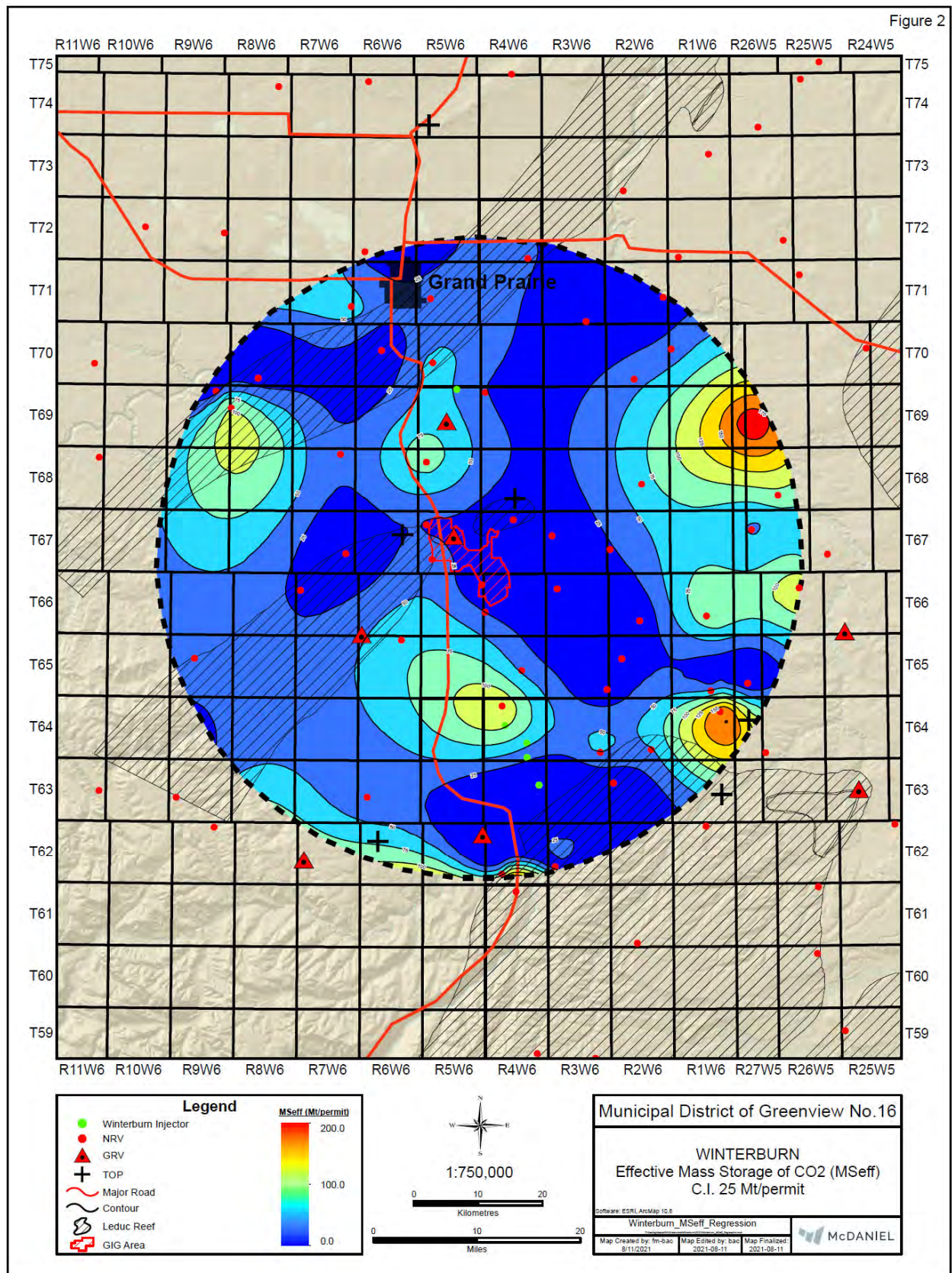


Figure 20: Winterburn Effective Mass Storage Map

6.1.3 Injectivity

Peak water injection rates for the for the Winterburn group are summarized below in Figure . The zone has a mid-range injectivity compared to the others.

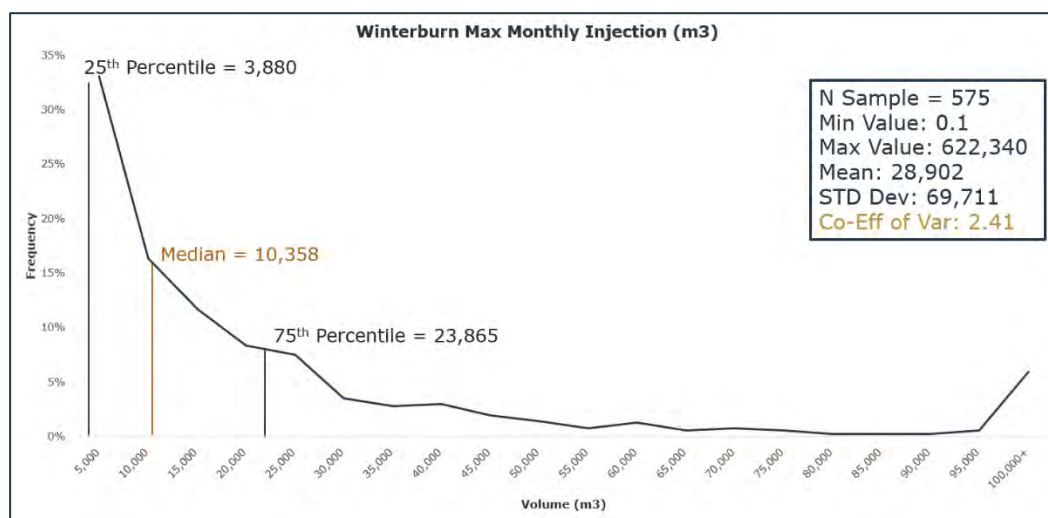


Figure 21: Winterburn Histogram of Water Injectors Max Monthly Rate

6.2 Woodbend Group

6.2.1 Geological Overview and Containment

The Woodbend Group conformably overlies the Beaverhill Lake Group. The group is composed of multiple formations. The highest reservoir potential can be found in the Cooking Lake, Leduc and Camrose Formations. There is also a significant amount of shale deposited during this period. Shale formations include the Majeau Lake, Duvernay and the lower Ireton. To the west, the Woodbend/Winterburn groups are undifferentiated and referred as the Fairholme Group. The Woodbend is either conformably overlain by the Winterburn Group or is partially eroded by the sub-cretaceous unconformity. Some of the younger seals present above the sub-cretaceous unconformity include the shales from the Fernie Group. The dominant lithology is carbonate and shale, but clastic and evaporite facies can also be found. The zone shows abundance of dolostone, particularly along the reef complex trends. Limestones are also present. The Woodbend deposition is characterized by gradual deepening driven by significant basin subsidence and eustatic level changes. The Woodbend is a unique group due to the inclusion of the Duvernay shale, a significant contributor to the WCSB petroleum system. Numerous hydrocarbon accumulations are found within the unit with most of them at the erosional sub-crop edge or centered around reef complexes. All the deeper zones except for the Wabamun, Winterburn and Cambrian have a greater aerial extent. Figure below, shows a type log of the Woodbend Group.



The Woodbend Group is up to 350 metres thick and grades towards zero towards the erosional unconformity. The net thickness is up to 280 metres with the thickest areas being up-dip or along the Rimbey-Meadowbrook reef trend. The study area has a good spread of wells with the proper mapping log suite.

Core analysis is summarized below for the Woodbend in Figure .

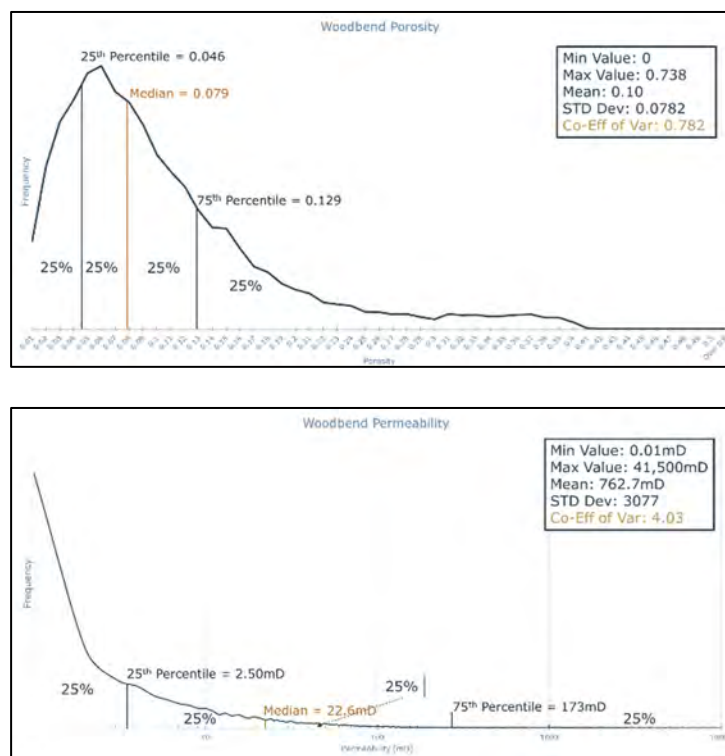


Figure 23: Woodbend Core Analysis Summary

The Woodbend Group has a mid-range depth yielding a CO₂ density that is median compared to other zones. A little less than half of the study area has a density less than 0.5 t/m³. The net impact of higher net thickness, mid-range porosity and mid-range CO₂ density means that the Woodbend holds the second largest storage potential across the study area. The areas with the greatest storage within the Woodbend are along the Rimbey-Meadowbrook reef trend directly southwest of Edmonton as well as a large area near Provost and the Saskatchewan border. These areas could hold a full-size permit with 250 to 500 Mt of prospective storage. Figure shows the effective storage across the study area.

There are many oil and gas wells drilled across the zone along the Rimbey reef trend and in the vicinity of Provost.

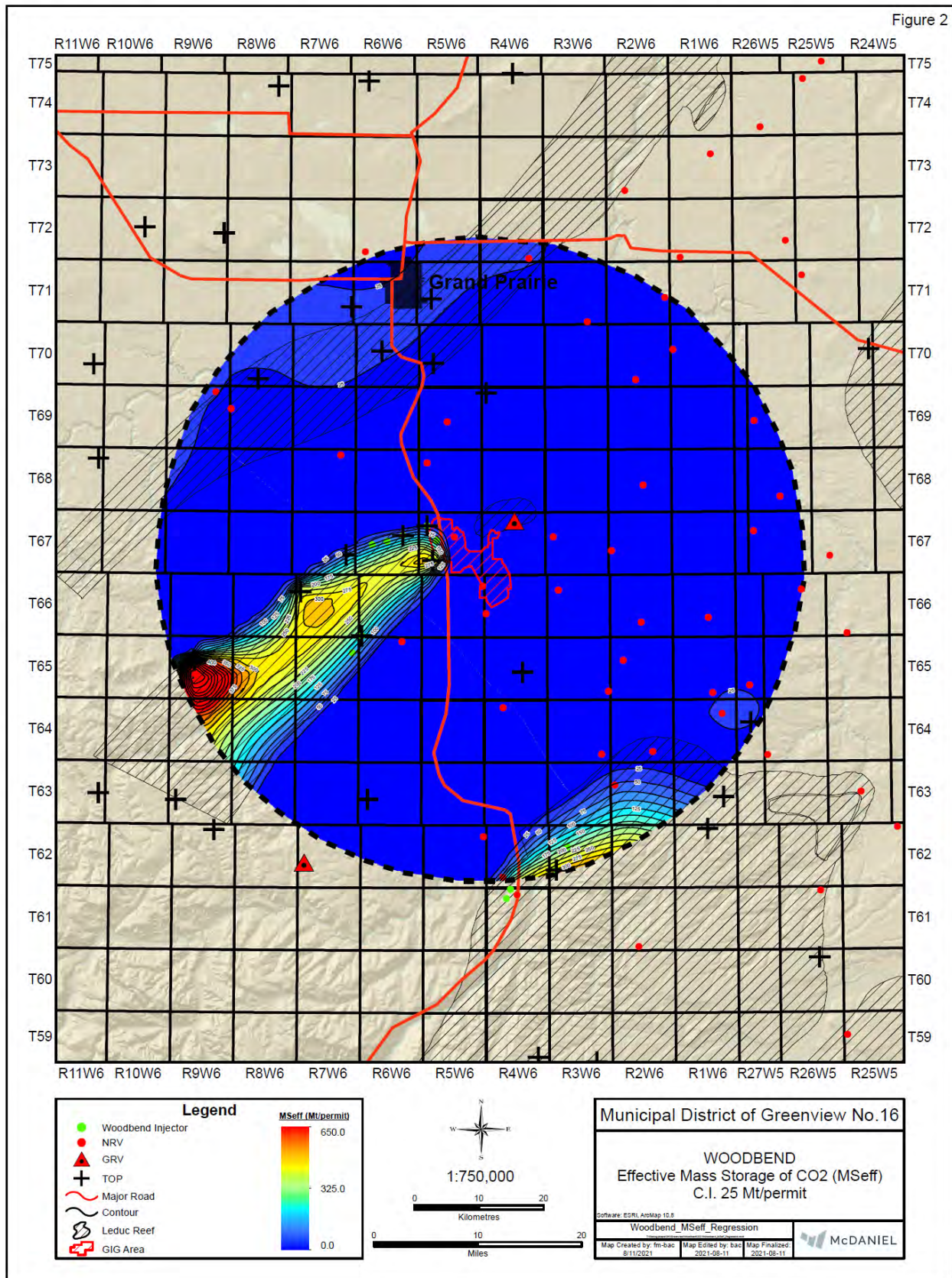


Figure 24: Woodbend Effective Mass Storage Map

6.2.3 Injectivity

Peak water injection rates for the Woodbend Group are summarized below in Figure . The Woodbend zone is a common target for water disposal. Most of the injection occurs at lower peak rates (<100,000 m³/month) but a few wells are taking a considerable amount of volume. This is due to the difference between the area under waterflood development and the disposal wells. The top three injectors have peak monthly rates greater than two million cubic metres. These results support the Woodbend as a tremendous target from an injectivity perspective.

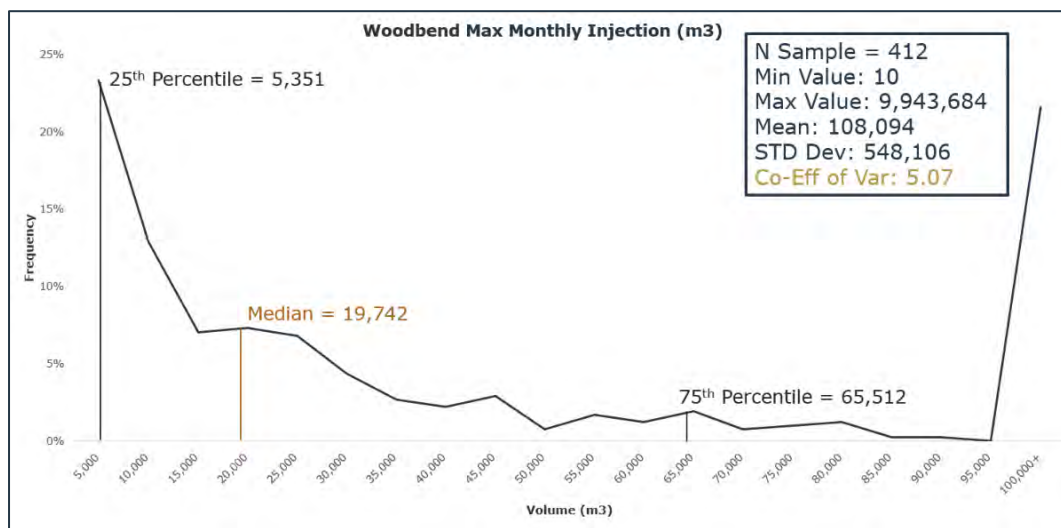


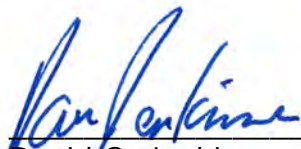
Figure 25: Woodbend Histogram of Water Injectors Max Monthly Rate

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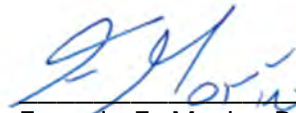
We reserve the right to revise any estimates provided herein if any relevant data existing prior to preparation of this report was not made available, if any data between the effective date of the evaluation and the date of this report were to vary significantly from that forecast, or if any data provided was found to be erroneous.

Sincerely,

McDANIEL & ASSOCIATES CONSULTANTS LTD.
APEGA PERMIT NUMBER: P3145



David G. Jenkinson, P. Geol.
August 20, 2021



Francis F. Morin, P. Geo.

DGJ/FFM:jep
[21-0132]

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CERTIFICATE OF QUALIFICATION

I, David G. Jenkinson, Petroleum Geologist of 2200, 255 - 5th Avenue, S.W., Calgary, Alberta, Canada hereby certify:

1. That I am an Executive Vice President for McDaniel & Associates Consultants Ltd., APEGA Permit Number P3145, which Company did prepare, at the request of Municipal District of Greenview No. 16, the report entitled "Carbon Sequestration Site Screening and Selection", dated August 20, 2021, and that I was involved in the preparation of this report. I am also registered as a Responsible Member as outlined by APEGA for McDaniel & Associates Consultant Ltd. APEGA Permit Number 3145.
2. That I attended the University of Saskatchewan in the years 2000 to 2004, graduating with a Bachelor of Science degree in Geology; that I am a registered Professional Geologist with the Association of Professional Engineers and Geoscientists of Alberta and that I have in excess of 15 years of experience in oil and gas reservoir studies and evaluations.
3. That I have no direct or indirect interest in the properties or securities of Municipal District of Greenview No. 16, nor do I expect to receive any direct or indirect interest in the properties or securities of Municipal District of Greenview No. 16, or any affiliate thereof.
4. That the aforementioned report was not based on a personal field examination of the properties in question, however, such an examination was not deemed necessary in view of the extent and accuracy of the information available on the properties in question.



APEGA ID 81046
Calgary, Alberta
Dated: August 20, 2021

CERTIFICATE OF QUALIFICATION

I, Francis Fortin-Morin, Petroleum Geologist of 2200, 255 - 5th Avenue, S.W., Calgary, Alberta, Canada hereby certify:

1. That I am a Senior Geologist for McDaniel & Associates Consultants Ltd., APEGA Permit Number P3145, which Company did prepare, at the request of Municipal District of Greenview No. 16, the report entitled "Carbon Sequestration Site Screening and Selection", dated August 20, 2021, and that I was involved in the preparation of this report.
2. That I attended Laval University in the years 2007 to 2011 and graduated with a Baccalaureate of Engineering. I also attended the University of Alberta in the years 2011 to 2012 graduating with a Master of Science. I am a member of the Canadian Society of Petroleum Geologists and I am registered as a Professional Geoscientist with the Association of Professional Engineers and Geoscientists of Alberta and that I have in excess of eight years of experience in oil and gas reservoir studies and evaluations.
3. That I have no direct or indirect interest in the properties or securities of Municipal District of Greenview No. 16, nor do I expect to receive any direct or indirect interest in the properties or securities of Municipal District of Greenview No. 16, or any affiliate thereof.
4. That the aforementioned report was not based on a personal field examination of the properties in question, however, such an examination was not deemed necessary in view of the extent and accuracy of the information available on the properties in question.



APEGA ID 136788
Calgary, Alberta
Dated: August 20, 2021

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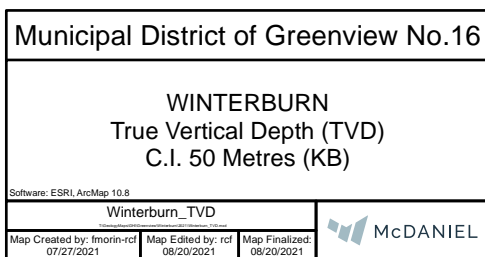
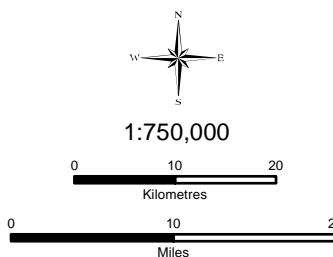
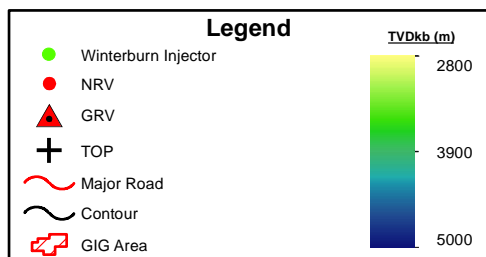
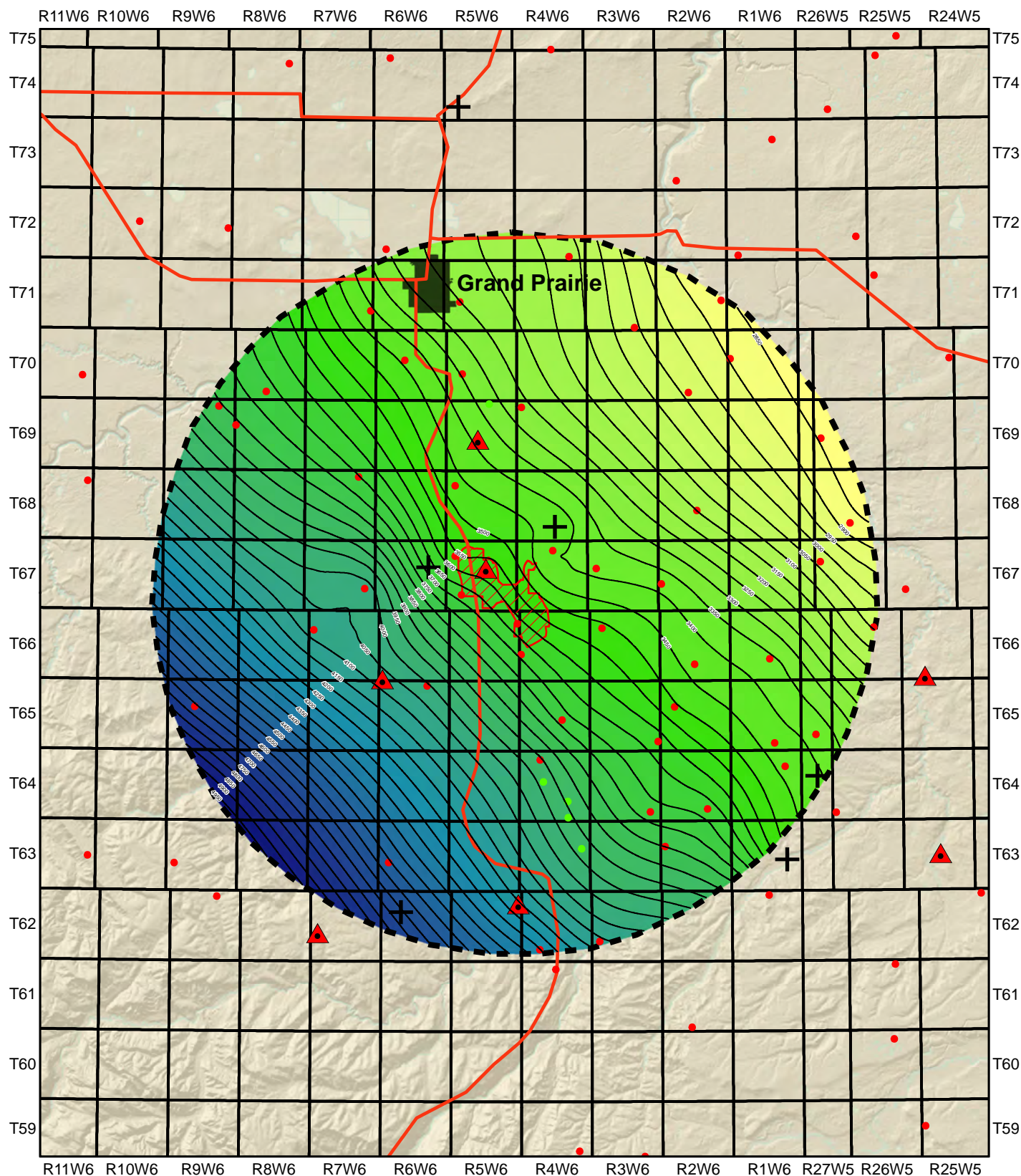


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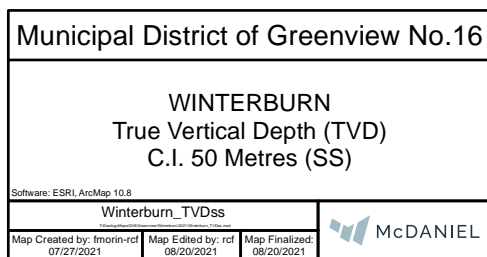
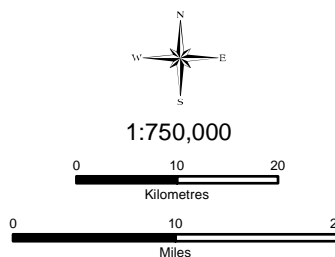
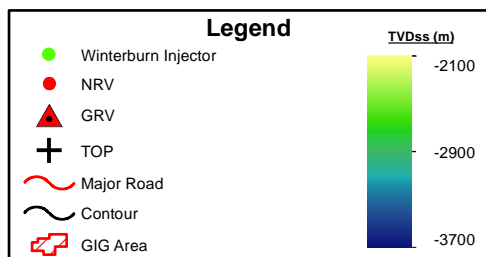
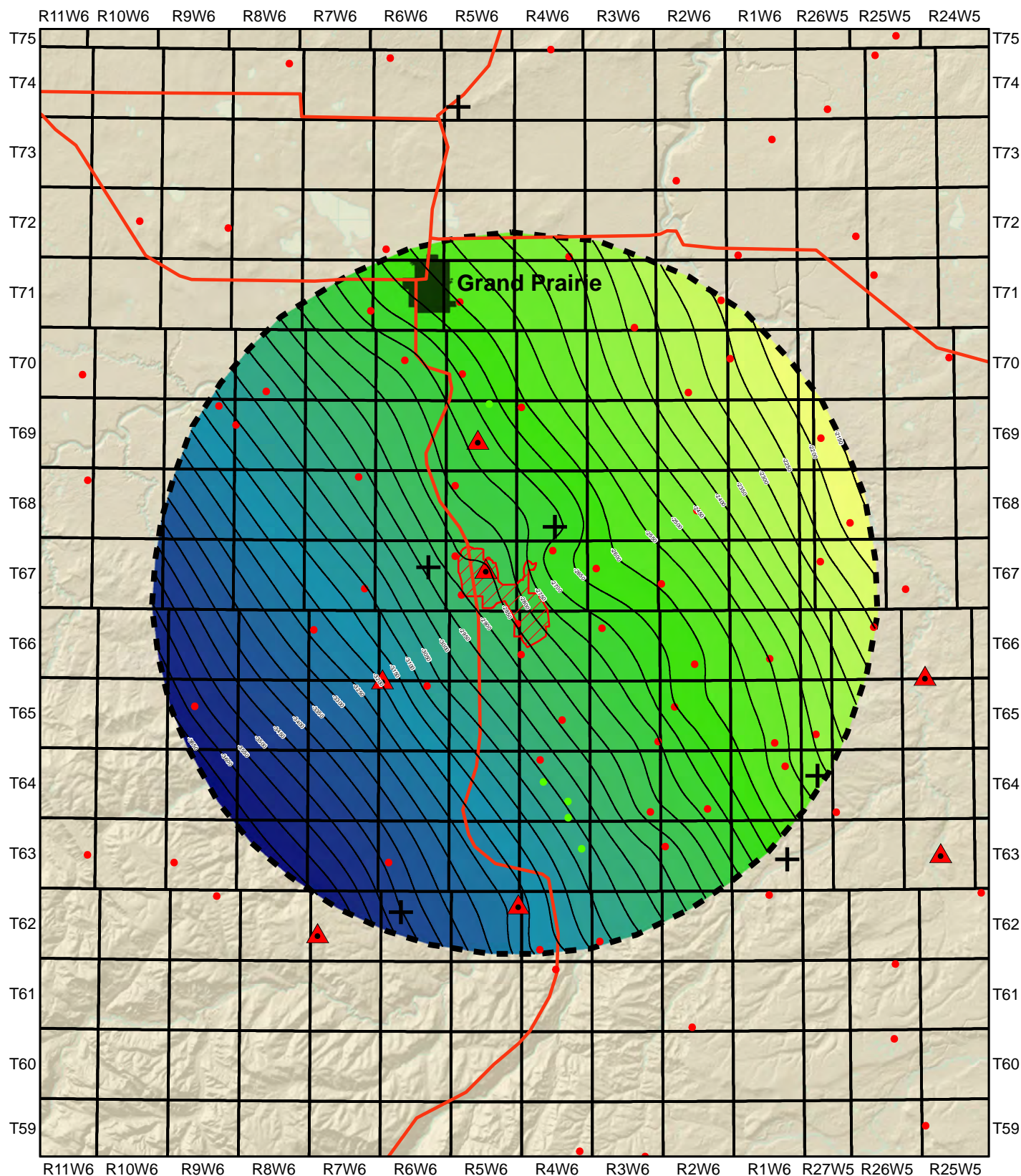


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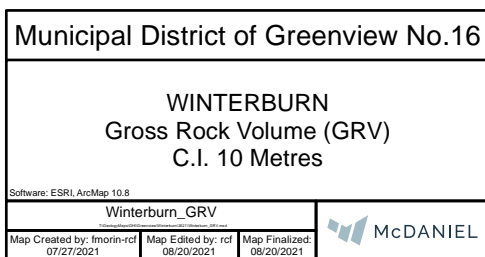
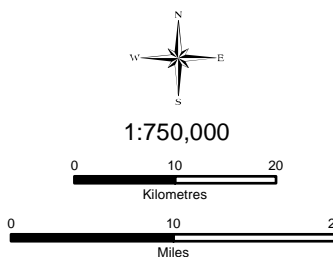
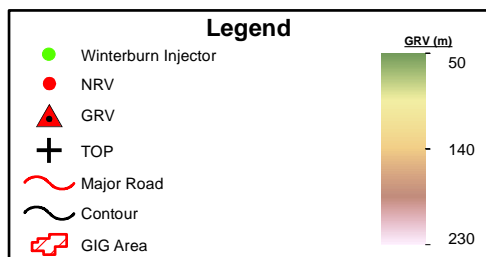
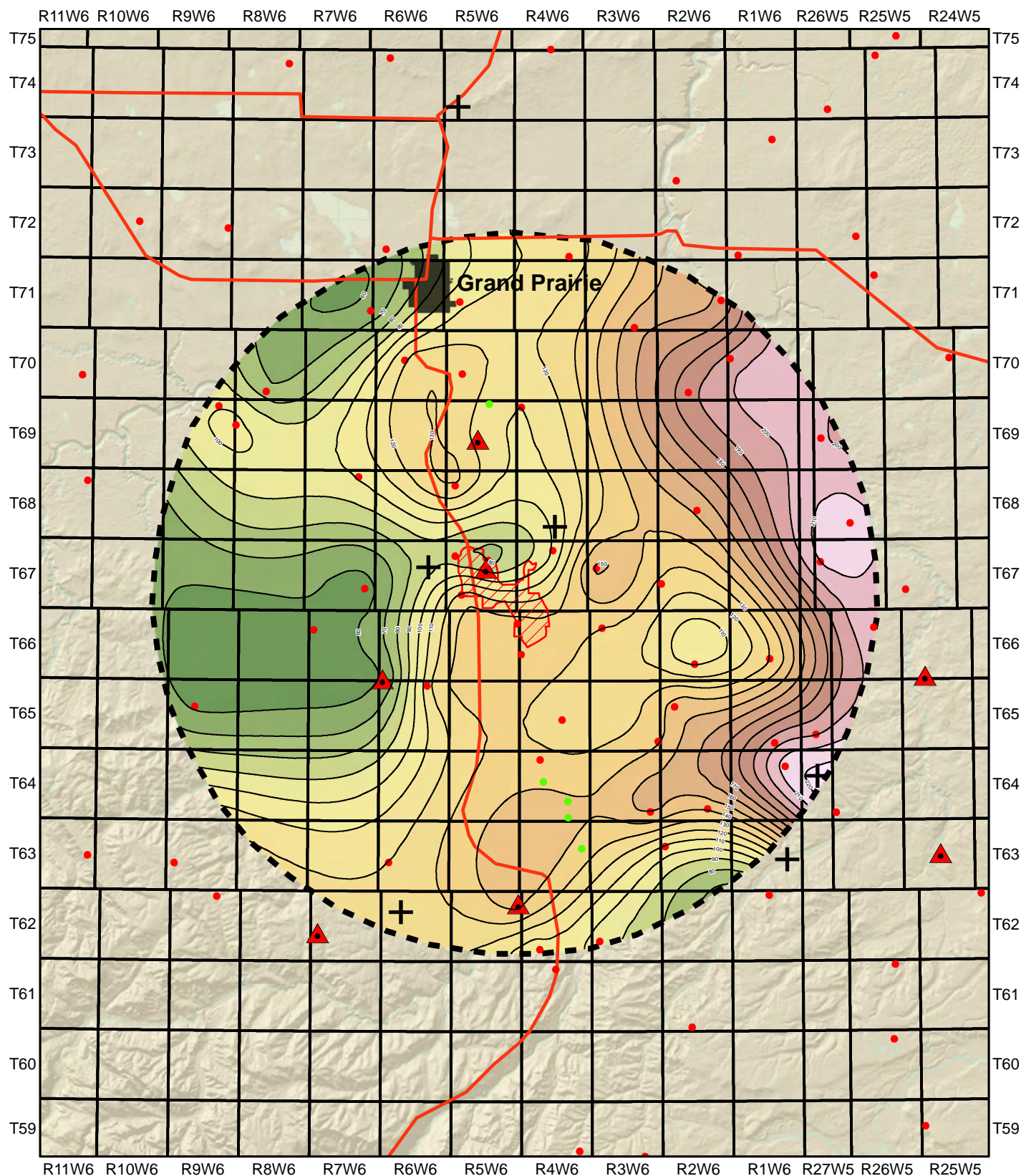


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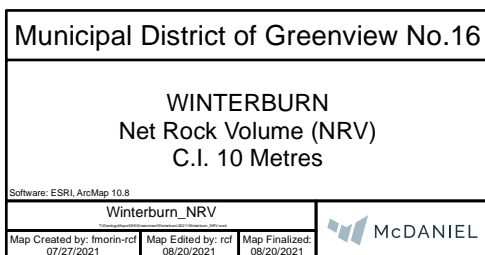
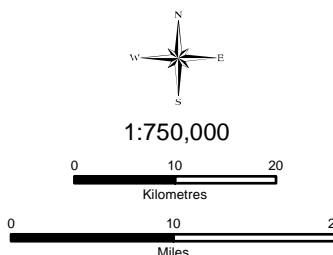
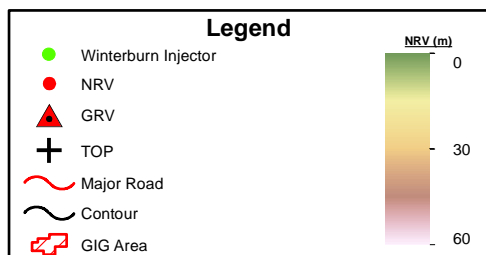
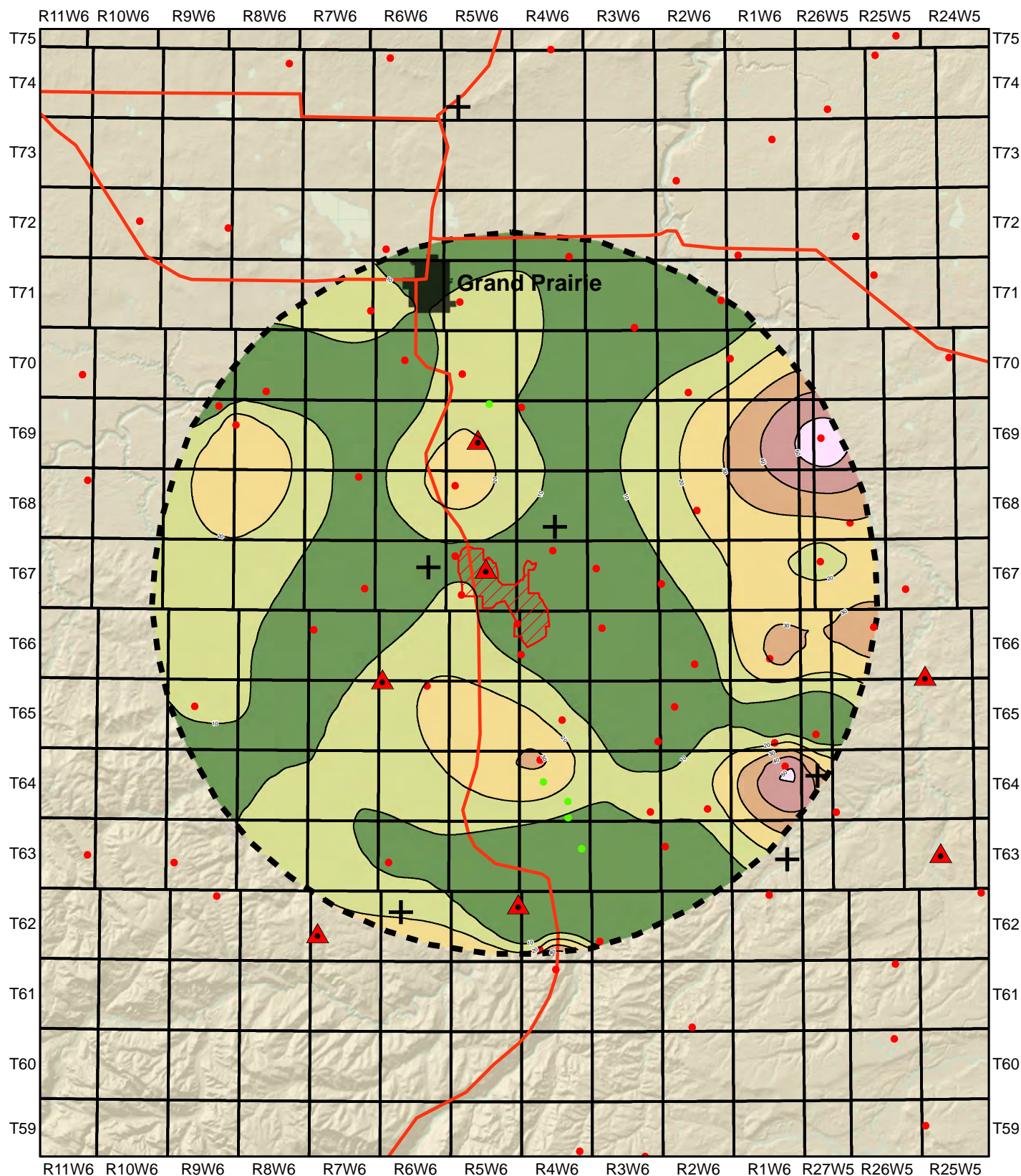


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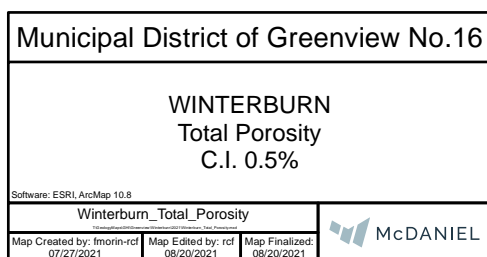
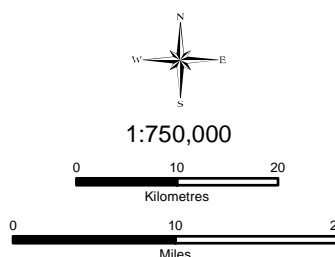
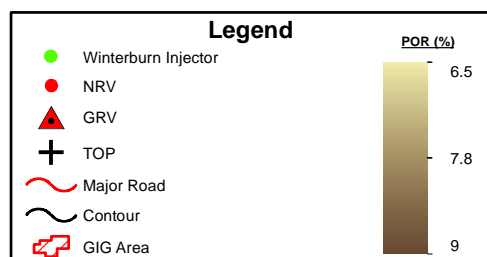
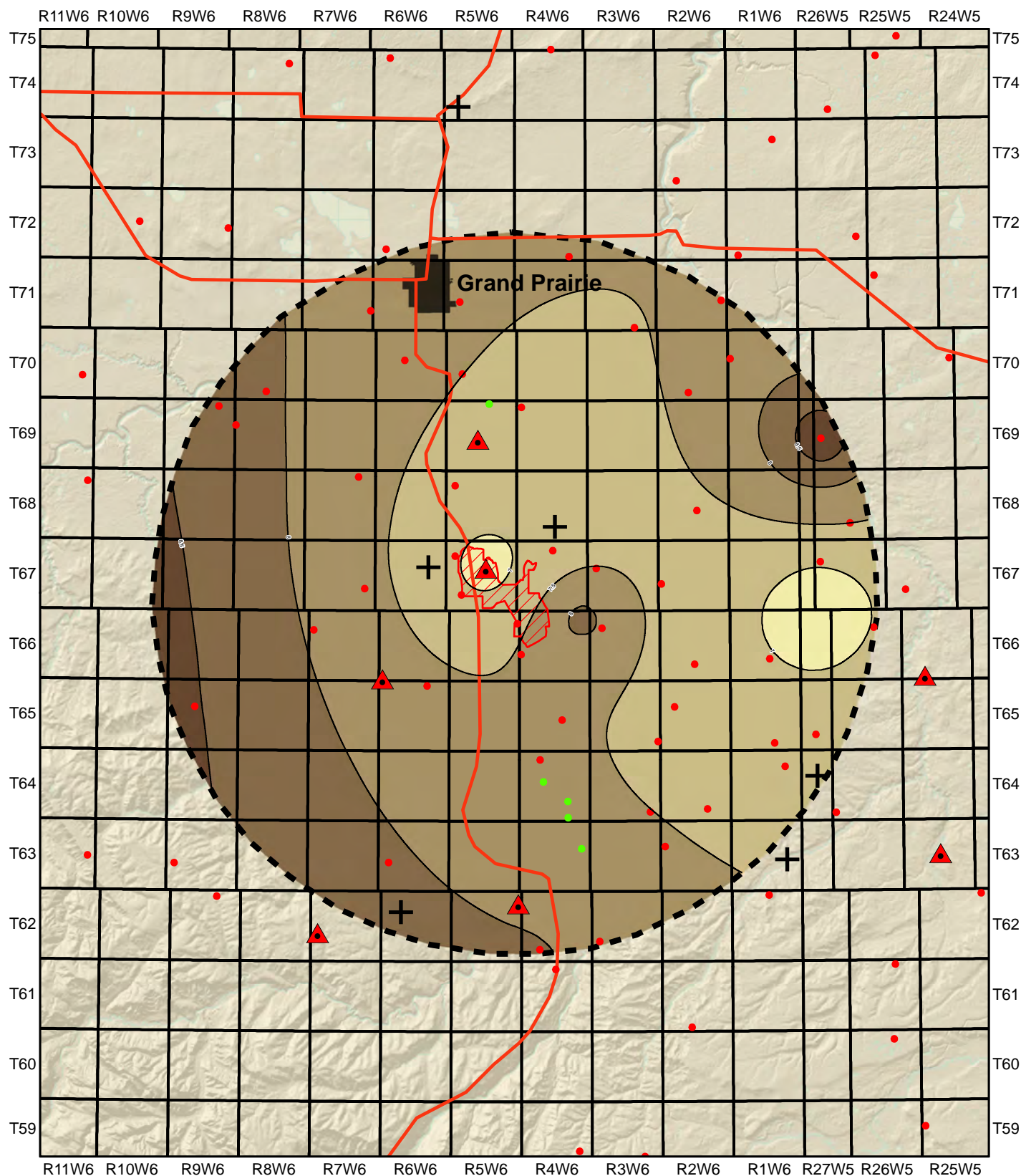


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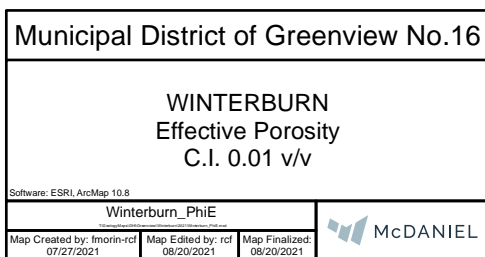
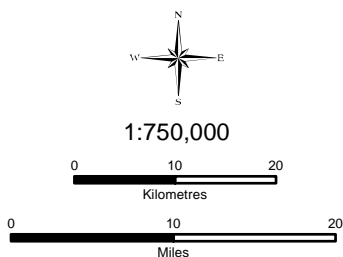
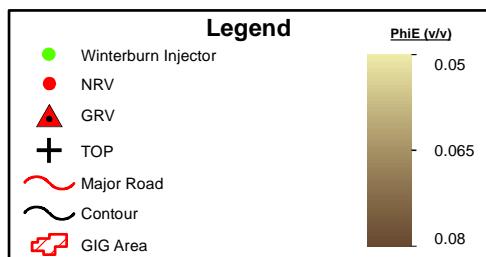
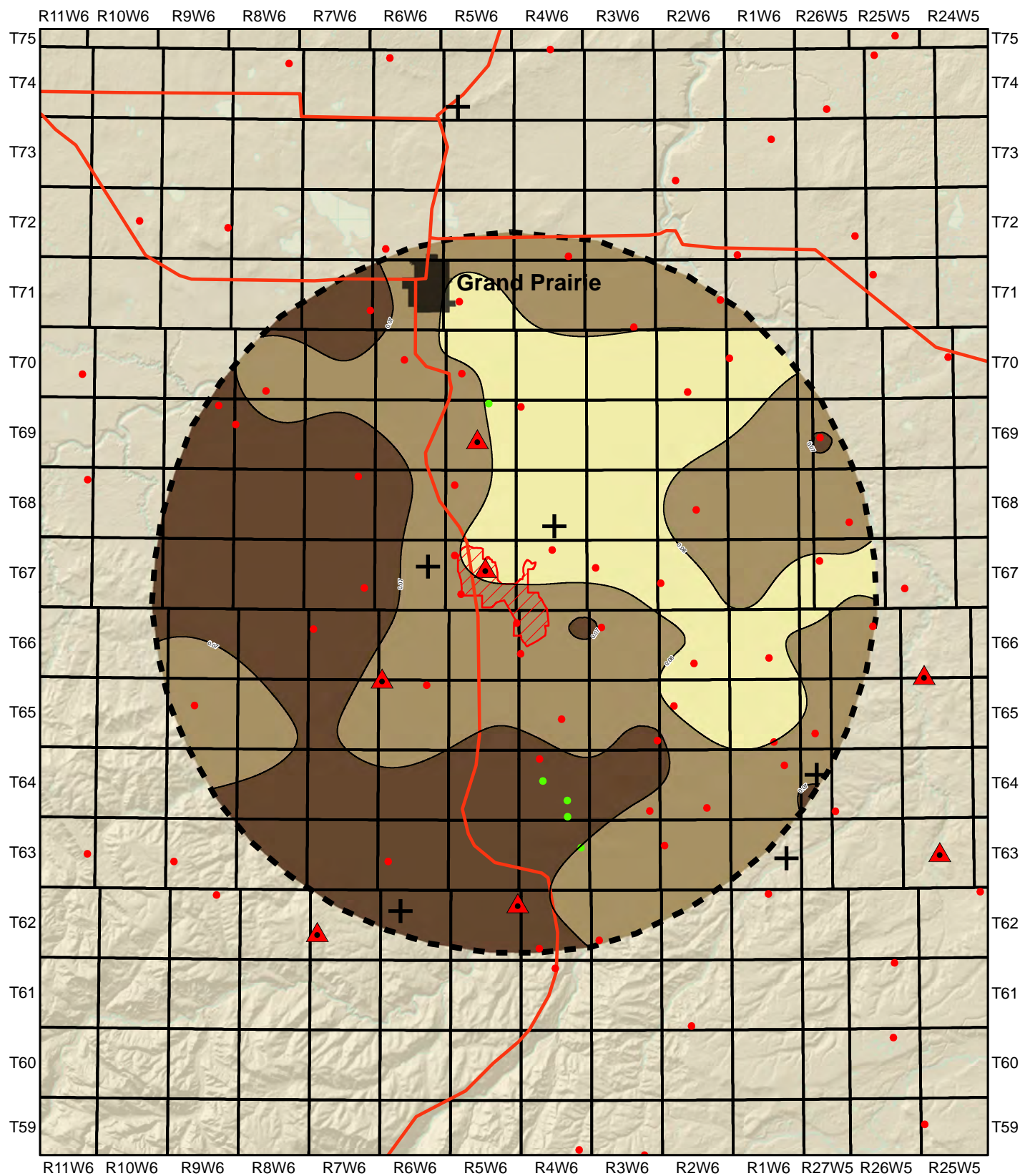


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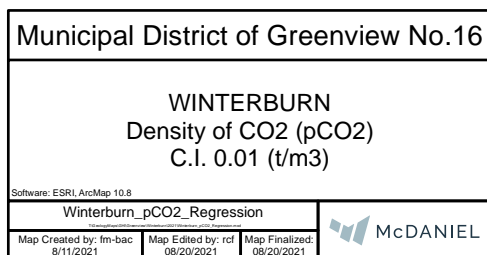
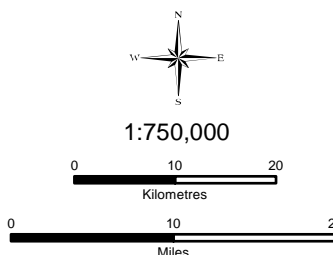
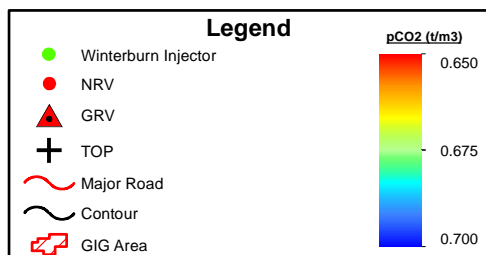
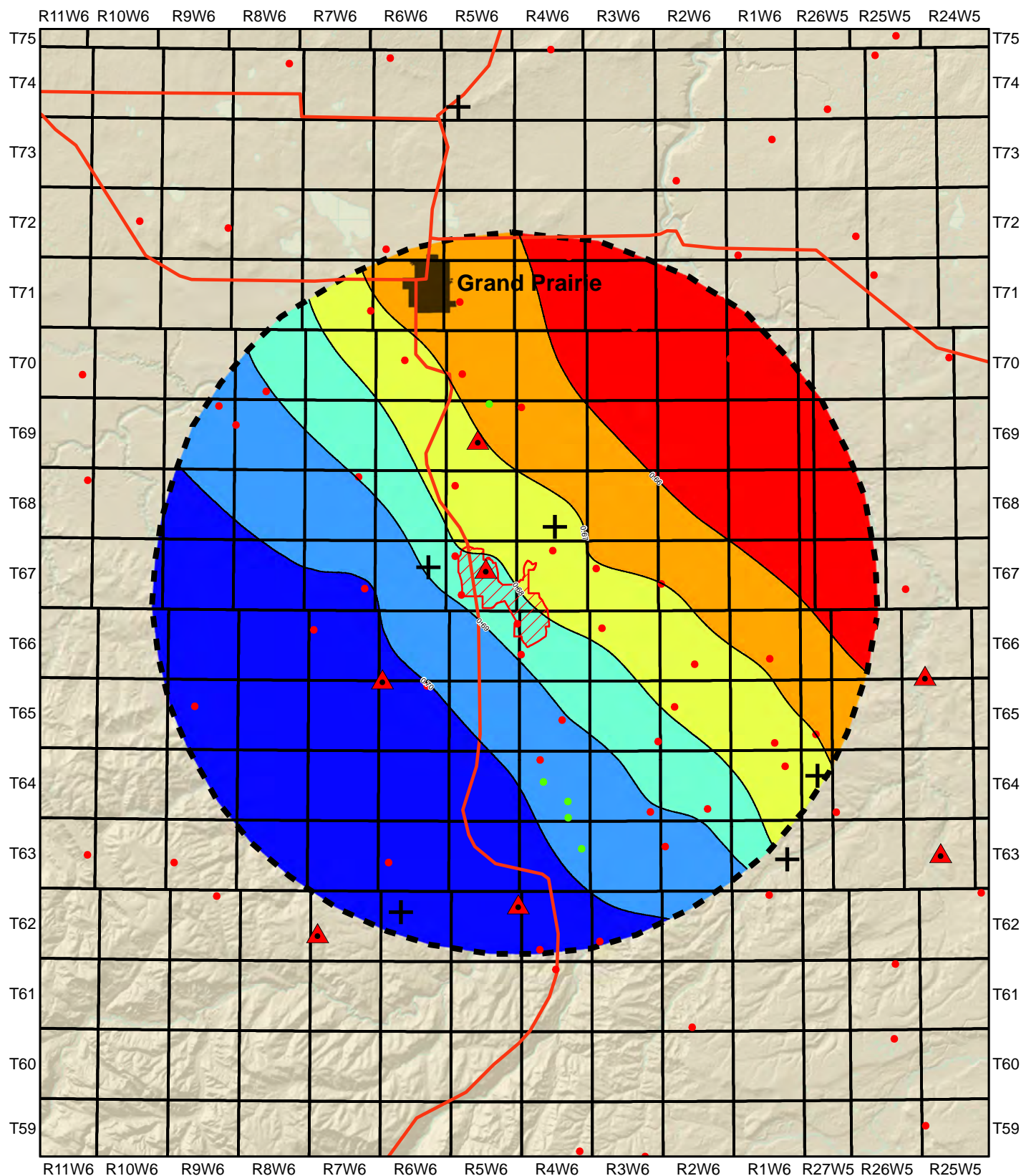


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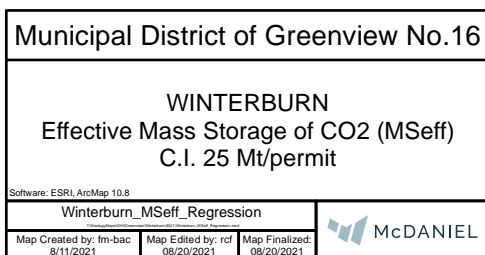
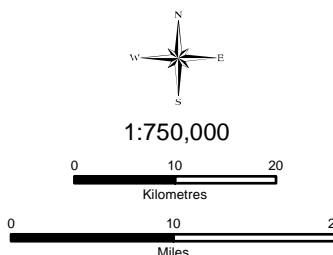
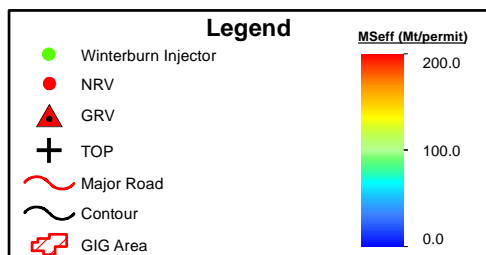
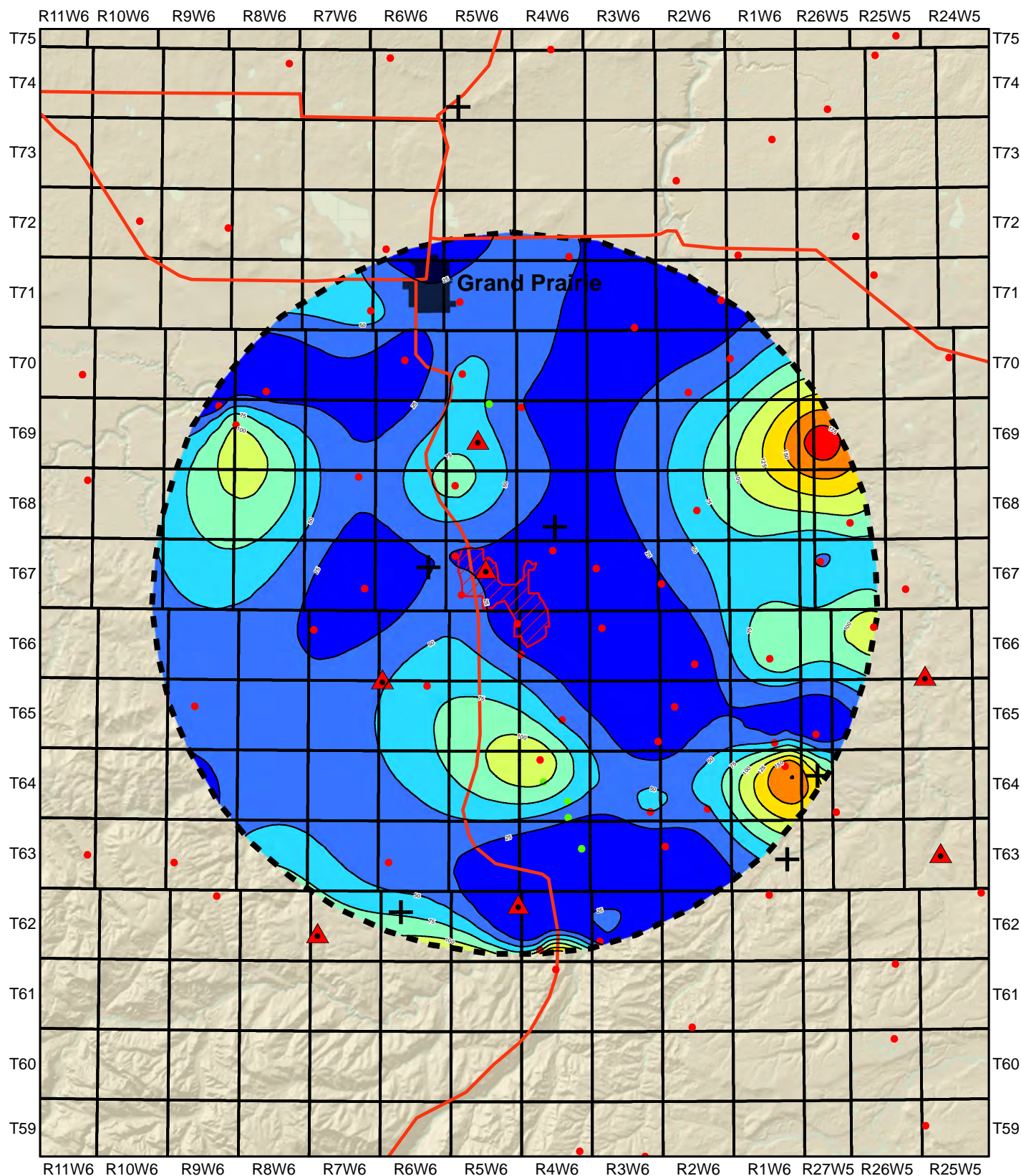


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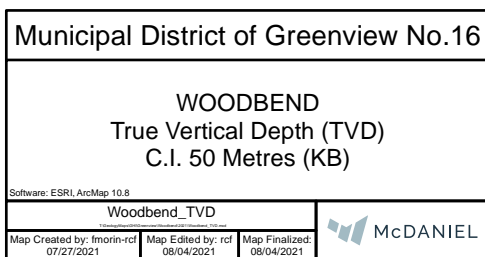
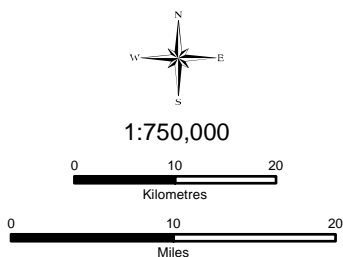
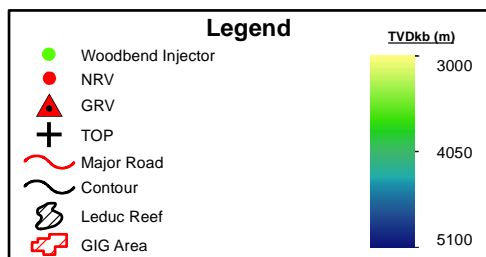
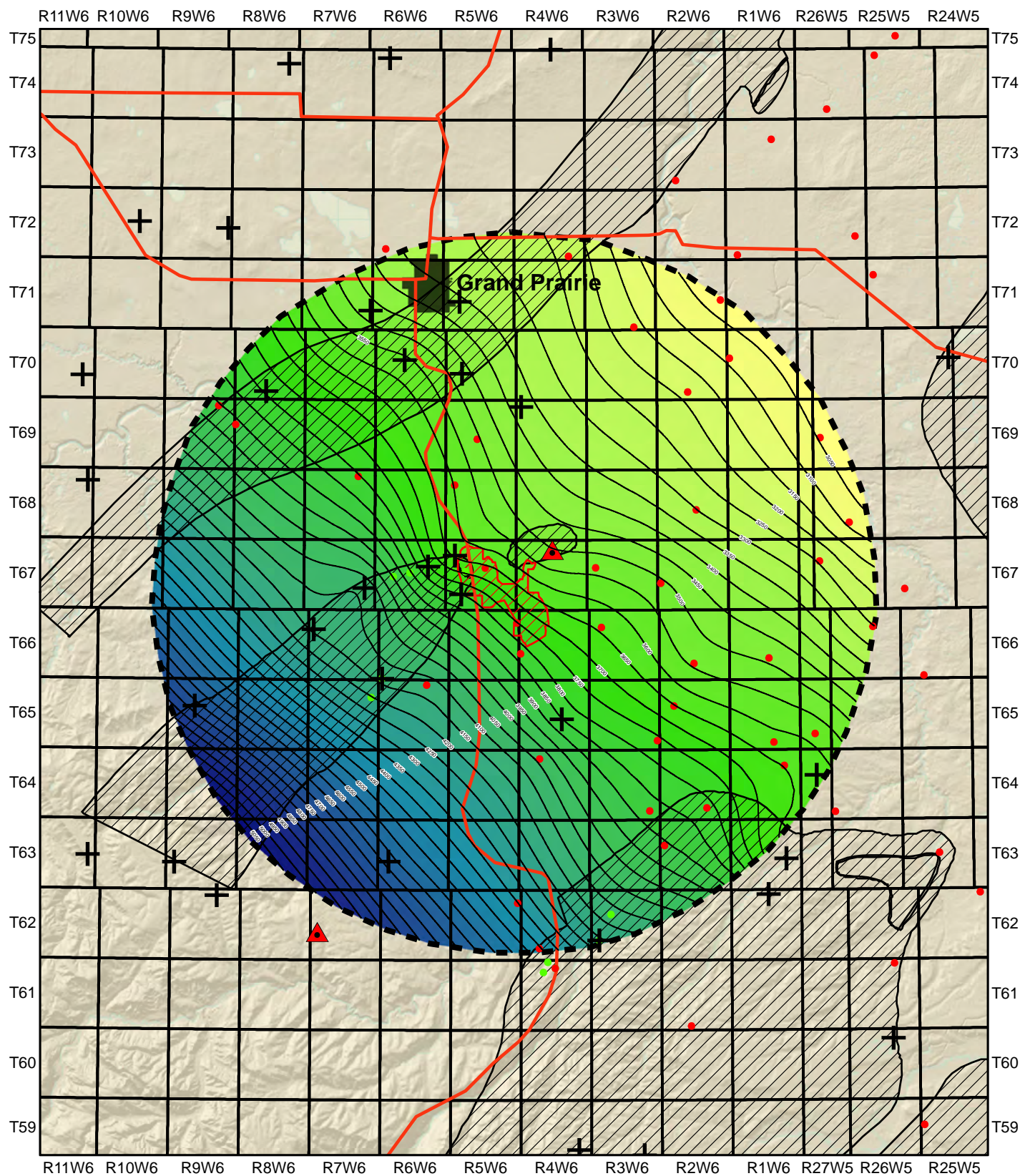


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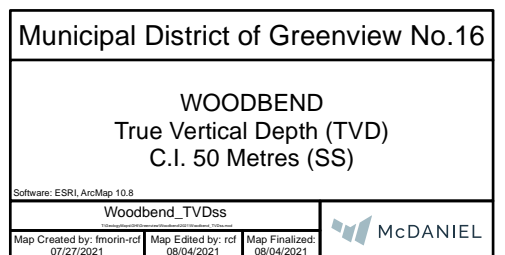
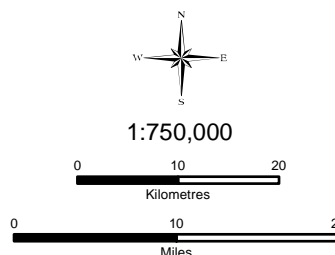
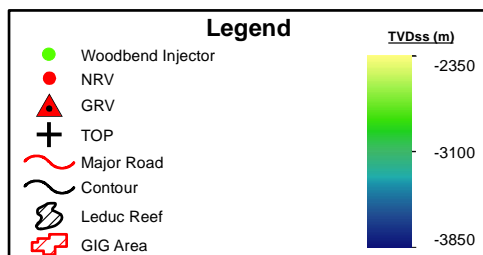
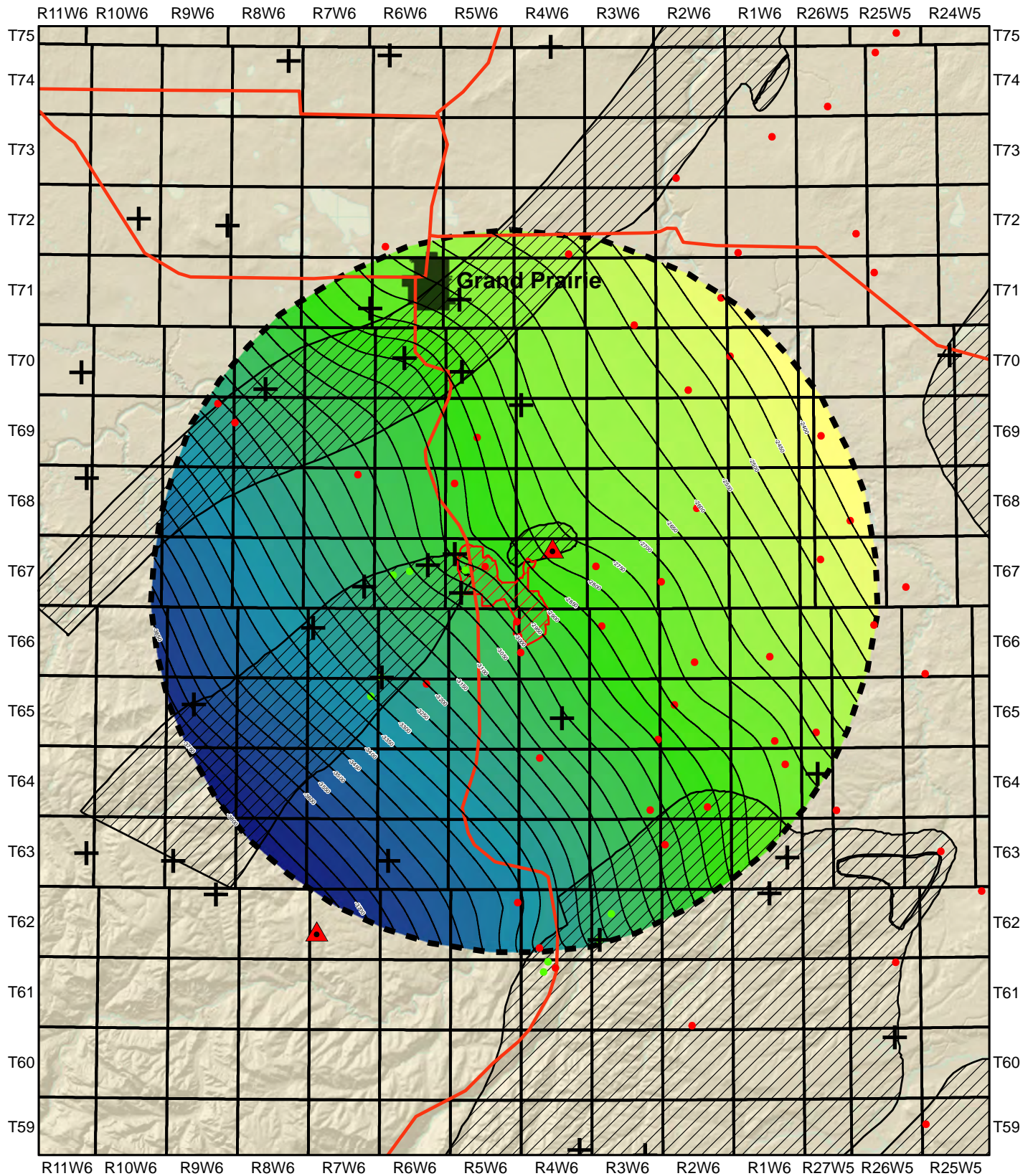


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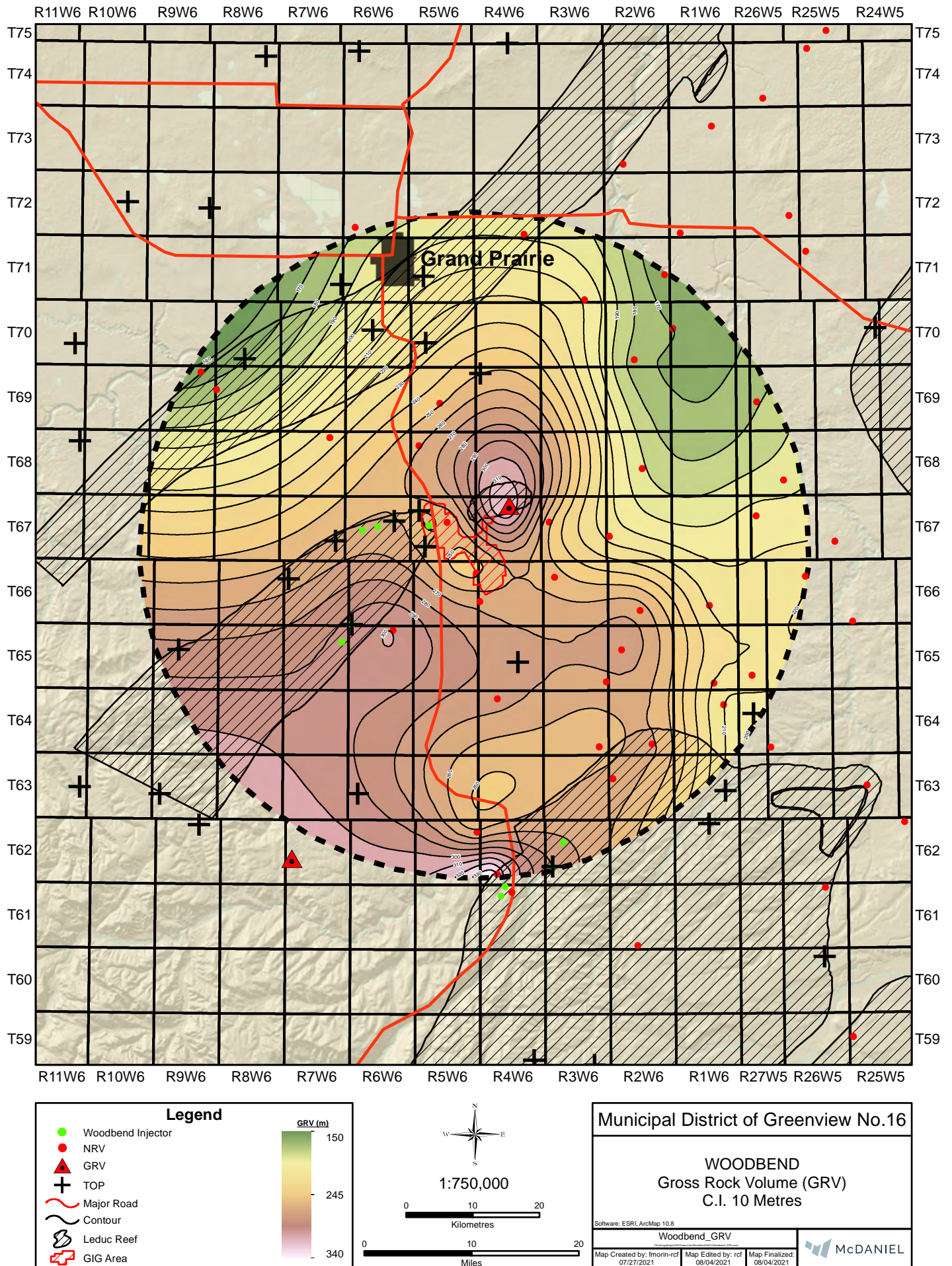


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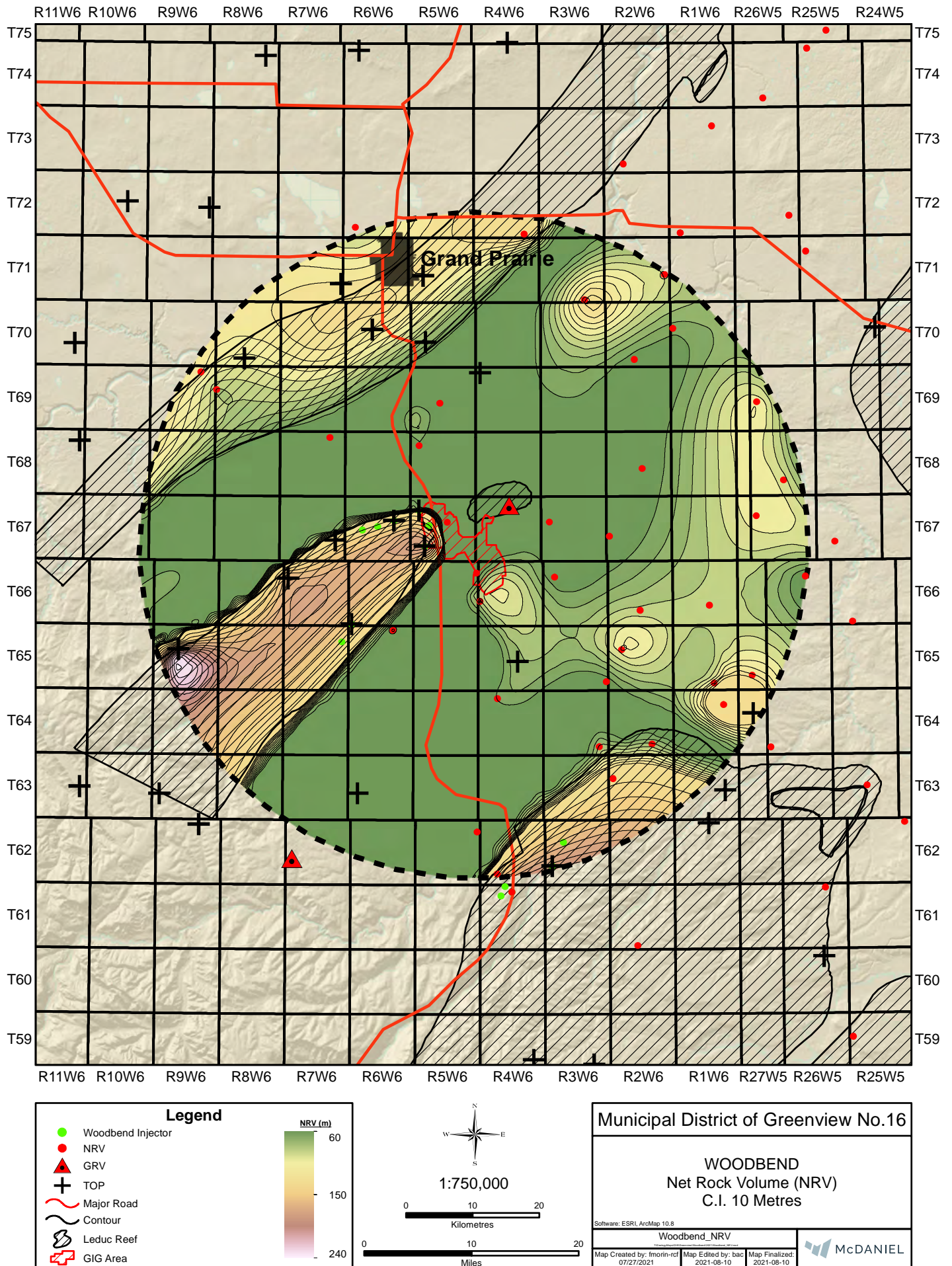


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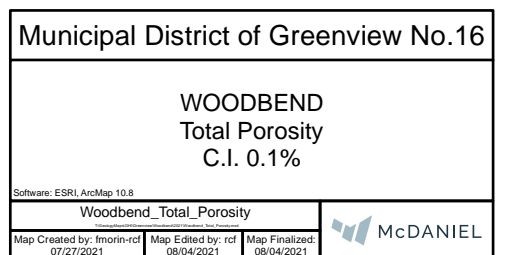
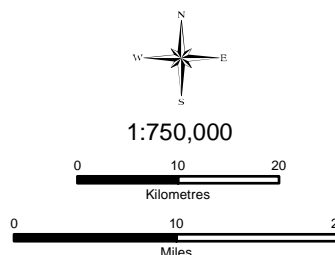
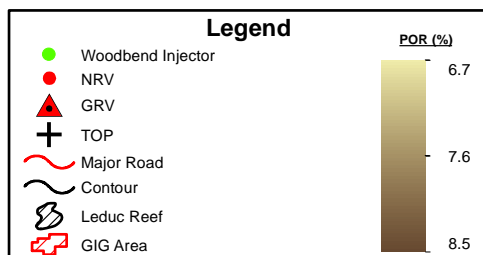
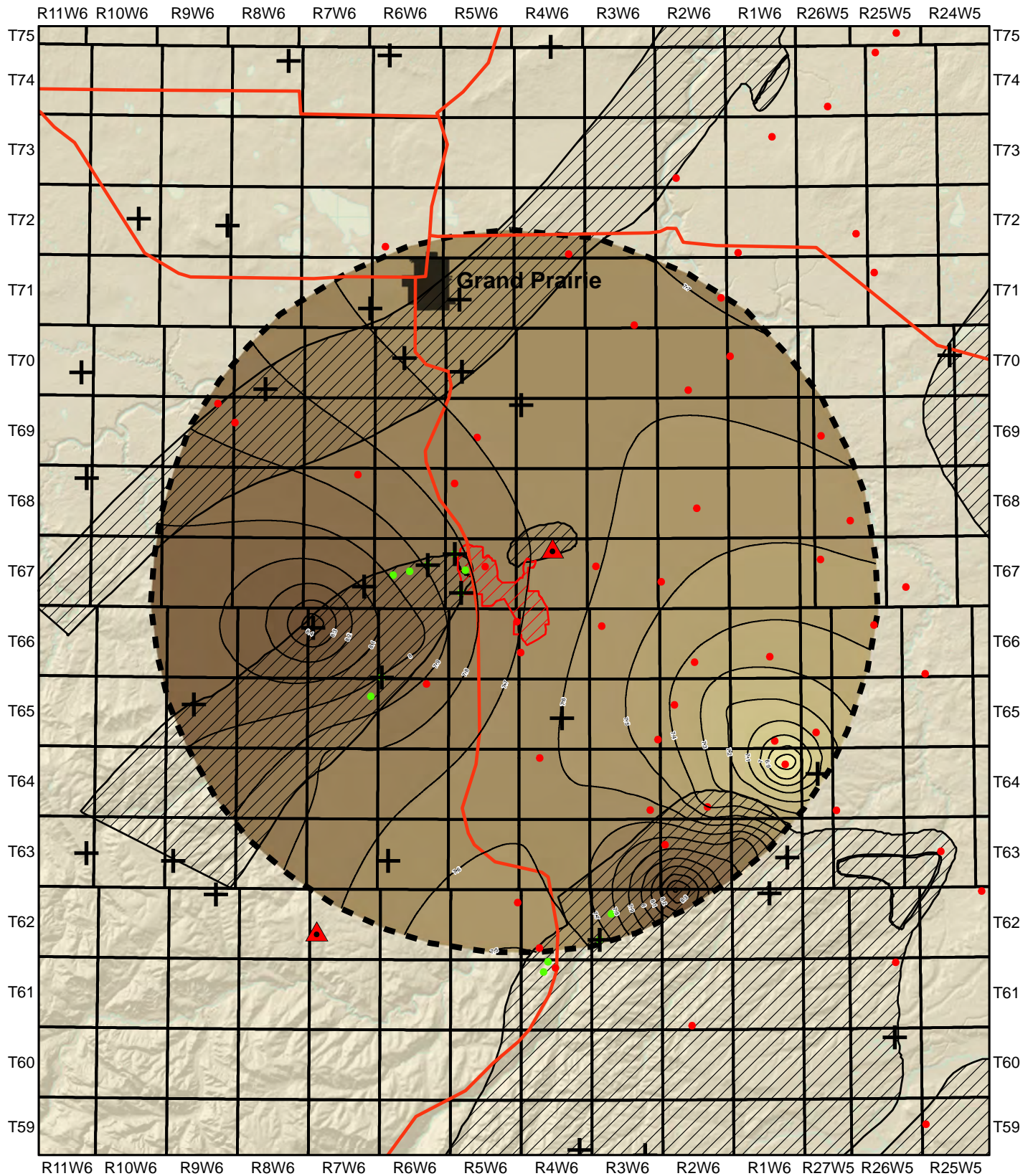


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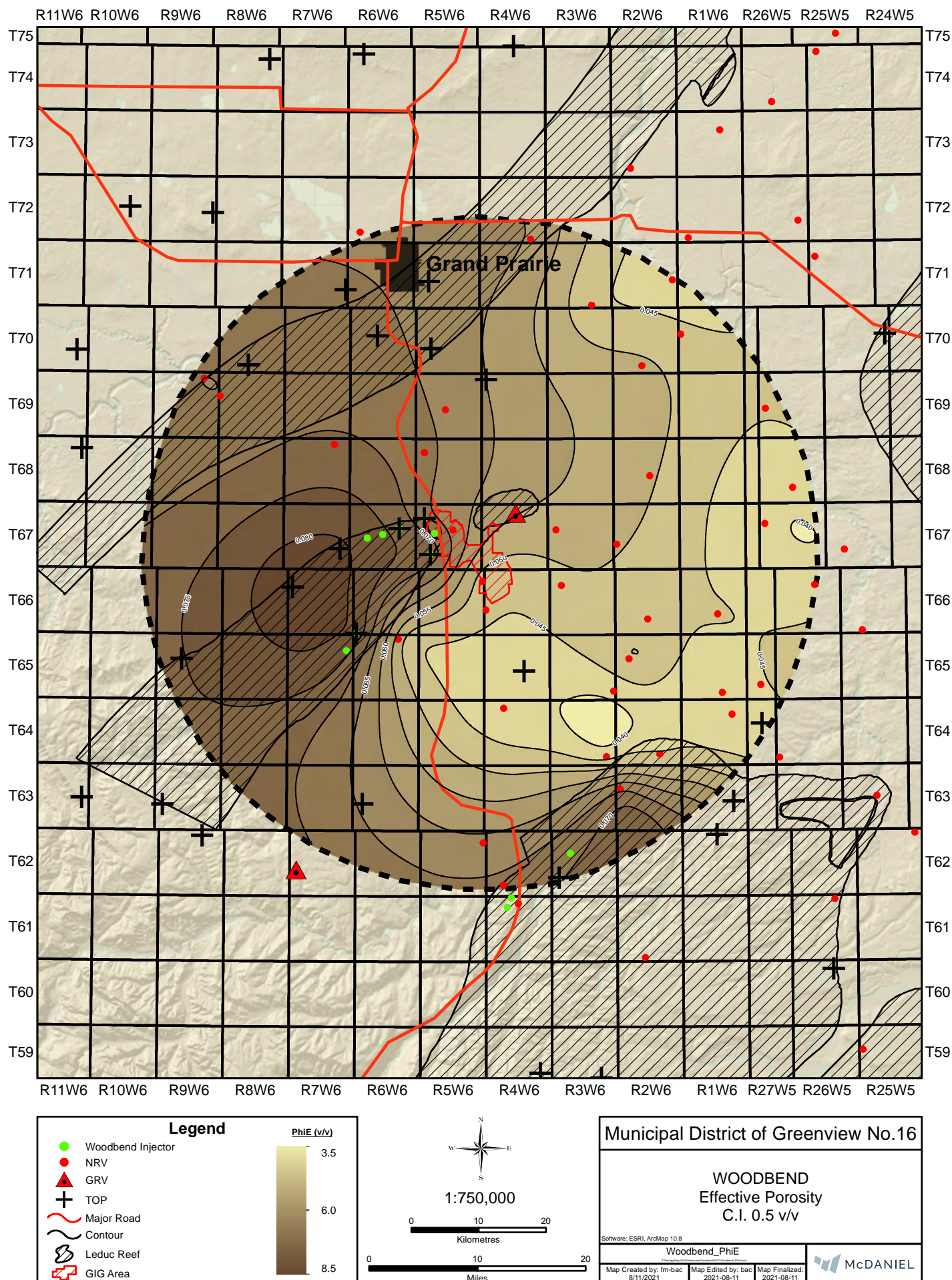


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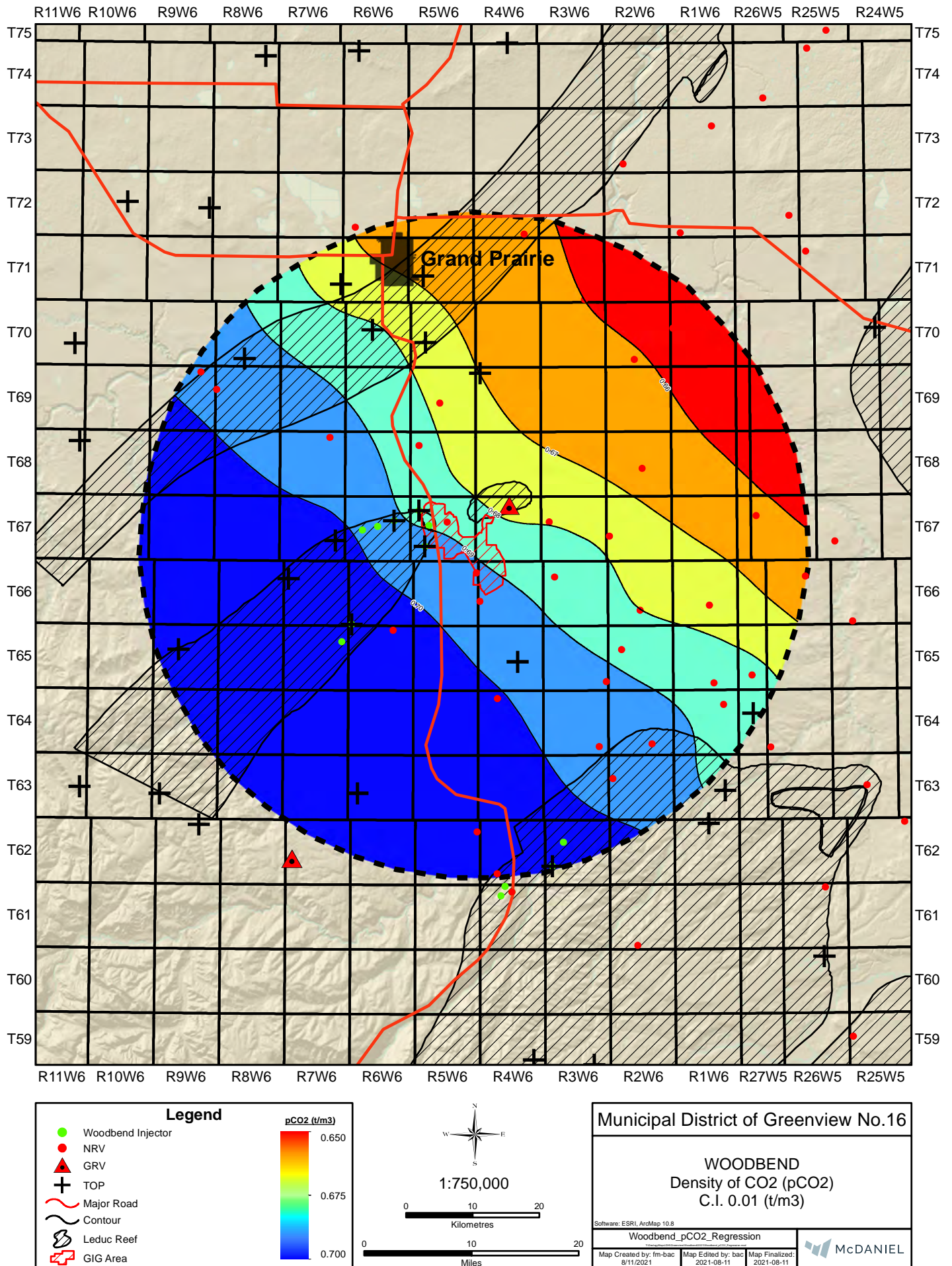
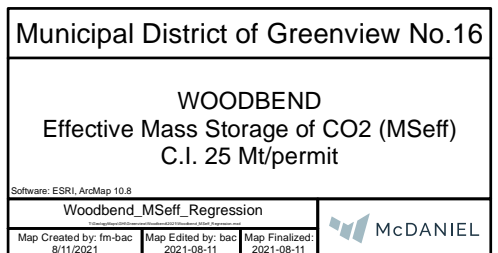
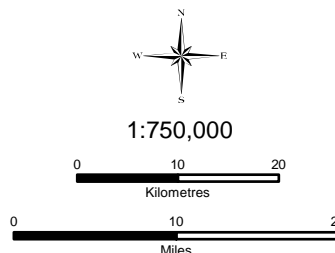
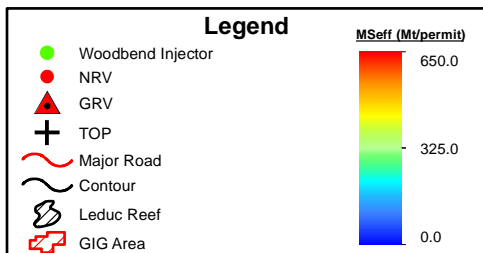
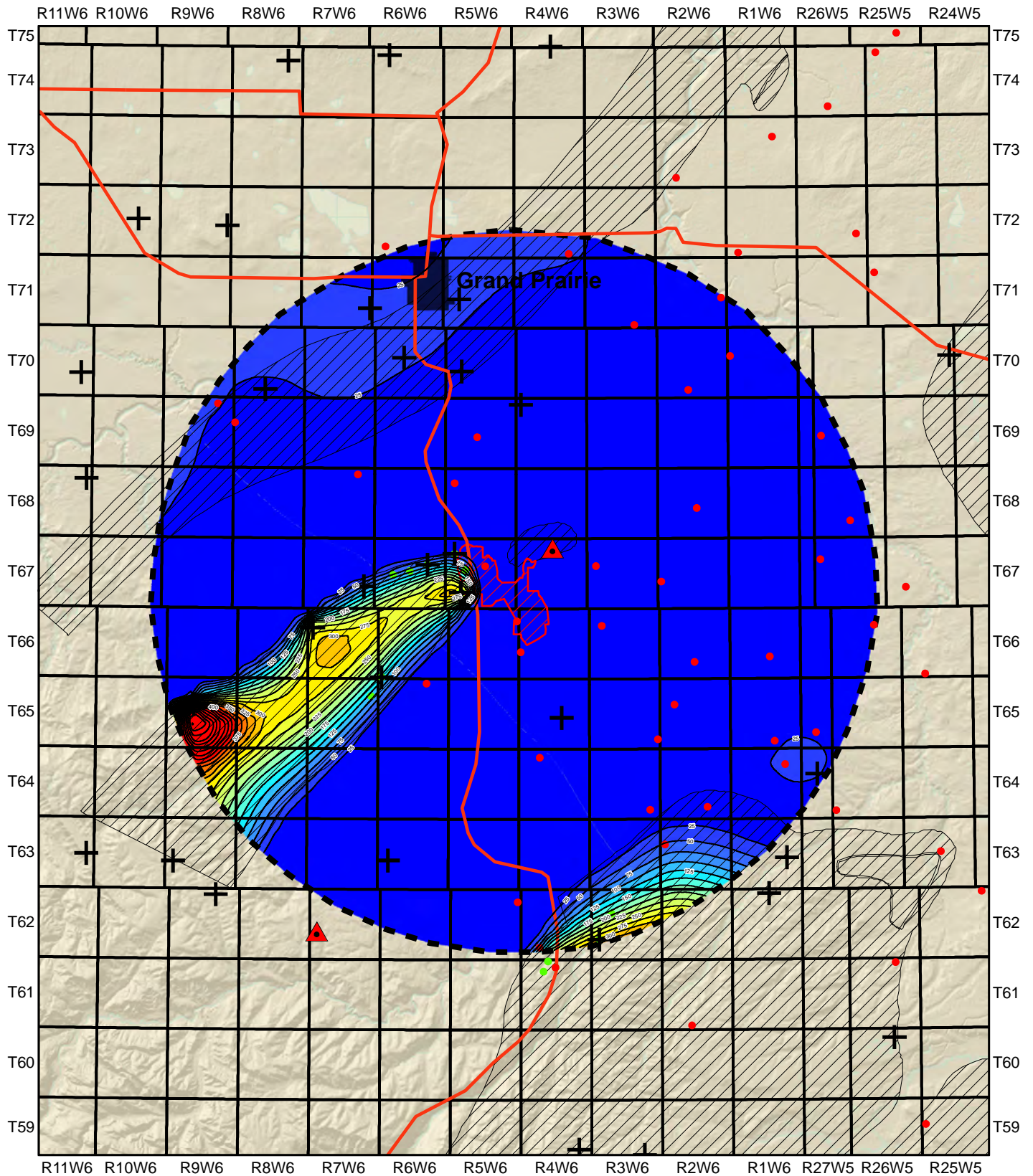


Figure 16





REQUEST FOR DECISION

SUBJECT:	Processed Water Management Plan		
SUBMISSION TO:	Greenview Industrial Gateway Committee Meeting	REVIEWED AND APPROVED FOR SUBMISSION	
MEETING DATE:	September 7, 2021	CAO: SW	MANAGER:
DEPARTMENT:	CAO SERVICES	GM: DM	PRESENTER: KR
STRATEGIC PLAN:	Development	LEG:	

RELEVANT LEGISLATION:

Provincial (cite) – N/A

Council Bylaw/Policy (cite) – N/A

RECOMMENDED ACTION:

MOTION: That the Greenview Industrial Gateway Committee accept the Process Water Management Plan report for information, as presented.

BACKGROUND/PROPOSAL:

A preliminary report has been completed by Watersmart Water Management Solutions which has concluded that Greenview should manage and lead all aspects related to the licensing and approvals for processed water withdrawals from the Smoky River. It was determined that for the size of the proposed industrial development, approximately 24 million cubic meters of water would be required which could be accommodated from the Smoky River. Upon discussions with the province, it was determined that Greenview would be eligible to obtain a master water license not the proposed developers and then grant water allotments to future proponents.

Administration is recommending that Greenview obtain all the licensing and approvals required in order to secure processed water for the industrial area, however, future proponents would be required to fund the capital infrastructure for their development whereby Greenview will be minimizing the risks associated with the project.

In order to obtain the water license Greenview will be required to complete an additional report which would include:

- Design of the water intake system
- Aquatic Environment Assessment
- Engineering of Water Diversion and Conveyance Infrastructure
- Decision by Alberta Environment and Parks (AEP) on the Approvals Application
- Submission of Review from Fisheries and Oceans Canada
- Water Related Planning for the Project including storm water management, water storage and delivery plan and heat integration opportunities.

- Geotechnical Investigation
- Public Notification Consultation and Approvals
- Pipeline Alignment and Design
- Etc.

It is anticipated that this further engineering will cost approximately \$800,000.00 of which Administration will be bringing forth cost recovery strategies for Council's review. The anticipated cost of providing a processed water system for the development will be approximately \$40 million dollars which will be the responsibility of future proponents.

BENEFITS OF THE RECOMMENDED ACTION:

1. The benefit of the recommended motion is that the Committee will be informed of the process water management report prepared by Watersmart Management Solutions.

DISADVANTAGES OF THE RECOMMENDED ACTION:

1. There are no disadvantages to the recommended motion.

ALTERNATIVES CONSIDERED:

Alternative #1: The Committee has the alternative to alter or deny the recommended motion.

FINANCIAL IMPLICATION:

There are no financial implications to the recommended motion.

STAFFING IMPLICATION:

There are no staffing implications to the recommended motion.

PUBLIC ENGAGEMENT LEVEL:

Greenview has adopted the IAP2 Framework for public consultation.

INCREASING LEVEL OF PUBLIC IMPACT

Inform

PUBLIC PARTICIPATION GOAL

Inform - To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.

PROMISE TO THE PUBLIC

Inform - We will keep you informed.

FOLLOW UP ACTIONS:

There are no follow-up actions for the recommended motion.

ATTACHMENT(S):

- Water Act - Notice of Application
- Alberta Environment and Parks – Response to the Water Application

PUBLIC NOTICE
MUNICIPAL DISTRICT OF GREENVIEW No. 16
WATER ACT
NOTICE OF APPLICATION

Notice is given that **The Municipal District of Greenview No. 16** has filed an application under the provisions of the *Water Act* for the diversion of up to 24 million cubic metres of water per year from the Smoky River located at NE 30-067-04-W6 to supply cooling and process water to the Greenview Industrial Gateway industrial subdivision for the purpose(s) of a Petrochemical and related facilities.

Any person who is directly affected by this application may submit a written statement of concern within **30** days of the date of this notice to:

Environment and Parks
Regulatory Approvals Centre
5th Floor, South Petroleum Plaza
9915 108 Street
Edmonton, Alberta T5K 2G8
Phone: 780-427-6311
Fax: 780-422-0154
Email: aep.waapplications@gov.ab.ca

The written statement of concern should include the following:

- the application number: **001-00476030**
- describe concerns that are relevant to matters regulated by the Water Act
- explain how the filer of the concern will be directly affected by the activity and/or diversion of water proposed in the application
- provide the legal land location of the land owned or used by the filer where the concerns described are believed to be applicable
- state the distance between the land owned or used by the filer and the site in the application
- contact information including the full name and mailing address of the filer. Please provide the telephone number and/or email address for ease of contact.

Environment and Parks will review each written statement of concern, seek more information if needed, and notify each filer by letter of the decision to accept or reject their written submission as a valid statement of concern. The Public Notice of this application will also be posted on the Department's website at <https://avw.alberta.ca/PublicNoticesViewer.aspx>.

Please quote file number: **00476030**

Statements of concern submitted regarding this application are public records which are accessible by the public and the applicant. Failure to file a statement of concern may affect the right to file a Notice of Appeal with the Environmental Appeals Board.

Copies of the application and additional information can be obtained from:

Kyle Reiling (Industrial Development)
Municipal District of Greenview No. 16
Phone: 780-524-7600, Email: kyle.reiling@mdgreenview.ab.ca



August 11, 2021

File: 00476030

Kyle Reiling
Municipal District of Greenview No. 16
4906 36 AVE
PO BOX 1079
VALLEYVIEW AB T0H 3N0

Dear Mr. Reiling:

**RE: Application under the *Water Act*
For the Purpose of Petrochemical & Related Facilities
at NE 30-067-04-W6
Application No. 001-00476030**

We acknowledge receipt of and are presently reviewing the application as noted above. Once the review is complete, you will be notified of the Director's decision.

Under the *Water Act*, notification of this application is required. Please have the enclosed public notice published in a "**three column**" width format one time only in the

**Grande Prairie Herald-Tribune
10604 100 ST
GRANDE PRAIRIE AB T8V 6V4
Phone: 780-532-1110
Fax: 780-532-2120**

Proof of publication must be filed with the Director in the form of an original full page tear sheet for each publication containing the notice, and the name and date of the Newspaper. In the alternative, electronic submission of the publication is also acceptable if submitted directly by the newspaper publisher. This scan must be clear (readable) and must contain the entire full page tear sheet including the published public notice and the name and date of the Newspaper. This scan can be sent to the following e-mail address: aep.waapplications@gov.ab.ca (Please note, our preferred document type is a PDF format).

The applicant is responsible for the payment of the publications. Please ensure that the suggested information relating to the description of your application is correct. Errors may require you to re-advertise the Public Notice.

We require that you post this notification within 60 days from the date of this letter. Also, please return proof of notice to the Regulatory Approval Center at:

Environment and Parks
Regulatory Approval Center
5 Floor, South Petroleum Plaza
9915 108 Street
EDMONTON AB T5K 2G8
Phone: 780-427-6311

Fax: 780-422-0154
Aep.waapplications@gov.ab.ca

no later than 90 days from the date of this letter. If we do not receive proof of notice within this time frame, the file established for your application may be closed.

Public Notice of this application will also be posted on the Department's website at:
<https://avw.alberta.ca/PublicNoticesViewer.aspx>

Please note, any person who is directly affected by this application may submit a statement of concern, which must be submitted within the period of time shown on the public notice.

This application should not be taken to mean that you have an authority under federal legislation. You should contact the:

**Fisheries Act
Fisheries Protection Program
Fisheries and Oceans Canada
867 Lakeshore Road
Burlington Ontario L7S 1A1
Phone: 1-855-852-8320
Email: fisheriesprotection@dfo-mpo.gc.ca**

relating to the application of federal laws relating to the *Fisheries Act (Canada)* and the:

**Navigable Protection Program
Transport Canada
Canada Place
1100 – 9700 - Jasper Avenue
Edmonton, Alberta T5J 4E6
Phone: 780-495-8215
Fax: 780-495-8607
Email: NPPPNR-PPNRPN@tc.gc.ca**

relating to the *Navigable Waters Protection Act*.

Please ensure that someone is available to answer any questions during the Public Notice period of the application.

Upon receipt of the original posted notice, you will be notified of the Director's decision.

If you have any questions, please contact James Proudfoot at 780-538-8039

Sincerely,



Cheryl Tweten
Water Application Coordinator
Regulatory Approvals Centre

Enclosure

cc: James Proudfoot, North-Boreal Region, Grande Prairie Office

1 Greenview Engagement & Next Steps



2 AEP Engagement



Interim deliverable ● Work underway 

Application submission ● Preparation 

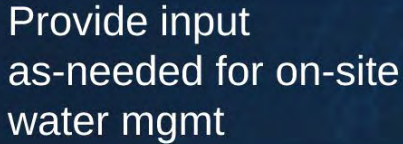
3 Coordinate Technical Content for Application



4 Prepare Approval Application



5



100



6

Construction Water Supply Support



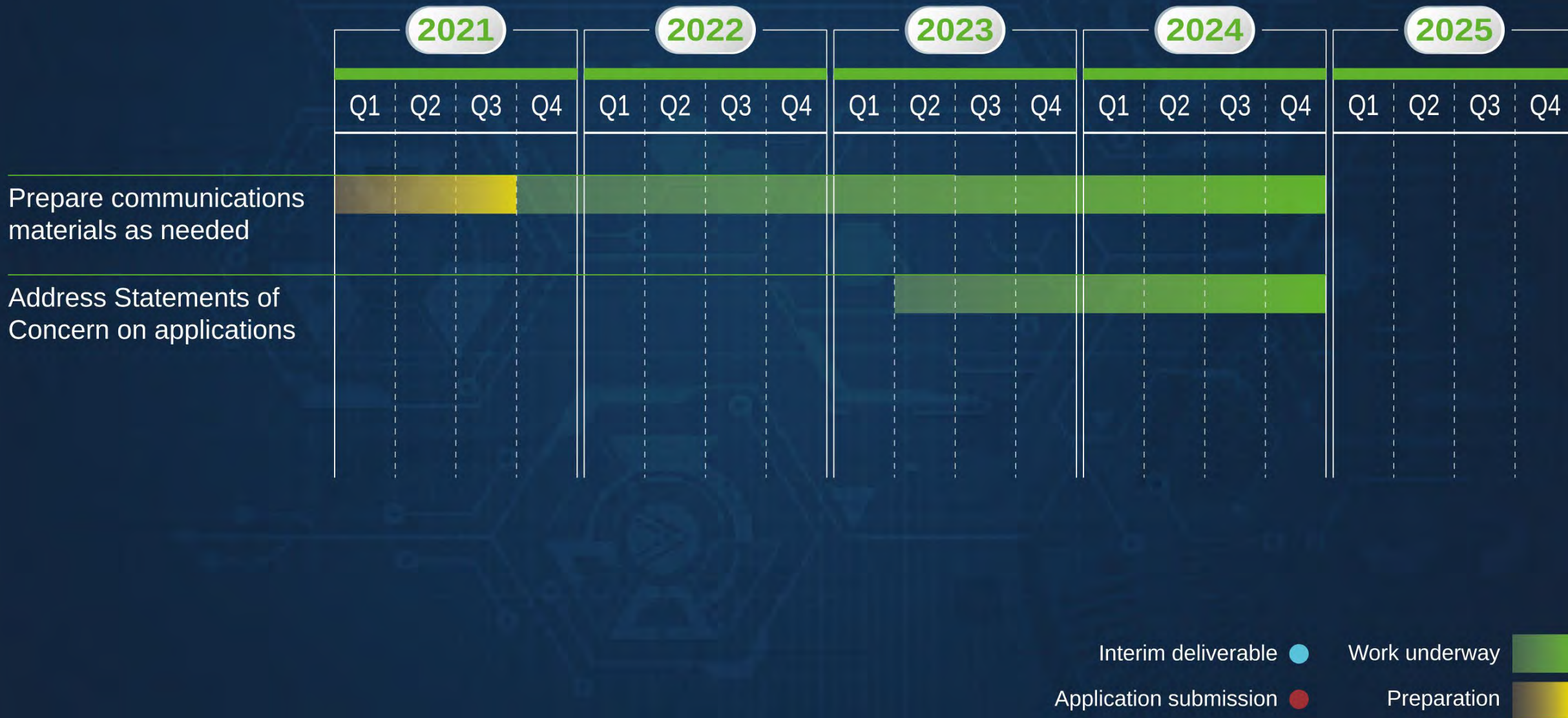
Interim deliverable ●

Work underway

Application submission ●

Preparation

7 Public Consultation Support





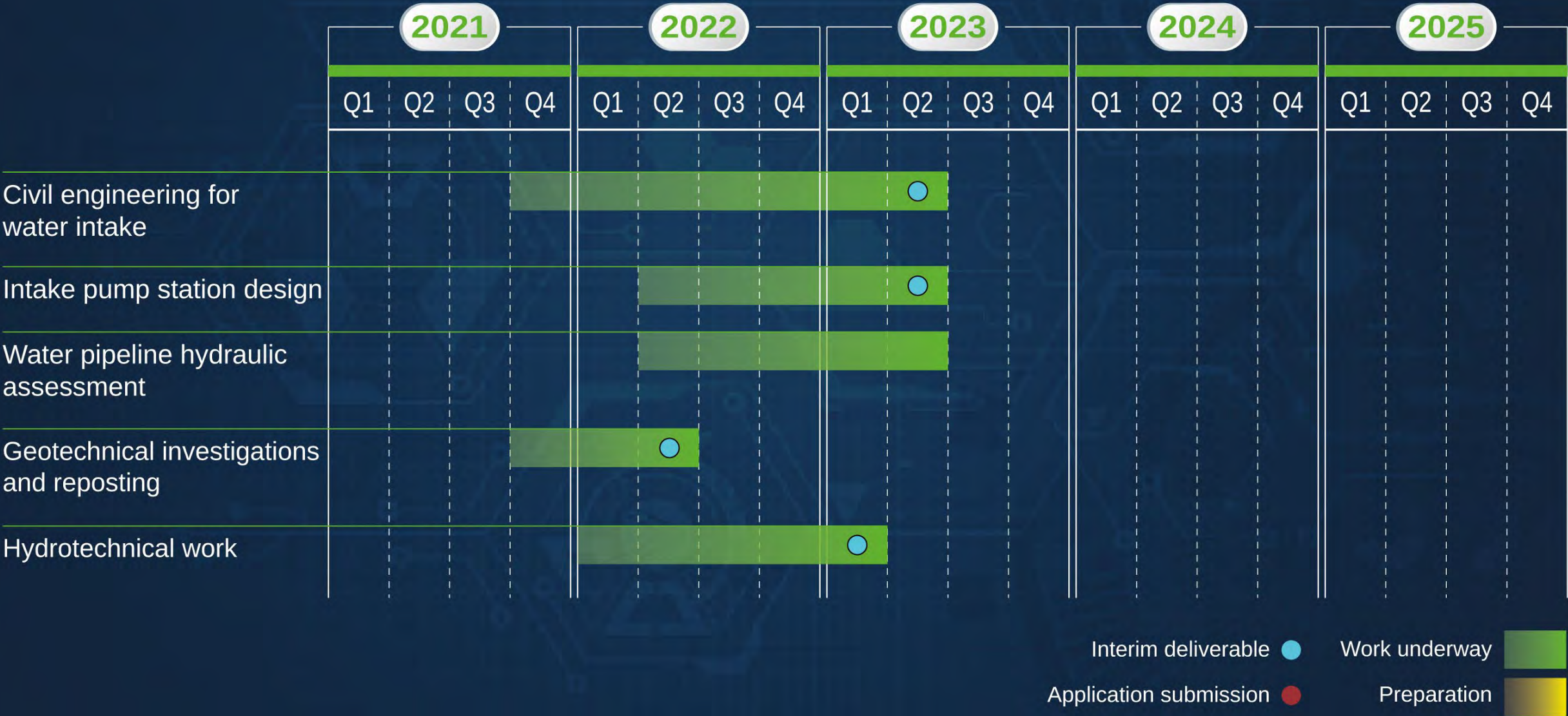
Interim deliverable ●

Application submission ●

Work underway

Preparation

9 Infrastructure design



Future Activities (not in current scope)





REQUEST FOR DECISION

SUBJECT: **Greenview Industrial Gateway – Stakeholder Event**
SUBMISSION TO: Greenview Industrial Gateway COMMITTEE Meeting REVIEWED AND APPROVED FOR SUBMISSION
MEETING DATE: September 7, 2021 CAO: SW MANAGER:
DEPARTMENT: CAO SERVICES GM: DM PRESENTER: KR
STRATEGIC PLAN: Development LEG:

RELEVANT LEGISLATION:

Provincial (cite) – N/A

Council Bylaw/Policy (cite) – N/A

RECOMMENDED ACTION:

MOTION: That the Greenview Industrial Gateway Committee recommend that Council authorize Administration to proceed with a Greenview Industrial Gateway Stakeholder Event, November 10th, 2021, Evergreens, Grande Prairie, Alberta.

BACKGROUND/PROPOSAL:

Administration is recommending that Greenview host a Stakeholder Event in order to inform stakeholders of this proposed world class industrial area. The benefits of hosting this event will be the following:

- Inform all stakeholders of the project status and economic benefits.
- An opportunity in a formal setting to make key announcements.
- An opportunity to inform municipal stakeholders of future potential opportunities.
- The ability for businesses and corporations to network.
- Infrastructure updates (rail, highway, CO₂, water, etc.)
- An opportunity for Council to showcase this exciting economic initiative.
- An opportunity to promote value-added opportunities.
- Provincial government message delivery.
- Etc.

The cost associated with an event of this nature will be approximately \$50,000.00 which will include, venue, food, keynote speaker, marketing, promotional items, etc. The tentative proposal would include a continental breakfast, keynote speaker, welcoming addresses, announcements, project update and lunch.

This exciting event will be a great opportunity for the official introduction of the Greenview Industrial Gateway project.

BENEFITS OF THE RECOMMENDED ACTION:

1. The benefit of the recommended motion is that a Greenview Industrial Gateway event will be planned to provide stakeholders with information about the proposed world class industrial area.

DISADVANTAGES OF THE RECOMMENDED ACTION:

1. There are no disadvantages to the recommended motion.

ALTERNATIVES CONSIDERED:

Alternative #1: The Committee has the alternative to alter or deny the recommended motion.

FINANCIAL IMPLICATION:

The financial implication of the event will be approximately \$50,000.00.

STAFFING IMPLICATION:

There are no staffing implications to the recommended motion.

PUBLIC ENGAGEMENT LEVEL:

Greenview has adopted the IAP2 Framework for public consultation.

INCREASING LEVEL OF PUBLIC IMPACT

Inform

PUBLIC PARTICIPATION GOAL

Inform - To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.

PROMISE TO THE PUBLIC

Inform - We will keep you informed.

FOLLOW UP ACTIONS:

Administration will follow up with submitting the event proposal to Council in accordance with the decision made by the Committee.

ATTACHMENT(S):

- Tentative Greenview Industrial Gateway Event Schedule

GIG First Annual Stakeholder Update:

8:00 – Doors Open

8:00 – 8:30 – Continental Breakfast and Networking

8:30 – 8:35 – Welcoming Remarks – Kyle Reiling

Recognition of First Nation Traditional Territory

8:35 – 8:40 – Reeve and Council Welcoming - Reeve Smith, Recognition of all Council Members

8:40 – 8:50 – Province of Alberta Update and Greetings (Premier, Minister Nixon, Minister Toews)

8:55: 9:30 – GiG =Overview and Questions Period – KR

9:30 – 10:00 - Break and Networking

10:05– 11:00 – Industry and Infrastructure Updates

- Northern Petrochemical
- CNRL
- ARC
- CN
- Atco
- Nauticol

11:00 – 11:15 – Break and Networking

11:15 – 12:00 – Keynote Speaker – TBD –

12:00 – 12:45 – Lunch and Prizes - KR

12:45 – 1:00 – Closing Remarks and Prizes – KR

1:00 – 2:00 – Closing and Networking



REQUEST FOR DECISION

SUBJECT: **Greenview Industrial Gateway Information Matrix**

SUBMISSION TO: Greenview Industrial Gateway REVIEWED AND APPROVED FOR SUBMISSION
Committee Meeting

MEETING DATE: September 7, 2021 CAO: SW MANAGER:

DEPARTMENT: CAO SERVICES GM: DM PRESENTER: KR

STRATEGIC PLAN: Development LEG:

RELEVANT LEGISLATION:

Provincial (cite) – N/A

Council Bylaw/Policy (cite) – N/A

RECOMMENDED ACTION:

MOTION: That the Greenview Industrial Gateway Committee accept the Greenview Industrial Gateway Information Matrix Report for information, as presented.

BACKGROUND/PROPOSAL:

Administration has prepared charts and infographics depicting the proposed industrial development costs and other associated factors considered for the industrial development project.

Administration's intent is to provide an opportunity for the Committee to acquire clarity and an assurance that all associated factors for the industrial development project have been analysed in an effort to determine the associated risk/benefit for Greenview.

BENEFITS OF THE RECOMMENDED ACTION:

1. The benefit of the recommended motion is that the Committee will be provided with an information matrix report of the industrial project to provide clarity and assurance that all factors have been analysed, evaluated and reviewed.
-

DISADVANTAGES OF THE RECOMMENDED ACTION:

1. There are no disadvantages to the recommended motion.
-

ALTERNATIVES CONSIDERED:

Alternative #1: The Committee has the alternative to alter or deny the recommended motion.

FINANCIAL IMPLICATION:

There are no financial implications to the recommended motion.

STAFFING IMPLICATION:

There are no staffing implications to the recommended motion.

PUBLIC ENGAGEMENT LEVEL:

Greenview has adopted the IAP2 Framework for public consultation.

INCREASING LEVEL OF PUBLIC IMPACT

Inform

PUBLIC PARTICIPATION GOAL

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FOLLOW UP ACTIONS:

There are no follow-up actions for the recommended motion.

ATTACHMENT(S):

- GIG Information with Infographics
- GIG Internal Development Costs
- GIG Internal Cost Estimates with Maps

<div data-bbox="60 29 388 329">  </div> <div data-bbox="433 101 897 308"> <p>GIG GREENVIEW INDUSTRIAL GATEWAY</p> </div>	<div data-bbox="1095 89 1281 266"> <p>\$ ESTIMATE</p> </div>	<div data-bbox="1493 122 1634 230"> <p>MD</p> </div>	<div data-bbox="1748 122 1916 230"> <p>NPC</p> </div>
<div data-bbox="60 554 290 760">  </div> <div data-bbox="356 416 491 461"> <p>LAND</p> </div> <div data-bbox="370 500 866 910"> <ul style="list-style-type: none"> • Engineering Design • Geotechnical Investigation • Wetlands Assessment • Purchase Sales Agreement • Legal and Legislative Support • Surveying and Boundary Establishment </div>	<div data-bbox="1044 632 1336 692"> <p>10,000,000</p> </div>	<div data-bbox="1499 608 1628 740">  </div>	
<div data-bbox="60 1084 272 1291">  </div> <div data-bbox="356 1006 776 1108"> <p>PROCESS WATER MANAGEMENT</p> </div> <div data-bbox="370 1144 862 1387"> <ul style="list-style-type: none"> • Engineering Design and Approvals • Construction, Management and Maintenance • Monitoring and Reporting </div>	<div data-bbox="1044 1159 1336 1219"> <p>25,000,000</p> </div>	<div data-bbox="1765 1129 1895 1261">  </div>	
<div data-bbox="60 1542 256 1749">  </div> <div data-bbox="356 1480 778 1524"> <p>SITE CLEARANCE</p> </div> <div data-bbox="370 1563 803 1818"> <ul style="list-style-type: none"> • Site 1 - 160 • Rail Corridor - 90 • Gas Utility Corridor - 65 • Water Management Facility - 225 </div>	<div data-bbox="1060 1623 1321 1683"> <p>5,400,000</p> </div>	<div data-bbox="1765 1581 1895 1713">  </div>	
<div data-bbox="47 2004 284 2166">  </div> <div data-bbox="356 1911 797 1956"> <p>TRANSPORTATION</p> </div> <div data-bbox="370 1995 850 2255"> <ul style="list-style-type: none"> • Engineering Design • Traffic Impact Assessment • Construction of 2.58 Km Industrial Standard Road • Project Management </div>	<div data-bbox="1060 2064 1321 2124"> <p>3,000,000</p> </div>	<div data-bbox="1499 2025 1628 2157">  </div>	
<div data-bbox="47 2390 284 2597">  </div> <div data-bbox="356 2351 468 2396"> <p>RAIL</p> </div> <div data-bbox="370 2432 689 2642"> <ul style="list-style-type: none"> • Rail Design • Turnouts • Sidings • Sidings Turnouts </div>	<div data-bbox="1060 2465 1321 2525"> <p>8,000,000</p> </div>	<div data-bbox="1765 2432 1895 2564">  </div>	
<div data-bbox="47 2732 284 2957">  </div> <div data-bbox="356 2792 878 2894"> <p>CO2 SEQUESTRATION AND MANAGEMENT</p> </div>	<div data-bbox="1044 2813 1336 2873"> <p>20,000,000</p> </div>	<div data-bbox="1765 2774 1895 2906">  </div>	



	<div>1</div> <div>LAND PURCHASE</div> <div>2,100 Acres x 5,000\$ (Estimated appraisal value)</div>	10,500,000
	<div>2</div> <div>ROAD DESIGN</div> <div><ul style="list-style-type: none">Design of 3.2 Km industrial standardroadTransportation Impact Assessment</div>	95,000
	<div>3</div> <div>PROCESS WATER DESIGN AND APPROVALS</div> <div><ul style="list-style-type: none">Regulatory Approvals and Stakeholder ConsultationDesign of OuttakeAquatics AssessmentGeotechnical AnalysisWater Pipeline Alignment</div>	800,000
	<div>4</div> <div>CARBON MANAGEMENT AND SEQUESTRATION SYSTEM</div> <div><ul style="list-style-type: none">Carbon Management and Sequestration AnalysisReserve Life Cycle AnalysisPositioning GIG as a Carbon Hub for Grand Prairie Region</div>	125,000
	<div>5</div> <div>SURVEY AND GEOTECHNICAL</div> <div><ul style="list-style-type: none">Establishment of Formal Plan and BoundaryGeotechnical Analysis for 8 locations in GiG, determined by priority of development and accessibility</div>	60,000
	<div>6</div> <div>RAIL</div> <div><ul style="list-style-type: none">Rail Design and Approval for CorridorCoordination with CN Rail</div>	40,000
	<div>7</div> <div>TIMBER</div> <div><ul style="list-style-type: none">Phase #1 clearance - Road and Corridor</div>	75,000
	<div>8</div> <div>LEGAL SUPPORT, AGREEMENTS</div> <div><ul style="list-style-type: none">Terms of Agreement / Cost ContributionsOptions to Purchase / LeaseDevelopment AgreementOff-Site Levies</div>	400,000



REQUEST FOR DECISION

SUBJECT: **Greenview Industrial Strategic Plan**
SUBMISSION TO: SPECIAL COUNCIL MEETING
MEETING DATE: September 7, 2021
DEPARTMENT: COMMUNITY SERVICES
STRATEGIC PLAN: Development

REVIEWED AND APPROVED FOR SUBMISSION
CAO: SW
GM: DM
LEG:
MANAGER:
PRESENTER: DM

RELEVANT LEGISLATION:

Provincial (cite) – N/A

Council Bylaw/Policy (cite) – N/A

RECOMMENDED ACTION:

MOTION: That the Greenview Industrial Gateway Committee recommend that Council adopt the Greenview Industrial Gateway Strategic Business Plan as presented.

BACKGROUND/PROPOSAL:

The Greenview Industrial Gateway Strategic Business Plan was presented for Council's consideration at the July 28th Special Council Meeting and was deferred to the September 14th Regular Council Meeting.

After the July 28th review and subsequent deferral of the plan, Administration has completed updates to include the project timelines and status updates.

Administration is requesting that the Committee recommend that Council adopt the Greenview Industrial Gateway Strategic Business Plan as it will act as the guiding document in the development of the proposed area, assist in setting specific goals and strategies and will demonstrate the potential economic deliverable. An additional benefit is that Greenview's preparedness in understanding the scope and complexities involved will be evident to all stakeholders. The adopted Greenview Industrial Gateway plan may be presented at the Greenview Industrial Gateway event as a professional demonstration of the Greenview commitment to the project.

BENEFITS OF THE RECOMMENDED ACTION:

1. The benefit of the recommended action is that the Strategic Business Plan will identify Greenview as having a guiding strategic plan for addressing the complexities involved with the Greenview Industrial Gateway project.

DISADVANTAGES OF THE RECOMMENDED ACTION:

1. There are no disadvantages to the recommended motion.

ALTERNATIVES CONSIDERED:

Alternative #1: Council has the alternative to alter or deny the recommended motion.

FINANCIAL IMPLICATION:

There are no financial implications to the recommended motion.

STAFFING IMPLICATION:

There are no staffing implications to the recommended motion.

PUBLIC ENGAGEMENT LEVEL:

Greenview has adopted the IAP2 Framework for public consultation.

INCREASING LEVEL OF PUBLIC IMPACT

Inform

PUBLIC PARTICIPATION GOAL

Inform - To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.

PROMISE TO THE PUBLIC

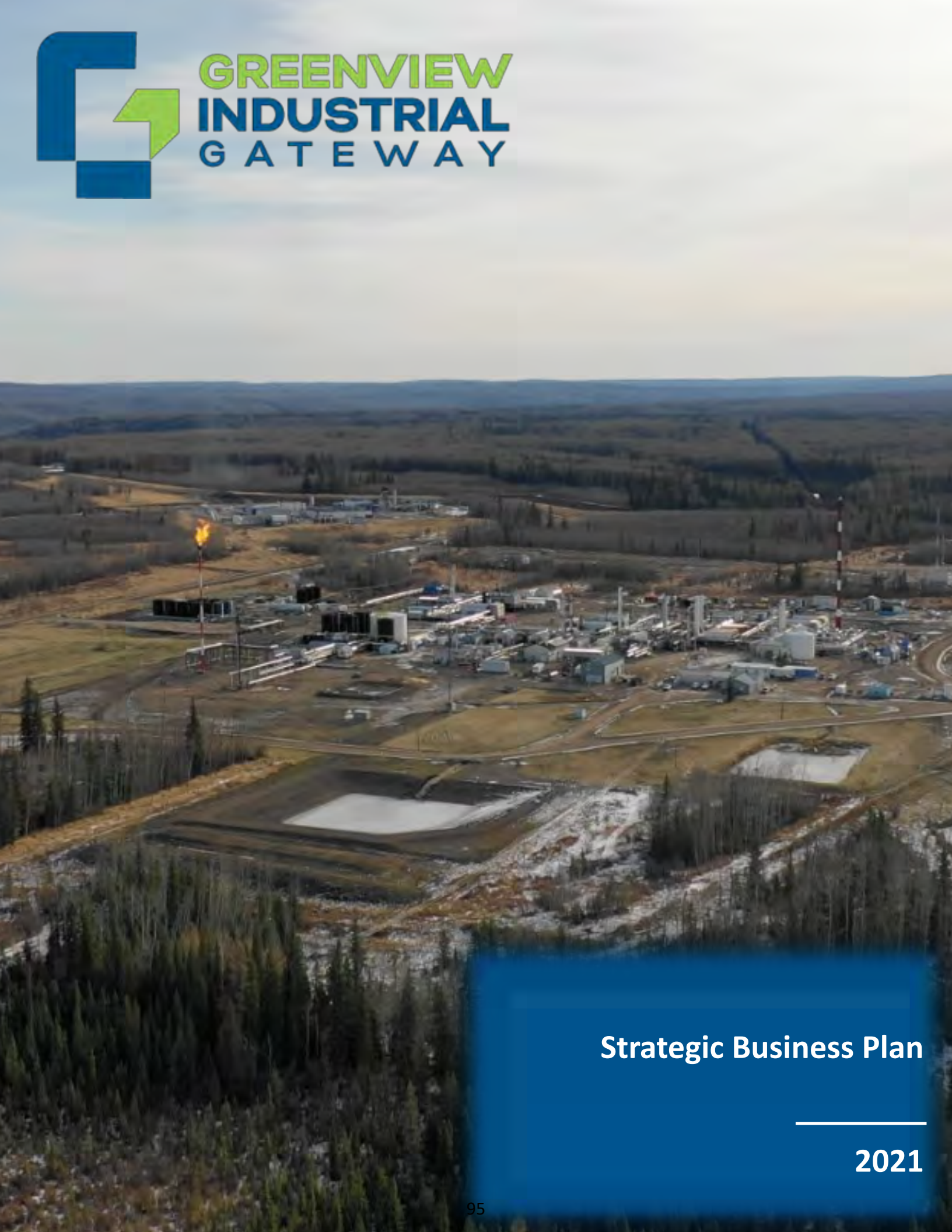
Inform - We will keep you informed.

FOLLOW UP ACTIONS:

Administration will proceed with the course of action as outlined in the Strategic Plan.

ATTACHMENT(S):

- Greenview Industrial Gateway Strategic Business Plan



Strategic Business Plan

2021

Vision:

That Greenview develop a world class eco-industrial site focused on the processing and development of natural gas by-products which will result in a sustainable economy for the region.

The Municipal District of Greenview with the support of the Alberta Government, through extensive consultation and collaboration, is developing the Greenview Industrial Gateway project located in Northwestern Alberta, Canada. The Greenview Industrial Gateway project will encompass a world class heavy industrial development focused on value added petrochemical development linked to the Montney's abundant natural gas deposit.

The large-scale industrial area offers low-cost natural gas feedstock utilized in the processing and development of petrochemicals. The industrial gateway which is positioned on the CanAmex Heavy Load Corridor with full rail capacity, provided by CN Rail provides an efficient transportation route to the ports of Kitimat and Prince Rupert. The project provides access to pipeline and infrastructure which provides an effective alternative in transporting product to market.

The diverse demographic region consists of a skilled and experienced industrial workforce specializing in conventional energy production, manufacturing and processing.

Greenview is excited to introduce the Greenview Industrial Gateway project, the development will have the capacity to deliver a world class integrated eco-industrial site that will enhance the economy on a vast encompassing scale.



Strategic Business Plan

A. Vision: That Greenview develop a world class integrated eco-industrial site focused on the processing and development of natural gas biproducts which will result in a sustainable economy for the region.

1. Strategy: Legal and Legislative Requirements

Greenview will be required to adhere to legal and legislation requirements including various provincial acts and regulations in order to proceed with the development of an integrated eco-industrial site.

Action:	Projected Timeline:	Status:
1.1 First Nations Consultations Indigenous consultations are a legal requirement that the provincial government is required to enact upon prior to the sale or disposal of crown lands.	January 2021 – August 2021	Complete
1.2 Public Sales Agreement Greenview will require a legal and binding agreement/contract with all proponents to ensure that all parties assets and mutual interests are adhered.	February 2022 - ongoing	In progress
1.3 Project Management/Government Relations Greenview will engage a Government Advocacy Company in order to ensure that the development of the Greenview Industrial Gateway is conveyed to the appropriate industry and government representatives and/or agencies.	January 2021 – August 2021	Complete
1.4 Development Agreement Greenview will be required to develop a comprehensive development agreement with all applicable proponents in order to ensure orderly growth and development of the proposed industrial site.	February 2022 - ongoing	



Action:	Projected Timeline:	Status:
<p>1.5 Legal Land Purchase Sales Agreement – Land (approx. 2000 acres). Greenview will consult and negotiate with the provincial government as to a purchase price of the above-noted land and enter into all applicable agreements.</p>	August 2021 - February 2022	In progress
<p>1.6 Risk Assessment Analysis Greenview will obtain the services of a consulting firm in order to develop a detailed risk assessment of the proposed industrial site in order to minimize all parties' future liabilities.</p>	August 2021- October 2021	In progress
<p>1.7 Area Structure Plan Review Greenview has previously developed and approved an area structure plan for the proposed industrial development in 2018. The existing document should be reviewed with any required revisions enacted upon.</p>	September 2021 – February 2022	
<p>1.8 Utility Ownership Model A comprehensive utility ownership model needs to be developed in order to proceed with the various utilities, services and corridors required as to service the proposed industrial area.</p> <p>There are various forms of utility models in which to review as to determine the most appropriate course of action to be taken as to aid in the development (i.e., Greenview, industry or private ownership models etc.)</p>	August 2021 – October 2021	In progress
<p>1.9 Sustainability Funding Model A sustainable funding model will be required as to address the long-term financial implications that result from the development of an industrial project of this magnitude. The model may include i.e, future utility, infrastructure and capital costs etc. as well as the revenue generated.</p>	August 2021 – January 2022	In progress
<p>1.10 Budget Annual budgets will be established for both the industrial park development and administrative operations addressing all capital and operational requirements.</p>	August 2021 – December 2021	In progress



2. Strategy: Infrastructure

Action:	Projected Timeline:	Status:
<p>2.1 Engineering Detailed engineering plans are required for the numerous project components as to be compliant with applicable legislation and aid in the project development.</p>	November 2021 -	Ongoing
<p>2.2 Infrastructure/Utility Plans Detailed plans including cost analysis will be prepared for each component as to aid in the development of present and future infrastructure and utility requirements.</p>	November 2021 -	Ongoing
Stormwater Plan	August 2021 -	Initiated
Processed Water Plan	November 2021 –	
Land Acquisition Plan	August 2021 – February 2022	
CO2 Management Plan	August 2021 – March 2022	
Rail Design Plan	August 2021 – January 2022	
Geotechnical Analysis Plan	August 2021 – October 2022	
Emergency Services Plan	September 2021 – February 2022	
GIG - Industrial Master Development Agreement		
Linear Infrastructure Corridor Plan	November 2021	Completed
Traffic Impact Assessment Study	August 2021 - November 2021	Initiated
Others		



Action:**Projected Timeline:****Status:****2.3 Cost Sharing Agreements**

Agreements will be established with potential stakeholders outlining the various components and fiscal models to be utilized in the development of all utility/infrastructure capital and operations (water, power, gas, etc.).

February 2022 - ongoing

2.4 Air Quality Management

An air quality management plan will be established as to be compliant with all current provincial/federal legislative requirements.

February 2022

3 Strategy: Stakeholder Partnerships

Establishing various stakeholder partnerships is a vital component as to lead in the viability and sustainability of the industrial development. Stakeholders (including, but not limited to the following) shall be consulted as to establish the level and degree of a partnership opportunity.

Action:**Projected Timeline:****Status:****3.1 Province of Alberta (Alberta Environment, AER, Land Assessment, Alberta Energy, Alberta Jobs and Innovation).**

June 2021 -

Invest Alberta, municipal, industry and indigenous, etc.

**4 Strategy: Governance**

Greenview Council shall act as the governing body in providing governance and direction as to achieve all the strategic directives in the development of the industrial project.

Action:**Projected Timeline:****Status:****4.1 Advisory Board**

Establish an advisory board comprised of elected officials and industry stakeholders as to aid in the future development and success of the industrial project.

November 2021

Action:**Projected Timeline:****Status:****4.2 Administrative Committee**

A committee comprised of various Greenview staff will enact upon the authorized strategies and actions and provide Council with the required information as to make informed decisions in the development of the industrial project.

November 2021

**5. Strategy: Marketing and Promotion****Action:****Projected Timeline:****Status:****5.1 Marketing/Promotions Plan**

A comprehensive marketing/promotions plan will be established as to deliver various forms of communications to provincial, national and global potential stakeholders.

January 2022

5.2 Stakeholder and Industry Events

Events (tradeshows, conferences, meet-and-greet, etc.) will be hosted in order to promote and network with various stakeholders.

November 2021

5.3 Leads Generational Analysis Development of a focussed targeted list of natural gas producers, manufacturers and stakeholders.

July 2021

Ongoing

5.4 Explore the opportunity to develop a Greenview Industrial Gateway Association (GIGA) which will be a medium for stakeholders to communicate collectively.

January 2022



GiG Development Costs



1



LAND PURCHASE

2,100 Acres x 5,000\$
(Estimated appraisal value)

\$ 10,500,000



ROAD DESIGN

- Design of 3.2 Km industrial standard
- Road Transportation Impact Assessment

\$ 95,000

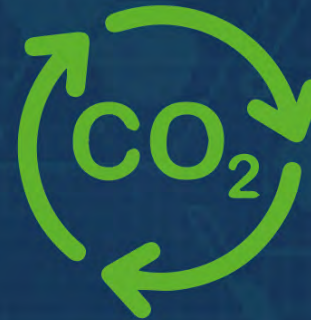


PROCESS WATER DESIGN AND APPROVALS

- Regulatory Approvals and Stakeholder Consultation
- Design of Outtake
- Aquatics Assessment
- Geotechnical Analysis
- Water Pipeline Alignment

\$ 800,000

4



CARBON MANAGEMENT AND SEQUESTRATION SYSTEM

- Carbon Management and Sequestration Analysis
- Reserve Life Cycle Analysis
- Positioning GiG as a Carbon Hub for Grand Prairie Region



\$ 125,000



SURVEY AND GEOTECHNICAL

- Establishment of Formal Plan and Boundary
- Geotechnical Analysis for 8 locations in GiG, determined by priority of development and accessibility

\$ 60,000

GiG Development Costs



RAIL

- Rail Design and Approval for Corridor
- Coordination with CN Rail

\$ 40,000

GiG Development Costs



TIMBER

- Phase #1 clearance - Road and Corridor

\$ 75,000

8



LEGAL SUPPORT, AGREEMENTS

- Terms of Agreement / Cost Contributions
- Options to Purchase / Lease
- Development Agreement
- Off-Site Levies

\$ 400,000