Mackenzie County

REQUEST FOR DECISION

Meeting:	**Committee of the Whole Meeting**
Meeting Date:	**July 16, 2024**
Presented By:	**Landon Driedger, Agricultural Fieldman**
Title:	**Mackenzie County Irrigation Initiative Update**

BACKGROUND / PROPOSAL:

Administration requested a preliminary report from Paragon Soil & Environmental Consulting to complete a level II irrigation feasibility assessment in Mackenzie County to help inform the likely feasibility of potential, large scale irrigation feasibility in the area.

Previously completed irrigation feasibility reports were reviewed and summarized to determine the land class and soil types that are suitable for Irrigation.

Page 8 of the attached report states that based on irrigation classification work completed to date, agricultural land within Mackenzie County is typically suitable for irrigation and previously assessed areas indicate that additional agriculture areas are likely to be suitable for irrigation. In areas investigated to date, soil and topography conditions present modest limitations, indicating there is high potential for additional suitable irrigable land within Mackenzie County.

Administration is currently drafting a RFP for a large scale feasibility study.

OPTIONS & BENEFITS:

COSTS & SOURCE OF FUNDING:

Small Community Opportunity Program grant funding.

COMMUNICATION / PUBLIC PARTICIPATION:

Author: C. Sarapuk **Reviewed by:** _____ **CAO:** _____

POLICY REFERENCES:

RECOMMENDED ACTION:

☑ Simple Majority ☐ Requires 2/3 ☐ Requires Unanimous

That the Irrigation Feasibility Summary be received for information.

Author: C. Sarapuk **Reviewed by:** _____ **CAO:** _____

Irrigation Feasibility Summary in Mackenzie County

Prepared for:

Mackenzie County

Prepared by:

Paragon Soil and Environmental Consulting Inc.

July 2024

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1 INTRODUCTION

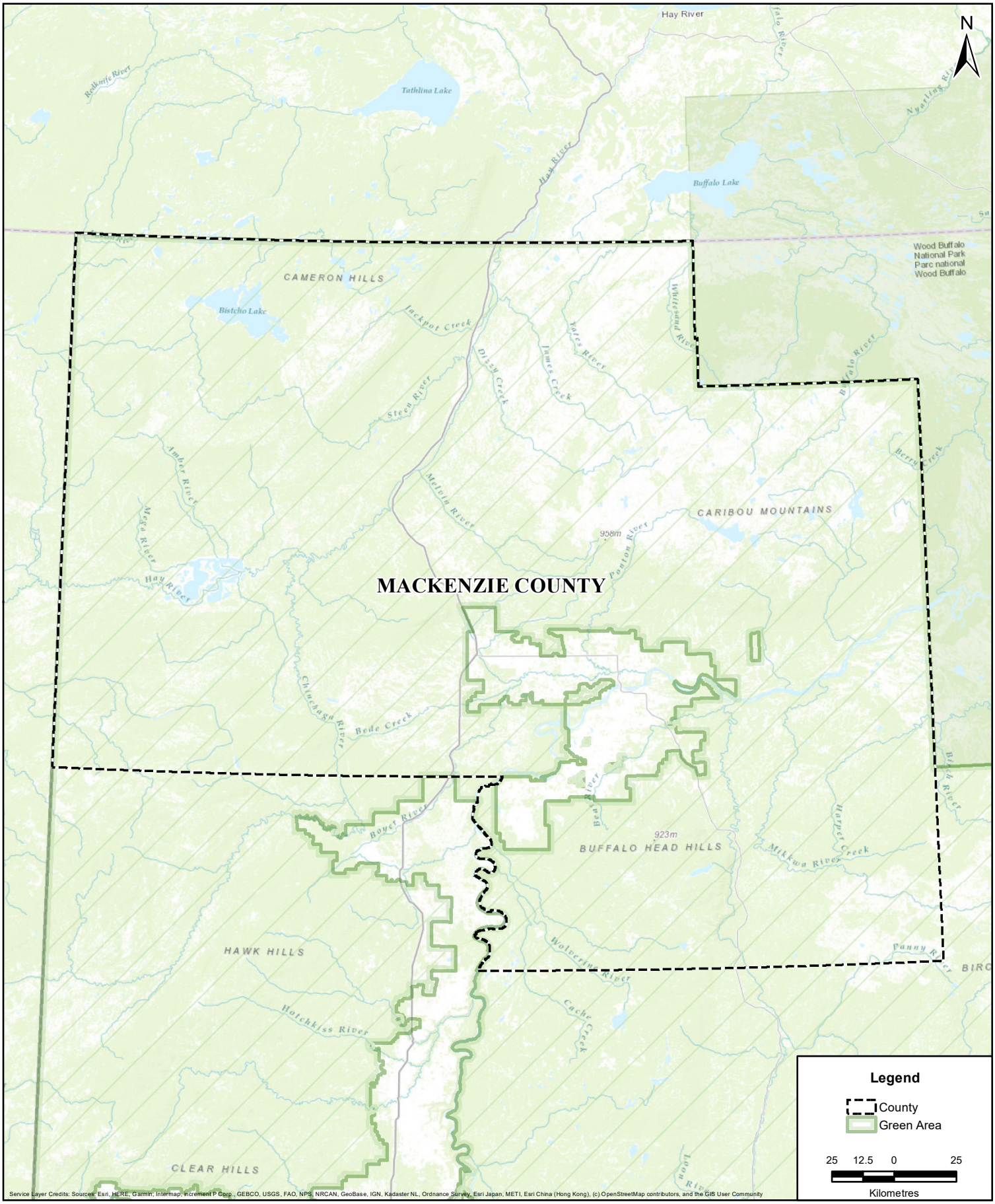
1.1 Project Information

Paragon Soil and Environmental Consulting Inc. (Paragon) was contracted by Mackenzie County to complete a summary of Level II Irrigation Feasibility Assessments completed in Mackenzie County to help inform the likely feasibility of potential large scale irrigation feasibility in the area.

Completed Irrigation Feasibilty Reports were reviewed and summarized to determine land classes and soil types that are suitable for irrigation within Mackenzie County, Alberta.

1.2 Study Area

The Project is located within the Boreal Forest natural subregion of Alberta and within the Grey and Dark Grey Soil Zone of the North Peace area (AGRASID 2024). The majority of irrigable area reviewed is located near the towns of High Level, Fort Vermillion and La Crete, however, all irrigation feasibility assessments within the County were reviewed. The dominant surrounding land use in the Project's immediate vicinity is cultivated agricultural land. An overview of the study area is presented in Figure 1.



PARAGON
soil and environmental consulting inc.

Paragon Map No. 24141-240708-01

Projection:	Scale:	
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	Drawn: JC	Approved: SB

Figure 1
Overview
Mackenzie County
Mackenzie County Irrigation Overview Map

2 METHODOLOGY

2.1 Desktop Assessment

A desktop assessment was conducted to review previously completed Level II Irrigation Feasibility Assessments. The desktop review included all Level II Irrigation Feasibility Reports completed by Paragon since 2017. Level II Irrigation Feasibilty Assessments include a minimum of ten soil inspection locations per full quarter-section, with four of these locations sampled by Paragon and subsequently analyzed for salinity and texture by a certified laboratory. The desktop assessment included a characterization of existing irrigation classes and soil types within the study area. All Level II Irrigation Feasibility Assessments were completed by a Professional Agrologist and adhered to the *Standards for the Classification for Land for Irrigation In the Province of Alberta* (Alberta Agriculture Food and Rural Development, 2004) and *Peace River Irrigation Suitability Classification Project* (Paragon, 2016).

2.2 Irrigation Suitability Assessment

To determine irrigation suitability of land mapped in the study area, field and lab data are assessed against criteria established in *Standards for the Classification for Land for Irrigation in the Province of Alberta* (Alberta Agriculture Food and Rural Development, 2004). Field evaluations are completed to determine physical soil properties and evaluate topography and landscape of the potential area. Soil samples are collected and analyzed at a certified laboratory to determine chemical properties. The soil and topography data are combined to calculate irrigation suitability ratings which are then used to determine the final land classification for irrigation. Lands are assigned an irrigation suitability class between Class 1 and Class 6 based on the most limiting soil or topography parameter according to the criteria. An overview of Irrigation suitability classes and limitations is presented in Table 1.

Table 1 Irrigation Suitability Ratings

Irrigation Suitability Rating	Degree of Limitation
Class 1	Land in this class is excellent for irrigated agriculture with no significant limitations. Class 1 land is capable of producing a sustained and a relatively high yield of a wide range of climatically adapted crops. The soils are of a medium texture, well drained, and hold adequate available moisture. Harmful accumulations of soluble salts are absent. Class 1 land is level to nearly level.
Class 2	Land in this class is good irrigation land with moderate limitations. A narrower range of crops or slightly more input to development and management may be required for Class 2 land than for Class 1. The soils in this class may have low hydraulic conductivity due to fine texture or adverse structure. The available water holding capacity may be lower as reflected by the coarser texture or limited soil depth. Salinity levels may be low to moderate. Drainability may be somewhat restricted. Class 2 land may be level to gently sloping or undulating to hummocky.
Class 3	Land in this class is fair for irrigation. Limitations of this land under irrigation are moderately severe. The deficiencies may be due to either a serious single factor or a combination of several limitations in soil and/or topographic features. The soils may be inferior because of excess salinity, sodicity, very low hydraulic conductivity, or low water holding capacity. Subsurface drainability or surface drainage may be restricted. A greater management input, such as light, frequent irrigations or more intensive soil conservation and improvement practices, may be required than for Class 2 land. Class 3 land may be level to hummocky.
Class 4	Land in this class has severe limitations for irrigation and requires special crop, soil, and water management practices. Limitations of Class 4 land may include moderate to strong slopes or small irregularly shaped fields. Class 4 land is suitable for irrigation with a special irrigation system design to minimize runoff and water erosion and prevent prolonged surface ponding.
Class 5R	Temporarily irrigable (undergoing reclamation): Land undergoing reclamation after the implementation of an appropriate improvement, such as drainage or canal lining.
Class 5	Nonirrigable (pending): Land in this class is considered not suitable for irrigation under existing conditions but has sufficient potential to warrant segregation for additional investigation or improvement. The limitations of Class 5 may include one, or more, of the following: poor drainability, a high water table, very poor soil structure, and excess salinity and/or sodicity.
Class 6	Nonirrigable: This class may consist of steep, rough-broken, or badly eroded land, or land having soils of very poor structure, very coarse texture, excess salinity and/or sodicity, poor drainage, shallow soils over gravel or bedrock, or other deficiencies not feasible to improve.
Adapted from *Standards for the Classification for Land for Irrigation In the Province of Alberta* (Alberta Agriculture Food and Rural Development, 2004)	

The land class is determined by combining the soil category (S) and the topography category (T). All combinations of S and T are summarized in Table 2. Final land classification ratings also include indicators of the most limiting soil and topography factors, which can be found in Table A1 and Irrigation Suitability Ratings by quarter section in Table A2.

Table 2 Irrigation Land Classification

Irrigation Suitability Rating	Potential Irrigation Ratings
Class 1	$1\frac{ST}{11}$
Class 2	$2\frac{ST}{12}, 2\frac{ST}{21}, 2\frac{ST}{22}$
Class 3	$3\frac{ST}{31}, 3\frac{ST}{32}$
Class 4	$4\frac{ST}{13}, 4\frac{ST}{23}, 4\frac{ST}{33}$
Class 5R	$5R\frac{ST}{41}, 5R\frac{ST}{42}, 5R\frac{ST}{43}$
Class 5	$5\frac{ST}{41}, 5\frac{ST}{42}, 5\frac{ST}{43}$
Class 6	$6\frac{ST}{41}, 6\frac{ST}{42}, 6\frac{ST}{43}, 6\frac{T}{4}$
Adapted from *Standards for the Classification for Land for Irrigation In the Province of Alberta* (Alberta Agriculture Food and Rural Development, 2004)	

3 EXISTING CONDITIONS

3.1 Field Assessment Results

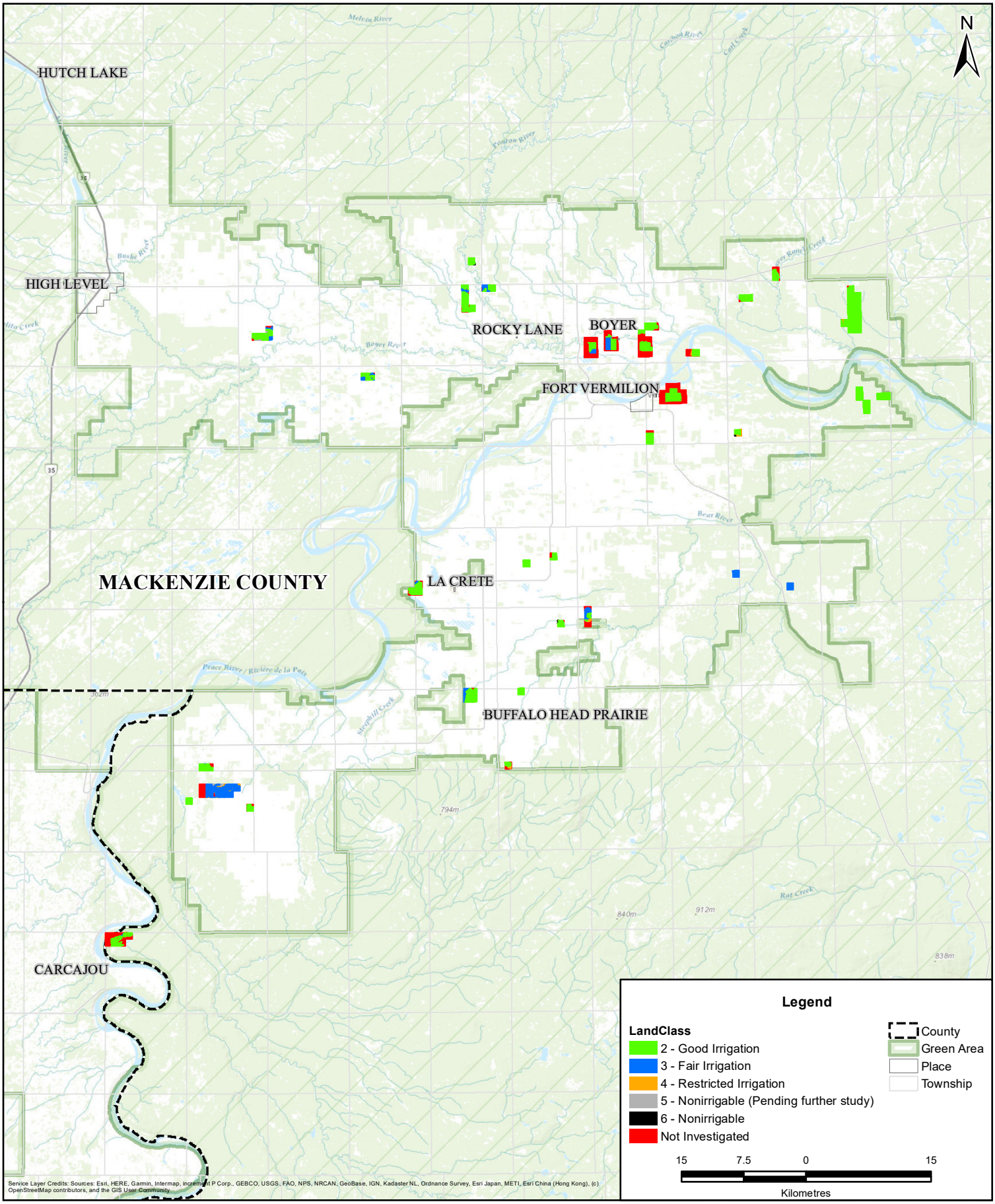
Since 2017, Paragon has completed irrigation assessments on over 5,182 hectares (12,806 acres) of irrigable land within Mackenzie County. Per government requirements, irrigation suitability mapping is completed on a quarter-section (QS) basis, though many landowners do not intend to irrigate full quarter-sections, or have property that is based on river lots where only small portions of quarter-sections are evaluated. Reporting on a QS basis is due to how the government requires irrigation mapping and reporting to be filed.

After investigating prospective acreage planned for irrigation, the remainder of these properties are classified as Not Investigated and are not included in irrigation suitability estimates. Non-irrigable area includes dugouts, farmyards, rivers, lakes and wetlands, rough broken topography along riverbanks and areas that have tree and brush cover at the time of the assessment.

No Class 1 land was identified in the review of irrigation suitability data. Class 2 land is the dominant land class within the assessed area, covering approximately 76% of the investigated area. Class 3 land comprises 20% of irrigable land assessed. Class 4, 5R and 6 lands were limited to 3, 1 and less than 1%, respectively. Class 5R lands may be re-evaluated in the future to determine if reclamation efforts (typically drainage improvements and tree clearing and levelling) have been successful and these areas can be reclassified. Table 3 summarizes irrigable area within Mackanzie County. Figure 2 provides an overview of the distribution of investigated irrigation suitability.

Table 3 Irrigation Suitability Within Mackenzie County

Irrigation Suitability Rating	Investigated Area [Hectares (Acres)]	Investigated Area (% of Irrigable Investigated)	Investigated (% of total)
Class 1	0	0	0
Class 2	3,913 (9,670)	76	54
Class 3	1,016 (2,510)	20	14
Class 4	162 (401)	3	2
Class 5R	69 (171)	1	<1
Class 5	0 (0)	0	0
Class 6	22 (54)	<1	<1
Not investigated	1,865 (4,610)	-	26
Non-irrigable (farmyard, wetland, river, lake)	169(417)	-	2
Total	**7,216 (17,833)** **5,182 (12,806) Irrigable**	**100**	**100**



PARAGON
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Paragon Map No. 24141-240708-02

Projection:	Scale:	
UTM 11N NAD83	1:600,000	
	Drawn: JC	Approved: SB

Figure 2
Mackenzie County
Irrigation
Mackenzie County Irrigation Detail Map

3.2 Soils

Dominant soil types within Mackenzie County that are suitable for irrigation include Dark Grey Luvisols, Gleyed Dark Gray Luvisols, Orthic Humic Gleysols (drained), Rego Gleysols (drained), Orthic Dark Gray Chernozems, and Orthic Dystric Brunisols. Soils that are not currently suitable for irrigation include undrained Gleysols and Terric Messisols and limited occurrences of Solonetzic Dark Gray Luvisols.

Parent materials in the area include Glaciolacustrine, Glaciofluvial, Glacial Till (Morainal) and Fluvial deposits. These deposits are typically moderately fine to very fine textured and can be overlain by moderately coarse to medium-textured veneers and blankets.

3.3 Topography

Topography within Mackenzie County is not typically a limiting factor for irrigation suitability. Irrigation systems can be developed to accommodate most topography within the region including fluvial terraces, and nearly level to gently undulating till, glaciofluvial and glaciolacustrine deposits. Hummocky and rolling glaciofluvial and glacial till deposits can be planned for with specialized irrigation equipment; however, the final irrigation rating will be lower. Steep, inclined, rough broken river valleys are not irrigable.

4 CONCLUSION

Based on irrigation classification work completed to date, agricultural land within Mackenzie County is typically suitable for irrigation and previously assessed areas indicate that additional agriculture areas are likely to be suitable for irrigation. In areas investigated to date, soil and topography conditions present modest limitations, indicating there is high potential for additional suitable irrigable land within Mackenzie County. Level III Irrigation Feasibility Assessments are a broader, planning-scale assessment tool, with four sites per quarter-section (one of which is sampled). A large-scale Level III survey would allow the County and regional landowners to prioritize areas suited for more detailed irrigation feasibility programs, at a lower cost than completing a series of Level II Irrigation Feasibility Assessments in a more ad hoc manner.

5 CLOSURE

We trust the contents of this report of this report meet your requirements. Please do not hesitate to contact the undersigned should you have any questions or require further assistance.

Report prepared by:

PARAGON SOIL & ENVIRONMENTAL CONSULTING INC.

Scott Boorman, B.Sc., P.Ag.
Project Manager

Reviewed by:

Lee Waterman
President

6 REFERENCES

Alberta Agriculture, Food and Rural Development (AAFRD). 1987. *Soil Quality Criteria Relative to Disturbance and Reclamation*. Soil Quality Criteria Working Group. Edmonton, AB, Canada.

Alberta Agriculture, Food and Rural Development (AAFRD). 2004. *Standards for the Classification of Land for Irrigation in the Province of Alberta 2004*.Lethbridge, AB, Canada.

Alberta Soil Information Centre. 2024. *The Alberta soil information viewer* (AGRASID). Agriculture and Agri-Food Canada, Alberta Agriculture and Food. https://soil.agric.gov.ab.ca/agrasidviewer/

Paragon Soil and Environmental Consulting Inc. 2016. *Peace River Regions Irrigation Suitabilty Classification Project.* Prepared for Alberta Agricultural and Forestry Irrigation Management Branch. Lethbridge, AB, Canada.

Appendix A Irrigation Ratings

Table A.1 Irrigation Ratings Legend

Land Classes

1 - Excellent irrigation capability
2 - Good irrigation capability
3 - Fair irrigation capability
4 - Restricted irrigation capability
5R - Temporarily irrigable, undergoing reclamation
5 - Nonirrigable, pending further study
6 - Nonirrigable

Soil Categories

1 - Irrigable - Excellent
2 - Irrigable - Good
3 - Irrigable - Fair
4 – Nonirrigable

Topography Categories

1 - Irrigable - Gravity
2 - Irrigable - Sprinkler
3 - Irrigable - Special System
4 - Nonirrigable

Soil Limitations

A - combination of minor soil limitations
B - brush/tree cover
D - low permeability/undesirable structure
E - erosion damage
K - shallow profile development
L - geological layering
M - low moisture holding capacity
N - sodicity
R - shallowness to bedrock
S - salinity
W - excessive wetness

Topography Limitations

F - surface drainage
G - steep slopes
I - periodic flooding
J - field size, shape
P - stoniness
RB - rough-broken
U - earth moving

Drainability

X - moderately to rapidly permeable
Y - slowly permeable
Z - relatively impermeable

Table A.2 Irrigation Ratings Table

Legal location	Irrigability	Acres	Year Investigated
NE-01-109-13-W5M	Not Investigated	153	2024
NE-01-109-13-W5M	2ST/22 Y,L,U	7	2024
NE-03-109-12-W5M	2ST/12 X,U	152	2017
NE-03-109-12-W5M	5ST/42 Y,U,W	4	2017
NE-03-109-12-W5M	Not Investigated	4	2017
NE-03-110-11-W5M	Not Investigated	103	2023
NE-03-110-11-W5M	2ST/22 Y,N,U	57	2023
NE-05-109-13-W5M	Not Investigated	152	2020
NE-05-109-13-W5M	2ST/21 Y,N,S,U	2	2020
NE-05-109-13-W5M	3ST/31 Y,N,S,U	7	2020
NE-06-108-11-W5M	2ST/22 Y, L, U	99	2023
NE-06-108-11-W5M	6T/4B	14	2023
NE-06-108-11-W5M	6T/4B	2	2023
NE-06-108-11-W5M	6T/4B	5	2023
NE-06-108-11-W5M	6T/4B	9	2023
NE-06-108-11-W5M	4ST/23 Y,A,J,U	31	2023
NE-08-109-13-W5M	Not Investigated	150	2020
NE-08-109-13-W5M	2ST/21 Y,N,S,U	9	2020
NE-10-109-13-W5M	Not Investigated	60	2023
NE-10-109-13-W5M	2ST/22 Y,S,N,U	75	2023
NE-10-109-13-W5M	River	10	2023
NE-10-109-13-W5M	Not Investigated	14	2023
NE-12-109-13-W5M	Not Investigated	75	2024
NE-12-109-13-W5M	2ST/22 Y,L,U	26	2024
NE-12-109-13-W5M	Not Investigated	1	2024
NE-12-109-13-W5M	River	2	2024
NE-12-109-13-W5M	River	10	2024
NE-12-109-13-W5M	Not Investigated	45	2024
NE-15-109-10-W5M	2ST/22 Y,D,U	160	2021
NE-16-109-10-W5M	2ST/12 Y,D,U	88	2022
NE-16-109-10-W5M	2ST/22 Y,D,J,U	30	2022
NE-16-109-10-W5M	Wetland	24	2022
NE-16-109-10-W5M	4ST/42 Y,W,U	16	2022
NE-16-109-10-W5M	Wetland	1	2022
NE-18-109-12-W5M	2ST/22 Y,L,U	107	2019
NE-18-109-12-W5M	Not Investigated	23	2019
NE-18-109-12-W5M	Not Investigated	23	2019
NE-18-109-12-W5M	3ST/22 Y,S,U	3	2019
NE-18-109-12-W5M	5ST422 Y,S,U	3	2019
NE-20-108-12-W5M	2ST/22 X,A,U	118	2023
NE-20-108-12-W5M	Not Investigated	42	2023
NE-21-108-12-W5M	Not Investigated	150	2023
NE-21-108-12-W5M	2ST/12 Y,U	6	2023
NE-21-108-12-W5M	2ST/22 Y,L,U	5	2023
NE-22-108-10-W5M	2ST/22 Y, L, U	160	2023
NE-22-109-10-W5M	2ST/12 Y,D,U	160	2022
NE-26-103-18-W5M	3ST/32 Y,L,W,U	128	2022
NE-26-103-18-W5M	4ST/33 Y,L,W,F	6	2022
NE-26-103-18-W5M	4ST/33 Y,L,W,F	2	2022
NE-26-103-18-W5M	4ST/33 Y,L,W,F	24	2022

Legal location	Irrigability	Acres	Year Investigated
NE-26-105-14-W5M	2ST/22 Y, D, U	81	2023
NE-26-105-14-W5M	Farmyard	8	2023
NE-26-105-14-W5M	6T/4B	10	2023
NE-26-105-14-W5M	Wetland	4	2023
NE-26-105-14-W5M	2ST/22 Y, D, U	54	2023
NE-26-105-14-W5M	6T/4B	2	2023
NE-26-109-15-W5M	2ST/22 Y,U,N	15	2017
NE-26-109-15-W5M	2ST/12 Y,U	145	2017
NE-27-103-18-W5M	3ST/32 Y,L,W,U	98	2022
NE-27-103-18-W5M	5ST/42 Y,W,F	39	2022
NE-27-103-18-W5M	4ST/33 Y,L,W,F	23	2022
NE-27-109-10-W5M	2ST/22 Y,A	160	2017
NE-28-103-18-W5M	3ST/32 Y,L,W,U	130	2022
NE-28-103-18-W5M	4ST/33 Y,L,W,F	11	2022
NE-28-103-18-W5M	4ST/33 Y,W,F	6	2022
NE-28-103-18-W5M	4ST/33 Y,W,F	4	2022
NE-28-103-18-W5M	5ST/42 Y,W,F	9	2022
NE-29-109-11-W5M	2ST/22 Y,N,U	154	2023
NE-29-109-11-W5M	Wetland	6	2023
NE-30-105-13-W5M	Not Investigated	85	2022
NE-30-105-13-W5M	Dugout	3	2022
NE-30-105-13-W5M	4ST/33 Y,W,F	24	2022
NE-30-105-13-W5M	Wetland	20	2022
NE-30-105-13-W5M	Not Investigated	1	2022
NE-30-105-13-W5M	Not Investigated	18	2022
NE-30-105-13-W5M	2ST/22 Y,S,U	9	2022
NE-31-101-19-W5M	Not Investigated	86	2024
NE-31-101-19-W5M	River	23	2024
NE-31-101-19-W5M	Not Investigated	6	2024
NE-31-101-19-W5M	2ST/22 Y,L,U	24	2024
NE-31-101-19-W5M	Not Investigated	21	2024
NE-31-105-13-W5M	3ST/32 Y,D,U	108	2022
NE-31-105-13-W5M	Not Investigated	51	2022
NE-31-109-14-W5M	2ST/22 Y,N,U	146	2023
NE-31-109-14-W5M	Dugout	0	2023
NE-31-109-14-W5M	Dugout	1	2023
NE-31-109-14-W5M	3ST/32 Y,N,U	12	2023
NE-32-101-19-W5M	2ST/22 Y,L,U	80	2024
NE-32-101-19-W5M	Not Investigated	78	2024
NE-32-101-19-W5M	Not Investigated	1	2024
NE-32-104-14-W5M	2ST/12 Y,L,U	160	2022
NE-34-104-15-W5M	3ST/32 Y,S,W,U	84	2024
NE-34-104-15-W5M	2ST/22 Y,L,U	76	2024
NE-35-109-15-W5M	2ST/21 Y,S,U	78	2020
NE-35-109-15-W5M	Not Investigated	20	2020
NE-35-109-15-W5M	3ST 3/1 Y, N, S, U	61	2020
NW-03-109-12-W5M	4ST/23 X,U,J	6	2017
NW-03-109-12-W5M	4ST/13 X,U,J	6	2017
NW-03-109-12-W5M	4ST/13 X,U,J	8	2017
NW-03-109-12-W5M	Not Investigated	140	2017
NW-04-109-13-W5M	Not Investigated	127	2020
NW-04-109-13-W5M	3ST/31 Y,N,S,U	33	2020
NW-06-108-12-W5M	2ST/22 Y,L,U	103	2023
NW-06-108-12-W5M	Not Investigated	58	2023

Legal location	Irrigability	Acres	Year Investigated
NW-06-109-12-W5M	Not Investigated	149	2024
NW-06-109-12-W5M	2ST/22 Y,L,U	11	2024
NW-07-106-15-W5M	2ST/22 X,A,U	116	2023
NW-07-106-15-W5M	Not Investigated	4	2023
NW-07-106-15-W5M	Not Investigated	1	2023
NW-07-106-15-W5M	Not Investigated	11	2023
NW-07-106-15-W5M	Lake	2	2023
NW-07-106-15-W5M	3ST/22 X,M,U	25	2023
NW-07-109-12-W5M	Not Investigated	93	2024
NW-07-109-12-W5M	2ST/22 Y,L,U	16	2024
NW-07-109-12-W5M	Farmyard	6	2024
NW-07-109-12-W5M	River	10	2024
NW-07-109-12-W5M	Not Investigated	35	2024
NW-09-109-13-W5M	Not Investigated	136	2020
NW-09-109-13-W5M	2ST/21 Y,N,S,U	24	2020
NW-10-109-13-W5M	Not Investigated	34	2023
NW-10-109-13-W5M	3ST/32 Y,S,N,U	120	2023
NW-10-109-13-W5M	4ST/42 Y,N,U	5	2023
NW-12-110-15-W5M	2ST/22 Y,A,U	151	2023
NW-12-110-15-W5M	6T/4B	6	2023
NW-14-108-10-W5M	2ST/22 Y,D,L,U	156	2023
NW-14-108-10-W5M	Dugout	2	2023
NW-15-109-10-W5M	2ST/22 Y,D,U	158	2021
NW-16-109-17-W5M	2ST/22 Y,S,U	61	2017
NW-16-109-17-W5M	3ST/32 Y,L,S,U	43	2017
NW-16-109-17-W5M	5ST/42 Y,W,U	26	2017
NW-16-109-17-W5M	Wetland	29	2017
NW-18-109-12-W5M	2ST/22 Y,L,U	160	2019
NW-20-103-18-W5M	2ST/22 Y,L,U	156	2022
NW-20-103-18-W5M	Dugout	0	2022
NW-20-103-18-W5M	Dugout	1	2022
NW-20-103-18-W5M	Dugout	1	2022
NW-20-103-18-W5M	Wetland	0	2022
NW-20-108-12-W5M	Not Investigated	155	2023
NW-20-108-12-W5M	2ST/22 X,A,U	5	2023
NW-21-108-12-W5M	2ST/12 Y,U	126	2023
NW-21-108-12-W5M	Not Investigated	33	2023
NW-21-108-12-W5M	2ST/22 Y,L,U	2	2023
NW-22-109-10-W5M	2ST/12 Y,D,U	150	2022
NW-22-109-10-W5M	Not Investigated	7	2022
NW-23-106-14-W5M	2ST/22 Z,D,U	120	2023
NW-23-106-14-W5M	Not Investigated	40	2023
NW-26-103-18-W5M	3ST/32 Y,L,W,U	100	2022
NW-26-103-18-W5M	4ST/33 Y,L,W,F	53	2022
NW-26-103-18-W5M	3ST/32 Y,L,W,U	4	2022
NW-27-103-18-W5M	3ST/32 Y,L,W,F	64	2022
NW-27-103-18-W5M	5ST/42 Y,W,F	33	2022
NW-27-103-18-W5M	3ST/32 Y,L,W,U	28	2022
NW-27-103-18-W5M	4ST/33 Y,W,F	24	2022
NW-27-103-18-W5M	3ST/32 Y,L,W,U	1	2022
NW-27-103-18-W5M	3ST/32 Y,L,W	7	2022
NW-27-109-10-W5M	2ST/22 Y,A	158	2017
NW-28-103-18-W5M	Not Investigated	158	2022

Legal location	Irrigability	Acres	Year Investigated
NW-29-109-11-W5M	2ST/12 Y,U	144	2023
NW-29-109-11-W5M	Wetland	14	2023
NW-29-109-11-W5M	Wetland	2	2023
NW-31-101-19-W5M	Not Investigated	59	2024
NW-31-101-19-W5M	2ST/22 Y,L,U	2	2024
NW-31-101-19-W5M	River	41	2024
NW-31-101-19-W5M	Not Investigated	58	2024
NW-31-109-14-W5M	3ST/32 Y,S,N,U	135	2023
NW-31-109-14-W5M	Not Investigated	4	2023
NW-31-109-14-W5M	2ST/22 Y,S,N,U	21	2023
NW-32-101-19-W5M	2ST/22 Y,L,U	45	2024
NW-32-101-19-W5M	Not Investigated	51	2024
NW-32-101-19-W5M	Not Investigated	43	2024
NW-32-101-19-W5M	2ST/22 Y,L,U	13	2024
NW-32-101-19-W5M	3ST/32 Y,W,L,U	8	2024
NW-35-104-15-W5M	2ST/22 Y,L,U	146	2024
NW-35-104-15-W5M	Farmyard	14	2024
SE-03-110-11-W5M	2ST/22 Y,N,U	125	2023
SE-03-110-11-W5M	Not Investigated	19	2023
SE-03-110-11-W5M	3ST/32 Y,W,U	14	2023
SE-04-104-18-W5M	2ST/22 Y,L,U	107	2024
SE-04-104-18-W5M	Farmyard	36	2024
SE-04-104-18-W5M	3ST/32 Y,L,W,U	16	2024
SE-06-104-14-W5M	2ST/12 Y,U	80	2023
SE-06-104-14-W5M	Not Investigated	55	2023
SE-06-104-14-W5M	4ST/13 Y,G	24	2023
SE-08-109-13-W5M	Not Investigated	127	2020
SE-08-109-13-W5M	2ST/21 Y,N,S,U	32	2020
SE-08-109-13-W5M	3ST/21 Y, N, S, U	1	2020
SE-10-106-11-W5M	3ST/32 Y,W,L,U	159	2023
SE-10-109-13-W5M	2ST/22 Y,S,N,U	75	2023
SE-10-109-13-W5M	Not Investigated	67	2023
SE-10-109-13-W5M	5ST/42 Y,N,U	17	2023
SE-12-106-16-W5M	2ST/22 X,L,U	133	2023
SE-12-106-16-W5M	Not Investigated	16	2023
SE-12-106-16-W5M	Farmyard	10	2023
SE-12-106-16-W5M	Dugout	1	2023
SE-12-109-13-W5M	2ST/22 Y,L,S,U	69	2024
SE-12-109-13-W5M	Not Investigated	45	2024
SE-12-109-13-W5M	2ST/22 Y,L,U	45	2024
SE-13-106-12-W5M	3ST/32 Y,W,U	155	2023
SE-13-106-12-W5M	Dugout	2	2023
SE-13-109-13-W5M	Not Investigated	83	2019
SE-13-109-13-W5M	2ST/22 Y,L,U	77	2019
SE-15-109-10-W5M	2ST/22 Y,D,U	158	2021
SE-17-109-17-W5M	2ST/22 Y,S,A,U	145	2017
SE-17-109-17-W5M	5ST/42 Y,W,S,U	15	2017
SE-20-108-12-W5M	2ST/22 Y,L,U	101	2023
SE-20-108-12-W5M	Not Investigated	59	2023
SE-21-108-12-W5M	Not Investigated	146	2023
SE-21-108-12-W5M	2ST/22 Y,L,U	14	2023
SE-22-108-10-W5M	2ST/22 Y,A,U	123	2023
SE-22-108-10-W5M	2ST/22 Y, L, U	37	2023

Legal location	Irrigability	Acres	Year Investigated
SE-22-109-10-W5M	2ST/12 Y,D,U	157	2022
SE-22-109-10-W5M	Wetland	2	2022
SE-22-109-10-W5M	Wetland	1	2022
SE-24-103-18-W5M	2ST/22 Y,D,U	112	2023
SE-24-103-18-W5M	Farmyard	23	2023
SE-24-103-18-W5M	Not Investigated	6	2023
SE-24-103-18-W5M	2ST/22 Y,W,U	20	2023
SE-24-108-10-W5M	2ST/22 Y, L, U	160	2023
SE-26-109-15-W5M	2ST/22 Y,U,S	30	2017
SE-26-109-15-W5M	Not Investigated	11	2017
SE-26-109-15-W5M	2ST/12 Y,U,N	118	2017
SE-27-103-18-W5M	3ST/32 Y,L,W,U	142	2022
SE-27-103-18-W5M	Dugout	1	2022
SE-27-103-18-W5M	3ST/32 Y,L,W,U	3	2022
SE-27-103-18-W5M	4ST/32 Y,L,W,F	12	2022
SE-27-109-10-W5M	2ST/22 Y,A	158	2017
SE-28-103-18-W5M	4ST/33 Y,L,W,F	34	2022
SE-28-103-18-W5M	Dugout	2	2022
SE-28-103-18-W5M	3ST/32 Y,L,W	116	2022
SE-28-103-18-W5M	4ST/33 Y,L,W,F	1	2022
SE-28-103-18-W5M	4ST/33 Y,L,W,F	5	2022
SE-29-108-12-W5M	Not Investigated	146	2023
SE-29-108-12-W5M	2ST/12 X,U	14	2023
SE-31-101-19-W5M	2ST/22 Y,L,U	141	2024
SE-31-101-19-W5M	Not Investigated	8	2024
SE-31-101-19-W5M	Not Investigated	10	2024
SE-31-105-13-W5M	3ST/32 Y,S,W,U	67	2022
SE-31-105-13-W5M	2ST/22 Y,D,U	58	2022
SE-31-105-13-W5M	3ST/32 Y,W,U	7	2022
SE-31-105-13-W5M	4ST/33 Y,W,F	27	2022
SE-34-104-15-W5M	2ST/22 Y,L,U	110	2024
SE-34-104-15-W5M	3ST/32 Y,L,W,U	50	2024
SE-34-108-16-W5M	2ST/22 Y,A,U	88	2023
SE-34-108-16-W5M	3ST/32 Y,W,L,U	42	2023
SE-34-108-16-W5M	3ST/32 Y,W,L,U	26	2023
SE-34-108-16-W5M	Wetland	3	2023
SE-35-109-15-W5M	Not Investigated	21	2017
SE-35-109-15-W5M	2ST/22 Y,U,N	56	2017
SE-35-109-15-W5M	5ST/42 Y,W	2	2017
SE-35-109-15-W5M	2ST/12 Y,U	80	2017
SW-04-104-18-W5M	2ST/22 Y,L,U	138	2024
SW-04-104-18-W5M	3ST/32 Y,L,W,U	14	2024
SW-04-104-18-W5M	3ST/32 Y,L,W,U	4	2024
SW-06-108-12-W5M	2ST/22 Y,L,U	160	2023
SW-07-106-15-W5M	2ST/22 X,L,U	148	2023
SW-07-106-15-W5M	Farmyard	7	2023
SW-07-106-15-W5M	Not Investigated	4	2023
SW-07-109-12-W5M	2ST/22 Y,N,U	78	2024
SW-07-109-12-W5M	Not Investigated	25	2024
SW-07-109-12-W5M	2ST/22 Y,L,U	58	2024
SW-09-109-13-W5M	2ST/21 Y,N,S,U	77	2020
SW-09-109-13-W5M	Not Investigated	44	2020
SW-09-109-13-W5M	3ST/31 Y,N,S,U	37	2020
SW-09-109-13-W5M	5ST/41 Y,W,U	2	2020

Legal location	Irrigability	Acres	Year Investigated
SW-10-109-13-W5M	3ST/32 Y,S,N,U	98	2023
SW-10-109-13-W5M	Not Investigated	57	2023
SW-10-109-13-W5M	5ST/42 Y,W,N,U	5	2023
SW-14-108-10-W5M	2ST/21 Y,A	154	2023
SW-14-108-10-W5M	Dugout	1	2023
SW-14-108-10-W5M	Dugout	1	2023
SW-15-109-10-W5M	2ST/22 Y,D,U	156	2021
SW-15-109-13-W5M	Not Investigated	77	2023
SW-15-109-13-W5M	2ST/22 Y,A,U	18	2023
SW-15-109-13-W5M	Not Investigated	1	2023
SW-15-109-13-W5M	River	10	2023
SW-15-109-13-W5M	Not Investigated	54	2023
SW-16-109-17-W5M	3ST/32 Y,L,M,U	67	2017
SW-16-109-17-W5M	2ST/22 Y,S,A,U	92	2017
SW-17-109-17-W5M	2ST/22 Y,S,A,U	128	2017
SW-17-109-17-W5M	5ST/42 Y,W,S,U	16	2017
SW-17-109-17-W5M	Not Investigated	15	2017
SW-20-108-12-W5M	Not Investigated	154	2023
SW-20-108-12-W5M	2ST/22 X,A,U	6	2023
SW-21-106-14-W5M	2ST/22 Y,L,U	156	2024
SW-21-106-14-W5M	Farmyard	3	2024
SW-21-108-12-W5M	2ST/22 Y,L,S,U	101	2023
SW-21-108-12-W5M	Not Investigated	59	2023
SW-22-109-10-W5M	2ST/12 Y,D,U	157	2022
SW-22-109-10-W5M	Wetland	1	2022
SW-22-109-10-W5M	Wetland	0	2022
SW-24-108-10-W5M	2ST/22 Y, L, U	153	2023
SW-24-108-10-W5M	6T/4B	6	2023
SW-25-109-15-W5M	2ST/21 Y,A,U	149	2020
SW-25-109-15-W5M	Not Investigated	10	2020
SW-26-103-18-W5M	3ST/32 Y,L,W,U	127	2022
SW-26-103-18-W5M	4ST/33 Y,L,W,F	17	2022
SW-26-103-18-W5M	4ST/33 Y,L,W,F	13	2022
SW-27-103-18-W5M	3ST/32 Y,L,W,U	90	2022
SW-27-103-18-W5M	Farmyard	44	2022
SW-27-103-18-W5M	Dugout	1	2022
SW-27-103-18-W5M	4ST/33 Y,W,L,F	8	2022
SW-27-103-18-W5M	4ST/33 Y,L,W,F	8	2022
SW-27-103-18-W5M	4ST/33 Y,L,W,F	3	2022
SW-27-103-18-W5M	3ST/32 Y,L,W,U	4	2022
SW-27-109-10-W5M	2ST/22 Y,A	156	2017
SW-28-103-18-W5M	Not Investigated	156	2022
SW-28-108-12-W5M	Not Investigated	142	2023
SW-28-108-12-W5M	2ST/22 Y,L,U	18	2023
SW-31-101-19-W5M	Not Investigated	134	2024
SW-31-101-19-W5M	2ST/22 Y,L,U	20	2024
SW-31-101-19-W5M	River	6	2024
SW-32-101-19-W5M	Not Investigated	101	2024
SW-32-101-19-W5M	2ST/22 Y,L,U	39	2024
SW-32-101-19-W5M	2ST/22 Y,L,U	5	2024
SW-32-101-19-W5M	Wetland	15	2024
SW-34-108-16-W5M	2ST/22 Y,S,N,U	88	2023
SW-34-108-16-W5M	3ST/32 Y,S,N,U	72	2023
SW-34-109-10-W5M	2ST/12 Y,D,U	145	2022

Legal location	Irrigability	Acres	Year Investigated
SW-34-109-10-W5M	Wetland	13	2022
SW-35-104-15-W5M	2ST/22 Y,L,U	160	2024